

Norman Schofield · Maria Gallego

# Leadership or Chaos

The Heart and Soul of Politics

 Springer

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The Heart and Soul of Politics

In collaboration with Jee Seon Jeon and Ugur Ozdemir

 Springer

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*Dedicated to  
Phoebe Ahn Schofield, born February  
28, 2011, and  
Maria's father and mother  
Humberto Gallego and Amparo Jaramillo.*



# Foreword

Equilibrium and chaos. Evolution and revolution. Risk and uncertainty. Knowledge and belief. Heart and soul.

In this book, Norman Schofield and Maria Gallego argue that to understand our past, and thus our future, we need to think hard about these contradictory pairs. In their view, we blind ourselves by focusing on only one side of the pair and ignoring the other.

Thus, political economists who focus on equilibrium often ignore the ways in which equilibrium changes. While these changes can be evolutionary, gradual and peaceful, they are sometimes revolutionary. Revolutions strike with little warning, and often bring violent change, in ways that seem unpredictable or chaotic. Indeed, if the authors are right, revolutions are chaotic in the most precise technical sense.

But, they warn us, it is not all chaos. Even though some equilibria are fragile, some are not; many societies are stable, and changes are regularized and controlled. Those who focus on chaos miss the order that characterizes equilibrium. Indeed, they often find those orders incomprehensible and baffling. In their chapters on elections, Schofield and Gallego show the different political orders induced by different electoral systems.

In making their arguments, Schofield and Gallego use the tools of modern political economy. They develop models and bring those models to the data, both quantitative and qualitative. Yet they are careful to show the roots of their program, of the questions they ask and the answers they give. Their fundamental question is: Why are some societies so much more hospitable to human flourishing than others? Their answer, to the Marquis de Condorcet and to James Madison and Thomas Jefferson, is that it's the institutions and the incentives they create.

Those who think that political economy has no soul will find much here to give them pause. Many times over, the authors point out the ways in which political



activists use their understanding of the logic of politics to remake the world to their liking. If they are right, then they have produced a handbook for real radicals, those who want to get to the root of the political economy.

California  
March 25, 2011

*Andrew Ruten*

# Preface

The bases of modern social and natural sciences are due to Thomas Hobbes in his *Leviathan* of 1651 and Isaac Newton in his *Philosophiae naturalis principia mathematica* of 1687. Newton's work, particularly the *Optiks* (1704), as well as his underlying philosophy of science, was transmitted throughout Europe by Voltaire's book on the *Elements of Newton's Philosophy* (published in 1738).

The human sciences, and especially political economy and moral philosophy, were developed further in France by Etienne Condillac's *Essay on the Origin of Human Knowledge* (1746) and Turgot's *Reflections on the Formation and Distribution of Wealth* (1766), and in Scotland by David Hume's *Essays Moral, Political, and Literary* (1742) and *A Treatise of Human Nature* (1752), culminating in Adam Smith's *The Theory of Moral Sentiments* (1759) and *Wealth of Nations* (1776). Finally in 1785 and 1795, the Marquis de Condorcet first published his *Essai sur l'application de l'analyse à la probabilité des voix* (*Essay on the Application of Analysis to the Probability of Decisions*) and then *Esquisse d'un tableau historique des progrès de l'esprit humain* (*Sketch for an Historical Picture of the Progress of the Human Mind*).

In one sense, this present work is an attempt to extend the Condorcetian logic as expressed in the formal apparatus of the *Essai* in an effort to judge whether the optimism of the *Esquisse* is justified in a world where a large proportion of humanity lives in what has been termed the Malthusian trap of growing population, poverty and tyranny.

The formal apparatus of economic theory has developed apace since the time of Adam Smith's *Wealth of Nations*, in the work of Ricardo, Pareto, Walras and Marshall, culminating in the mathematical existence theorems for a competitive equilibrium. (Von Neumann 1932; Arrow and Debreu 1954; McKenzie 1959).

In contrast to the theoretical efforts on the *economic* side of political economy, almost no work on formalizing Condorcet's insights, in his *Essai* on the *political* side of political economy, was attempted until the late 1940s, when Duncan Black and Kenneth Arrow published seminal papers on this topic. In 1948, Duncan Black published his paper "On the Rationale of Group Decision Making," and specifically addressed the question of existence of a voting equilibrium. He followed this in 1958

with his monograph on *The Theory of Committees and Elections*. The monograph emphasized the importance of Condorcet's work in voting theory, but paid much less attention to the Condorcet Jury Theorem. In contrast, recent research has suggested that this latter theorem gives a justification for majority rule as a "truth seeking" device.

Arrow's paper, "A Difficulty in the Concept of Social Welfare" (1950) derives from quite a different tradition of formal political economy, namely the work in welfare economics of von Mises (1920), Bergson (1954), Lange (1938), Schumpeter (1942), von Hayek (1944) and Popper (1945). Arrow shows essentially that any social welfare function (that maps families of individual preferences to a weak social preference) is either imposed or dictatorial. To obtain what Arrow termed this "possibility theorem," he assumed that the social welfare function had universal domain and satisfied a property of positive association of preferences.

As Arrow commented in his paper, the negative result of the "possibility theorem" was "strongly reminiscent of the intransitivity of the concept of domination in the theory of multiperson games" as presented in von Neumann and Morgenstern (1944). Arrow also emphasized that he viewed the theorem as relevant to a situation where individuals make value judgments, rather than to the more typical economic context where agents make choices based on their tastes. Since all political choices are based, to some degree or other, on the aggregation of values, we further infer that the "possibility theorem" addresses not just the traditional questions of welfare economics, but the larger issue of the interaction between the political and economic realms. In other words, the relevance of the theorem is not simply to do with the question of voting cycles, or intransitivities, but concerns the larger questions of political economy.

The formal exercise of proof of existence of an economic equilibrium (obtained between 1935 and 1954) leaves unanswered many questions. For example, can the existence proof be extended from the domain of private commodities to include public goods? More particularly, can democratic procedures be devised to ensure that preference information be aggregated in an "efficient" fashion so that social choice is welfare maximizing. Arrow's possibility theorem suggests that democracy itself may be flawed: indeed it suggests that democratic institutions may (as Madison foresaw in *Federalist X*) be mutable or turbulent.

Thus difficult questions of institutional design need to be addressed. These questions come back in one sense or another to an interpretation of Arrow's Theorem. In the rest of this volume we shall attempt to outline our sense of the current state of the debate.

Chapter 1 first sketches one way of interpreting Arrow's Theorem. Since the theorem refers to the aggregation of *preferences*, we argue that any society or legislature can potentially fall into disorder. However, if social decisions also depend on the aggregation of beliefs, then it is possible, as Madison argued in *Federalist X*, that voters will base their judgment of political leaders on the perception of the leaders' inherent or intrinsic quality. This suggests analyzing elections using the formal idea of *valence*. This electoral model is presented as a heuristic device to examine what are called *social contracts*, instituted at times of social quandary. The

chapter briefly discusses social quandaries in Britain and the USA in the period from 1688 to the present.

One purpose of Chap. 1 is to interpret the understanding of the Founders in terms of the Scottish and French Enlightenments. In the works of Adam Smith and David Hume, the Scots focus on decentralized institutions – markets and civil society. They use their understanding of these institutions to talk about what policy should be. But they do not take the next step, and give an extended discussion of the political system that will support this policy. Instead, their writings on politics are shorter and more practical than their writings on markets and civil society.

Condorcet, in a sense, fills the gap between the French and Scottish theorists, by giving a systematic account of the virtues (and vices) of democratic decisions. He shows that democratic decisions need not mimic individual decisions. Most of the focus of social choice has been on Condorcet's discovery of the *vices* of democracy – voting cycles – which show “rational man but irrational society.” There has been less focus on the Jury Theorem, which shows, instead, the *virtue* of democracy. The Jury theorem shows that when the Scots theorists are right and individuals are fallible, then the best way to make social choice is to vote. In fact, voting can get close to the truth, something that no individual (and thus no autocrat) can guarantee. In other words, voting, like market exchange, leads to better decisions than could be made by any individual, especially an autocrat.

Chapter 2, deals with the other extreme of “Limited Access” or autocratic societies before democracy is fully developed. This chapter, in large part, is an extended rumination on the work by North et al. (2009a,b).

Chapter 3 surveys general models of social choice, and contrasts Arrowian and Condorcetian ideas. Chapter 4 considers modelling complex systems such as the economy and draws parallels between such models and those of weather and climate. Chapter 5 begins the analysis of democratic elections with a formal model of presidential elections in the United States. The next six chapters use the same method of analysis, first, in Chaps. 6 and 7 for the developed polities, Great Britain, Canada, the Netherlands and Belgium, and then for the younger democracies: Poland, Russia, Georgia, Israel, Turkey, and Argentina.

Having studied particular elections in the countries mentioned above, we discuss leadership transitions in Chap. 12. We first examine an economic theory of leadership transition in dictatorial regimes, then we turn our attention to estimating the leadership transitions using a worldwide sample for leaders who exit by either constitutional or unconstitutional means.

The last chapter in the volume discusses moral sentiments, social beliefs and uncertainty.

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Missouri  
Ontario, Canada  
July 10, 2011

*Norman Schofield*  
*Maria Gallego*

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# Chapter 1

## Political Economy: Risk and Uncertainty

For what shall it profit a man, if he shall gain the whole world, and lose his own soul? (*Mark 8:36. King James Bible*)

For before constitution of Sovereign Power . . . all men had right to all things; which necessarily causeth Warre.

For by Art is created that great Leviathan called a Common-wealth, or State . . . which is but an Artificiall Man

The Artificiall Man maintains his resemblance with the Naturall; whose Veins receiving the Bloud from the severall Parts of the Body, carry it to the Heart; where being made Vitall, the Heart by the Arteries sends it out again, to enliven, and enable for motion all the Members of the same. (*Leviathan, Hobbes*)

In August 1784, after the success of the revolutionary war against Great Britain, Thomas Jefferson had arrived in Paris as Minister Plenipotentiary, to take over from Benjamin Franklin. Condorcet had been appointed the Permanent Secretary of the Academy of Science, in August 1776, and had close contact with Franklin in that context. After his arrival in Paris, Jefferson was introduced by Franklin to Condorcet at the salon of the Comtesse d'Houdetot. From then on, Jefferson also frequented the salon of Sophie de Grouchy, Condorcet's wife. Sophie was later to translate Adam Smith's *Theory of Moral Sentiments*, adding a number of her *Letters on Sympathy* (De Grouchy 2008 [1798]) to the translated volume. Jefferson's later writings on debt and the benefit of free trade indicate that the ideas of Turgot, Smith and Condorcet exerted a considerable influence on him.<sup>1</sup>

During his time in Paris, Jefferson communicated regularly with James Madison, particularly over the discussions in the Constitutional Convention. Moreover, in 1787, Jefferson sent Condorcet's *Essai* to Madison, together with a copy of a book by Jefferson's friend, Mazzei. Condorcet's *Essai* included what is now called the

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<sup>1</sup>See McLean (2003) and Schofield (2002, 2006a) for further explorations of the connections between the French and Scottish Enlightenments and the creation of the American Republic. These are discussed further below.

*Jury Theorem*. This provides a formal reason why a committee or polity, using majority rule, will make a better choice than a single, average member. There is indirect evidence that Madison had this result in mind when he formulated the argument, in *Federalist X*, that the choice of a Chief Magistrate in the extended Republic will lead to the *probability of a fit choice*.

The immense debt that France had accumulated, partly as a result of the aid provided to the thirteen Colonies, obliged Louis XVI to call the Estates General, and eventually this led to the Revolution in France. In June 1789 or so Jefferson contributed to the drafting by Lafayette of the *Déclaration des Droits de l'Homme et du Citoyen*. In the midst of the Revolution, Jefferson and Condorcet had a farewell dinner on September 17, 1789. In 1791, after Jefferson had returned to the United States, Condorcet was elected to the National Assembly, and then became its Secretary. The Girondists, including Condorcet, lost the contest for a constitutional monarchy, and after the execution of Louis XVI on 21 January 1793, the Jacobins took power. In October, Condorcet was declared a traitor and forced to flee. In the next few months he wrote *Esquisse d'un tableau historique des progrès de l'esprit humain* (*Sketch for a Historical Picture of the Human Mind*), and after his death in March 1794, Sophie de Grouchy had it published in 1795.

The *Esquisse* was used by Thomas Malthus as the point of departure for his pessimistic book, the *Essay on the Principle of Population* (1798), where he argued against what he saw as Condorcet's excessively optimistic, "Smithian," viewpoint.

In one sense, this present work is an attempt to extend the Condorcetian logic as expressed in the formal apparatus of the *Essai* in an effort to judge whether the optimism of the *Esquisse* is justified in a world where a large proportion of humanity lives in what has been termed the Malthusian trap of growing population, poverty and tyranny.

The idea behind this chapter is to provide an extended interpretation of Madison's argument in *Federalist X* (1999 [1787]), and to use ideas from social choice theory in an attempt to develop a "rational choice" approach to the evolution of society. This research program can be regarded as continuing the work of Madison's contemporaries, the Marquis de Condorcet and Pierre-Simon Laplace. In the later sections of the chapter, recent work on modelling elections is also discussed in an attempt to evaluate Madison's contention about the "probability of a fit choice" in the Republic.

We shall attempt to construct the beginnings of a theory of democratic choice that we believe can be used as a heuristic device able to tie together these differing historical accounts. The basic underlying framework is adapted from social choice theory, as we understand it, and later chapters will complement the social choice theory with a "stochastic" model of elections. This model is an attempt to extend the Condorcetian theme of electoral judgment. We shall argue that its logic was the formal principle underlying Madison's justification for the Republican scheme of representation that he made in *Federalist X*. While this logic does not imply a general will in the sense of Rousseau, it does suggest that Riker in *Liberalism Against Populism* (Riker 1982a) was overly pessimistic about the nature of democracy. On the other hand, the social choice framework

suggests that a democracy, indeed any polity, must face difficult choices over what we call chaos and autocracy. These difficult choices are *constitutional quandaries* that societies have to face. In the next three sections, we first discuss this quandary in the context of Madison's views about the Republic, and then consider in more detail the quandaries of power that first Britain, and then the United States, faced as they developed their institutions of political economy. In the second chapter, we take a longer view and discuss quandaries of power and population in an historical context.

## 1.1 Democracy and Autocracy

In order to provide a motif for the topics discussed in this chapter, it is worth quoting Madison's argument in *Federalist X*.

[I]t may be concluded that a pure democracy, by which I mean a society, consisting of a small number of citizens, who assemble and administer the government in person, can admit of no cure for the mischiefs of faction. A common passion or interest will . . . be felt by a majority of the whole . . . and there is nothing to check the inducements to sacrifice the weaker party. . . . Hence it is that such democracies have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security, or the rights of property; and have in general been as short in their lives, as they have been violent in their deaths.

A republic, by which I mean a government in which the scheme of representation takes place, opens a different prospect . . .

The two great points of difference between a democracy and republic, are first, the delegation of the government, in the latter, to a small number of citizens elected by the rest; secondly, the greater number of citizens and the greater sphere of country, over which the latter may be extended.

[I]t may well happen that the public voice pronounced by the representatives of the people, will be more consonant to the public good, than if pronounced by the people themselves . . . .

[I]f the proportion of fit characters be not less in the large than in the small republic, the former will present a greater option, and consequently a greater probability of a fit choice.

[A]s each representative will be chosen by a greater number of citizens in the large than in the small republic, the suffrages of the people will be more likely to centre on men who possess the most attractive merit.

The other point of difference is, the greater number of citizens and extent of territory which may be brought within the compass of republican, than of democratic government; and it is this . . . which renders factious combinations less to be dreaded in the former, than in the latter. Extend the sphere, and you take in a greater variety of parties and interests; you make it less probable that a majority of the whole will have a common motive to invade the rights of other citizens . . .

Hence it clearly appears, that the same advantage, which a republic has over a democracy . . . is enjoyed by a large over a small republic – is enjoyed by the union over the states composing it.<sup>2</sup>

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<sup>2</sup>James Madison, *Federalist X* (1787) in [Rakove \(1999\)](#).

We shall try to relate Madison's justification for the Republican scheme of representation that he made in *Federalist X* to the social choice theory presented in Schofield (2008b) and the empirical work on elections discussed in later chapters.

The key to our understanding of a general theory of social choice is that any polity must, on occasion, face difficult choices over what we call *constitutional quandaries*. Simply put, a quandary is a choice situation where all possible options appear extremely unpleasant, and laden with risk and uncertainty.<sup>3</sup> The constitutional feature of the quandary refers to the likelihood that opinion as regards the correct choice will typically be highly heterogenous. The actual choice will depend on the political mechanisms used by the society, and thus on the constitutional rules that govern political choice.

The results from social choice theory indicate that when preferences, or opinions, are sufficiently heterogenous, then disorder or *chaos* can ensue. The process of social decision-making is denoted by a correspondence,  $\mathbb{Q}$ , so  $\mathbb{Q}(x)$  is the set of outcomes that can come about from a point  $x$  (in the space of alternatives,  $X$ ) as determined by whatever social rule or political process is used by the society. The idea of *social chaos* is that there are conditions under which, starting from a point,  $x$ , it is possible to reach *many* possible outcome  $y \in \mathbb{Q}^f(x)$  by reiterating the social rule. In contrast we can identify the *core* or *social equilibrium*,  $y$ , to be some stationary outcome such that  $\mathbb{Q}(y)$  is empty. We write  $\mathbb{C}(\mathbb{Q})$  for the core of  $\mathbb{Q}$ . An even stronger equilibrium notion is that of an *attractor* of  $\mathbb{Q}$ : that is a single outcome  $y$  with  $y = \mathbb{Q}^f(x)$ , which results from any  $x$ , after a sufficient number of iterations of the rule. A *voting rule* is a choice mechanism determined by a set,  $\mathbb{D}$ , of a family of winning coalitions. A *dictator* of  $\mathbb{D}$  is a single agent who belongs to every winning coalition and is also winning. An *oligarchy* is a group that belongs to every winning coalition and is itself winning, while a *collegium* is a group of voters that belongs to every winning coalition in  $\mathbb{D}$ , but need not be winning. Social choice theory suggests that when there is no collegium, then the core of  $\mathbb{D}$ , namely  $\mathbb{C}(\mathbb{D})$ , will generally be empty, but only if the dimensionality of the policy space is high.<sup>4</sup> Because the core may often be empty, we can define a set,  $\mathbb{H}(\mathbb{D})$ , called the *heart*. Even when the core  $\mathbb{C}(\mathbb{D})$  is empty, the heart will be non-empty. Indeed, under general conditions the heart will be guaranteed to be non empty, and when the core is non-empty, the heart and the core coincide. We shall give examples of the heart in various legislatures, in Chaps. 7–10 in this volume. For the moment we shall just say the heart of a general social process, denoted  $\mathbb{H}(\mathbb{Q})$ , is the set of potential outcomes.

From the social choice perspective, disorder or *chaos* means not only that the heart of the particular social process is very large, but that even though the trajectory of outcomes is constrained to the heart, the path itself seems random. Since the social choice trajectory will be generated by the formation of different coalitions, one after the other, how these coalitions make their decisions will be

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<sup>3</sup>The choice situation as regards Iraq and Afghanistan from 2003 to the present presents such a constitutional quandary.

<sup>4</sup>See McKelvey (1976), Schofield (1978) and Saari (1997).

largely indeterminate. Another way of expressing this is that the trajectory will be associated with *uncertainty*. Chapter 4 discusses the relevance of uncertainty and the possibility of chaos in many economic and climatic systems, using the analogy of chaos in celestial mechanics.

While these results focused on voting rules, it seems just as likely that chaos can ensue in a society where there is an underlying degree of economic, political or religious conflict. Many less developed polities appear chaotic from this point of view. Indeed, Lee Smith (2010) argues that endless sectarian violence in countries like Iraq is the only alternative to authoritarian rule. For example, Bates et al. (2003) estimate that there have been over 400 cases of political instability in the period 1955–2002, including 39 cases of genocide, 62 revolutionary wars, 72 ethnic wars and 106 cases of “adverse” regime change such as coup d’etat.

Indeed, it is possible that any society can fall into chaos, unless some institutional device, such as a collegial veto (or “negative”) is constructed to prevent such a situation. The classic example of a fall into chaos is France, from the first meeting of the Estates General in May 1789, through the execution of King Louis XVI in January 1793, followed by the Terror and the deaths of Condorcet in March, and of Robespierre in July 1794. The political instability was ended by Napolean’s coup d’etat in November 1799. See Winik (2007) for example.

Madison was keenly aware that one way to lessen the possibility of such chaos was to institute a method of veto. As he says,

for the harmony of that [British] Empire, it is evident I think that without the royal negative or some equivalent control the unity of the system would be destroyed. The want of some such provision seems to have been mortal to the ancient Confederacies.<sup>5</sup>

*Federalist X* suggests that Madison certainly viewed direct democracy as subject to chaos. Since a legislative assembly can be understood as a direct democracy, social choice theory provides a formal basis for Madison’s argument about direct democracy and what he called “mutability” of the legislature.

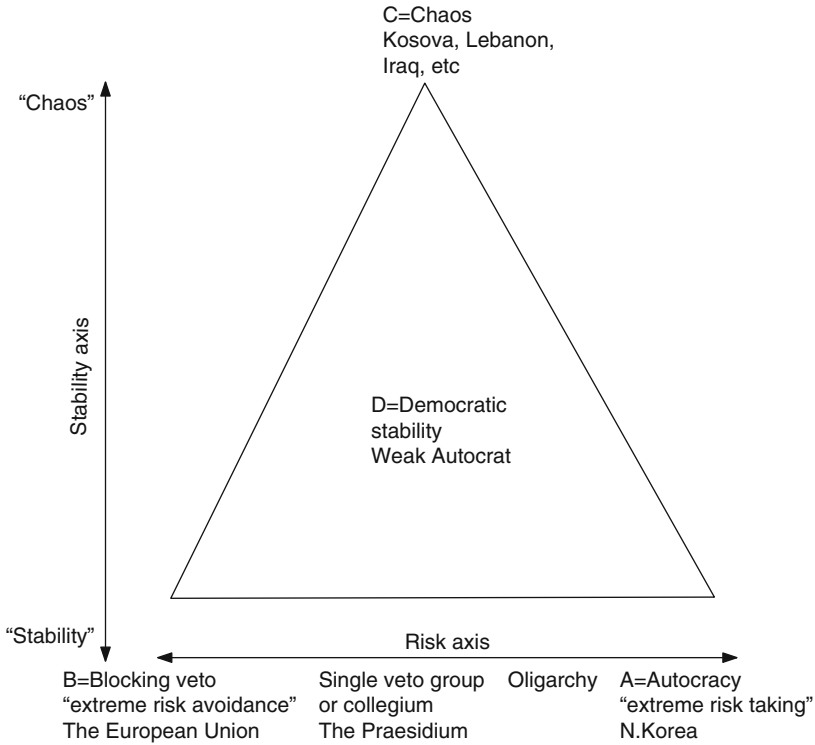
This first method of mitigating chaos, as proposed by Madison, is to impose the concentration of power implied by the power of the president. Because we define a dictator to be someone who can control *every* choice, we must infer that it is very unlikely that such a degree of concentration of power can actually occur. However, we can use the term *autocrat* for someone who controls most of the levers of power of the polity, without being constrained by some strong form of political veto.

While an autocrat will constrain the heart, the danger of such concentration of power is that an autocrat is also likely to be a risk-taker. The credibility of this hypothesis is supported by the historical illustrations of the costs of autocratic-risk taking given in Kennedy (1987) and in Chap. 2 on “social orders.”<sup>6</sup> The rule of Mao

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<sup>5</sup>Letter to Jefferson, 24 October 1787, in Smith (1995: 498).

<sup>6</sup>The chapter discusses Attila, Genghis Khan, Philip II of Spain, and Napoleon as risk taking autocrats. In the twentieth century, Hitler and Stalin caused an untold number of deaths (Snyder 2011).



**Fig. 1.1** Uncertainty and risk

Zedong (Mao Tse-tung) from 1949 to 1976 is believed to have caused the deaths of 40–70 million people. Another example would be Kim Il-sung of North Korea who died in 1994 after 46 years in power, and his son, Kim Jong-il who officially took the title of General Secretary of the Workers’ Party of Korea in 1997, and has been in sole power since then.

Similarly, Saddam Hussein of Iraq and Muammar el-Qaddafi of Libya, and more recently Chavez of Venezuela, Mahmoud Ahmadinejad of Iran, and Robert Mugabe of Zimbabwe, have adopted the risky strategy of directly confronting the US, sometimes with a degree of success. Vladimir Putin has been in power in Russia since August 9, 1999, when President Boris Yeltsin named Putin as Russia’s acting Prime Minister, and since then has been President and Prime Minister.<sup>7</sup>

As Fig. 1.1 suggests, there is a fundamental quandary in social choice, that chaos is a real possibility in the absence of a concentration of power. As this book goes to press, there are uprisings in many counties: Tunisia, Egypt, Libya, Sudan, Yemen, Jordan, Bahrain, and even Iran. Some of these countries have been ruled by an

<sup>7</sup>Chapter 9 discusses Putin’s popularity in Russia, as well as autocracy in Georgia and Azerbaijan.

autocrat for up to 40 years. The underlying rationale for such autocracy is to prevent the collapse into chaos, and the harsh response to these uprisings is perhaps due to the belief of the elite that autocracy is better than chaos.<sup>8</sup>

However, the second cost of autocracy is stagnation. Once power is concentrated in the hands of the autocrat and his supporters, the people will be denied the opportunities of a free, or open access, society.<sup>9</sup> The dilemma of democracy is how to balance the possibility of chaos against the costs of autocracy. As many now fear, the overthrow of these autocrats may induce conflict between supporters of a secular society and one governed by *Sharia* the religious law of Islam.

### ***1.1.1 The Constitution of the United States***

One way of understanding the US Constitution is that the Presidential veto was designed to overcome Congressional mutability. Madison, of course, was concerned that the President would gain autocratic power, and to avoid this, the Congressional super-majority counter-veto was devised. However, even with the counter-veto, the President does have some autocratic power, and we shall use the term *weak autocrat* to characterize his power. It is evident that there is a tendency for US presidents to display the degree of risk preference that characterizes what we term weak autocrats. The above hypothesis about risk suggests that even a weak autocrat will tend to be more risk-taking than an oligarchy which in turn will tend to be more risk-taking than a collegium.

We judge that Congress will generally be risk-averse, which is why, we believe, power to declare war resides in Congress. From this perspective, the weak autocracy that we ascribe to the president is an important feature of the US constitution because risk taking is an essential component of presidential power.<sup>10</sup> Moreover, Congressional risk-avoidance has the effect of delaying the resolution of fundamental constitutional quandaries. Typically, a *quandary* can only be faced if there is a risk-taking leader capable of forcing resolution. Below we discuss examples of risk taking by US Presidents, particularly Johnson in 1964, entailing conflict over civil rights between the president and Congress. At the same time, the purpose of the Congressional veto, aside from restraining any tendency to full autocracy, is to cause the president to temper his risk-preference with caution.<sup>11</sup>

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<sup>8</sup>Chapters 11 and 12 discuss autocracy and democracy in more detail, and model the overthrow of the autocrat.

<sup>9</sup>See North et al. (2009).

<sup>10</sup>Many writers since Schlesinger (1973) have used the term “imperial presidency” for the weak autocracy of the president. See Wills (2010) for discussion of recent extensions of the autocratic power of the presidency.

<sup>11</sup>A good example of this is the caution displayed by Franklin D. Roosevelt in late 1941 as he moved the country to a war-footing, paying attention to public opinion and the concerns of Congress (Kershaw 2007).



The fact that 41 members of the Senate have an effective veto (due to the possible use of the filibuster) means that important choices over climate change, economic regulation and health care, just to mention a few, are made very difficult. The uncertainty comes in because it is well nigh impossible to predict whether a counter-coalition of at least 60 can form. Chapter 5 discusses this issue in further detail.

We suggest that Madison's argument in *Federalist X* was that a balance between risk and uncertainty can be found by seeking leaders who "possess the most attractive merit." It is important for this constitutional balance that the president be elected by a method that gives what Madison called "a probability of a fit choice." This requires that the electorate use their judgment in making a "fit choice" for president. Madison clearly hoped that the selection of the president would be founded on judgment, rather than preference.

It can be argued that Madison developed his argument in *Federalist X*, on the basis of his reading of Condorcet's *Essai* of 1785. Condorcet's Jury theorem in the *Essai* refers to the probability that a jury makes a correct choice on the basis of majority rule. Schofield (2006a) argues that Madison received work by Condorcet from Jefferson in Paris, and acknowledged receipt on 6 September 1787. This suggests that Madison adapted Condorcet's idea during the Fall of 1787, while writing *Federalist X* for publication on 22 November 1787.<sup>12</sup> In constrained situations where we may assume that judgments predominate, and voters evaluate the options in a clear-sighted fashion, then their choice of Chief Magistrate may indeed be well formed in the way that Madison thought possible.

Madison, in his earlier paper on the "Vices of the Political System of the United States" (April 1787) had written

[An] auxiliary desideratum for the melioration of the Republican form is such a process of elections as will most certainly extract from the mass of the Society the purest and noblest characters which it contains.<sup>13</sup>

Because the election of the Chief Magistrate involved the selection of a person, rather than an option (as in the passage of a law), there was some basis for Madison's hope that judgment rather than preference or interest would predominate. On September 4, 1787, the Constitutional Convention had agreed that the President be selected by a majority of an Electoral College, where the weight of each state was given by the sum of its members of the Senate plus the sum of its members of the House of Representatives. The Convention had rejected choice by Congress, by the legislatures of the states and by direct election by the people. We may infer that this system of decision making was adopted in order to refine the method of choice.<sup>14</sup>

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<sup>12</sup>It is also possible that Madison discussed the Condorcet result with Franklin, in Philadelphia after Franklin's return from France in 1784.

<sup>13</sup>James Madison, in Rakove (1999: 79).

<sup>14</sup>However, in Madison's speech on electing the executive, made on July 19, 1787, he argues that the people at large would be likely to choose "an Executive Magistrate of distinguished Character." (Rakove 1999: 127).

McLean (2003, 2004, 2006b) has argued that the influence of the Scottish Enlightenment thinkers, Francis Hutcheson, David Hume, and Adam Smith, and their concern for *Moral Sentiment*, is very pervasive in the thought of both Jefferson and Madison. As McLean (2009b) points out, Madison attended the College of New Jersey (now Princeton), where the Scot, John Witherspoon, was principal. Jefferson attended the College of William and Mary and was taught by another Scot, William Small. McLean argues that the political settlement of 1707 created a free-thinking intellectual climate in Scotland that was very different from that of Enlightenment France.<sup>15</sup> As a result, any sensible Scot would rationally fear the tyranny of monarchy or autocracy. The basis of the Scottish Enlightenment thought is thus much more skeptical than the French Enlightenment with its emphasis on reason.<sup>16</sup> Whereas Condorcet exhibits this optimism in both the *Essai* and *Esquisse*, Madison, just like a Scot, had doubts, but also hope, that social choice could be fit.<sup>17</sup>

Von Hayek (1976 [1948]) made a similar point when he divided social theorists into two camps: British or Scottish, on the one hand, and the Continental on the other. The British argue that social processes, such as markets, make better decisions than would any individual. The Continental theorists talk about society as if it was an individual. This leads them to chase after a variety of political and economic utopias. According to von Hayek, Descartes (1637) is typical of the continental approach, as in his *A Discourse on Method*, where he says:

the pre-eminence of Sparta was due not to the pre-eminence of each of its laws in particular, but to the circumstances that, originated by a single individual, they all tended to a single end.

Hayek suggests that “the British, on the other hand, celebrate the common law,” and then alludes to Adam Ferguson’s *An Essay on the History of Civil Society* (1996 [1767]),

nations stumble upon establishments, which are indeed the result of human action, but not the execution of any human design.<sup>18</sup>

Gordon Wood (2006) has made the additional point that both Scotland and the American Colonies were on the British periphery.

[England, the] center of the empire was steeped in luxury and corruption... had sprawling poverty-ridden cities, overrefined manners, gross inequalities of rank..., widespread manufacturing of luxuries, all symptoms of over-advanced social development and decay.

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<sup>15</sup>See Buchan (2003) and Herman (2001) on the Scottish Enlightenment, and McLean (2006b) and Ross (1995) on the life and thought of Adam Smith.

<sup>16</sup>Obviously enough, the French belief in the rationality of politics turned out to be invalid.

<sup>17</sup>See Adair (1974, 2000) on the influence of Hume (particularly the essay “That Politics may be reduced to a Science”) on Madison. See also Rothschild (2001) for a comparison of the *philosophe*, Condorcet, and Adam Smith.

<sup>18</sup>These quotes are from “Individualism: True and False,” Chap. 1 of Von Hayek (1976 [1948]). See also Chap. 6 on the rule of law in Von Hayek (2007 [1944]).

In contrast, gentlemen of Scotland and the Colonies, and particularly the Founders,

struggled to internalize the new liberal man-made standards that had come to define what it meant to be truly civilized-politeness, taste, sociability, learning, compassion, and benevolence-and what it meant to be good political leaders: virtue, disinterestedness, and an aversion to corruption and courtierlike behavior.

Doubts about the ability of political choice to display common sense means that politics requires caution in the creation of the institutions. As we discuss below, Jefferson, after his stay in France, from 1784 on, was clearly influenced by Condorcet, particularly over the virtues of free trade and the possibility of political liberty. The Madisonian–Jefferson focus on Republican virtue is explored by many authors including Wood (1969, 1991, 2002, 2009) and Rakove (2010). Kramnick (1990, [1968], 1992) and Burt (1992) have sought for antecedents in the early part of the eighteenth century in the writings of Henry St. John, Viscount Bolingbroke, a country Tory.<sup>19</sup>

Madison’s hope over the possibility of a fit choice found vindication in the first president, George Washington, who said:

We have now a National character to establish; and it is of the utmost importance to stamp favourable impressions upon it; let justice then be one of its characteristics, and gratitude another.<sup>20</sup>

Wood (2006: 34) writes

Washington epitomized everything the revolutionary generation prized in its leaders. He had character and was truly a man of virtue. ...Washington was a self-made hero, and this impressed an eighteenth century enlightened world that put great stock in men’s controlling both their passions and their destinies. Washington seemed to possess a self-cultivated nobility.

However, Scottish scepticism would lead to the inference that there is no necessary reason that electorates would always have the ability to judge candidates by these high standards, and that the chosen presidents would have the requisite characteristics of leadership.<sup>21</sup>

Indeed, any selection of a president must be accompanied by *risk*, by the possibility that the chosen individual fails miserably. An individual who has the

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<sup>19</sup>Bolingbroke was Secretary of State under Queen Anne, but fled the country on the accession of George I. Burt notes that Bolingbroke continued his writings against Walpole on returning to England in 1726. See also the comments of Pocock (1971) on Bolingbroke and on the other British political author, Harrington (1992 [1656]).

<sup>20</sup>Letter of April 4, 1783, in Rhodehamel (1997:506).

<sup>21</sup>The founders, particularly Madison were clearly fascinated by Rome, and were well aware that the Republic explicitly depended on the choice of leaders with the required character traits of *dignitas, pietas, virtus and auctoritas*: honor, diligence, confidence and authority or prestige. See the discussion of the importance of these traits in the political life of the Roman republic in Goldsworthy (2006).

quality of “honor” can be perceived as one likely to minimize the risk of failure. Thus the perception by the electorate of this risk of failure is a fundamental characteristic of the Republic. Washington, himself had showed his qualities in the years of the Revolutionary War. Indeed, it can be argued that the War was brought to a happy conclusion for the Colonists because Washington gambled *successfully* that the French Fleet under de Grasse could bottle up the British Fleet, thus trapping the British, under Cornwallis, at Yorktown in 1781.<sup>22</sup>

All elections in democratic states turn on the electoral assessment of risk. Madison’s argument can be interpreted along these lines. Notice that the uncertainty induced by the potential instability of coalitional preference is quite different from the nature of risk embedded in any electoral process.

One of the themes of this book is the interpretation of social choice in terms of the requirement to balance the quite different features of risk and uncertainty.

We shall show in Chaps. 5 and 6 that the response by voters in modern elections in the United States and the United Kingdom depend on the voter perceptions of the candidates’ *traits*. In the United States, these perceived traits include whether the candidates are moral, honest, strong, optimistic, “care about the people”, and intelligent. The first five of these are character traits. Certainly intelligence is a useful trait for a president, but not a moral one.

These traits can be interpreted as qualities that determine whether a candidate is a fit choice. Voter estimates of these traits belong to the realm of beliefs rather than preferences. Thus democratic choice depends on the aggregation of *preferences* (delineated by what we term the heart) combined with *beliefs* about the qualities of political leaders. We shall use the term, the *soul* of the polity, as a convenient shorthand for the distribution of these beliefs in the polity. In the following sections we attempt to combine these two notions of the heart and the soul in a discussion of politics over the long run in Great Britain and the United States.

## 1.2 Economic and Political Change in Britain

The experience of the people after the execution of King Charles I in 1649, followed by the rule of Oliver Cromwell, as Lord Protector of the Commonwealth from 1653 until his death in 1658, must have caused them to fear any risk-loving autocrat. While Cromwell had conquered Ireland and Scotland, and invaded Catholic France, he had also massively increased the debt of the country. After the Restoration and reign of Charles II, his brother James II came to the throne. The birth of a son to James and Maria of Modena in 1688, together with James’s clear intent to create a “modern” catholic state in the image of France meant that

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<sup>22</sup>See Nelson (2010). Indeed O’Shaughnessy (2000) suggests that Washington’s gamble paid off because Admiral Rodney’s greed led him to take half the British fleet from the Caribbean back to Great Britain. As a result, the British fleet in North America was too weak to defeat de Grasse.

Protestantism in Europe was endangered.<sup>23</sup> The Dutch Republic was faced with the possibility of war in the future with the two powerful Catholic states of Britain and France. Prince William of Orange (1650–1702) had governed as Stadtholder of the Dutch Republic from 1672, as William III, and had already successfully battled with England, under Charles II, and France, allying himself with Spain and Brandenburg in 1672–1673. The Anglo-French fleet had been defeated three times, forcing Charles to end England’s role in the war.

William had a claim to the British throne in his own right, and through that of wife, Mary, daughter of James II, and he began to build a fleet to invade England. The invasion force eventually comprised fifty three warships and four hundred transport ships for the 14,000 infantry and cavalry, much larger than the ill-fated Armada of 1588. The States General of Holland supported the invasion, with loans to William of about half a million pounds sterling. The fleet landed at Torbay in the south west on November 5, 1688. James fled to France, and by December the Dutch army had taken London, without opposition. [Jardine \(2008\)](#) calls the invasion “a brilliantly stage-managed sequence of events” that led to the coronation of Mary, and her husband, William, as co-rulers of Great Britain in 1689.

We may assert that the political economic equilibrium in a society is the result of a bargain between the elite holders of factors of production, and those who govern the institutions. A political leader, whether democratically elected, or holding onto power by force, must have enough support from the elite or the people, or both, to stay in power. The quandary facing Parliament after 1688 was first whether to engage in a long war with France, as William III wished, and if so, how to fund the war.

War would require a standing army, which could give too much power to the monarch, endangering liberty. To depend on a militia could well induce France to attack. The solution was to divide control of the standing army between Parliament and the monarch ([Humphrey 2009](#)). Although William had the potential to be autocrat, this Parliamentary strategy restrained his power. We may use the term, *collegium*, introduced above, to describe this power of Parliament to veto or restrain the weakened autocrat.

The creation of the Bank of England in 1693 provided a method of imposing credible commitment on Parliament. The dilemma facing any government of that time was that war had become more expensive than government revenue could cover. Consequently, governments, or monarchs, became increasingly indebted. Risk-preferring, or war-loving, monarchs, such as Philip II of Spain or Louis XIV of France, were obliged to borrow. As their debt increased, they were forced into repudiation, thus making it more difficult in the future to borrow. Since the Bank of England “managed” the debt in Britain after 1693, there was an incentive

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<sup>23</sup>For background on 1603–1714, see [Kishlansky \(1996\)](#). For the Restoration of Charles II in 1660 see [Harris \(2005\)](#), and for the Glorious Revolution of 1688 see [Harris \(2006\)](#) and [Pincus \(2009\)](#). Chapter 2 provides some additional background on the conflict between Protestant and Catholic politics from 1540 to 1688.

for Parliament to accept the necessary taxation, thus avoiding the temptation of repudiation. This had the effect of reducing the cost of public debt.<sup>24</sup>

However, the cost of war kept increasing. The War of Spanish Succession (1701–1714) brought war weariness, and the governing party, the Tories, sought to avoid the costs (and taxes) induced by war (Stasavage 2002, 2003, 2007). Contrary to the argument of North and Weingast (1989), the escalating war debt had made repudiation an increasingly attractive option by 1710. It was not obvious why Parliament would choose to commit to fiscal responsibility.

The fundamental problem was that the majority of members of both Commons and Lords were of the landed interest. The obvious method of funding government debt (which had risen to 36 million pounds sterling by 1710) was by a land tax. Indeed the land tax raised approximately 50% of revenue.

In a desperate attempt to deal with debt, the government “sold” the debt to the South Sea Company in 1711. After Queen Anne died in 1714, and the Hanoverian, George I, became sovereign, increasing speculation in South Sea Company stock and then the collapse of the “bubble” in September 1720, almost bankrupted the country. Walpole, Chancellor of the Exchequer and First Lord of the Treasury, stabilized confidence in the Company by a swap arrangement with the Bank of England. In April 1721, Walpole began his scheme to further control government debt by instituting a complex system of customs and excise (Hill 1989).

By restricting imports, mostly foodstuffs and land intensive commodities, this system had the effect of supporting the price of the scarce commodity, land. Thus the key compact (between the Tory landed elite, and the Whigs, the capital elite) to create a long run political equilibrium involved the protection of land via increased customs and excise. Figure 1.2 provides a schematic representation of political preferences of Whigs and Tories in the 1700s.

This enabled the government of Britain to dramatically increase its borrowing so as to prosecute the continuing wars with France. This compact not only raised food prices, but was associated with the concentration of land ownership (leading to the beginning of the agricultural revolution). Moreover, the compact required restriction of the franchise. Thus the compact created benefits for land and capital, at the cost to labor, maintained by a relatively autocratic or collegial power arrangement. These excise taxes and customs raised an increasing share of government revenue.<sup>25</sup>

O’Brien (1988: 16) comments that these data on tax revenue

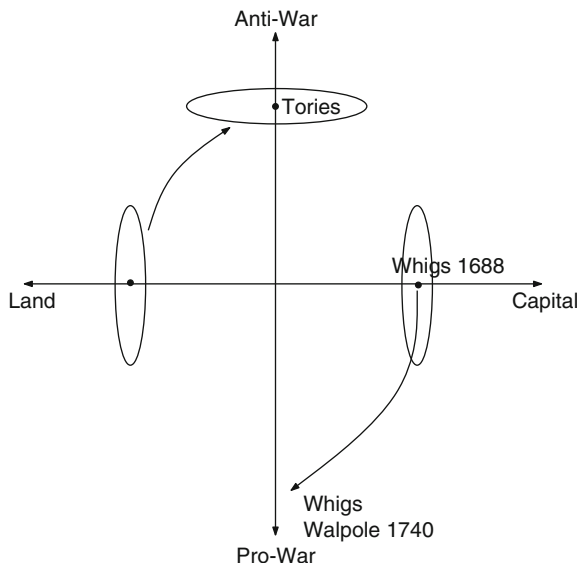
provide some statistical support for suggestions that the burden of taxation on the aristocracy declined during the eighteenth century. Not until they confronted Napoleon did the upper classes once again undertake the kind of sacrifices for the defence of property that they had made under William III. [W]ith the repeal of the Pitt’s income tax in 1816 the situation reverted to the status quo ante bellum.

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<sup>24</sup>See the argument in North and Weingast (1989). Quinn (2001) suggests that there was a crowding out, in the sense that while the cost of public debt fell, the cost of private debt rose, at least until 1705.

<sup>25</sup>Tax receipts as a percentage of national income rose from 10.8% in 1720 to 18.2% in 1810. The share of customs and excise in government income was about 73% in 1720 and 82% in 1800 (O’Brien 1988: 15).

**Fig. 1.2** Walpole's position in between 1721 and 1740



As [Brewer \(1988\)](#) has described, the system required a sophisticated and skilled bureaucracy. The Walpole system of finance created a compact between the “commercial” Whig interests and both Whig and Tory “landed” interests, securing their Parliamentary support for continued war with France.<sup>26</sup> This compact had a number of other effects. First, it ushered in a period of Whig dominance until 1783.<sup>27</sup> By supporting land prices, the bargain led to increased investment in agriculture.<sup>28</sup> Although agricultural output increased in Britain (by 76% between 1740 and 1860), the population grew even more rapidly (increasing from about 6 million in 1740 to 29 million in 1860, according to [Maddison 2007](#)).<sup>29</sup>

Britain became increasingly dependant on food imports, particularly from the United States.<sup>30</sup> However, the combination of protection of land and population growth led to an increase of the cost of living of 43% between 1740 and 1800, and

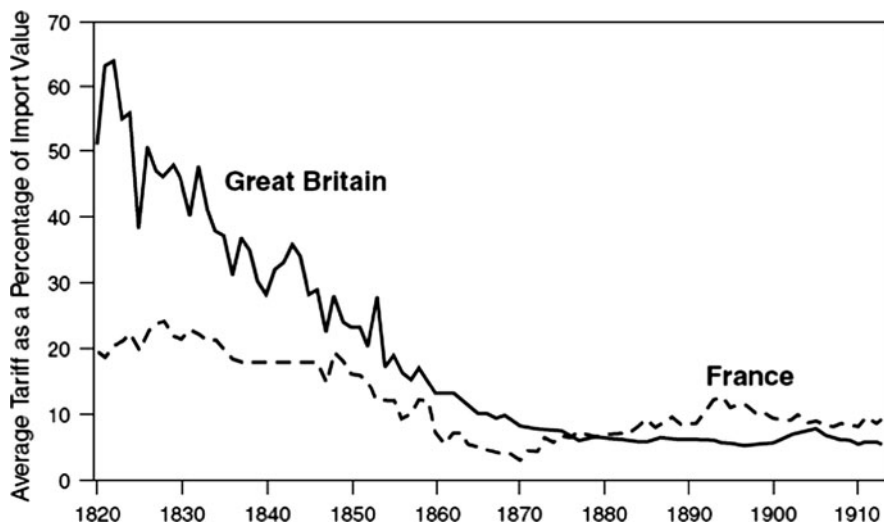
<sup>26</sup>As [Simms \(2008\)](#) notes, Britain won three wars against France in the first part of the eighteenth century, but lost the War of Independence against the Colonies (and France) in 1776–1783.

<sup>27</sup>From 1721 to 1783 eleven out of thirteen prime ministers were Whig. Tory prime ministers included the Earl of Bute (1762–1763) and Lord North (1770–1782). In contrast, from the time of the Tory, William Pitt the Younger (1783–1801, 1804–1806), until Benjamin Disraeli (1868, 1874–1880) there were fourteen Tory or Conservative prime ministers out of eighteen.

<sup>28</sup>[Allen \(1988\)](#) estimates that the rental on land rose from about 0.5 pounds per acre in 1725 to 1.5 pounds per acre in 1825.

<sup>29</sup>[Mokyr \(2010\)](#) provides an extensive account of the growth in the British economy in this period, including the effect of the enclosures and the slow increase in agricultural and then industrial product.

<sup>30</sup>[Clark \(2007a\)](#) estimates an increase of agricultural imports from zero in 1730 to 22% of GDP in 1860.



**Fig. 1.3** Tariff revenue as a fraction of all imports (Nye 2007), with permission of Princeton University Press

a decline of the real wage.<sup>31</sup> It is estimated that 80% of subsistence farmers were forced off the land between 1780 and 1810.

The continuing fall in the real wage must have contributed to the emigration of 80,000 from England and Wales, 115,000 from Ireland, and 75,000 from Scotland (including 15,000 highlanders) between 1700 and 1780.<sup>32</sup> As a consequence, the population of the 13 colonies/the United States had increased from about 200,000 in 1700 to 890,000 in 1750 to 2.8 million by 1790 and 5.3 million by 1800. The fall of real wages until the end of the Napoleonic Wars, coupled with a rise in GDP capita suggests that income inequality increased in this period.

The model of political economy proposed by Acemoglu and Robinson (2000, 2006a) suggests that the Walpole compact could only be maintained by a severe restriction of the franchise. It is true that it was not until 1867 that the franchise was extended to any great degree, and this extension was coupled with gains for labor. However, real wages started to rise after the end of the Napoleonic Wars, suggesting that economic inequality was slowly declining.<sup>33</sup> More importantly, protection of land was only maintained until the repeal of the Corn Laws in 1846. As Fig. 1.3

<sup>31</sup>Clark (2005: 1325) estimates that the real wage in the decade 1800–1809 was about 10% below that of 1730. See also Froud and McCloskey (1994).

<sup>32</sup>Harper (2003).

<sup>33</sup>Clark (2005) estimates an increase of 66% between 1815 and 1860. He accounts for this with an evolutionary account model population growth leading to selection of attributes of thrift, thus causing the increase in productivity that became quite apparent in the mid 1850s.



shows, Great Britain maintained higher tariffs than France until about 1875.<sup>34</sup> We can infer that from about 1850, the compact between land and capital was no longer essential to British hegemony.<sup>35</sup>

As discussed by [McLean \(2001a,b\)](#), this first significant decrease in protection of land in May 1846 was effected by the Tory, Robert Peel, together with Wellington in the Lords, against the interests of the majority of their party. “The entire opposition – Whig, Radical and Irish-supported Peel, as did about one-third of the Tories. The other two-thirds under Bentinck and Disraeli voted against Repeal.”<sup>36</sup>

Famine in Ireland made it obvious to Peel and Wellington that unless food prices were lowered then social unrest could lead to civil strife. Notice that this observation differs from that of [Acemoglu and Robinson \(2006a\)](#), who suggest the franchise would only be expanded because of the fear of civil strife. It was *protection of land* that was lifted because of the fear of strife. Two million people emigrated from Ireland in the period 1846–1856, while the US population jumped in this decade from 23 million to about 32 million, exceeding for the first time the population of Britain.

[Schonhardt–Bailey \(1991, 2006\)](#) suggests that the agrarian interests had diversified into industrial capital by 1846, and stood to gain from the expansion of trade that could be expected from Repeal. But this is difficult to reconcile with the Tory opposition to Repeal. It is more likely that Peel was able to put together a temporary winning coalition in the Commons, with Wellington’s help in the Lords, using the two-dimensionality of a policy space. This space involved not only the land-capital axis, but also the second labor axis.

By the 1860s, Britain’s economic lead allowed for further reduction in the protection of land, in the form of Gladstone’s budget of 1861, which reduced the duty on wine and repealed the paper tax ([Aldous 2006](#)). [McLean \(2001a\)](#) also discusses the political maneuver of Benjamin Disraeli, who, as Chancellor of the Exchequer in 1867, was able to push through the Reform Bill, doubling the enfranchised population.<sup>37</sup> Whether as cause or effect, the real wage and real GDP/capita started to rise rapidly from the mid 1850s, with a further decline in

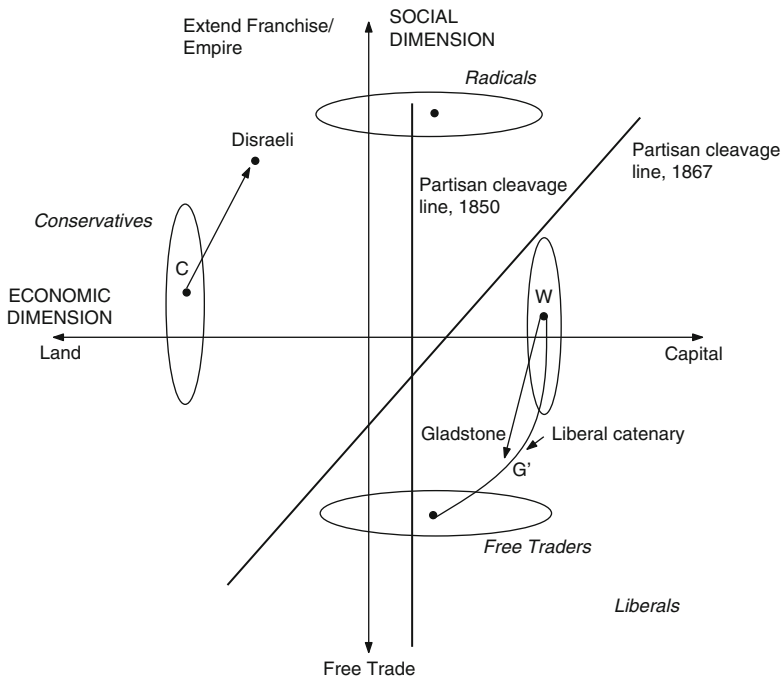
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<sup>34</sup>See [Nye \(2007\)](#) on protection of land in the nineteenth century. [Mokyr and Nye \(2007\)](#) provide an account of the ability of the landed interest to continue protecting land and their wealth until about 1850. They argue that the development of a centralized party system ([Cox 1987](#)) prevented the formation of rent seeking coalitions that could have slowed technological development.

<sup>35</sup>[Clark \(2007a\)](#) estimates that real farm rents/acre increased until about 1880 and then fell rapidly, indicating that the landed interest was still able to protect itself to some degree after the collapse of the compact.

<sup>36</sup>[McLean \(2001b: 115\)](#). It would be twenty-eight years before a Conservative Prime Minister again had a majority in the House of Commons.

<sup>37</sup>[Lizzeri and Persico \(2004\)](#) essentially present a different argument to [Acemoglu and Robinson \(2000, 2006a\)](#), suggesting that the franchise was expanded because the dominant commercial elite formed a coalition with labor to demand a system of public goods, particularly in the urban centers. This led to a more productive labor force and increased the real return of both capital and labor.



**Fig. 1.4** Tories and Liberals in Britain in 1867

income inequality.<sup>38</sup> Marx’s extrapolation (Marx 1930, [1867]) from the recent past proved to be as wrong as Malthus’s earlier argument, as applied to Britain at least.

Figure 1.4 presents a schematic figure showing the opposition between the Liberals, led by Gladstone, and the Tories, led by Disraeli. The figure is meant to suggest that Gladstone adopted a position that was pro-capital, but also in favor of free trade. In contrast, Disraeli understood that the hold on the Tories by the landed interest had to be broken, in order to oppose the Whigs, or Liberals. Disraeli’s maneuver was to join with electoral radicals to extend the franchise, essentially changing the “partisan cleavage line.” The “partisan cleavage line” is a convenient way of showing the separation between the Whigs and the Conservatives, and how this changed from its position in 1850 to a new position in 1867, as illustrated in the figure. Disraeli faced opposition from his own party,

worried that too much democracy might leave them in a permanent minority, while Liberals were concerned that laborers might vote against the middle class.(Weintraub 1993:443).

It is possible that Disraeli’s maneuver depended on beliefs about Empire. For industrial labor, “Empire” meant the opportunities for emigration and a better life

<sup>38</sup>Maddison estimates that GDP/capita grew 22% in Britain, from \$2,300 to \$2,800 (in \$1,990), in the decade 1850–1860. In the same decade GDP/capita in the United States grew from \$1,800 to \$2,100 (i.e. 16%).

in the Imperial Dominions of Australia, Canada, New Zealand and South Africa. By using the rhetoric of “Empire,” Disraeli could hope to appeal to working class voters.<sup>39</sup> These political changes laid the foundation for Britain’s continuing hegemony in the late nineteenth century. [Porter \(2004\)](#) comments that

Disraeli calculated that here was a seam of potential support for the Conservatives that might trump the Liberals’ conventional support among the lower middle classes[.] [He became] the first leading politician to try to appeal to the working-class electorate on imperial-patriotic grounds.

Earlier, [Harcourt \(1980\)](#) had written that it

was evident that a display of British power abroad had a special appeal for the working classes.<sup>40</sup>

Note that this change in the nature of the political institution in Britain was highly contingent on a particular coalition put together by Disraeli, just as the Repeal of the Corn Laws in 1846 was also highly contingent on Peel’s coalition. Together, these two policy moves defined the principal axis of political contention in Britain for the next century.

After World War I, when the British Empire began to decline, a vigorous political debate turned on whether Britain should maintain its hegemony through a system of Imperial Preference, so as to oppose the growing power of the United States. This imperial quandary was very much on Keynes’s mind during the negotiations over the creation of the post World War II international institutions leading to the Bretton Woods Agreement in 1944 ([Schofield 2006a](#)).

In the 1960s, the issue changed to the nature of the British Commonwealth, and the rights of Commonwealth citizens. To illustrate, in April 1968, Enoch Powell (1912–1998), the Conservative Member of Parliament for Wolverhampton South West gave his infamous “Rivers of Blood” speech, criticizing Commonwealth immigration, as well as proposed anti-discrimination legislation in the United Kingdom.<sup>41</sup> The title derived from its allusion to a line from Virgil’s *Aeneid*:

As I look ahead, I am filled with foreboding; like the Roman, I seem to see “the River Tiber foaming with much blood.”

In his book, [Powell \(1977\)](#) explains his logic: with the British Empire gone,

[t]he whole contraption [of the Commonwealth] was a humbug, a pretense and a self deception.

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<sup>39</sup>Later, in 1876, Disraeli as Prime Minister effected the Royal Titles bill, proclaiming Victoria *Regina et Imperatrix*.

<sup>40</sup>Disraeli’s maneuver probably allowed the Tories/Conservatives to vie with the Liberals over the next 50 years.

<sup>41</sup>The speech is often regarded as contributing to the surprise Conservative victory in the election of June 1970. More recently, the speech was referred to with regard to a Labor leader, Ed Balls, after the 2010 election.

While the Commonwealth has become an irrelevancy, “nationalism” is still an important theme in British politics, but is now concerned with the role that Britain plays in the concert of nations, and in particular, with the nature of the relationship between Britain and the European Union.<sup>42</sup>

### 1.2.1 Summary of Changes in the British Polity

In summary, the Walpole compact:

- Helped to maintain the Whig elite in power.
- Allowed the Whig government to borrow the capital required for Britain to finance the long war against France.
- Transformed agriculture, forcing people off the land and into the cities.
- Caused the impoverishment of a considerable proportion of the population until 1815, inducing a large immigrant flow, first to the colonies and then the United States.
- Facilitated rapid population growth, because of the availability of agricultural imports from the United States.
- Led to the creation of efficient capital markets, and the eventual expansion of manufacturing.
- Which paid for food imports, thus creating the possibility for further population growth as the basis for the growth of the empire.

At least until 1867, the compact necessitated the maintenance of a restricted franchise, since it was believed, even by Gladstone, that extending the franchise could lead to Parliamentary disorder.

It was also crucial for this dynamic path of Britain’s economic development that there be a plentiful and cheap supply of (land intensive) agricultural goods from the United States. This was made possible by the availability of land in the United States and by the growth of the American population. The next section discusses some aspects of this *synergy* between the United States and the British Empire.

## 1.3 Political Transformations in the United States

The Declaration of Independence by the thirteen colonies in 1776 was, in turn, triggered by conflict over land, specifically because of the attempt by the British to remove the Ohio Valley from settlement through the Quebec Act of July 1774.<sup>43</sup> This Act led almost immediately to the First Continental Congress in October 1774, and was denounced in the Declaration itself.

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<sup>42</sup>See the empirical work on elections in the United Kingdom in Chap. 6.

<sup>43</sup>See Schofield (2002) and Simms (2008).

After independence in 1783, conflict between Federalists, represented particularly by Alexander Hamilton, and the Republicans, James Madison and Thomas Jefferson, focused on land versus capital. Hamilton's Reports of 1790–1791 on Public Credit, Manufactures and The National Bank were all aimed at creating an American analogue of the British system of tariffs and excise. Since the United States exported land-intensive goods, the only feasible path to creating a commercial economy was to sustain manufactures either by tariff or by direct government assistance. Hamilton rejected the Madison–Jefferson view that the future of the US economy lay principally in the cultivation of the land. Indeed, in the Report on Manufactures, Hamilton argued that the US could grow only through an increase of productivity as a result of manufacturing.

By the 1790s, Jefferson was well aware of the implications of the Walpole compact in terms of impoverishment of the people and the concentration of power. His reading of the works of Henry St. John, Viscount Bolingbroke, led him to believe that the land-capital compact led to corruption, as well as the filling of Parliament by placemen.<sup>44</sup>

In fact, Bolingbroke's arguments against the British compact were, to some degree, invalid, since the compact did make it possible for Britain to manage its debt, fight its wars and create an empire. Bolingbroke's logic was, however, valid for the U.S. Hamilton's attempt in 1793 to recreate Walpole's system of commerce would have necessitated both a land tax and tariff protection. Since US imports were primarily manufactures, a tariff would protect the scarce factor, capital, associated with these imports. In Jefferson's view, this would have disadvantaged the landed interest.<sup>45</sup> Jefferson's "Empire of Liberty" meant the exact opposite.<sup>46</sup> His election in 1800 saw the victory of the Democrat-Republican trade-oriented coalition of the slave-owning elite and free agrarian labor against the more urban north east.<sup>47</sup> Essentially, Jefferson created a long-lasting compact under which the US became the food supplier for Britain.<sup>48</sup> See Fig. 1.5 for a schematic representation of the Jefferson/Hamilton conflict and the emergence of slavery as a fundamental political issue. The changing policy preferences of political leaders is shown by the transformation of the partisan cleavage line from 1800 to 1860.

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<sup>44</sup>Kramnick (1992 [1968]) quotes Bolingbroke as follows: "they (the corporations) have bodies but no souls nor consequently consciences." See also Schofield (2006b) for further discussion.

<sup>45</sup>We have argued above that Jefferson's view about this agrarian empire, and the possibility for trade, was much influenced by the ideas expressed by Condorcet in the *Esquisse* (1795).

<sup>46</sup>See the discussion of this period in Wood (2009).

<sup>47</sup>In this election, the Democrat-Republicans won 146 electoral college votes, with Jefferson and Burr, of New York, each receiving 73. The Federalists won 129 in total. Eventually Jefferson won the House with ten states to four for Burr. The three fifths weight given to unfree labor in the south had proved crucial.

<sup>48</sup>Of course, Britain also depended on food supplies from Europe. However, abundant land and productive labor in the United States led to a lower price of food, which obviously benefited Britain. It is possible that the general equilibrium model of Dakhli and Nye (2004) could be used to explore the synergy between the economies of Britain and the United States.

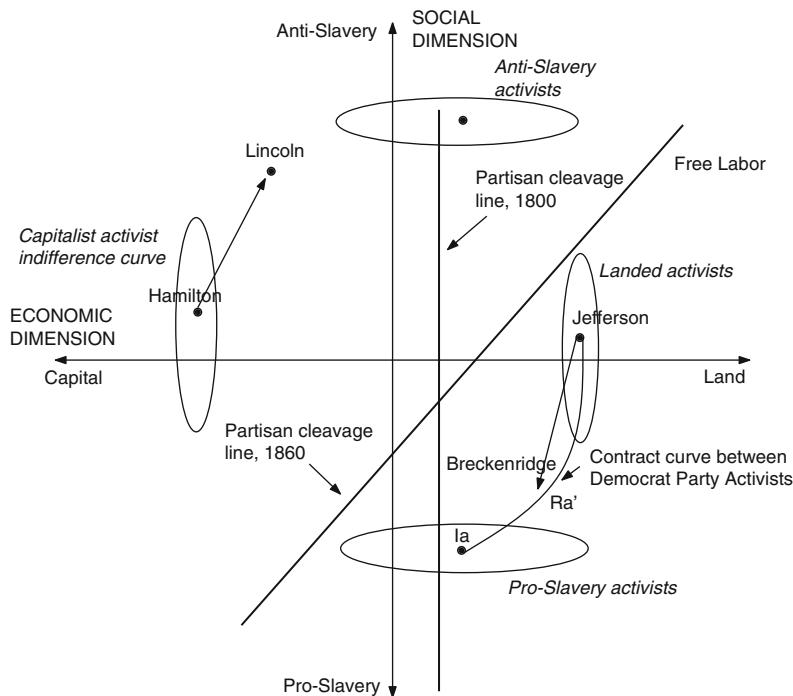


Fig. 1.5 Changes in political realignment 1800–1860

Until the election of Lincoln in 1860, the political coalition structure was “intersectional” of eastern pro-capital Whigs against the agrarian Democrat south and west. Lincoln’s election was the result of the collapse of the agrarian coalition, triggered by the Dred Scott opinion of the Supreme Court in 1857. Figure 1.5 is intended to suggest that the position of Breckenridge was the result of a coalition of pro-slavery agrarian activists. In the period up to the 1860 election, Lincoln argued that the Dred Scott decision was a maneuver by the pro-slavery coalition to expand slavery to the Pacific. Such a move would clearly be against the interests of northern free labor, and the conflict that ensued can be represented by the new positioning of the fundamental partisan cleavage line.<sup>49</sup>

During the Civil War, the Tariff Acts of 1862 and 1864 were proposed as means to raise capital for the effort against the south.<sup>50</sup> After the Civil War, the Republicans

<sup>49</sup>Egnal (2009) suggests that the conflict between north and south was generated by the factors of land and capital, rather than labor, as a result of new transportation technologies of canal and railway. Figure 1.5 is meant to suggest that all three factors were relevant.

<sup>50</sup>Indeed, Lincoln’s economic advisor, Henry Carey argued in his book of 1896, that the “American system” involving tariffs, was the only way to maintain equality, in contrast to the free trade British system of imperialism.

became even more closely associated with pro-capital protectionism. As Taussig (1888) noted, in his classic treatise on the tariff,

Great fortunes were made by changes in legislation urged and brought by those who were benefited by them.

By the Tariff Act of 1883, the average duty on aggregate imports was of the order of 30%, mostly on manufactures.

The second half of the nineteenth century had seen an enormous growth of agrarian exports from the US to Great Britain. [Brawley \(1998\)](#) notes that US exports of grain to Britain increased very rapidly after Britain repealed the Corn Laws in 1846. In turn the US lowered tariffs on manufactures, paving the way for what we have called the US–Britain synergy.<sup>51</sup> As [Belich \(2009\)](#) notes, grain exports increased from a million tons in 1873 to 4 million by 1900, with similar increases in dairy and meat products. However, by 1900, the Dominions (Canada, New Zealand and Australia) began to replace the United States as the agrarian suppliers for Britain. At the same time, the United States began its somewhat delayed process of industrial development, making use of the transport infrastructure, canals etc. that had been put in place in the previous decades. [Belich \(2009\)](#) suggests that the decoupling of the United States from Britain took place about 1900, by which time the population of New York had reached 3.5 million.<sup>52</sup>

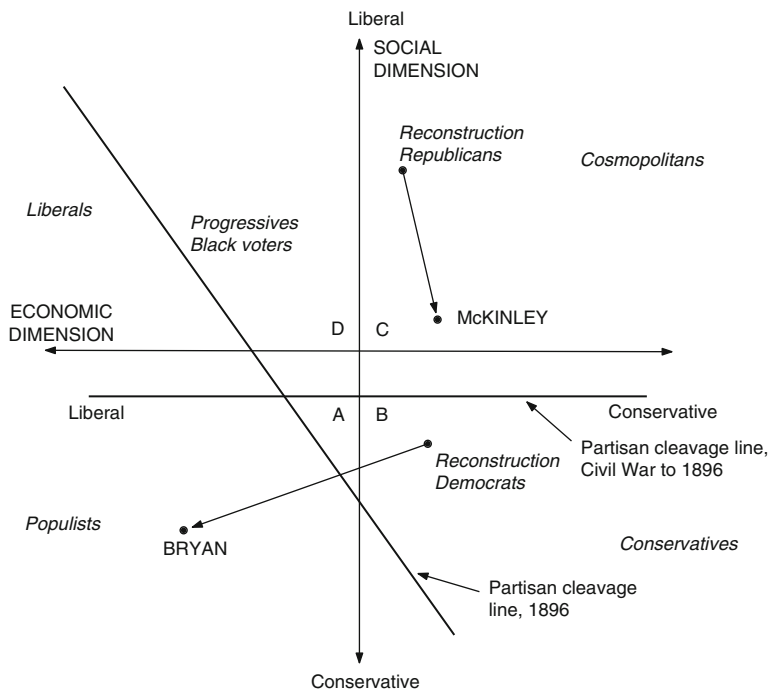
This decoupling set the scene for the conflict between the manufacturing interests of the north east, and their preference for the protective tariff, against the free trade preference of the south and west of the country. The Democrat president, Grover Cleveland, was able to start a reduction in tariffs through the Wilson–Gorman Tariff Act, against strong Republican opposition. At the election of 1896, the Democrats chose the “silverite,” William Jennings Bryan, whose populist position for cheap money against the gold standard was strongly supported in the somewhat less populous agrarian south and west. The Republicans chose William McKinley, who stood for protection of the manufacturing interests of the north east. McKinley won 51% of the popular vote but 60% of the electoral college, taking the entire northeast along with California and Oregon.<sup>53</sup> McKinley, and his vice-presidential ally, Theodore Roosevelt, won the election again in 1900, with Roosevelt becoming President after McKinley’s assassination on 14 September 1901. Roosevelt increased the Republican vote share to 56% against Alton Parker in 1904, and in 1908, the Republican Taft took 51% of the vote and 321 electoral college seats to Bryan’s 43% and 162 seats. As [Fig. 1.6](#) suggests, the importance of

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<sup>51</sup>By this synergy we mean the equilibrium by which both Britain and the US, were advantaged by a flow of people and manufactures from Britain to the US and a reverse flow of foodstuffs back to Britain, so the population and wealth of both countries could grow rapidly.

<sup>52</sup>According to [O’Rourke and Williamson \(1999\)](#), the US economy grew rapidly in the period 1870–1913. Real wages, GDP per capita and GDP per worker hour increased by 46, 115 and 126% respectively. These figures suggest that inequality increased. See also [Lears \(2009\)](#) for the transformation of the US economy from 1877 to 1920.

<sup>53</sup>See [Kazin \(2006\)](#).



**Fig. 1.6** US realignments 1860–1896

the social dimension, involving slavery, had declined, and the Republican Party had adopted a conservative, pro-capital position on the economic axis. This is reflected in the change in the partisan cleavage line from the Civil War to 1896.

The transformation of the US economy, the recent passage of the Payne–Aldrich protectionist bill (1909) and the growth of big business prompted Roosevelt to run against his old ally William Taft as the Republican candidate in 1912.<sup>54</sup> When he failed to be nominated he ran as a Progressive third party candidate in 1912 on a platform of the “New Nationalism.” In addition to Taft, his opponents were the Democrat candidate, Woodrow Wilson, and the Socialist candidate, Eugene Debs.<sup>55</sup> Because of the split, Wilson took 42% of the vote and an overwhelming majority of 435 electoral college seats, from southern and western states. Wilson essentially recreated a winning coalition of the agrarian south and west, and parts of the industrial north east, and began a process of transformation in the coalition configuration of US politics, as suggested by Fig. 1.7. Again, the partisan cleavage line is rotated in a clockwise direction. In all the elections from 1896 to 1908, the Republicans took the north east states. After the split between Theodore

<sup>54</sup>See Wolman (1992) for a discussion of tariff policy, 1897–1912.

<sup>55</sup>See Morris (2001), Chace (2004) and Gould (2008).



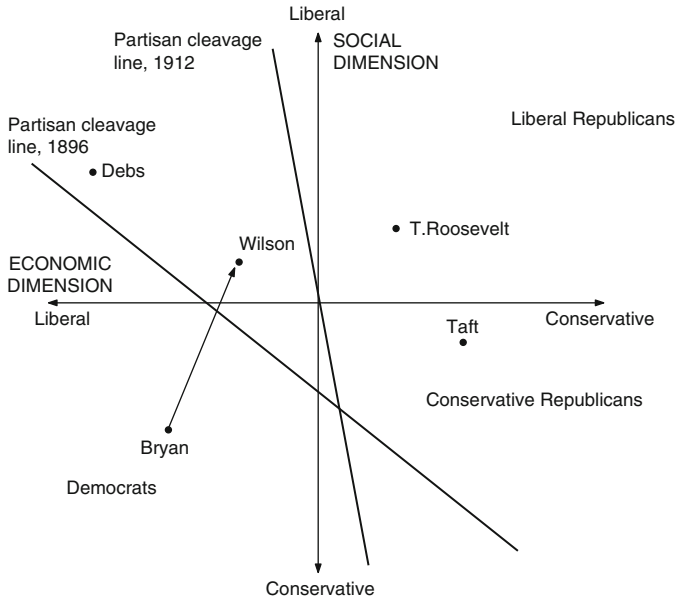


Fig. 1.7 The election of 1912

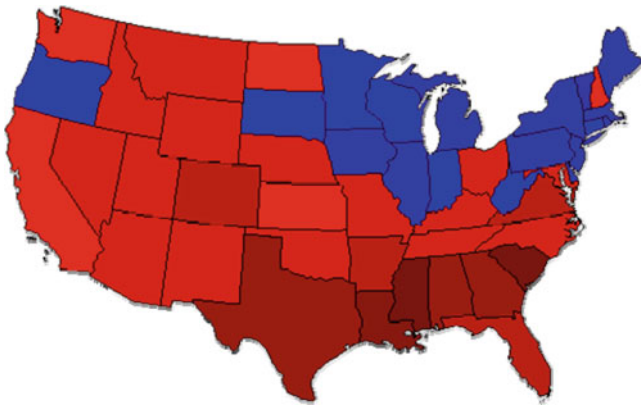


Fig. 1.8 Republican States (in dark) and Democrat States (in lighter) in the election of 1916. © David Leip

Roosevelt and William Taft in 1912, the north east again became a Republican heartland. Figure 1.8 shows the Republican states of the northeast (in dark) and the Democrat states (in lighter) for the election of 1916. In a close election, Wilson took nearly 50% of the popular vote and 277 electoral college seats (52%) against the Republican, Charles Hughes. “Third party” candidates took just over 4% of the vote.

In the post-World War I boom years, the Republican coalition, centered on the industrial north east, was dominant. Harding won with 60% of the vote in 1920, Coolidge with 54% in 1924 and Hoover with 58% in 1928.<sup>56</sup> In many respects, the period from 1880 to 1928 in the US is similar to that of Britain in the nineteenth century, with inequality first growing then declining.

However, the Wall Street crash of 1929 and the great Depression created the context for the Democrat realignment, started by Wilson, to be completed by Franklin Roosevelt after his election victory in 1932 with 57% of the popular vote and 472 electoral college votes from almost all states outside the core Republican stronghold of the north east.

The Smoot–Hawley Tariff Act of 1930 had raised average tariffs to about 20% and is generally considered to have contributed to the dramatic fall in both imports and exports. From Roosevelt’s inauguration on March 3 to June 16 he pushed through the beginnings of the New Deal, including the Emergency Banking Act, the Economy and Beer–Wine Revenue Act (finishing Prohibition, and providing much needed government revenue), the Agricultural Adjustment Act (to deal with over production, but also with an amendment that essentially took the dollar off the gold standard), and the National Industrial Recovery Act. The CCC (Civilian Conservation Corps), the FERA (Federal Emergency Authority), the TVA (Tennessee Valley Authority), the NRA (National Recovery Administration), the PWA (Public Works Administration) and the AAA (Agricultural Adjustment Administration) were all created to attempt to deal with unemployment, partly through public works.

In September 1931 Britain had come off the gold standard, and the pound then floated on foreign exchange markets. On July 3, 1933, Roosevelt announced that the US was following suit. [Kennedy \(2001\)](#) writes that this announcement of US “isolationism”

killed any prospect of international cooperation. ... Like Japan in Manchuria,.. Germany could do what it wanted in Europe without fear of reprisal.

In 1935, Congress passed five Neutrality Acts, restricting trade with any combatant nations. Thus emboldened, Mussolini invaded Ethiopia from Italian Somalia in October 1935, Hitler retook the Rhineland on March 7, 1936, General Franco invaded Spain from Morocco in July 1936, and in November 1936, the alliance between Germany and Italy was agreed, followed by the Anti-Comintern Pact between Germany and Japan. Japan then invaded China and took Nanking on December 12, 1937.

The great achievement of the Roosevelt administration was to pass the Social Security Act of August 1935. The retirement benefit was wage-determined and retirement benefits were to range from 10 to 85 dollars a month. In the 1936 election, Roosevelt took every state but Maine and Vermont. In 1935 and 1936, the Supreme

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<sup>56</sup>In 1930, out of a population of 120 million, 12 million were foreign born, and had migrated to the manufacturing centers of the north east. [Kennedy \(2001\)](#) notes however about 44% of the population were rural.

court in a number of five to four decisions, had asserted that many of the initiatives implemented by Roosevelt were unconstitutional. However, Justice Owen Roberts changed to the liberal side of the Court, and in the *West Coast Hotel vs. Parrish* decision the Court upheld the constitutionality of a minimum wage law, and later of other New Deal legislation.

Roosevelt still depended on southern senators, since the South could still use the threat of filibuster to block legislation that was too liberal on the social axis. For example, the House had voted on an anti-lynching bill in 1937, but the Senate filibustered for 6 weeks. The Fair Labor Standards Act (FLSA) of 1937 was designed to implement a minimum wage, but southern opposition kept agricultural laborers and domestic servants off the bill. The New Dealers in the administration were of course enthusiastic about the new economic strategies proposed by Keynes in his *General Theory of Employment*, and Keynes in his turn had welcomed Roosevelt's rejection of the gold standard. However, the New Deal was still hemmed in by the fear of budget deficits and southern opposition to a change in the relationship of land and labor.

The Prime Minister of the United Kingdom, Neville Chamberlain agreed to the annexation of the Sudetland from Czechoslovakia to Germany, and this duly happened between October 1 and October 10, 1938. The Czech part of Czechoslovakia was then invaded by Germany in March 1939, followed by the invasion of Albania by Mussolini on April 9. In response, Roosevelt tried to revise the Neutrality Acts, and wrote to Hitler and Mussolini in April 1939, to which Hitler replied with scorn in a speech to the Reichstag on April 28. On August 23, it was revealed that Hitler and Stalin had signed a non aggression pact, under which they each took half of Poland, and the Baltic States and part of Finland fell under Soviet control.

On September 1, 1939, Germany invaded Poland, triggering the Second World War.

By 1941, British reserves were exhausted, and in March, the Lend-Lease bill was passed by overwhelming majorities in Congress, but it was only the attack on Pearl Harbor in December 1941 that brought the US into the war against Japan, and then Germany. Because of under-used industrial capacity, the United States was able to turn its full industrial might to a military footing. [Kennedy \(2001\)](#) notes that the first 6 months of 1942 saw \$100 billion (in nominal terms) of military contracts, paid for by the extension of income taxes, under the Revenue Act of 1942, to include 13 million new taxpayers. This military machine provided the apparatus for the eventual defeat of the U-boats in the Atlantic, the invasion of North Africa, in late 1942, and Sicily and Italy, in July and September 1943. Churchill feared that a premature invasion of France could lead to defeat, and perhaps pressed for these Mediterranean invasions to gain time. Roosevelt wanted a promise from Stalin that Russia would turn against Japan in the event the German invasion of Russia was repulsed. In their meeting in Tehran in November, Roosevelt had to mollify Stalin for the delay in opening up the second front in France, by effectively acknowledging a post-war Russian sphere of interest in Eastern Europe.

The US and British armies invaded Normandy on June 6, 1944, but by January 1945 were still stalled west of the Rhine. However, massive bombing raids had destroyed most of Germany's war production, and on April 11 the Americans

reached the Elbe, while the Russians took the Reichstag in Berlin on April 30. Hitler committed suicide, and the German High Command surrendered unconditionally, first in Rheims on May 7, and again in Berlin on May 8.

Roosevelt had won his fourth election victory in 1944, with Harry Truman as running mate, against Dewey, taking 54% of the popular vote and 81% of the electoral college. In February 1945, Roosevelt again met Stalin, at Yalta and, in return for concessions to Russia in Eastern Europe and Asia, again wrung the promise of a declaration of war against Japan. Roosevelt died on April 12. The invasion of Okinawa, from April until mid-June 1945 cost Japan over 100,000 troops, and more than 50,000 Allied casualties, while one-quarter of the civilian population died during the invasion. Truman met Stalin at Potsdam, outside Berlin, on July 17. The two leaders, along with Churchill, signed the *Potsdam Proclamation*, requiring the unconditional surrender of Japan.

The British election results were announced on July 19, 1945. Labor had won in a landslide of 393 seats to 197 for the Conservatives and 21 for the Liberals. Churchill returned to the UK to resign as Prime Minister, and his place was taken in Potsdam by Clement Attlee, the new Prime Minister.

Fear of the likely death-toll of an invasion of Japan caused Truman to issue the order for the use of atomic weapons against Nagasaki and Hiroshima on August 6 and 8, and Russia immediately invaded mainland Manchukuo.<sup>57</sup> On August 8, Emperor Hirohito announced on radio that Japan had surrendered, and this was followed by the formal surrender on September 12, 1945.

The first problem that had to be dealt with at the end of the war was Britain's debt. The State Department wanted to force Britain to open up the Sterling bloc to US interests, and, in particular, to oblige sterling to become, once again, fully convertible. A problem with this aim was the \$14.4 billion of sterling balances held by the member states within the British Empire (particularly India). The termination of Lend/Lease, the flow of US capital to Britain, obliged the new Labor government (as of July 1945) to deal with a serious balance of payments problem. Keynes, as principal negotiator for Britain, requested \$6 billion from the US, but the amount was scaled down to \$3.75 billion, conditional on the commitment that the British would open the Sterling Area. Lend/Lease had cost the US \$22 billion, but the UK obligation to repay was cut to \$650 million. Canada provided a further loan of \$1.25 billion, and Australia and New Zealand canceled \$38 million of the debt. The total British debt obligation was thus still of the order of \$20 billion. The legislation passed in the House of Commons in December 1945, by 345 to 98, would probably have failed in the Lords, had not Keynes spoken up for the arrangement as well as the Bretton Woods agreement to construct the post war international institutions. The loan agreement almost failed in the US House of Representatives in July 1946, as well, but passed partly because of the recognition of Britain as an ally against possible Soviet threats in Europe.

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<sup>57</sup>Manchuria and eastern Inner Mongolia. It had been seized by Japan in 1932.

As required by the loan agreement, Britain started to move towards convertibility on July 15, 1947. Some of the US loan had already been used by this time; conversion of sterling to dollars immediately drained the remaining dollars from the British account. On August 15, 1947, India and Pakistan became independent dominions. In Churchill's phrase, the British Empire, as well as the American loan had been "scuttled."<sup>58</sup>

The estimates by Maddison (2007) of US GDP and GDP/capita clearly show the effect of the Great Depression, New Deal, World War II and the aftermath. In 1929, GDP was \$850 billion<sup>59</sup>, \$600 billion in 1933, \$800 billion in 1938<sup>60</sup>, and \$1.7 trillion<sup>61</sup> in 1944. After the war, GDP had fallen to \$1.3 trillion by 1947.<sup>62</sup>

It took the reconstruction of Europe through the \$13 billion of Marshall Aid together with the international institutions created under the Bretton Woods system to reassert the pattern of economic growth in the US.<sup>63</sup> US GDP hit \$1.45 trillion<sup>64</sup> in 1950 and \$2 trillion<sup>65</sup> in 1960. Truman just gained a Democratic Party victory in 1948. In that year, however, Strom Thurmond, for States' Rights, won 2.5% of the popular vote from the states of the south east, suggesting that the Democratic coalition could be broken: indeed Eisenhower won in 1952.

From the election victory of Eisenhower in 1952 to Kennedy in 1960, we may assume that the two main parties adopted positions close to those labeled D and R in Fig. 1.9. However, the election of Johnson in 1964 indicated the beginnings of a new "realignment" involving the social dimension of civil rights. Again, this is indicated by the rotation of the partisan cleavage line. Figure 1.9 also shows an arc called the "conservative catenary" which indicates the possible bargains that can be effected between economically and socially conservative activist groups in support of Republican presidential candidates. A similar "liberal catenary" can be drawn in the upper left quadrant. The figure shows Goldwater located close to the conservative catenary, in the lower right quadrant, and Johnston located close to the liberal catenary, in the upper left quadrant. Figure 1.10 indicates the consequence in 1968 of Johnson's move in the earlier election, as the states of the old confederacy (in green) switched from the Democrat, Hubert Humphrey,

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<sup>58</sup>Clarke (2008: 464). As Ferguson (2010) remarks: "Within a dozen years, the United Kingdom had let go of its overseas possessions in Burma, Eritrea, Ghana, India, Jordan, Malaya, Newfoundland, Palestine, Sri Lanka, Sudan, and the Suez Canal Zone."

<sup>59</sup>\$6900/capita, both in 1990 Geary Khamis dollars.

<sup>60</sup>\$6200/capita.

<sup>61</sup>\$12,300/capita.

<sup>62</sup>\$8,888/capita.

<sup>63</sup>See Skidelsky (2000) for a description of the efforts by Keynes, in the closing years of the war, to create lasting international institutions that would facilitate trade and maintain peace.

<sup>64</sup>\$9,500/capita.

<sup>65</sup>\$113,200/capita.



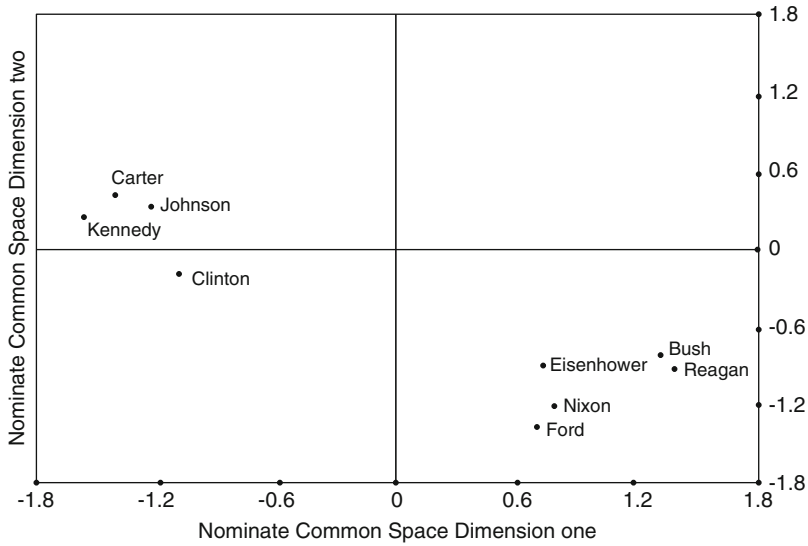


Fig. 1.11 Presidents' positions from Kennedy to Bush

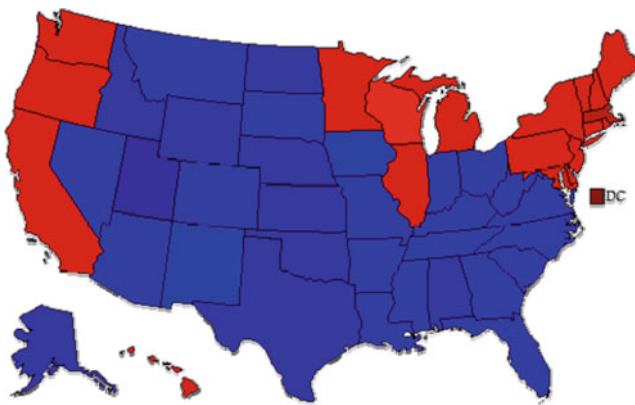


Fig. 1.12 Republican States (in dark) and Democrat States (in light gray) in the presidential contest between G.W. Bush and Al Gore, 2000. © David Leip

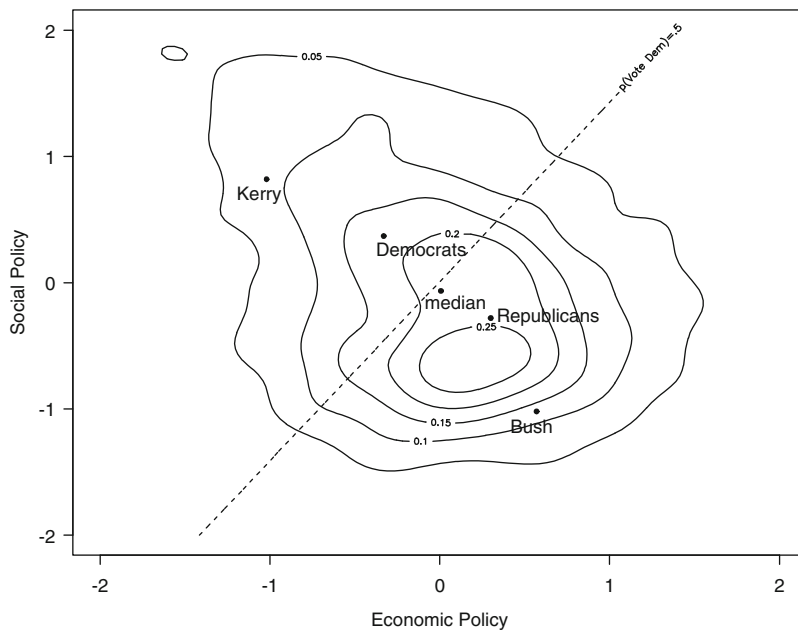
Figure 1.11 offers an estimate of US presidents' policy positions from Kennedy to Bush, suggesting that the separation of candidates positions into opposite quadrants of the policy space is a now a fundamental aspect of recent US elections.

Figure 1.12 shows the states (in light gray) that voted for the Democrat candidate, Al Gore, while the states of the south and west (shown in dark) voted for the Republican candidate, G.W. Bush, in the 2000 presidential election. This close election (with both Bush and Gore each gaining about 48% of the vote) resembled the election of 1916 in so far as there were "third party" candidates again, Ralph Nader, Patrick Buchanan and Harry Browne, with about 3% of the vote in total.

A comparison of Figs. 1.8 and 1.12 indicates that the Republican heartland of the North East in 1916 had, by 2000, become the Democrat heartland. Figures 1.7 and 1.8 are based on the proposition that the populations of the north east states tend to be socially liberal. There is no reason to suppose that there has been a fundamental change in these social preferences. Instead, as conjectured by Miller and Schofield (2003), it is plausible that the parties have changed policy position in the long period from the end of the nineteenth century to the end of the twentieth century.

In a later Chap. 5, we present a formal model of this transformation. To suggest the results of this model, Fig. 1.13 gives a representation of the 2004 contest between John Kerry and G.W. Bush. Again the election was fairly close (Kerry took 48% of the vote, and Bush took 51%, while “third party” candidates like Ralph Nader took less than 1%). As in previous figures, the Democrat candidate, Kerry, is located in the upper left quadrant and Bush in the lower right. The formal model for the three elections of 2000, 2004 and 2008 assumes electoral success depends not only on candidate positions but on the perceptions by the electoral about candidate characteristics. These can include “traits” such as whether a candidate is moral, caring, knowledgeable, strong, honest, optimistic, etc. These trait perceptions have considerable effect on the way people vote. There is additional influence because of sociodemographic characteristics.

Even so, modelling the elections still leaves unexplained the candidate positions. We could assume that candidates have intrinsic policy preferences. Instead,



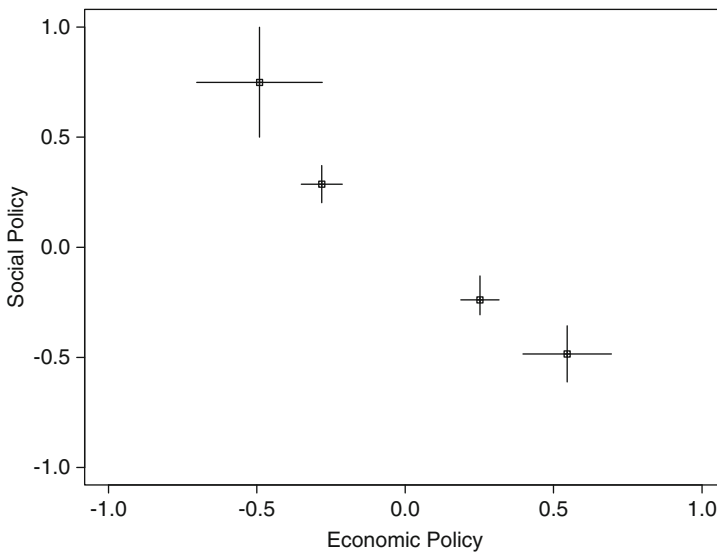
**Fig. 1.13** Electoral distribution and candidate positions in the United States in 2004



we assume that candidates are influenced by activists. The candidates need the resources, particularly in primary races, that are provided by the activists. The resources made available by activists depend on the preferences of the activists, and on the outcome of a bargaining game between activists and candidates. Moreover, activists differ in their policy preferences, so the electoral outcome will also depend on the result of a coalition game between activists. For example, the “conservative catenary” noted above in Fig. 1.9 is a very simple way of representing the nature of the coalition of Republican activists. The previous diagrams suggest that policy changes over the long run are due to activists switching their support from one party to another. An important motivation for such switching between parties lies in the requirement for gaining support in Congress for policy initiatives.

We can infer from Figs. 1.11 and 1.13 that not only do presidential candidate positions lie in the two opposed quadrants, but that the various activist groups tend to be located in these quadrants. Survey data allows us to estimate the average position of Democrat and Republican voters, as well as average activist positions (those who provided direct support for one or other of the candidates) as shown in Fig. 1.14 for 2004. (The average positions for activists in this figure have the larger error bars.) Figure 1.14 shows clearly that the average activist positions for each party are more extreme than average voter positions.

It is plausible that over the long run, the economically conservative activists in the lower right have greater impact on policy implementation in Congress. For example, [Hacker and Pierson \(2010\)](#) provide evidence that the flow of resources from the economically conservative groups greatly exceeds that from the economically



**Fig. 1.14** Activist and voter means for the two parties in 2004: Democrats *upper left*, Republicans *lower right*

progressive.<sup>67</sup> As an illustration, attempts to pass a bill establishing a consumer protection agency in February 1978 failed in the House by a vote of 189 to 227, even though there was a Democrat majority. The US Chamber of Commerce was able to establish a powerful coalition of activists with the resources to kill the bill. Over the long run, Hacker and Pierson (2010) argue that the success of such conservative activism has been the fundamental cause of increasing inequality in the US economy, and the pushing back of the New Deal perception of government.

Conservative activism may also pull the Democrat Party towards the upper *right* quadrant of the policy space. For example, after winning the election in 1992, William Clinton pushed through North American Free Trade Agreement, in 1993. Free trade had, in the recent past, been a policy supported by Republicans. Finance capital was supportive of this policy initiative. Such a move leaves behind a considerable proportion of working labor. Many such voters are socially conservative, and may be inclined to switch votes to the Republicans, or to third party contenders (like Patrick Buchanan, in 2000). Other economically liberal Democrat voters may dislike pro-business policies and switch to other third party contenders, like Ralph Nader.

However, such third party contenders tend to have low *valence*.<sup>68</sup> Typically such third party candidates will have little likelihood of influencing policy, though they can give an indication of coalition shifts to come. However when there is a strong policy move, such as that of Johnson in 1964, there may be an important third party response, such as that of George Wallace in 1968. Miller and Schofield (2003) suggested that the Wallace candidacy of 1968 and the Anderson candidacy of 1980 represented two distinct groups of activists who had quite different perspectives about a re-orientation of the Republican Party. The Wallace candidacy is an example of a *leading* third party for the Republicans, indicating future choices, while the Anderson candidacy was an attempt to pull back the Republican party to more traditional policy objectives. The activists who supported Wallace are an example of leading edge activists, a harbinger of a change in the nature of the party coalition.

In 1992, the trade deficit of the United States, on the whole gave little cause for alarm. For example, that year imports from China totalled \$25.7 billion and exports \$7.4 billion, for a deficit of \$18 billion, in nominal terms. By 2009, imports had climbed to nearly \$300 billion, with exports of about \$70 billion, and a deficit of about \$230 billion. As a result, China had accumulated \$900 billion of US assets, and was accused of artificially devaluing its currency, the renminbi. In October, the House of Representatives passed a bill allowing for large retaliatory tariffs against Chinese imports. There was fear of the beginning of a trade war, as in the 1930s.

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<sup>67</sup>This remark is substantiated below for the 2010 midterm Congressional election.

<sup>68</sup>Throughout this volume we use the notion of valence of a contender to mean the general electorally perceived quality of the candidate. The term comes from sociology, and was introduced by Stokes (1963).

The brief period of rapid growth from about 1992 until 2007 that we call “Globalization,” and its rapid end in 2008/9 has created many losers.<sup>69</sup> As we discuss in Chap. 4, there are now severe problems over budget and trade deficits, and also a background fear of global climate change.

The Republicans had lost credibility by 2008, but by 2010 were able to create a coalition between such very different activist groups as “tea party anti-government libertarians” and pro-business finance (who fear a new era of government regulation). We conjecture that in general leading party activists will be more aggressive than trailing activists, which is why the tea party appears to strongly influence the Republican Party. After the November 2010, mid term election, there were indications that the tea party radicals were also opposed to free trade and globalization. This may cause some portion of the pro-business finance group to change alliance, leaving the Republican Party in order to support the Democrats. However, the Democrats themselves also had difficulty maintaining their coalition of pro-business “centrists” and “progressives.”

### ***1.3.1 Summary of Changes in the US Polity***

This brief sketch of shifts in the dominant societal cleavages indicates how social choice in the United States will tend to be transformed as a result of essentially political changes in the balance of power in the earlier stage of development between agrarian and capital elites and different elements of labor. In the later stage of development, the policy space will become more complex, involving issues such as trade, globalization, nationalism, immigration etc. The simple two-dimensional representation does however help in the visualization of this dynamic process. As we have emphasized, the partisan cleavage line separating the parties rotates at an uneven rate, sometimes jumping as a result of the creation of a new policy coalition. We suggest that this rotation is induced predominantly by activist strategies. As the cleavage line rotates, some activists find themselves far from the preferred position of the party to which they had been aligned. We can call these “trailing edge activists.” For example, activist groups associated with finance capital have found themselves at the trailing end of the Republican coalition, and have the possibility of a new coalition with a Democrat president over the free trade NAFTA. Similarly other trailing end activist groups, concerned with civil rights but who had supported the Democrats up to 1964 found it more attractive to be “leading edge” Republicans. In the current situation, with the Republicans located in the lower right quadrant and the Democrats in the upper right, we may say that the *political heart* is the union of these two quadrants. The outer boundary of the heart will be given by the “Democrat activist catenary” and the “Republican activist catenary.” The presidential election will be the result of the influence of the activists associated

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<sup>69</sup>As at the end of the nineteenth century in the US, the recent period has been characterized by increasing income inequality.

with these two catenaries, together with the electoral response determined by the perception of the traits of the candidates. Thus both the heart and soul are necessary to understand elections in the United States.

The thrust of the argument presented here is that what appears to be a stable political economic equilibrium may eventually create a constitutional quandary. Such a quandary may cause political leaders and activists to search for, and create, new coalition structures and political economic “compacts.” We can summarize some of the political economic transformations that have occurred in the Colonies and in the United States after 1776, as follows:

- The break between the Colonies and Britain in 1776–1783, caused by the conflict over the land of the Ohio Valley, induced by the offer of military support from France.
- The solution to the constitutional quandary of 1787, proposed by Madison, which balanced the potentially autocratic power of the President with the collegial veto power of Congress.
- The Jeffersonian compact of 1800 leading to the American agrarian empire, which allowed for the rapid expansion of the US population, but required the maintenance of slavery.
- The dissolution of the Jeffersonian compact by Lincoln after 1860, again due to the conflict between the slave owning Southern landed elite and northern industrial capital, allied with labor, over control of the west.
- The continuing conflict between eastern capital, still allied with industrial labor, against western agrarian populism in 1896, expressed by the presidential contest between the Republican, McKinley, and the Democrat, Bryan.
- The dominance of capital leading to continuing economic growth, so US GDP/capita reached \$4,600 in 1905 and \$5,500 in 1914, exceeding that of Britain.
- The creation of the Democrat New Deal compact by Roosevelt, beginning in 1932, to protect labor from the effects of the economic chaos of the Depression.
- The creation of the Keynesian or Atlantic compact in 1945 under which the United States supported international institutions to promote growth and economic stability.
- The quandary over the extension of the franchise, leading to the Democrat compact associated with the Civil Rights Acts of 1964–1965 during the presidency of Johnson.
- The response by the Republican party during the presidencies of Nixon and Reagan, leading to the capture of the southern states and eventually the collapse of the Roosevelt and Johnson compacts.
- The disappearance of the bipolar world after the collapse of the Soviet Union in 1989, and the beginning of “globalization” and economic growth in China and India.
- The creation of a new Republican compact by George W. Bush, in response to the fear generated by 9/11/2001, taking on autocratic power with the support of the New South, consolidating the dominance of capital, increasing inequality and attempting to make the United States the global hegemon.

- The quandary associated with the increasing dependency of the United States on imported oil and debt, and thus on the oil autocracies of Saudi Arabia, and Russia, as well as the financial support of China.
- The international quandary of a fractured world, with numerous failed states in the Middle East and Africa as well as the possibility of a resurgent Russia, willing to use its oil and military power to expand its sphere of interest.
- The economic quandary caused by the eventual collapse of the financial bubble in September 2008, increasing the Federal debt to an estimated \$17 trillion (or 117% of GDP) by 2010.
- The attempts to resolve these quandaries by Barack Obama, in the first stage of his administration, by recreating the American New Deal compact, and possibly the global Keynesian compact, in order to deal with the possibility of economic collapse, catastrophic climate change and a fractured world.

The economic collapse in 2008/9 is reminiscent of the collapse of the South Sea bubble in 1720. The cause of the current collapse may be the kind of speculation that Keynes warned against. Indeed it has been suggested that one of the ancillary causes was the dominance of an economic technical elite.<sup>70</sup> Not only has inequality increased in the United States in the recent past, but since 1972 the median hourly wage for men has remained flat or declined, just as the real wage in Britain declined in the period from 1720 to the early part of the nineteenth century.

As regards debt, the Federal debt will be about \$17 trillion, in fiscal year 2011. It has been rising by \$500 billion a year since 2003. This debt ratio was 120% of GDP in 1950, but had declined to 40% by 1980.<sup>71</sup> It is estimated that China holds \$900 of US Treasury bills, and it has been remarked that this can be regarded as a form of imperial tribute to the United States, similar to the tribute that flowed to Rome. The British Empire, in contrast, provided capital to the rest of the world in the nineteenth century. See [Ferguson \(2008\)](#).

Under vigorous pressure from Obama, the Copenhagen Accord was agreed to, in December 2009, by the United States together with four key emerging economies – China, Brazil, India and South Africa. It is non-binding, and faces opposition from many developing countries, but was hailed as a start in dealing with climate change.<sup>72</sup> Even though relations between Russia and the United States became difficult as a result of the short conflict between Russia and Georgia, President Obama and President Dmitri Medvedev agreed to a nuclear arms reduction pact on April 8, 2010. There remain very difficult problems with regard to the Middle East and North Africa, as well as the question of trade balance with China and debt overhang in countries such as Greece, Ireland, Estonia etc.

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<sup>70</sup>We discuss this in Chap. 4.

<sup>71</sup>It has been argued that some of the deregulatory strategies adopted in the 1980s during Reagan's presidency were part of the fundamental cause of the current crisis.

<sup>72</sup>However, as we mention below, the Senate Democrats decided in July 2010 that they would not be able to push through an energy/climate bill, because of Republican opposition to a carbon tax.

The general argument is that the theoretical accounts, posing chaos against centrist equilibrium, miss the underlying feature of dynamic stability, in the US in particular. For example, the transformations in the United States, listed above, led Miller and Schofield (2003) to suggest that political parties in the US slowly cycle in the two-dimensional policy space, created in the period just prior to the Civil War. In certain periods (such as 1896–1920) the principal axis is one of land/capital. However, in the more general situation, which has held from 1964 to the present, a second dimension, *the social axis* (a reflection of the free labor/slave axis) is also necessary for understanding political change.

When the economic axis is predominant, then private interest is of greater electoral concern. When the social axis predominates, then public purpose is more important. We thus find that the shifting balance between the principal axes of social choice generates the kind of cycles that Schlesinger (1986) perceived in American politics. Schlesinger followed the suggestion made by his father, Schlesinger (1939), and considered a 30 year cycle, as illustrated by the following cycle: first the post Civil War period of economic dominance (1869–1901), followed by a progressive era (1901–1919), then the Republican restoration (1919–1931), and finally the New Deal (1931–1947). He perceived later peaks in public purpose in 1961–1964, and peaks in private purpose during the presidencies of Ronald Reagan (and Bush) in the 1980s. Figures 1.5–1.9 match Schlessinger’s notion of cycles, but are more compatible with the suggestion by Keller (2007) that there have been three fundamentally different regimes in US politics. The first period, until the 1820s is one where the social dimension was suppressed, and the principal conflict was between land and capital. From the 1830s the slavery issue becomes increasingly important, and the Republican party adopted a position in the upper right hand quadrant of the policy space, opposed by the Democrats in the lower left quadrant. By 1912, the Democrats had begun to move into the upper left quadrant, and this position was consolidated by the election of Roosevelt in 1932. The final period, especially since the election of Johnson, is one where the Republicans respond by beginning to move into the lower right quadrant.

The analysis of recent presidential elections in the United States, presented in Chap. 5, suggest that both economic and social considerations are currently equally important. These opposed dimensions set the context for activist conflict. Instead of a continuing cycle, we currently see oscillation between the two quadrants of the policy space, generated by a polarization of preferences and beliefs.

The narrative presented in this chapter suggests that preferences and beliefs interact to maintain a kind of *structural stability of the polity*, balanced between chaos and the rigidity of permanent equilibrium. The driving force behind the resulting political rotation is provided by activists who continually attempt to pull one or other of the parties towards them (Montgomery 2010).

Whereas this chapter has discussed the evolution of democracy in Great Britain and the United States, the next chapter focuses on the logic of the economic notions of the factors of labor, land and capital, and discusses the nature of quandaries of power and population in earlier societies, as well as in present day non-democratic or partially democratic polities.

## Chapter 2

# Limited Access Society

*Violence and Social Orders* by [North et al.](#) (2009b, called NWW on occasion) continues the research program that has engaged these three authors for many years. The key purpose of the book is to understand the two great transitions that have occurred in human society. The first, the agricultural revolution resulted in a transition from *hunter-gather society* to what [North et al.](#) (2009) call *limited access society*. This first transition occurred at various times and places, but generally about 10 KYBP. (1 KYBP means 1000 years before the present.) The second revolution, the social/industrial/technological revolution, from limited access to what [North et al.](#) (2009) call *open access*, occurred initially in a few societies, Britain and the United States, within a fairly brief period between about 1600 and 1860, as discussed in Chap. 1.

North's early work with Thomas ([North and Thomas 1970, 1973, 1977](#)) presented an economic explanation of this first agricultural transition. Since then, much work has been done in anthropology in terms of understanding the evolutionary consequences of this transition. First of all it led to a very rapid increase in population growth. The population is estimated to be between 250,000 and 50,000 in 62 KYBP, slowly increasing to about six million in 12 KYBP, at the end of the ice age. After the transition, population increased to about 60 million in 3 KYBP (the beginning of the bronze age) and then to about 240 million in 2 KYBP.

Farming appeared in the Fertile Crescent about 11.5 KYBP with wheat, barley, then peas and lentils. It spread to Egypt by 9.5 KYBP, and had independent origin in China and India about the same time, but much later in the New World ([Diamond 1997](#)). Pastoral agriculture appeared about the same time: goats were tamed in Iran by 12 KYBP, sheep in Iraq by 9 KYBP, and various breeds of cattle in the middle east and India by 8 KYBP. Pre-urban communities, of the Ubaid period (7.5 to 6.0 KYBP), in what is now Syria and Iraq are only now being excavated. The later Uruk period (6.0 to 5.2 KYBP) gave rise to the ancient cities of Ur and Nineveh, and writing on clay tablets.

Recent research has emphasized the importance of the domestication of the ass or donkey ([Marshall and Hildebrand 2002](#)) and particularly the horse. [Anthony \(2007\)](#) suggests very plausibly that the domestication of a "gentle" horse, about 4.5 KYBP,



together with the technological innovation of the wheeled chariot/cart, provided the impetus for a people, speaking a proto-Indo-European language, to spread out of an area in the southern Russian grasslands, near the Black Sea, to “colonize” Western Europe and India.<sup>1</sup>

It is possible that this expansion was coupled with an evolutionary advantage associated with lactose tolerance. These pastoral Indo-Europeans depended for much of the calorie intake on cow, sheep and goat milk (as did the later Mongol conquerors under Genghis Khan) and this is a very efficient way of obtaining calories.

Early Indo-European society was clearly limited access, with an elite consisting of a priestly caste together with a warrior class (expert in the war technology associated with wheeled horse driven chariots) while the remainder were the agricultural labor of herders/farmers. Today, approximately three billion people today speak one of the various Indo-European languages.

Many of these anthropological accounts have a distinctly evolutionary flavor. For example, [Cochran and Harpending \(2009\)](#) note that while agriculture produces 10 to a 100 times more calories than foraging, the nutritional quality declined, leading to populations whose average height was smaller in the early agricultural societies than in the hunter forager societies they replaced.<sup>2</sup> We have not seen this point noted in the anthropological literature, but it is possible that the real average economic product/capita (in terms of calories) in *pastoral* societies tends to be higher than in *agricultural* societies, those based mostly on production of grain or rice, etc. For agricultural societies, increasing population density, urbanization and domestication of animals enhanced the effect of disease. In short, agriculture resulted in caries and disease, like the black death, that could in some circumstances be lethal.<sup>3</sup>

Since this agricultural world that came into being is “Malthusian”, there may have been proportionally fewer deaths by violence but more by starvation and disease.<sup>4</sup> [Diamond \(1997\)](#) has emphasized the consequence of this evolutionary contest between agricultural societies and disease. When Europeans arrived in the New World they carried potentially lethal diseases, such as smallpox, measles, diphtheria, whooping cough, leprosy and bubonic plague. Against these diseases

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<sup>1</sup>Other accounts based on statistical analysis of the daughter Indo-European languages favor an earlier origin in Anatolia about 8–9.5 KYBP. See also [Gray and Atkinson \(2003\)](#).

<sup>2</sup>[Tudge \(1995\)](#) describes farming as “the end of Eden,” as agricultural peasants suffered from rickets and tooth decay. See also [Barrett et al. \(1998\)](#) and [Mummert et al. \(2011\)](#).

<sup>3</sup>Caries was due to the change to a diet based on carbohydrates. The increase in western society of the incidence of diabetes II is due to a similar kind of diet. See also [Mummert et al. \(2011\)](#).

<sup>4</sup>[Clark \(2007a,b\)](#) refers to the tendency of population to rise to match food production as the “Malthusian Trap” after [Malthus \(\[1798\], \[1830\], 1970\)](#). Malthus wrote his essay to contradict the more optimistic views of Condorcet’s *Esquisse* (1795). On Condorcet’s *Esquisse* see [Baker \(2004\)](#). In this current paper, the Malthusian generic tendency for population to grow to match food production is seen as an important consideration that is neglected by NWW. Darwin read Malthus in 1838, and it was this Malthusian logic that provided the basis for Darwin’s theory of natural selection.



the invaders had developed defenses, but the invaded hunter/gatherer or agricultural societies were completely defenseless. In return the Europeans picked up syphilis.

North et al. (2009b) focus on the societal and political consequences of the nature of limited access societies. Though they do not emphasize this point, the invention of writing and the development of mathematics and astronomy seem to occur in limited access, agricultural societies. The earliest Sumerian cuneiform writing on clay tablets dates to 5.4 KYB and Egyptian hieroglyphics to about 5.1 KYB. Indo-European Hittite cuneiform documents are dated at 3.5 KYB. A major innovation was the Phoenician script, with 22 symbols for consonants, about 3.3 KYB. This semitic language was closely related to Hebrew. By 3.5 KYB a Cypriot script was in place, and can be seen as ancestral to classical Greek (with symbols for vowels) as well as Latin, and thus English script.

The control of agricultural surplus requires the ability to keep records and to count, leading eventually to mathematics. Thus, agricultural societies need a scientific elite who have access to this astronomical and mathematical technology. It is also plausible that the elite will use this technology to predict the seasons, and thus to act as intermediaries to the gods.<sup>5</sup> Moreover, agricultural societies depend on the factor of land, and there is likely to be a process, over time, of increasing concentration of land ownership, and thus the formation of an aristocracy, as well as hierarchy and tyranny, supported by a priesthood. So agricultural societies not only lead to disease, mathematics and astronomy, they tend to bring about state sponsored religion, priests and autocracy.

Pastoral societies seem to be somewhat different. While land is obviously important for grazing, pastoralism tends to be associated with nomadism, so wealth resides in herds or flocks, not land per se. Early nomad societies tended to be of small population, and were thus often subjugated by more populous agricultural tyrannies, witness the Jewish people in Babylon and Egypt.<sup>6</sup>

Agricultural societies must balance the factors of land and labor in some fashion. Since population grows, under the Malthusian restraint of the supply of land, we expect the real price of land to rise, and the wage rate of unskilled labor to fall. In the extreme, we would expect slavery to be a component of a hierarchical agricultural society. Because of the importance of the particular kind of astronomical technology, we also expect the wage rate of scientifically skilled labor to rise. Thus, agricultural societies experience a bifurcation: there will be two elites, landed and priestly/technological, comprising what may be termed the oligarchy (Greek: *ολιγαρχία*), opposed to the masses, the *hoi polloi* (Greek: *οί πολλοί*) and the unfree (such as the helots of Sparta: *εἰλωτοί*).

Agricultural societies engage in war with each other, and we therefore expect the landed elite to become a military elite. It is possible for some societies, like

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<sup>5</sup>For example, Schele and Miller (1986) and Hammond (1982) describe how the Mayan autocrat was implicitly bound up with the astronomical technology of the priestly class.

<sup>6</sup>An interesting point here is that many nomadic pastoral societies tend to have little use for writing. However, Hebrew had a very early phonetic script, that may have been ancestral to Phoenician.

the Greek city states of the classical period or of Macedonia, to engage in highly profitable war. In this case there may develop a class of hoplites (Greek: *ὀπλίτης*), highly skilled military warriors, naturally allied with the landed elite. Hoplite military equipment cost approximately the equivalent of a year's income, so the existence of such a hoplite elite depends on high productivity, or real wage. The basis for this class system in the Greek world was the form of mixed pastoral agriculture.<sup>7</sup>

A point to be developed further is that a society based on pastoralism, and associated with a specialism of this kind, may prove superior in war to a society based purely on agriculture. As suggested above, pastoral society may be less subject to the inequalities induced by the creation of an elite who control most of the land.<sup>8</sup> We shall comment on this below, in a discussion of the Roman Empire in contest with pastoral invaders from Eurasia.

To illustrate the returns to this military specialism of what we call a pastoral society, consider the invasion of Persia by Alexander's Macedonian army of 47,000 in 333 BCE.<sup>9</sup> At Gaugamela in 331 BCE, 40,000 Greek and Macedonian hoplites and 7,000 cavalry completely routed the army of Darius III, comprising approximately 200,000 infantry, 40,000 cavalry and 200 war chariots.<sup>10</sup> The treasury of Persepolis that fell to Alexander was worth 6,000 talents. A talent is 60 kg of gold. The current price of gold is approximately \$27,000/kg so a talent can be valued at \$1.6 million in current terms. However, gold was much scarcer in the ancient world than in ours, and it is estimated that the true value ratio is approximately 14 to 1, indicating a talent was approximately \$22.4 million, and the Persian treasury worth \$134.4 billion. Since the population of Greece/Macedonia was about three million, the spoils of war were worth about \$45,000 per head of the Greek population.

It is said that Alexander transferred more than 100 years of the Greek GDP from Persia to Greece. The spoils were in fact distributed to his hoplites and military elite, on average about \$2 million per head. However, the limited access, military Macedonian society was unstable, since it depended on a godlike autocrat, Alexander himself.

Alexander's death brought about a period of chaos, as the various Greek leaders created Hellenistic kingdoms such as the Ptolemaic Kingdom of Egypt, Pergamum

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<sup>7</sup>I believe the high productivity of the Greek peninsular was due to a mix of pastoralism with intensive agriculture of grapes, figs, olives etc.

<sup>8</sup>I acknowledge that Greek society depended to some degree on an agricultural slave class such as the helots. Nonetheless, Greeks felt they were free, while they regarded Asian or Persian society as unfree. I suggest that the difference between these societies was due to the logic of their agricultures.

<sup>9</sup>We use CE to mean Christian Era, or AD, while BCE means before the Christian Era.

<sup>10</sup>The war chariot had been the standard military technology of Indo-Europeans for centuries, but it proved to be no match for the hoplite phalanx, coupled with Alexander's light cavalry. See [Cartledge \(2004\)](#) for a useful account of Alexander's life, and the later book, [Cartledge \(2006\)](#) for the earlier contest between Darius of Persia and the Greeks, and particularly at Thermopylae in 480 BCE.

and Pontus in Asia Minor, and the Seleucid Kingdom, on the Euphrates and Tigris. Ptolemy's Alexandria and Seleucia on the Tigris were rich cosmopolitan cities.

The Hellenes brought mathematics to new heights, particularly in Alexandria, the city created by Alexander the Great in 331 BCE in Egypt. Euclid (323–283 BCE) wrote his *Elements* in Alexandria circa 300 BCE, laying the foundation for the later work in astronomy, and Archimedes (287–212 BCE) of Syracuse spent time there. Ptolemy (Klaudios Ptolemaios) of Alexandria, mathematician and geographer (87 to 170 CE) codified the geocentric view of the universe, by extending Hipparchus's system of epicycles and eccentric circles to construct a model of the solar system. This system of astronomy was accepted as empirically and conceptually accurate for approximately 1,500 years. He was followed by Hypatia (370 to 415 CE) who studied mathematics and astronomy, and wrote on the philosophy of Plato and Aristotle.<sup>11</sup> The vast Alexandrian transfer of wealth from Persia to the Mediterranean littoral stimulated economic growth, but also caused inflation, and economic distress (Grant 1982).

Rome, with a population base in Italy of about 4 million grew increasingly powerful, and the more sophisticated Roman military technology proved superior to the Greek phalanx. Eventually all the successor Hellenistic Kingdoms, except Ptolemaic Egypt were absorbed as Roman dominions. The population of Greece itself fell to two million in the next 150 years, after the military defeats inflicted by Roman legions in various Macedonian wars.<sup>12</sup>

## 2.1 Rome and Byzantium

After the defeat of its enemy, Carthage, in the three Punic Wars (264 BCE to 241 BCE, 218 BCE to 201 BCE and 149 to 146 BCE),<sup>13</sup> Rome continued its expansion across the Mediterranean littoral, reaching a total population of about 8 million in 1 CE. By 200 CE the Roman empire encompassed 46 million people (roughly 20% of the world population), including 28 million of the 36 million living in Europe.

North et al. (2009) argue that limited access societies must face and solve the problem of violence if they are to survive. From about 100 BCE, Rome faced what we shall call *quandaries over land and power*. Rome's growing population required new dominions, such as North Africa,<sup>14</sup> Greece,<sup>15</sup> Pontus, on the Black

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<sup>11</sup>Vrettos (2001) notes “the persecution of everything pagan culminated in the murder of Hypatia [by a mob, egged on by the patriarch Cyril], and with her, the Greece of the spirit died.” The famous Library of Alexandria was finally destroyed in 642 CE by the Arab general Amru.

<sup>12</sup>While Rome reached about 1 million by 100 CE, Alexandria also had a similar population.

<sup>13</sup>Goldsworthy (2009a).

<sup>14</sup>Carthage was finally destroyed in 149 BCE by Scipio Africanus the Younger.

<sup>15</sup>Philip V of Macedonia stood against Rome and allied with the Carthaginian, Hannibal, during the Second Punic War. However, the second Macedonian War (200–197 BCE) led to a Roman victory.

Sea and Greater Armenia,<sup>16</sup> Sicily and the Iberian Peninsula.<sup>17</sup> These dominions provided tribute in the form of food for Rome, but also provided bases of support for competing military elites, triggering a sequence of civil wars.<sup>18</sup> In 60 BCE, the contending elite factions, led by Gaius Julius Caesar, Gnaeus Pompey Magnus and Marcus Licinius Crassus, had attempted to resolve their conflicts by creating the “The First Triumvirate.” This compact only lasted until Crassus’s death in 53 BCE. In 59 BCE Caesar left Rome to gain the resources of a great new dominion, Gaul. The task took 9 years.

Vercingetorix, his opponent, was able to unite the Gallic tribes and build a military force of between 80,000 and 250,000 Gauls. He was eventually surrounded and defeated at the city of Alesia in Northern Gaul, as a result of very sophisticated military technology and tactics by Caesar. This battle can be seen as one of the crucial contests in the expansion of Rome. It makes clear that Caesar was both risk loving and extremely skilled in the military arts.<sup>19</sup> His success opened Gaul up so it could be absorbed into the Roman dominions, eventually becoming a peaceful, agricultural supplier of food for Rome.

Crossing the Rubicon and returning to Rome in 49 BCE, Caesar then defeated his Roman opponent, Pompey, at Pharsalus in 48 BCE.<sup>20</sup> In the same year Caesar landed at Alexandria, Egypt, where he was presented with Pompey’s head. To secure Egypt as a further dominion, he allied with Cleopatra Ptolemy, who bore him a son.<sup>21</sup> By 46 BCE he was back in Rome, in 44 BCE he was declared *dictator perpetuo*, and on March 15 of the same year, he was murdered by an opposed faction, led by Brutus. Initially, relations between Octavian, Caesar’s adopted son, and Mark Anthony, Caesar’s colleague, were a standoff, with both competing for the loyalty of the legions. Octavian courted the favor of the famous orator and politician, Cicero, who began a series of speeches, nicknamed the “Philippics”<sup>22</sup> against Mark Anthony. In April 43 BCE, it appeared that the Republic had been saved. Later, in the year, Octavian and Mark Anthony reconciled their differences, forming, with one Lepidus, “The Second Triumvirate.” Cicero, the last Republican, was murdered that November.<sup>23</sup>

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All of Greece and Macedonia finally fell to Rome after the defeat of Philip’s son, Perseus, at Pydna in 168 BCE. (Grant 1982).

<sup>16</sup>These fell after the three wars against Mithridates of Pontus by Sulla and Pompey *circa* 88 to 63 BCE.

<sup>17</sup>These fell to campaigns by Pompey *circa* 82 BCE and 71 BCE. Julius Caesar was also active in extending Rome’s dominion in Spain *circa* 62 BCE.

<sup>18</sup>One “civil war” was the slave revolt led by Spartacus *circa* 70 BCE, which resulted in the crucifixion of 6000 by Crassus, and the final destruction of the revolutionary forces by Pompey.

<sup>19</sup>On Caesar’s military skills see Lendon (2005).

<sup>20</sup>See Goldsworthy (2006) and Holland (2003).

<sup>21</sup>See the biography of Cleopatra by Schiff (2010), and the book on Anthony and Cleopatra by Goldsworthy (2010).

<sup>22</sup>So named after the Athenian orator Demosthenes’s speeches against Philip of Macedon.

<sup>23</sup>Everitt (2001).

The eventual conflict between Octavian and Mark Anthony, by then allied with Cleopatra, was eventually resolved at the Battle of Actium in September 31 BCE, when Octavian's army of 80,000 legionaries, and 20,000 legionary marines, with a navy of 250 ships, defeated Anthony's similarly sized army and navy of 230 quinquerimes and 50 Egyptian warships.<sup>24</sup> One result of the battle was that Greece and Egypt became fully absorbed in the Roman Empire as dominions.

After the defeat of Anthony, Octavian restored the outward facade of the Roman Republic, with governmental power vested in the Roman Senate, but in practice he retained autocratic power. In 27 BCE, Octavian effectively became the Emperor, Augustus, with the approval of the Senate, the loyalty of his legions, and the respect of the people. The resulting *Pax Romana* lasted at least 200 years.<sup>25</sup>

Although the creation of an autocracy essentially resolved the power quandary, the quandary over land remained. During the Empire, further expansion into dominions was accomplished by Augustus himself, who completed the conquest of Hispania.<sup>26</sup> Trajan (52–117 CE) conquered Dacia, and invaded Parthia in 117 CE. Britannia was invaded in 43 CE by the army of Emperor Claudius, but in 60 CE, Boudica led a revolt against Roman rule, destroying Camulodunum (Colonia, now Colchester) and Londinium. Her army of about 5,000 was defeated by the 10,000 men of the legions of Gaius Suetonius Paulinus, possibly at Manduessedum (in what is now Warwickshire). It was not until Hadrian (76–138 CE) that Britannia was fully pacified and the northern boundary demarcated by the wall separating Britannia from Pictland (119–121 CE).<sup>27</sup>

These various expansions, while making more land available, also made it more difficult for a single emperor to govern alone from Rome. The requirement that Rome maintain the supply of food also required that the empire control the supply lines from Egypt and Africa, and thus dominate the Mediterranean.

Marcus Aurelius (121–180 CE) partially solved this problem by creating the institution of *joint augusti* with Lucus Verus, under which Aurelius dealt with the Lombards and German tribes at the Danube, and Verus faced the eastern enemy, Parthia. The creation of the Eastern Empire in Constantinople (earlier and later

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<sup>24</sup>200 of Mark Anthony's galleys were sunk (Everitt 2006). This was the largest naval engagement of the ancient world, and remained the largest until the Battle of Lepanto, off Greece in 1571, between the Catholic Holy League (Spain, Venice, Genoa, Savoy, Malta and the Papal States) and the Ottoman Empire. In that battle, the 206 galleys and 6 huge galleasses of the League destroyed the 230 galleys and 56 galiots of the Empire.

<sup>25</sup>See Everitt (2006) on Augustus and Matyszak (2008) for the Julio–Claudian dynasty Augustus founded.

<sup>26</sup>Garnsey (1988) asserts that Augustus expanded Rome's control of food resources, by bringing Egypt into the empire. Egypt supplied 133,000 tonnes, sufficient for a population of about 600,000. Rome's population in this period was a million, requiring imports principally from North Africa. The loss of North Africa in 429 CE to the vandals meant that Rome was then doomed.

<sup>27</sup>Everitt (2009).

called Byzantium), founded in 330 CE by Constantine the Great, took this solution one step further.<sup>28</sup>

Although the Western Roman Empire survived until September 4, 476 CE, when the Scyrian chieftain, Odoacer, took Ravenna, then capital of the empire, and deposed the young emperor, Romulus Augustus, it had been under external pressure for many years. In 408 CE, Alaric the Goth spared the city for a ransom of 5,000 pounds of gold, and 30,000 pounds of silver. Then, in 451 CE, the Roman general, Aëtius, in coalition with the first Christian Visigoth king, Theodoric, was able to defeat Attila the Hun at Chalons in Gaul.

In 429 CE, the Vandal, Geiseric, had landed in North Africa, taking Carthage in 439 CE, eventually sacking Rome itself in 455 CE. In 468 CE, Emperor Leo of Constantinople had chosen Basiliscus to lead a military expedition against Vandal Carthage. The purpose of the operation was to punish the Vandal king Geiseric for the sacking of Rome. It is said that the fleet that attacked Carthage consisted of over eleven hundred ships. A conservative estimate for the cost of expedition was 64,000 pounds of gold, greater than a year's revenue of Constantinople. The Byzantine fleet was destroyed by fireships, although later Basiliscus became emperor in the east in 475 CE.

Salvian (born 400 CE) had noted that even as the empire died, "the poor [were] dying of the increase in taxes that they already found too great for endurance" (quoted in Grant 1998:26). As the Western Roman Empire died, the Eastern Empire began to flourish. In 488 CE, with the connivance of the eastern emperor, Zeno, a later Visigoth ruler, also called Theodoric, invaded Italy and on March 5, 493 CE, forced Odoacer to capitulate. Until his death in 526 CE, Theodoric ruled Italy as Viceroy, essentially a vassal of the eastern emperor. In 527 CE, Justinian and Theodora, his wife, were crowned co-rulers of the Byzantine Empire. The Nika riots of 532 CE in Constantinople were vigorously put down by Justinian's general, Belisarius. Justinian, to reassert the majesty of the empire, ordered the rebuilding of the great church, Hagia Sophia, in Constantinople (consecrated in 537 CE), and determined to try again to reconquer the western empire. By 534 CE, Belisarius had destroyed Vandal Carthage, and in short order, took Sicily and southern Italy. After 3 years of war, Ravenna fell to the Byzantine army. The church of San Vitale, in Ravenna, although started under Theodoric, was completed by the Byzantines in 547 CE as a monument to Justinian and Theodora (Norwich 1988: 181–226).

Many writers (and most importantly Gibbon (1994 [1781])) have attempted to assess why the Western Empire fell in 476 CE, but the Eastern Byzantine Empire, centered in Constantinople, persisted until May 29, 1453 CE, when it was taken by the Ottomans under Mehmed II.<sup>29</sup>

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<sup>28</sup>It is possible that the great library of Alexandria was destroyed *circa* 391 CE, and that some of its treasures ended up in Constantinople.

<sup>29</sup>Many recent authors have discussed the fall of Rome, including Burns (1994), Mattern (1999), Baker (2006), Heather (2006), and Goldsworthy (2009b). Luttwak (1976, 2006), in these two books, contrasts the military strategies of the Western and Eastern Empires.

In 698 CE, Carthage had fallen to the Muslim commander, Hasan ibn al-Nu'man, and a force of 40,000 men. After further attacks by the Arabs in the eighth century, there was a degree of peace between Byzantium and the Caliphates, until 934 CE when Byzantium took the offensive (Kennedy 1986). After that, Byzantium slowly lost territory to the Arabs and Seljuk Turks. Even so in the mid twelfth century CE, the Eastern Empire controlled half of Asia Minor and most of what is now Greece and the Balkans. By 1300 CE, however, all that remained of the Byzantine Empire was the city of Constantinople, and its population of about 100,000. Although shrunken, the Eastern Empire had lasted a millennium.<sup>30</sup>

At the height of the Western Empire, the population was about 65 million. The elite consisted of approximately 600 Senators, while perhaps 30,000 men filled the roles of Equestrians (knights), or the second tier of the aristocracy. 10 to 30% or 6–19 million people lived in the cities, leaving about 50 million people living in the country as tenant farmers.<sup>31</sup> Rome itself had over 1 million people, the largest city in the world until the industrial revolution 1500 years later. The slave population of Rome approached 500,000 on its own, probably half of whom were owned by the 600 men of the Senate. Additional estimates have suggested that of the total 65 million people, 2–10 million may have been slaves. After the plagues of the 160s to 170s CE, the population of the Empire fell to about 40 million. By the beginning of the fourth century, and the reign of Constantine, the population had grown again to about 55 million. By this time, the population of Rome was in decline and Byzantium (or Constantinople) was on the rise. By then, the west made up about 40% of the Empire's total population with the remainder in the east. By the mid sixth century, wars, disease and emigration brought the population of Rome as low as 30 to 100 thousand. By the time of Justinian in the sixth century, Constantinople may have numbered somewhere between 750,000 to 1 million people.

Schofield (2009a) suggests that the *Codex Justinianus*, prepared by order of Justinian the Great in Constantinople in 529 CE, while setting out a system of Roman Law that was the basis for the later Civil Law of Europe, gave legitimacy to the imperial or kingly autocrat, and it was this legitimization of the concentration of power that made it possible for the Eastern Byzantine Empire to solve the quandary of power and persist for so long. (Below, the quandary of power will be discussed more formally.)

Rosen (2007) suggests that one possibility concerning the eventual fall of the Eastern Empire was that it was continuously weakened by population crashes as a result of the bubonic plague. For example, in the year 542 CE the plague afflicted Constantinople during Justinian's reign, killing about 10,000 people every day.

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<sup>30</sup>It may also be the case that the parallel between the British Empire and Rome lies in the requirement that a populous center, whether Rome or London, must protect the sea lanes that supply the vast population from its overseas dominions. The supply lines for Constantinople were land based and maybe easier to control than those of the Western Empire.

<sup>31</sup>This is consistent with Appleby (2010) which asserts that 80% of the population in such a society must work to produce the food for the whole society.



The plague appears to have started in the Egyptian harbor town of Pelusium, and it seems that climate change had opened up a pathway from Africa that gave the flea/rat invasion access to the Mediterranean litoral. It is possible that the eventual decline in the population of Constantinople was the underlying reason for the initial expansion of the Abbasid Caliphate (750–1258).<sup>32</sup>

The Frankish kingdoms of Outremer (founded in 1096) in the Levant had grown rich by the twelfth century. The Sunni leader, Saladin, had first taken Egypt, then Damascus, and Syria in 1174, then Jerusalem in 1187, leaving only the Crusader cities of Tyre, Tripoli and Antioch. The Third Crusade, with Richard the Lionheart, retook Acre and Jaffe in 1191 but was unable to retake Jerusalem (Reston 2001). In the Fourth Crusade of 1203, Constantinople proved an easier target than Jerusalem, and was conquered by Franks and Venetians. The city never fully recovered from the Latin occupation of 1204–1261. As noted below, the Holy Roman Emperor, Frederick II became King of Jerusalem in 1229, through negotiation rather than war. In 1258, a Mongol army sacked Bagdad, ending the Abbasid Caliphate.<sup>33</sup> In 1260, however, a Mongol army was defeated by the Mamluks, and most of the Middle East was divided up into various Turkic factions. Chief of these factions, the Ottomans, defeated a combined army of Serbs, Albanians and Poles, in 1389 at the “Field of Blackbirds,” and the whole of Macedonia, and eventually Asia Minor, became part of the Ottoman Empire. By the end of the fourteenth century, as Pagden (2008) suggests, Byzantium lacked any strategic importance, but was still the “Golden Apple” that made Mehmed II “master of the world.”

North’s (1981) reason for the fall of the Western Empire is a version of Salvian’s observation, attributing the fall to institutional inefficiency, as a result of increasing demands on the tax structure combined with a decline in the tax base. While this argument is plausible for the Western Empire, it does not seem to account for the long period of about a thousand years that the Eastern Empire survived.

### ***2.1.1 Competition Between Factors***

The differences in the stability of the two Roman Empires may result from differences in the nature of the underlying quandaries of land and power that they faced. First, consider the nature of the landed elite,  $\mathbb{C}$ . As we have suggested, with population pressing against the Malthusian resource food boundary, land becomes

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<sup>32</sup>This suggestion does not provide a reason why Byzantine’s opponents were less affected by the plague. It may be again a question of exposure and eventual resistance to the disease, or the higher level of urbanization in Constantinople.

<sup>33</sup>Below we comment on the expansion of the Mongel empire, initially under Genghis Kahn (1162–1227).



relatively more expensive in terms of the average wage rate of total labor,  $\mathbb{L}$ .<sup>34</sup> Some fraction of the landed elite, as exemplified by the Roman emperors Hadrian and Trajan, become military specialists, labelled  $\mathbb{C}_m \subset \mathbb{C}$ . This landed military elite would also include members of the landed equestrian or centurian order. Whereas members of  $\mathbb{C} - \mathbb{C}_m$  will tend to be risk averse, members of  $\mathbb{C}_m$  will be risk-loving. Some fraction of  $\mathbb{L}$ , labelled  $\mathbb{L}_t$ , will specialize in the technological, engineering and legal skills required to run the empire.

As the empire expands, these skills will become more valuable. Since expansion requires military competence, a legionary class,  $\mathbb{L}_m \subset \mathbb{L}$ , will specialize in these skills. We might expect  $\mathbb{L}_m$  to be also risk-loving. In the initial phase of expansion, agricultural labor,  $\mathbb{L}_a \subset \mathbb{L}$ , in new dominions such as Gaul and Hispania, will also benefit from higher returns to land. Risk preferring military coalitions of  $\mathbb{C}_m \cup \mathbb{L}_m$  will also demand more of the total product of the empire, and this can be accommodated by distribution of some of the new land to members of the legionary/military caste,  $\mathbb{L}_m$ , when they retire from service. Since land becomes more valuable over time,  $\mathbb{C} - \mathbb{C}_m$  will also expect a greater share of the total product. Consequently the share of unskilled labor,

$$\mathbb{L}_u = \mathbb{L} - \mathbb{L}_m - \mathbb{L}_a - \mathbb{L}_t$$

in total product will fall.

Equilibrium can be maintained as long as the expansion of new land and its higher productivity matches the equilibrium or Malthusian population growth rate. However, when new land runs out, the share of  $\mathbb{L}_u$  may fall rapidly. If the productivity of land also eventually starts to fall, then the real return of  $\mathbb{L}_a \cup \mathbb{L}_m$  must also fall, possibly resulting in a population crash.

The problem facing Rome as a result of this quandary may have been exacerbated by the characteristics of the various invaders, whether Hun, Visigoth or Vandal. Unlike Rome, these people were pastoralists, not agricultural farmers. While the invaders also sought land to feed their growing populations, they were not subject to the problem of high concentration of the ownership of land. Moreover, if this pastoralism was more efficient in terms of calorie creation per unit of labor than Roman agriculture, then the pastoralists real wage would be higher than the Roman.

Finally, almost all labor in the invading societies would involve a combination of military (risk taking) and agricultural expertise, so the drain on resources attributable to  $\mathbb{L}_u$  did not exist. It may be that the Eastern Empire depended more on pastoralism, in the Balkans and Asia Minor, and so avoided some of the

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<sup>34</sup>The wealth requirement for a senator was 1 million sesterces. where a sesterce bought a loaf of bread. A legionary maybe earned only 90 sesterces/annum. This compares with the bribes of 400 sesterces to each made by Mark Anthony to the legions in 44 BCE and 2,000 sesterces to each made by Octavian the same year to his legions (Everitt 2001). Great estates could bring in up to 200 million sesterces. Garnsey and Saller (1987) comment that the author and magistrate, Pliny the Younger (61–112 CE) was worth 20 million sesterces.

consequences of the quandary over land that the West faced. It may also be that there developed a priestly class, say  $\mathbb{L}_p \subset \mathbb{L}_t$ , specializing in control of the masses,  $\mathbb{L}_u$ . Finally, because of Byzantium's position on the trade route between east and west, there developed a capitalist merchant class,  $\mathbb{K}$ , controlling not land, but capital, and this class would trigger economic growth through trade with the early city Italian states of Venice, Genoa and Palermo.

## 2.2 Structural Stability and Chaos

The above suggestions are in terms of an equilibrium concept of the economic and power transformations that faced the polities in question. North et al. (2009) make no mention of equilibrium, possibly because their view of economic equilibrium theory (Arrow and Debreu 1954; Arrow and Hahn 1971) is that it is a static theory, unsuited to the study of dynamic change. We suggest that this view is incorrect, and that we can make use of equilibrium concepts, as well as the notion of factor groups, as presented above. The theory presented here is based on social choice theory, which is here regarded as a fundamental theory of social conflict (Schofield 2006).

**Definition 1.** Dynamic equilibrium.

At time  $\tau$ , there is a population  $\mathbb{N}_\tau$  of size  $n_\tau$ . This population is divided into various categories (or factor groups, to use the economic terminology):

$$\{\mathbb{C}_m, \mathbb{L}_m, \mathbb{L}_p, \mathbb{L}_u, \mathbb{L}_t, \mathbb{K}\}$$

as just described.

At this time, societal choices lie in a "state" space,  $\mathbf{X}_\tau$ , a bounded (or compact) space. This space describes the total factors available, including land, capital and labor/population, as well as the distribution of total product to all the factor groups.

At  $\tau$ , each individual,  $i$ , is described by a utility function  $\mathbf{u}_i : \mathbf{X}_\tau \rightarrow \mathbb{R}$ , so the population profile is given by  $\mathbf{u} : \mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}$ . Beliefs about the future  $\tau + 1$  are given by a stochastic rule,  $\mathbb{Q}_\tau$ , that generates a new profile for  $\mathbb{N}_{\tau+1}$  at  $\tau + 1$  given by  $\mathbb{Q}_\tau(\mathbf{u}) = \mathbf{v} : \mathbf{X}_{\tau+1} \rightarrow \mathbb{R}^{n_{\tau+1}}$ . The utility and beliefs of  $i$  depend on which subfactor  $i$  belongs to. In particular, risk preference is a key property of the factor groups.

Thus we obtain a transformation on the function space  $[\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}]$  given by

$$[\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}] \rightarrow \mathbb{Q}_\tau \rightarrow [\mathbf{X}_{\tau+1} \rightarrow \mathbb{R}^{n_{\tau+1}}] \rightarrow [\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}].$$

The second transformation here is projection onto the subspace  $[\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}]$  obtained by restricting to changes to the original population  $\mathbb{N}_\tau$  and space.

A *dynamic belief equilibrium* at  $\tau$  for  $\mathbb{N}_\tau$  is a fixed point of this transformation. Penn (2009) shows that particular conditions on this transformation allow the

application of Brouwer's fixed point theorem (Pugh 2002) to show existence of such a dynamic equilibrium. This concept was first suggested by Hahn (1973) who argued that equilibrium is located in the mind, not in behavior.

North et al. (2009) also emphasize the importance of what they call *causal beliefs*. Here a dynamic belief equilibrium refers to the stability of the utility functions for  $\mathbb{N}_\tau$  as these individuals guess as future consequences of choices, on the basis of the causal beliefs about how society operates.

**Definition 2.** Chreod or structurally stable dynamical path.

The term chreod was used by Rene Thom ([1966], 1994) to describe a dynamical system that returns to a steady trajectory, as in evolutionary or biological processes. *Structural stability* refers to the property that the qualitative features of the path are not changed by small perturbations. The word is derived from the Greek word for "necessary" and the word for "pathway". The term is in contrast to the notion of homeostasis which refers to a stable equilibrium.

A *social chreod* is therefore a structurally stable path through all time,  $\tau$ , where the state space  $\mathbf{Z} = \cup_\tau \mathbf{Z}_\tau$  now involves not only characteristics, such as factor endowments, but also the beliefs of individuals, particularly as regards the risk postures that are embedded in their utilities. Over the long run, there may be selection for character traits and propensities.

A structurally stable path need not always exist. Indeed, the opposite notion to that of chreod is of *chaos*, when the dynamic path displays extreme sensitivity to perturbations. Even when a structurally stable path does exist, the path may exhibit points of inflection, where the dynamic process exhibits a small qualitative change. (See the notion of punctuated equilibrium path below). Major points of inflection occur at transitions in the fundamental structure of production and consumption of the society, and these will generally be associated with a qualitative change in the developmental path. The suggestion here is that these transitions are chaotic, and that different transitions exhibit very different forms of chaos.

**Definition 3.** Major Transitions: From hunter gatherer society to agricultural society and from agricultural society to industrial society.

These transitions occur in different societies at different times and locations, as briefly discussed in Sect. 1 and below. How they are triggered is subject to considerable controversy, but if the transitions are indeed chaotic, then the attempt to determine causality will be extremely difficult.

The historic examples discussed here suggest failure of existence of structural stability due to different kinds of chaos: Arrovian, Malthusian and Keynesian. These causes of failure of structural stability are characterized in social choice theory by power relations, which are defined in terms of decisive coalitions.

**Definition 4.** Decisive Coalition at  $\tau$ .

A decisive coalition,  $M_\tau$ , is a subset of  $\mathbb{N}_\tau$ , able to defeat its complement,  $\mathbb{N}_\tau - M_\tau$ . The set of decisive coalitions at  $\tau$  is denoted  $\mathbb{D}_\tau$ . For convenience, we now delete reference to  $\tau$ .

**Definition 5.** Autocrat.

An autocrat is an agent,  $A$ , who with allies in  $\mathbb{C}_m \cup \mathbb{L}_m$ , belongs to every decisive coalition, and is also decisive.

**Definition 6.** Collegium.

A collegium is a subset of  $\mathbb{C}_m \cup \mathbb{L}_m$ , allied to an autocrat, which belongs to every decisive coalition, but is not itself decisive.

**Definition 7.** Risk loving autocrat.

An autocrat who is sufficiently risk loving that he may bring disaster to the society

**Definition 8.** Benevolent autocrat.

An autocrat whose risk preference is low enough that disaster is unlikely.

Although Augustus, Trajan, Hadrian and Constantine may be viewed as benevolent autocrats, since they succeeded in expanding the empire, this was partially because they controlled a military technology that brought about their success. Two of the Julian emperors, Nero and Caligula, who followed Augustus, cannot be so considered. Alexander of Macedonia is an example of an extreme risk loving autocrat whose military adventure was coupled with a very superior military technology. We may say he was munificent, at least in the short run.

**Definition 9.** Arroviaan Chaos.

Social choice theory (Arrow 1951; Schofield 1985a; Saari 1997) strongly indicates that if the state space is of sufficient complexity, and there exists no concentration of power in terms of existence of an autocrat or collegium, then the outcome of the exercise of power is unpredictable.<sup>35</sup>

In situations of such Arroviaan chaos, the people may choose an autocrat over other power distributions, as suggested by the Roman example of the peoples' preference for Octavian's exercise of power. A second example is the creation of the Empire by Napoleon, after the Terror following the French Revolution.<sup>36</sup> When distributional conflicts over land, for example, are paramount, and the elites are fragmented, so that power cannot be concentrated, then Arroviaan chaos may lead to violence, sufficient to destroy the conditions for existence of economic equilibrium and thus of dynamic equilibrium.

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<sup>35</sup>In the illustrations above, the state space is sufficiently complex, since it involves all feasible distributions of total societal product to the various factor groups.

<sup>36</sup>It is possible that the universal system of law put in place by Napoleon, and modeled on Justinian's code, provided him with the autocratic authority to build a citizen army, with the motivation to gather tribute from the conquered countries of Europe. Although Napoleon intended to be munificent, he was in fact tragic.

**Definition 10.** Malthusian chaos.

If the pressure of population against the productivity of land means that the distributional quandary over land cannot be solved, then society may fall into Arrovian chaos and eventually collapse ([Diamond 2005](#)).

**Definition 11.** Keynesian chaos.

For non-agricultural societies, the uncertainty associated with distributional conflict between economic factors could make life so intolerable that the people would choose an autocrat, giving up their freedom for a believed security. [Keynes \(1936\)](#), in particular, argued that such uncertainty could arise from irrational speculation, which we might ascribe to high risk preference by capitalists.

**Definition 12.** Chaos due to external autocrats.

Invasion by enemies, whether Hun, Vandal, Visigoth, or later Mongol or Ottoman, will destroy belief equilibria. Moreover, the leaders of such peoples generally will be autocratic and extremely risk preferring. [Schofield \(2006\)](#) suggests that such leaders (for example, Napoleon or Hitler) will be willing to take military risks that appear insane, or certainly unpredictable to their opponents.

**Definition 13.** Decline or collapse due to an internal autocrat.

A risk loving autocrat like Napoleon or Hitler can lead his people in acts of war that eventually destroy the society.

We discuss below the possibility that an autocrat, like Philip II of Spain, can engage his people in a long term war, resulting in massive debt and then decline. In the twentieth century, autocrats like Mao Zedong, the chairman of the Communist Party of China, or Stalin, in the Soviet Union, may launch internal programs that result in great loss of life. In the current period, poverty or disorder in poor societies allow autocrats, such as Mugabe in Zimbabwe, to come to power. Their risk preference helps them to retain power against all opponents, even when the polity has embryonic democratic institutions.

**Definition 14.** Quandary or Bifurcation.

With chaos, it is impossible to rationally choose future actions with any certainty. Another way of characterizing belief disequilibrium is that the population faces a quandary, representable as a bifurcation in the set of possible courses of action to take.

As in the previous discussion, leaders like Octavian or Justinian may decide that there is a way to resolve the quandary, and by force of personality, persuade the society that this is the correct course. Other times, the quandary generates social conflict, with multiple leaders pressing for different solutions, leading to further Arrovian chaos.

**Definition 15.** Madisonian Constitutional Quandary.

A democracy may on occasion face aggression from a hostile power led by a military, risk preferring autocrat. Only a democratically elected leader, able to deal with such a threat, can respond in an appropriate fashion.

A solution to this quandary is to partially restrain the risk preference of the leader by the risk aversion of a political collegium. In Chapter 1 we have discussed this solution in terms of the restraint exercised by Parliament on the military autocrat, William III, in Britain. The genius of the American constitution, as proposed by Alexander Hamilton and James Madison, in the *Federalist* (1787) is that it allows for concentration of power by granting the President almost autocratic power, so as to deal with foreign aggression, yet constrains his power by the collegial veto capacity of a (risk averse) Congress.

**Definition 16.** Quandary over the transition to Democracy.

Before a collegium will relinquish power, by extending the franchise, it may be necessary to formulate a theory why this will not induce Arrovian chaos. Schofield (2005, 2006) argues that the work by Condorcet (1785) provided such a theory and that this was utilized by Madison (1787) in his notion of a “fit choice” by the people.

In Chapter 1 we have discussed the resolution of this democratic quandary by Disraeli in Britain in 1867.

**Definition 17.** Belief Cascade.

Facing a social quandary of some form, a democracy may respond to the argument of a leader that there is only one way to deal with the quandary. An example might be that of William Wilberforce and the eventual *Slavery Abolition Act* of 1833, which abolished slavery in most of the British Empire. On the same question of slavery in the United States in 1860, the society bifurcated into two utterly opposed groups, with war between them the only method of choosing the future.

**Definition 18.** Social Point of Inflection.

Resolution of a quandary may create a minor point of inflection, or change in the political and economic path of development of the society. The illustrations from the Roman Empire, above, and from the discussion in Chapter 1 of political history in Britain and the United States suggest that points of inflection are often associated with fundamental changes in the nature of political and social rights. The most important of these are to do with the extent and logic of the franchise.<sup>37</sup>

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<sup>37</sup>Chapter 1 has already discussed the origins of the Civil War, as well as the Civil Rights Acts in the 1960s in the United States, and the earlier extension of the franchise in Britain in 1867. From the discussion above, it should be obvious that the rights and obligations of citizenship in the Roman Empire were also crucial for its stability.

**Definition 19.** Punctuated Equilibrium.

There may be long periods of stable equilibrium, punctuated by sudden change in the qualitative nature of the evolutionary path, at a point of inflection (Eldridge and Gould 1972; Denzau and North 1994).

This notion has proved useful in evolutionary biology. It suggests that the social evolutionary path of a society can exhibit major break points where the developmental path is transformed because of some form of bifurcation. The major transitions of the agricultural and technological revolutions seem to have incorporated multiple points of inflection.

**Definition 20.** Climatic chaos.

Recent work in evolutionary biology (Calvin 1991, 2006) suggests that climate can best be described as a dynamic process exhibiting punctuated equilibrium, where the bifurcations are associated with periods of climatic chaos (See also Comin et al. 2010).

Calvin argues that the climatic equilibrium following the last ice age, about 15 KYBP, was the reason for the development of agriculture. According to current evolutionary anthropology, anatomically modern humans evolved solely in Africa, between 200 and 100 KYBP, with members of one branch leaving Africa by 60 KYBP. The last glacial period lasted from 110 to between 10 and 15 KYBP, and so overlapped with the various migrations out of Africa. More importantly, inter-equilibrium climatic chaos during this glacial period had a profound effect on human evolution, driving rapid cultural adaptation in the long pre-agricultural period from 60 to 15 KYBP.

It would seem that a full account of the cultural and biological changes that occurred in this interval will depend on developments in evolutionary anthropology based on the Malthusian principle.

The next section examines population and GDP/capita estimates, as computed by Maddison (2007), using a standardized 1990 dollar as a measure of product/capita, to seek for points of inflection in the recent past, from 1 KYBP to the present.

## 2.3 The Malthusian Constraint and Points of Inflection

In 1000 CE (1 KYBP), world population is estimated to be 225 million, with 60 million in China, 75 million in India, 33 million in the rest of Asia, and only 31 million (or 13%) in Western and Eastern Europe.<sup>38</sup> GDP/capita had increased slightly in China from \$450 in 1 CE (in 1990) to \$466 in 1000 CE, while in Europe

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<sup>38</sup>These population figures are taken from Maddison (2007). While they are no more than informed guesses, they do suggest that Europe's population had fallen considerably between 200 and 1000 CE. Note that Italy's population had fallen from about 8 million dollars in 1 CE to 5 million in 1000 CE.

it had fallen from perhaps \$600 in 1 CE to \$425 by 1000 CE, with France the richest and most populous.<sup>39</sup>

By 1600 CE world population had increased to 600 million with 400 million in Asia (160 million in China and 135 million in India). Western and Eastern Europe had about 62 and 17 million respectively (again 13%) with 2.3 million in the English colonies and 8 million in Latin America. In Asia, GDP/capita had increased to \$600 in China, to \$570 in Japan and \$550 in India. In Europe, the highly developed Netherlands reached \$1,380, with Italy at \$1,100, England at \$980 and France at about the European average of \$840. Mexico, with its mineral wealth reached \$760. Asia was clearly growing in population but faced the Malthusian boundary, while most of Western Europe had crossed an inflection point.

By 1820 CE, world population was 1040 million with 710 million in Asia (China 380 million, India 210 million Japan 31 million, the rest of Asia 89 million). Latin America reached 22 million and Africa 74 million. Western and Eastern Europe were at 133 million and 36 million, respectively (or 16% together), with France still the most populous (31 million) and Germany at 25 million. Russia had grown to 55 million, while the English off-shoots (the United States, Canada, New Zealand and Australia) had grown to 11 million.

In Asia, GDP capita was generally fairly constant (at \$580), slightly lower in India (at \$533) and somewhat higher in Japan (\$670), and \$600 in Africa. In Europe it had increased to \$1,800 in the Netherlands, \$1,700 in the United Kingdom, \$1,135 in France, close to the European average of \$1,200, and the United States at \$1,250. Eastern Europe was far behind at \$680, close to the world average GDP/capita of \$667.

Although the population share of the West (Western Europe and the English off shoots) was about 17%, it generated about 27% of world product. The West had obviously overcome the Malthusian constraint that still bound the rest of the world. We could say that Condorcet in his optimistic *Equisse* of 1795<sup>40</sup> had proved correct, but only for the West, while the much more pessimistic argument of Malthus (1798) appeared to be correct for most of the world.

By 2008, it was clear that there existed multiple population and GDP capita inflection points for different countries. World population was at 6.7 billion, with 4.0 billion in Asia (1.3 billion in China, 1.1 billion in India, 127 million in Japan), 950 million in Africa, 575 million in Latin America, 287 million in Russia, 400 million in Western against 120 million in Eastern Europe (or 7.6% of the total), while the English off-shoots had grown to 362 million (5.4%).

World average GDP capita according to Maddison is currently \$6,500, with low averages of \$1,500 in Africa, \$2,100 in India, \$4,800 in China, \$5,300 in Russia, \$5,700 in Latin America, \$6,500 in Eastern Europe, and highs of \$20,000 in Western Europe (with Germany, France and the United Kingdom all very similar), \$21,200 in Japan and \$28,000 in the English off-shoots. With a population share of 13%, the

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<sup>39</sup>GDP/capita is measured in 1990 international Geary Khanis dollars. See Maddison (2007).

<sup>40</sup>From now on we drop the notation CE.



West and Japan generated over 48% of world product. In contrast, Russia with 4.2% of world population generated only 3.4% of world product.<sup>41</sup>

The UN gives an estimate of a world population of about 9.2 billion in 2050. With economic growth continuing in Asia, there will be tremendous pressure on world resources, with a probable increase of CO<sub>2</sub> concentration in the atmosphere, and thus a catastrophic rise in temperature.<sup>42</sup>

Thus all the West European economies, as well the English offshoots and Japan have crossed (or are just about to cross) the economic threshold of \$20,000/capita. Singapore and Hong Kong have crossed this economic threshold, but are limited access societies, while Taiwan and South Korea are close to the economic threshold, and we may infer that they will soon become open access societies.

Modern economic growth theory has in recent years moved from the classical theory emphasizing capital and labor productivity to the roots of productivity in the form of ideas and institutions.<sup>43</sup> The key idea here is that ideas are non-rival, so increased population triggers more ideas. As world trade increases and markets become increasingly integrated, those countries that are open to ideas, invest in education, and create efficient institutions can benefit dramatically.<sup>44</sup> Even less developed countries like Korea in the 1960s or China in the 1980s and 1990s, can be transformed and grow at 6%/annum or more. Conversely, countries particularly in Africa and parts of the Middle East seem not to be open to ideas. Burgeoning population can then exacerbate the rivalness of factors of production, limiting the benefit of trade to such an extent that GDP/capita may even fall.

Inequality across the set of all political economies, is extreme. GDP/capita in Africa ranges from a low of \$212 in Zaire, to highs in countries like Botswana of \$5,000. Some African countries, like Botswana, may be able to cross the Malthusian barrier, because of their control of scarce resources, but others will find it impossible (Collier 2007). The argument presented in this chapter is that such societies face a harsh form of the distributional quandary over land, as their populations grow rapidly. Their political leaders will tend to be extreme risk preferring, and violence will be endemic, as in regions like Darfur or the Republic of Congo.<sup>45</sup> Bates et al. (2003) present a fairly dismal outline of the propensity to violence in poor countries.

Differing estimates by Friedman (2009) puts current global product at \$54 trillion, with the US share at \$14 trillion, Japan's at \$4.4 trillion and Western Europe about 11.2 trillion (so 55% in all). While China, India, Brazil and possibly

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<sup>41</sup>The pattern of economic growth is more or less consistent with macro-economic models of technology diffusion as discussed in Lucas (1988, 2000) and Romer (1986), but these models give no explanation why some countries suddenly develop and others do not.

<sup>42</sup>Climate change is discussed in Chap. 4.

<sup>43</sup>Romer and Paul (1986), Grossman and Helpman (1991), Hall and Jones (1999), Jones (2002), Jones and Romer (2009).

<sup>44</sup>This argument is consistent with North (1993, 1994) who emphasises institutions and beliefs. Shapiro (2008) focuses on human capital in the context of globalization.

<sup>45</sup>Prunier (2009).

Russia will grow in the future, it is unlikely that their population and GDP/capita will change the overall unequal pattern of economic power.<sup>46</sup> Sachs (2008) gives figures which suggest that world income/capita has increased from about \$1200 in 1900 (about a fivefold increase to the present), while total world output has increased from about \$2.5 trillion in 1900 (a 20 fold increase). This obviously means global inequality has increased. It is also probable that the share of Africa will decline further. There is an enormous literature on development in the Third World, much of it pessimistic (Collier 2009; Easterly 2006).

Indeed, Nunn (2008) presents an empirical argument that the tendency towards ethnic fragmentation and violence, which certainly contributes to Africa’s poor economic growth, is a consequence of it having suffered from the slave trade for many centuries.

Figure 2.1 gives a broad idea of the nature of these inflection points for the period from 1900, while Fig. 2.2 illustrates the linear, indeed logistic growth of

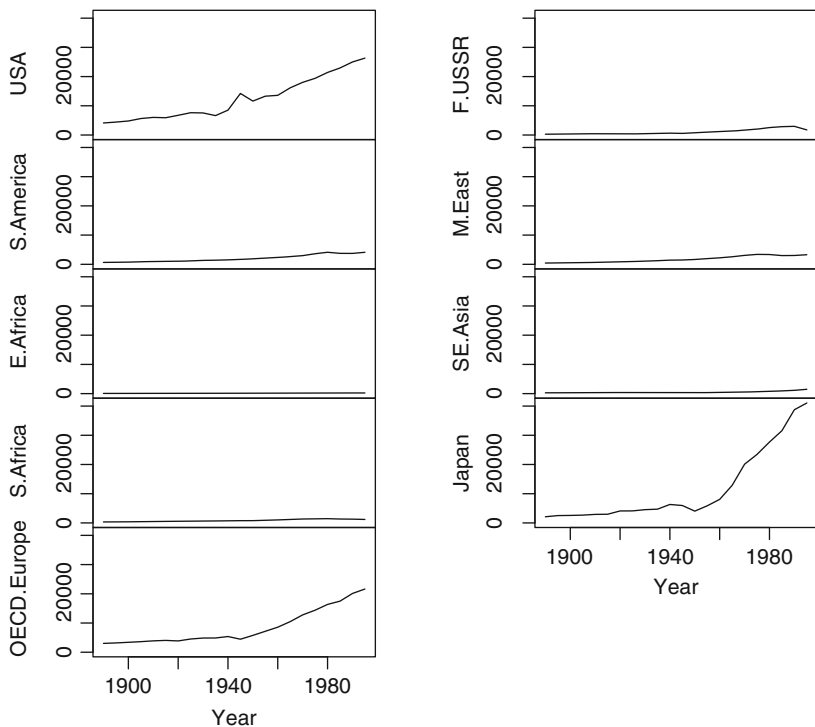


Fig. 2.1 Malthus or Condorcet

<sup>46</sup>Of course there is much discussion of how China’s growth will affect the world economy.

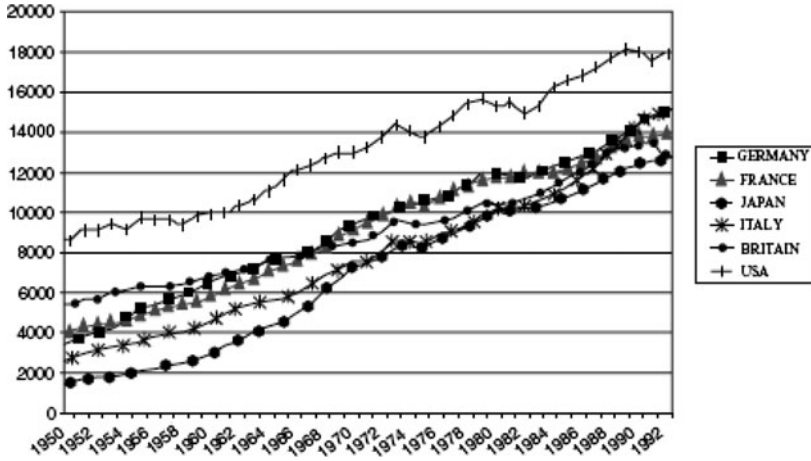


Fig. 2.2 GDP per capita in six OECD countries (in 1985 dollars)

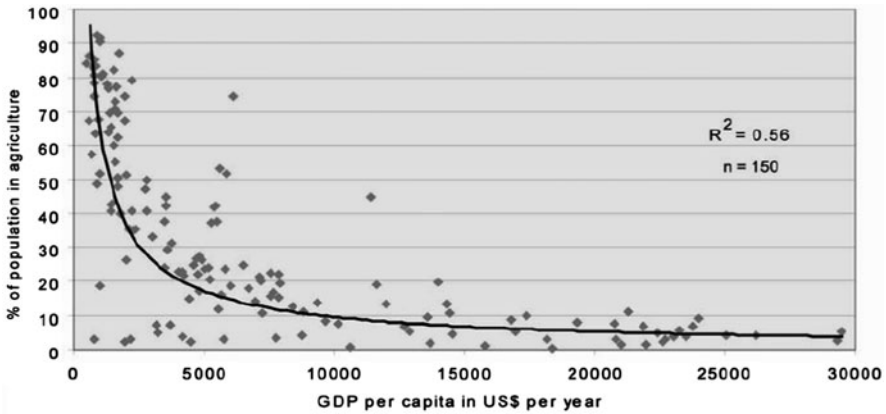


Fig. 2.3 Agriculture and GDP/capita (International Assessment of Agricultural Science and Technology for Development, 2008)

some western economies from 1950 to 1992.<sup>47</sup> Figure 2.3 gives another logistic curve, indicating the quandary generated by agriculture: very few countries with more than 10% of its population in agriculture can attain a GDP/capita of \$10,000. More to the point, there is a real possibility that climate change due to CO<sub>2</sub> and methane emissions will induce severe dislocations, particularly in poor countries (Stern 2009). As Stern (2007) argues,

<sup>47</sup>Figure 2.2 is taken from Schofield (2003), where it is argued that the growth curve is logistic in the sense of showing a decline over time. The current crisis has, of course, induced a profound drop in economic growth.

Climate change poses a real threat to the developing world. Unchecked it will become a major obstacle to continued poverty reduction. Developing countries are especially vulnerable to climate change because of their geographic exposure, low incomes, and greater reliance on climate sensitive sectors such as agriculture.

The effect of the climate changes that have already occurred are beginning to be a real concern. As Krugman (2011) recently noted, severe weather seems to have already had an impact on world food prices. Economic growth in India and China particularly has increased food demand, but China, usually self sufficient in food, and one of the world's major producers of rice and wheat has been hit by a severe drought. Russia, also a major wheat producer, had a record heat wave in summer 2010. The price of wheat doubled between summer 2010 and spring 2011, probably because of the record heat recorded in many countries. The poor in the world spend the bulk of their income on food, so price increases have a severe impact on real income. Indeed, this effect may be the ultimate cause of the popular unrest in Tunisia, Egypt and other countries. Whether the fall of the autocracies in these countries will result in chaos is an open question. We return to the question of climate change in Chap. 4.

The main challenge to political economy is to better understand the formation and transmission of ideas and knowledge through well designed institutions. North (1993) made a number of propositions governing this process:

- Interaction between institutions in a context of scarcity induces institutional change.
- Competition forces institutions to invest in knowledge which shapes perceptions.
- Institutions generate incentives which dictate the nature of sought-after knowledge.
- Perceptions derive from mental constructs (beliefs).
- Institutional change is overwhelmingly path-dependent.

The idea of chreod, and of the ancillary notion of point of inflection, presented above, is an attempt to provide a possible way to formalize these earlier suggestions of North. The emphasis of North et al. (2009) is very much on the nature and development of institutions, and in particular on extending North's earlier "neo-classical theory of the state," wherein "Leviathan" contracts to set up a system of property rights and taxes (North 1981). An emphasis in North et al. (2009) is on the ability of "Leviathan" to limit, or at least set bounds on, violence.

Although North et al. (2009) discuss violence extensively, it can be useful to consider the roots of violence in terms of risk preference. First, a categorization of society into different factor groups, such as  $\{C_m, L_m, L_p, L_u, L_t, K\}$ , as in the discussion of Rome, would seem very useful. It is plausible that these classes or categories display very different risk postures. While this is simply a hypothesis, the work of Cochran and Harpending (2009) suggests that these postures are the result of rapid evolutionary selection. Recent work by Clark (2007a,b), already discussed, makes a similar argument. In what follows, we shall emphasize the consequences of differing risk postures of these factor groups.

As mentioned above, military leaders, such as Philip II of Spain, Napoleon or Hitler must be considered extremely risk preferring. Moreover, members of the military classes in Europe seem in general to be highly risk preferring, and this would suggest that war between states was a fundamental aspect of the family of closed access societies. Rather than attempting to control violence, the elite in such societies would specialize in the exercise of violence. North (1981) paid attention to large scale conflict, for example, between the Ottoman Empire and Christian Europe (Pirenne 1939). Schofield (2000b) discussed some aspects of this, and we shall make a few more remarks below.

Much of North et al. (2009) is concerned with the ways institutions work differently in closed and open access societies. Some of the conceptual apparatus used in this discussion was present in North's earlier work with Weingast (North and Weingast 1989) on the Glorious Revolution in 1688 CE in Britain. This social and economic revolution transformed Britain's ability to manage debt, fight wars (particularly with France), and develop an empire. But the Industrial Revolution that followed later in Britain was driven by a scientific revolution that first made its appearance about 1600. Although North (1993) discusses knowledge, there is little in North et al. (2009) about knowledge-seeking institutions.<sup>48</sup> Mokyr (2002, 2010) emphasizes the extension in scientific knowledge and the changes in beliefs in this period.

The next section will make some observations about the cultural transformations that took place in Europe from about 1100.

## 2.4 Cultural and Scientific Change: East and West

One of the most interesting questions about social change concerns the role of "cultural transmission" in triggering the beginnings of economic growth.

By 1000, Al-Andalus, the Arab world in what is now Spain was an immensely sophisticated and wealthy culture, Cordova had a population about half a million, exceeding that of Byzantium.<sup>49</sup>

It can be argued that the knowledge of Greek writings and philosophy, which had been kept alive in Al-Andalus and Byzantium, was transmitted to Europe through the court of Frederick II (1194–1250), Holy Roman Emperor and King of Sicily with his capital in Palermo.<sup>50</sup> Frederick was elected king of Germany in 1215, and crowned in Aachen by Pope Innocent III. In 1227, Frederick was excommunicated by Pope Gregory IX for failing to lead a crusade to the Holy Land, although he did lead the crusade the next year. Possibly because of his ability to speak Arabic, he was able to make peace in the Holy Land, being crowned King of Jerusalem in

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<sup>48</sup>Indeed, there is nothing in the book about natural science or mathematics, although there is much discussion of social and political science.

<sup>49</sup>Earlier, Arab armies had only been prevented from conquering a large part of Europe by the victory of the Frank, Charles Martel, over a Muslim army in 732 at Poitiers in France.

<sup>50</sup>He was known as *Stupor mundi* ("wonder of the world").

1229. In Palermo, he created a court based on the combination of Jewish, Muslim and Frankish culture, that had some similarities to that of Granada and Cordova in Al-Andalus. He also built on the reform of the laws begun by his grandfather, Roger II, leading to a remarkable collection of laws, *Liber Augustalis*. It made the Kingdom of Sicily an absolutist monarchy, but also set a precedent for the primacy of written law.

The twelfth and thirteenth centuries were times of conflict between the Italian city states and the Holy Roman Emperors, Frederick I, or “Barbarossa,” (1122–1190), his son, Henry VI, and grandson, Frederick II. Frederick I attempted to assert his rights at the second Imperial diet at Roncaglia, November 1158, by appointing imperial podestàs, “as if having imperial power in that place” and this was one of the causes of the formation of the “Lombard League” and the uprising against Frederick I in 1167.

The idea of a podestà, a man of foreign birth to act as a disinterested magistrate, had first been tried in 1151. Although the imperial podestà was rejected, local podestàs became common about 1200. These magistrates were appointed by the citizens (or by the citizens’ representatives) for a period of a year, and exercised power in foreign and domestic matters alike. Greif (2006) has argued that the podestà played an important role in the facilitation of trade by the city states in Italy.

Like his father and grandfather, Emperor Frederick II spent many years at war with the Pope, and a number of the city states, in an effort to consolidate Italy (Bordihn 2005). As the example of the podestà illustrates, the indirect consequence of the actions of these three Emperors was the creation of a political and economic context in which trade in the Mediterranean could flourish. Moreover, it does seem to be the case that a number of agricultural and institutional innovations were put in place in Sicily by Frederick, and for a few hundred years the island was a source of great wealth. These innovations in the technology of commerce, banking and agriculture then spread to the rest of Italy. Even 350 years later, in 1600, Italy had a high GDP/capita of \$1,100.<sup>51</sup>

The reason for the increasing wealth of Northern Italy was partly to do with trade with Byzantium, but also partly a result of the expansion of the Mongol Empire under Genghis Kahn, born Temujin (1162–1227). Genghis Khan conquered Yanjing (Beijing) in 1215, then the Khwarezid Empire, between the Caspian and Aral Seas, then Christian Georgia in 1221, and finally part of what is now Russia. His army, beginning the march east in 1219 numbered about 150,000, and used a new combination of military technology of armed nomadic cavalry together with Chinese siege machines (Man 2004; May 2007) See Fig. 2.4 for the extent of the Empire.

The Empire was tolerant of differing religions, including Christianity. Trade flourished, with exotic goods and manufactures flowing from China to Europe. Printing presses were used with a simple alphabet, and the use of paper for books and money spread westwards. A consistent system of law was put in place. The

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<sup>51</sup>Maddison (2007), again in 1990 dollars.

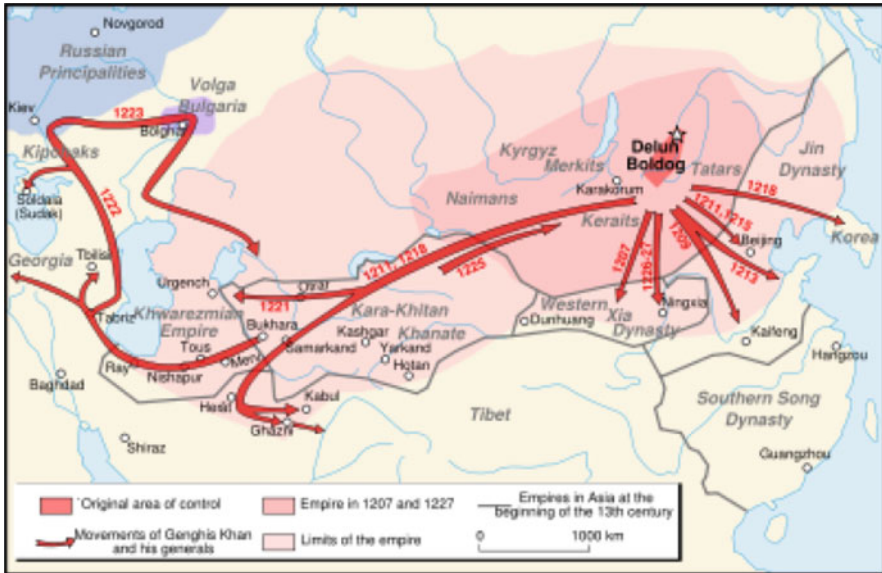


Fig. 2.4 The Mongol empire (1215–1300)

empire eventually fragmented after Genghis Kahn’s death, just as did Alexander’s empire, into the Yuan under Kubilai Khan in Cathay, the khanates of Iraq and Persia, the Moghul Empire (after Babur, descended from Tamerlane, conquered India in the early sixteenth century) and the Golden Horde of Russia (which lasted until 1480). Even so, the Mongols shattered a Polish Army in 1241 and the Hungarians in 1242. Their later invasion of Japan in 1281 was destroyed by a *kamikaze*, or *divine wind*.

Weatherford (2004) notes that

mongol administrators found both European and Chinese mathematics too simple... They adopted many useful innovations from Arabic and Indian mathematics.. and introduced the use of zero, negative numbers and algebra.

Chua (2007), in her analysis of empires past, comments that

Genghis Khan decreed religious freedom for everyone. He also embraced ethnic diversity, ... drawing into his service the most talented and useful individuals of all his conquered populations. Two generations later, his grandsons, Mongke, Hulegu and Khubilai followed the same strategy on an even larger scale.

It is reasonable to conjecture that the Mongol Empire contributed to the flow of new ideas that came from the scholars of the Muslim world, and of the many technologies from China, that began to have such an impact on Europe from this time on. Indeed, it is extraordinary that Frederick II and Ögedei Khan (1186–1241), the son of Genghis Khan, both great autocratic emperors, were fascinated by new ideas about how to rule. Frederick wrote a learned treatise on falconry, and built up Palermo as his capital. Ögedei built a new city of Karakorum in Mongolia.



Had Ögedei not died in 1241, it is probable that the “golden horde” would have conquered Vienna, and then the rest of Western Europe. The heavily armored knights of the West had proved to be no match for the military tactics of the mongol armies.

Niccolo Polo and his brother Maffeo travelled to take advantage of the relative degree of freedom of travel to journey from Venice through Bukhara to China in 1260, where they were greeted by Kubilai Khan. The Polos returned to Venice in 1269, and Marco Polo (1254–1324) then set off in 1271 on his own trip to China, returning by sea, sailing to Sumatra, round India to Hormuz, reaching Venice again in 1295. However, the growth of trade between Asia and Europe probably spread the Black Death from China to Europe in 1347–1351.

[Morris \(2010\)](#) notes that Kaifeng in northern China in the 1200s had been close to an industrial revolution, using coal to produce cast iron tools and weapons. Kaifeng fell to the Jurchen empire in 1127, which was in turn destroyed by the Mongols. The southern Song empire was then destroyed by Khubilai Khan in 1279. Disorder and the plague that followed slowed Chinese technological development. But many of the Chinese inventions, particularly gunpowder and printing, were transferred to the west, resulting in new technologies of war and information.<sup>52</sup>

It is still something of a mystery why the “West”, which far behind the “East” until about 1600, went through a scientific and cultural Renaissance ([Goldstone 2009](#)), and the East did not.<sup>53</sup>

Whatever the reason, we might date the beginning of this revolution to the birth of Nicolaus Copernicus (1473–1543) in Thorn, Poland and Leonardo da Vinci (1452–1519), from Vinci just outside Florence. The reasons proposed for this transformation are very varied. As discussed below, one theory focuses on the development of representative assemblies restraining the monarch. Another emphasizes the flow of gold and silver from the Americas and the expansion of trade between Europe and Asia that followed. Mokyr, as mentioned above, emphasizes the beginnings of Enlightenment thought in the 1600s and the eventual scientific revolution that followed after Copernicus and Newton.<sup>54</sup> [Lizzeri and Persico \(2004\)](#) and [Mokyr and Nye \(2007\)](#) focus on the “institutional” transition to democracy in the 1800s. Against these institutional accounts it is worth noting the cultural and political impact of the autocrats, Genghis and Ögedei Khan from the East and Frederick II from the West, all living at precisely that point in time when East and West became connected. From this point on, increased trade led to economic growth, but population growth meant that societies, both East and West were still bound to

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<sup>52</sup>By the 1400s the Ming Empire was able to send out seven enormous treasure fleets under Admiral Zheng He to Africa, Arabia, India and Java.

<sup>53</sup>One hypothesis has been put forward by [Kuran \(2010\)](#) who suggests the cause lies in Islamic Law.

<sup>54</sup>The concluding chapter to this volume addresses some further remarks about the scientific revolution that occurred from 1600.



the Malthusian logic.<sup>55</sup> As we have discussed in Chap. 1, it was only after about 1800 that real income started to rise, and then initially only in Great Britain.

### 2.4.1 *Monarchs and Merchants*

[Acemoglu et al. \(2005\)](#) argue that the countries that grew after 1500 or so were on the Atlantic rather than the Mediterranean litoral. However, the point made by [Pirenne \(1939\)](#) is relevant: the fall of Constantinople/Byzantium in 1453 meant that the Mediterranean became an Ottoman lake, dangerous for Christian vessels even after the defeat of the Ottoman navy, at the Battle of Lepanto in 1571. The final collapse of the Byzantine Empire stopped trade between West and East, and this provided the stimulus for the Spanish, Portuguese and English attempts to find new passages to the East.

The “discovery” of the New World by Columbus in 1492 had two indirect causes. First was the reconquest of the Iberian Peninsula, and particularly of Granada, by Ferdinand and Isabella of Christian Spain, and their desire to expand their empire.<sup>56</sup> The second was the fact that Columbus was wrong about the circumference of the globe, but had “scientific” knowledge of the North Atlantic’s great circular wind pattern. In particular, a brisk wind from the east, commonly called an “easterly”, propelled Santa María, La Niña, and La Pinta for 5 weeks from the Canaries. To return to Spain eastward against this prevailing wind would have required several months of arduous sailing needing huge stores of food and drinkable water. Columbus returned to Spain by following prevailing winds northeastward from the southern zone of the North Atlantic to the middle latitudes of the North Atlantic, where the winds curve southward towards the Iberian Peninsula. This clockwise circuit was used thereafter by Spanish and Portuguese explorers.

Within 30 years of Columbus’s voyages, all Europe had begun to be split asunder by the contest between Catholic Spain, its Protestant opponents and Islam. The conquest of the Aztec and Inca cultures by the Spanish conquistadores was due to a combination not only of their military technology and the diseases they carried, but most importantly of their military risk preference ([Wood 2000](#)). The tribute from the Americas contributed to the imperial ambitions of the Holy Roman Emperor, Charles V. Charles, King of the Netherlands, Naples and Sicily, had become King of Spain, known as Carlos I, in 1516, and then Holy Roman Emperor in 1519.

Martin Luther (1483–1546) had obtained his Doctorate in Theology from Wittenberg, Germany, in 1512. His *95 Theses on Indulgences* of 1517, essentially

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<sup>55</sup>See [Goldstone \(2009\)](#), [Ferguson \(2011\)](#) and the historical and economic analysis in [Allen \(2001, 2005, 2011\)](#).

<sup>56</sup>See [Wheatcroft \(2003\)](#) for example. An indirect consequence of the reconquest of Spain was the diaspora of Jewish people to cities in Northern Europe, including Amsterdam, contributing to the development of ideas such as those of Spinoza two hundred years later.

denounced the Pope, and Luther in turn was denounced by *The Edict of Worms* issued on May 25, 1521 by Charles V.

While Francis I of France and the Pope, Clement II, battled against Charles V for control of northern Italy, the forces of Hungary and Bohemia, led by King Louis II, were defeated by the Ottoman, Suleyman the Magnificent, in 1526 at Mohács in Hungary. Three years later, an Austrian army under arch duke Ferdinand, Charles's brother, was able to repulse Suleyman's seige of Vienna (Reston 2009). Charles V was officially crowned Emperor in Italy in 1530.

The catholic rulers had originally attempted to enlist Henry VIII of England in the contest with the Ottoman Empire. For personal reasons to do with the annulment of his marriage, Henry VIII of England chose to go against Catholic Europe, and forced through Parliament an *Act of Supremacy* in 1534, declaring that the King was "the only Supreme Head in Earth of the Church of England."<sup>57</sup> The *Treasons Act* of the same year made it high treason, punishable by death, to refuse to acknowledge the King as such. In response to his excommunication by the Pope, the *Peter's Pence Act* was passed and it reiterated that England had "no superior under God, but only your Grace, Henry."

After Henry's death in 1547, and the short reign of Henry's son, Edward, his daughter, Mary, became Queen in 1553. Almost 300 religious dissenters were burned at the stake in the Marian Persecutions.

On the abdication of Charles V in 1556, he left his son, Philip II, with a debt of 36 million ducats and an annual deficit of one million ducats. In 1554, Philip had become King of Naples, as well as King Consort of England on his marriage to Mary. Elizabeth, Mary's half sister, became Queen of England after Mary's death in 1558. Elizabeth well understood that England could not resist the naval might of Spain, and she managed to keep some sort of peace with Philip for 30 years, politely refusing his various offers of marriage.

Philip meanwhile occupied himself with rebellion in the Netherlands, and with the creation of the Catholic League against the Ottoman empire, leading to the Battle of Lepanto in 1571. In 1585, Philip made peace with the Ottomans, and turned his attention to England, angered by the execution of the Catholic, Mary Queen of Scots by Elizabeth, for treason. The Spanish Armada of 1588 comprised 108 armed merchant vessels and 22 galleons, against a defending force of 34 English warships and 163 armed vessels, with 30 Dutch flyboats. The storm that destroyed the Armada left perhaps 20,000 Spanish soldiers and sailors dead. For the religious people of England, this was an act of God.

Kennedy (1987) used the example of Spain under Charles V and Philip II as an illustration of the propensity of states to overstretch, to engage in expensive wars in order to extend their domains. As Chap. 1 has argued, it is not so much military aggression by the state as autocrat risk preference that leads to war. Certainly,

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<sup>57</sup>Although Henry had defended the Pope against Lutheran heresy in 1521, for which he earned the title "Defender of the Faith," between 1536 and 1541 he continued his conflict against the established Catholic Church with the dissolution of the monasteries.

Elizabeth was no war preferring monarch, but rather an extremely subtle and risk averse ruler. There is no doubt that Philip's war proclivity led to inflation (a fivefold increase in prices in Spain) and this was transmitted throughout Europe (Parker 1998). This inflation may have been caused partially by the flow of tribute from the Americas, but government spending and the importation of manufactured goods by a privileged elite contributed to the fiscal imbalance. Spain's income, from taxes in Castile and the Netherlands, was insufficient to cover Philip's wars.

Philip became increasingly dependent on loans from foreign bankers, particularly in Genoa and Augsburg. By the end of his reign, interest payments on these loans alone accounted for 40% of state revenue. Even though Spain was able to maintain its empire in the Americas and in Asia until the nineteenth century,<sup>58</sup> it no longer played as important a role as Britain or the Netherlands.

The argument by Acemoglu et al. (2005) about growth on the Atlantic littoral depended on the creation of a merchant class able to take advantage of transatlantic trade. While there was certainly trade between Spain and its American colonies, this seems not to have engendered a growth-enhancing merchant class. It seems quite obvious that the risk preference of Spain's rulers, and their propensity for debt, hindered the growth of a merchant class.

Stasavage (2010a,b) makes the general point that in geographically extended polities, such as Spain, the merchant class in the early modern period found it more difficult to form legislative assemblies able to constrain the autocratic monarch. Thus early success in creating a large state created the situation where the monarch retained autocratic power, and could engage in risky, military adventures. Legislative assemblies were easier to form in small city states, and so their leaders might more easily be retrained from incurring debt. This provides an interesting insight into the conflicts between Italian city states and the Holy Roman Emperors from the twelfth century to the sixteenth centuries.<sup>59</sup> A similar hypothesis about the restraints on the merchant class may be valid for the Ottoman and Austrian–Hungarian Empires.<sup>60</sup>

A lesson to be drawn from Philip II must have been obvious to any Englishman: a risk loving autocrat, particularly one who believes that God is on his side, is likely to engage in war, and this has the potential to bring about disaster. The religious ferment of the next hundred years, at least until the Peace of Westphalia (1648), provided ample opportunities for risk loving military and royal autocrats to cause

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<sup>58</sup>Spain conquered the Phippines in 1521 and lost it to the United States in August 1898.

<sup>59</sup>The most glorious city state of all, the Republic of Venice, finally fell to Napoleon in 1797 (Morris 1990).

<sup>60</sup>Schofield (2006a) has suggested that the collapse of the Soviet empire in 1989/90 may also have been fundamentally due to its leaders' military risk-taking in Afghanistan, and the escalating, but hidden, levels of debt. Soviet expenditure in 1988 was about 12.7% of GDP and 47% of government expenditure. For the Russian Federation it was only about 3.5% of GDP in 2008, but has been increasing. In July 2010, Russia began selling state assets to cover these increasing costs.

chaos and for the people to rise up in rebellion.<sup>61</sup> Disorder in Continental Europe continued until 1815, with the final defeat of Napoleon. England (or Britain) was to some extent shielded from this chaos by the English Channel, and by the growing power of its navy. The transformations that we have discussed in Britain would seem to stem from a number of deeply held beliefs: that the power of autocrats must be controlled because of the chaos they create; that a merchant class, engaged in trade, is best able to create wealth; that trade depends on the maintenance of freedom of the seas, and this requires a formidable navy; that debt, though necessary to defend the country, must be constrained by the political institutions; that though there are innate conflicts between land, capital and labor, compromises between these various interests are always possible; and finally, since religious conflict engenders war, some degree of religious tolerance is necessary.<sup>62</sup>

## 2.5 Concluding Remarks

The narrative presented in this chapter suggests that the dynamic economic transformations that have caused the great bifurcation between the rich countries (Britain, the United States etc.) and the poor were due to political changes with respect to civil rights as well as property rights. Britain's transition to an open access, more democratic society appears to have been the consequence of a series of somewhat contingent choices, based on a strategic decisions by political leaders, such as Walpole, Peel, Wellington and then Disraeli. We have described a similar sequence of contingent choices in the United States.

The Keynesian or Atlantic compact of 1945 was an important step in creating an international order that made it possible for the West European polities to become mature, open access societies after the disaster of World War II. The collapse of the Soviet Union in the 1990s has created a new round of democratization among polities in many parts of the world.

However, it is unclear whether this process will continue, with the transition of polities such as Russia to full democracy. A recent literature on democratization by many scholars has looked for relationships between economic transformation and democracy. While there are reasons to believe that electoral preferences secure sensible economic choices in mature democracies,<sup>63</sup> some of the conclusions from

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<sup>61</sup>It is also possible that climate change had a negative impact on political stability in the period 1600–1715. See Chap. 4 for further discussion of the impact of climate.

<sup>62</sup>Elliot (2006) provides an excellent account of the differences between the British and Spanish empires, one called an “empire of commerce” and the other an “empire of conquest,” in the long period from 1492 to 1830.

<sup>63</sup>Besley (2006). Even so, this argument depends on a better understanding of democratic elections than is currently available.

this literature about the relationship between the polity and the economy in less developed societies are quite pessimistic.

It is plausible that, in poorer countries, political leaders will tend to be extremely risk preferring.<sup>64</sup> Even if democratic elections occur, the risk attitude of autocratic leaders will lead to violence that cannot be contained, and chaos will be generic. Indeed, [Collier \(2009\)](#) finds empirically that democracy and violence are causally linked in poor countries.

The recent Keynesian disorder has brought considerable stress, even to developed polities, such as Iceland, and there is cause to fear the consequences in newer democracies like Poland. The government in the Czech Republic fell on March 24, 2009, as a direct consequence of the economic crisis. For poorer countries, the World Bank reports a rapid increase in hunger, and this will further exacerbate Malthusian chaos. As suggested above, it is very likely that climate change will have severe consequences for agricultural productivity in the longer run, particularly in Africa, thus further increasing the possibility of civil war, and inducing even more violence and autocracy.<sup>65</sup>

In those countries that successfully crossed the Malthusian boundary in the past, the risk preference of leaders was constitutionally constrained by a more risk averse capital elite (who had gained some degree of power in the political institutions). Other countries, such as Germany in 1914, and Japan in the 1930s, were unable to politically control the military elite by a commercial collegium, and found themselves in pursuit of military empires. The quandary for the developed democracies in the twentieth century was that their populations could not be expected to have a taste for war. However, we may conjecture that, in the mature democracies of Britain and the United States, the economic returns of the extended franchise meant that their populations were in fact willing to fight for their freedom.<sup>66</sup>

The fear generated in the United States after 2001 led to a short lived autocracy that engaged in extreme risk-preferring strategies to create a military hegemony. It is plausible that there is a connection between this risk preferring military strategy and the commercial risk preference that led to the recent collapse of the economic bubble. The collapse, in turn, created the conditions for a rejection of the Republican administration by the electorate of the United States in November 2008.<sup>67</sup> None the less, the risk of international disorder is extreme, fed by economic uncertainty and global inequality.<sup>68</sup> While it is to be hoped that Obama will be successful in creating

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<sup>64</sup>One only has to consider Mugabe in Zimbabwe. The same may be true of middle income countries, as suggested by Putin in Russia.

<sup>65</sup>Miguel, Satyanath and Sergenti (2004).

<sup>66</sup>This response seems to have been conditional on the ability of political leaders like Churchill and Roosevelt to articulate the danger presented by war loving autocrats.

<sup>67</sup>See Chap. 5 for an analysis of this election.

<sup>68</sup>The recent IMF report predicted a drop of about 4% in the GDP of the advanced economies for 2009. In 2010 there is little sign yet of a rebound. This drop will surely have serious consequences for poorer countries. Chapter 4 discusses some aspects of the current recession.

new domestic and global compacts that will mitigate this disorder, the short term prospects are daunting.

Indeed, the resolution of these complex quandaries appears to be at least as difficult as the those that faced earlier societies, as discussed in this chapter. However, a start has been made, as indicated by the agreement, in April 2009, of the G-20 group of Industrial countries, under pressure from Obama, to make \$850 billion available through international financial institutions like the IMF and World Bank.

One purpose of this discussion has been to attempt to understand how societies of the past, such as the Roman or British Empires, managed, at least temporarily, to construct constitutional or institutional rules that kept the logic of economic, or factor power, compatible with that of political power.

This chapter has deployed a number of abstract ideas from social choice theory and the theory of dynamical systems. It has also emphasized the role of the factors of land, capital and labor (or human capital), so as to complement the institutional perspective on social order presented in North et al. (2009).

Our current understanding of economic growth is that it is largely determined by the generation of ideas, so that skill based human capital is the fundamental cause of growth, if the institutions are right. Conversely, poor institutions will hinder growth. Even in developed countries, the wage premium on skill has been maintained, and has grown. Naturally this causes an increase in economic inequality and in the degree of polarization in the polity. Many of the chapters that follow will focus on the generation of ideas in the past, and on how the quandaries that are being created affect political institutions.

# Chapter 3

## Social Choice

### 3.1 Introduction

A major theme in the pronouncements of the Reagan administration in the United States and of the Thatcher government in Britain during the 1980s was that Keynesian economic theory provided an excuse for the previous governments of these countries to intervene in their own economies in a way which lead eventually to high unemployment and inflation. One version of this argument, due to [Buchanan and Wagner \(1977\)](#), asserts that, once a government implements Keynesian deficit spending strategies, it becomes susceptible to various special interests in the economy. In an attempt to remain in office, the government adopts policies which result in an increase in the money supply and thus in the rate of inflation. A related argument, presented in the literature on the so-called “political business cycle,” suggests that governments will seek to bring about those combinations of inflation and unemployment which are “politically optimal” in terms of electoral response at the time of an election, in an effort to assure re-election. These politically optimal combinations will not coincide with economically optimal combinations, but instead will generate, in the long term, increasing rates of inflation and levels of unemployment.

Keynesian economics was based on the assumption that inconsistent expectations of producers and consumers are persistent features of free market economies. The privileged role of benevolent dictator was given to government, so that its spending strategies might off-set the inconsistency of expectations, encourage investment, and increase output and employment. The new conventional wisdom of the 1980s rejected Keynesian economic theory and returned to pre-Keynesian assumptions. In its simplest form, the neoclassical theory asserts that free markets will tend to be in a state of Pareto optimal equilibrium, as long as government restricts itself to a minimalist strategy. Such a strategy includes increasing the money supply at a constant and declared rate, equal to the long term expected rate of economic growth, reducing the government budget deficit to zero, and if possible bringing about a drop in the government share of GNP. This “disentanglement” of government from the

**Table 3.1** Twelve developed polities July 2010\*

Country (Gov <sup>g</sup> )	G <sup>a</sup>	B <sup>b</sup>	E <sup>c</sup>	U <sup>d</sup>	C <sup>e</sup>	T <sup>f</sup>
<i>Corporatist</i>						
Sweden (67)	31.0	-2.1	1.8	9.1	+6.6	+10.9
Denmark (62)	32.0	-5.8	1.2	4.2	+2.6	+12.3
Austria (52)	34.0	-5.0	1.1	4.9	+1.6	-4.8
France (53)	30.2	-8.4	1.5	10.1	-2.1	-60.2
Average (59)	-	-5.3	1.4	7.0	-	-
<i>Mixed</i>						
Belgium (56)	32.9	-6.0	1.3	11.6	-0.1	+19.3
Italy (54)	28.0	-5.3	0.7	8.3	-2.6	-9.6
Germany (49)	30.7	-5.6	1.6	7.8	+5.3	+207.2
Netherlands (54)	35.1	-6.2	1.2	5.8	+5.5	+51.3
Average (53)	-	-5.8	1.2	8.4	-	-
<i>Liberal/Plurality</i>						
UK (43)	32.8	-12.8	1.3	8.0	-1.0	-131.6
Canada (48)	34.0	-4.3	3.1	8.1	-1.8	-2.8
US (34)	41.8	-11.0	3.1	9.9	-3.3	-546.4
Japan (34)	30.8	-7.9	2.1	5.0	+3.2	+71.9
Average (40)	-	-9.0	2.1	7.75	-	-
Overall (51)	-	-6.7	1.6	7.7	-	-

<sup>a</sup> G = GDP/capita in thousand US dollars

<sup>b</sup> B = Budget balance deficit (-) or surplus (+) as a percent of GDP

<sup>c</sup> E = Estimated change in GDP, over previous year

<sup>d</sup> U = Unemployment, average percent, over previous year

<sup>e</sup> C = Current account as a percent of GDP

<sup>f</sup> T = Trade balance (merchandise) in \$billion

<sup>g</sup> Gov = Government spending as a percentage of GDP

\*Source: OECD: <http://www.oecd.org/linklist>

economy would reduce the politically induced inefficiencies in the economy and bring about higher rates of economic growth. As agents and coalitions realize that they cannot expect assistance from government on terms which are economically irrational and politically motivated, they will increasingly accept their “legitimate” returns, from the free market. According to Usher (1981) this should reduce the level of distributional conflict in the political economy.

Garrett (1998) has compared the “corporatist democracies” with the polities based on plurality, in order to see which of them proved adept at maintaining economic growth in the so-called “global world economy” since 1980. Table 3.1 uses Garrett’s typology of three different categories of countries for 2010 to present macro-economic data on twelve developed polities.

The four corporatist polities tend to have quite powerful social democrat parties that have been in office at least at some time during the 1980s. (Garrett also includes Finland and Norway in this first category, but places France in a mixed category.) In the four liberal/plurality polities, the left was out of power in the 1980s. While it



is not evident that the twelve countries can be so readily classified, nonetheless Table 3.1 is suggestive. There does seem to be a tendency for governments of corporatist democracies to absorb a greater share of GDP. Unemployment in the 1980s in the Scandinavian democracies tended to be lower than in the OECD as a whole, while growth was somewhat lower and inflation somewhat higher than in the United States. Table 3.1 shows that the two Scandinavian countries, as well as Germany and the Netherlands, have current account and trade surpluses. Indeed, in August 2010, it was announced that Germany's economy grew 2.2% in second quarter of the year. The United States and the United Kingdom both have very substantial trade and budget deficits, as well as high unemployment rates of 9.9 and 8.0% respectively.

The boom years up to 2007, were associated with a new wave of technological innovations: container ships, satellite communications, computers and the internet. As Reich (2010a,b) points out, these changes contributed to an increase in productivity, but contrary to economic theory, these productivity increases had little impact on the median male wage.<sup>1</sup> Just as we have noted in Chap. 1 for Britain at the beginning of the Industrial Revolution, inequality in the US has increased over the last 30 or 40 years.<sup>2</sup> King (2010) observes that the Gini coefficient of income in the US increased from 0.397 in 1967 to 0.463 in 2007, due to the higher proportion of income going to the highest quintile. Higher inequality because of a shift to an industrial society (as in Britain in the nineteenth century, or China at present) is consistent with the work of Kuznets (1965). Presumably the same holds true in the shift from a manufacturing economy to an advanced service economy.

To cope with these changes, more women joined the labor force, and men and women worked longer hours, they borrowed more from the increasing value of their homes, while they saved less.<sup>3</sup> The crisis in confidence associated with the collapse of the housing bubble and the recession, starting in late 2007 has induced fear of the future, and brought the savings rate back up to over 6% in the US, as of June 2010.<sup>4</sup>

It is probable that technological changes have induced a change in the balance of comparative advantage between the developed economies of the "North" and the developing or less-developed economies of the "South," resulting in the fairly high unemployment rates in the OECD countries in general, and the increase in inequality in the more market oriented polities of the UK and US. The old-established political balance between efficiency and equity has been disturbed in all developed polities.

The contraction in economies from the peak in late 2007 to the trough in mid 2009 was a world wide phenomenon. The worst hit were the counties in the

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<sup>1</sup>Reich comments that the median male wage is less, when adjusted for inflation, than 30 years ago.

<sup>2</sup>Forty years ago the richest 1% gained 9% of total income in the US. In 2007 they gained over 23%.

<sup>3</sup>The savings rate for the US had been about 9% of disposable income over the long run from say 1965 to 1985, but dropped to -0.4% before the crisis.

<sup>4</sup>In September 2010, the Federal Reserve estimated that total household liabilities had dropped about \$200 billion to \$13.9 trillion while credit card debt had dropped \$83 billion to \$830 billion, both in a year.

former Soviet bloc. From peak to trough some of these economies fell over 25%.<sup>5</sup> Ireland and Iceland fell 14 and 16%, respectively, while even the Asian tigers like Taiwan (−10%) and Singapore (−9%) contracted. The resulting difficulties have been exacerbated in Europe by the adoption of the euro. As a consequence, unemployment rates in the European periphery are currently very high (19% in Spain, and 16% in Greece). These two countries had high budget deficits of 11.5 and 9.4% of GDP, respectively. Greece was the recipient of a rescue package of about 110 billion euro. With total external debt about 170% of GDP debt of the order of 160% of GDP, Greece was forced in late June 2011 to seek another bailout of order 120 billion euro. The austerity plans of the Greek government have been opposed by protests, raising the possibility of a default. Possibly the worst hit country was Ireland. The *Economist*, on November 18, 2010, estimated the Irish budget deficit to be 15% of GDP for 2009, rising to 32% for 2010. Total debt had increased from 65% of GDP for 2009, to an estimated 98% for 2010, while unemployment had risen to 14%. In December 2010, the Irish government obtained a loan of about \$93 billion from the IMF, the European Commission and the European Central Bank. Brian Cowen, the prime minister of Ireland, had said on Monday, November 22, that he would dissolve his government and hold an election once a new national budget was enacted. Cowen's coalition government, with a narrow majority in the Dail, the Irish parliament, was threatened by the reluctance of independent and Green Party members to back an austerity budget. Eventually, on December 7, the 2011 budget, involving spending cuts and tax increases of 6 billion euros was passed by a vote of 82 to 77. Cowen first resisted demands to resign, and attempted to reorganize the cabinet, but the Greens refused to agree. On January 22, 2011, Cowen was forced to resign as leader of his party, Fianna Fail, and Parliament was dissolved on February 1, and an election held on February 26. From 78 seats in 2007, Fianna Fail only took 25, and Enda Kenny of the opposition party, Fine Gael, became Taoiseach (Prime Minister) of Ireland on 9 March.

By January 2011, it was clear that Portugal was also in a bad way. Even with its cost cutting efforts, the budget deficit was about 7%, with total government debt about 118% of GDP. It seemed likely that it would need to obtain an aid package of 40–80 billion euro. Prime Minister Jose Socrates, of the Socialist Party, resigned on March 23, and his caretaker government obtained a bailout of \$116 billion on May 3, 2011. In the election of June 5, the center right Social Democrats, under Pedro Passos Coelho, took 39% of the vote to 28% for the Socialists and 12% for the Popular Party. Coelho will lead a coalition with the Popular Party, and promised austerity measures to deal with the crisis.

Belgium had an election in June 2010, Yves Leterme has led a caretaker government, since then, but Bart de Wever, leader of the opposition New Flemish Alliance has been unable to form a coalition. With a debt load of nearly 100% of GDP, it began to experience difficulty in financing its debt and was also looking for assistance of the order of 50 billion euros. Spain was also lining up for a package,

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<sup>5</sup>Latvia −26%, Ukraine −20.4%, Estonia −20.3%, Russia −10.9%.

estimated at 400 to 500 billion euros. Even Italy, with a debt load of 118% of GDP could require up to 1 trillion euros. Germany refused to increase the 750 billion euro (\$1 trillion) financial fund set up to help euro members that run out of money, and was joined with France in refusing to set up a system of euro zone bonds.

In 2008, Iceland had become bankrupt, but had negotiated a bail-out, and because its currency, the krona, was not tied to the euro, it was able to escape some of the severe consequences that the EU economies experienced in 2010. Iceland had let its banks fail, but made \$2 billion of taxpayers money available to new banks. The bank debt owed to British and Dutch depositors was \$5.8 billion, about 46% of Iceland's GDP. Government debt is about 100% of GDP, and Iceland is being sued by Britain and the Netherlands in EFTA.

From peak to trough the EU economies dropped about 7%. Iceland had let its banks fail, but made \$2 billion of taxpayers money available to new banks. The bank debt owed to British and Dutch depositors was \$5.8 billion, about 46% of Iceland's GDP. Government debt is about 100% of GDP, and Iceland is being sued by Britain and the Netherlands in EFTA.<sup>6</sup> Greece for example lost 6.6%, and even in the second quarter of 2010 Greece experienced a 1.5% contraction in its economy. Germany also lost 6.6% but by mid 2010 had begun to grow again, and its budget deficit was only about 5.6% of GDP. As a result the overall economy of the euro area was able to manage a 1% growth in 2010.

Britain lost 6.6% and has not yet recovered, while the US lost about 4%. As Table 3.1 suggests, the US budget deficit for fiscal year 2010 is about \$1.5 trillion (about 11% of GDP), bringing its total debt to \$17 trillion (about 120% of GDP).<sup>7</sup> The equivalent figures for the United Kingdom are a deficit of £140 billion (about \$240 billion) and a total debt of £927 billion (or 68% of GDP). These partial recoveries have done little to reduce unemployment and budget deficits, and all these countries face severe political difficulties as a result. It is very likely that other coalition governments in Europe will fall, the result of the economic restrictions imposed by the euro together with the political effects of a proportional electoral system.

Shapiro (2008) argues that the continuing expansion of outsourcing of skilled services through globalization will increase and lead to continuing increases in unemployment in the developed countries. This may be ameliorated as the population ages, but then a smaller working population has to provide for a growing population of retirees, leading to increasing budget deficits. As we note in Chap. 6, the government of the United Kingdom announced in October 2010 that its budget deficit had forced it to cut child allowances and financial support for Universities. These difficulties may prove more difficult for the economies of the European Union in the long run than for the United States.<sup>8</sup> Many commentators fear that Europe will

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<sup>6</sup>Sweden -7.5%, Denmark -7.3%, Italy -6.8%.

<sup>7</sup>Total US debt had increased from about \$12.9 trillion (90% of GDP) in 2008.

<sup>8</sup>One reason may be that the United States has a very diversified trade regime with many countries. Indeed, Leontief observed the paradox that the US, the country with the world's highest

fall into the deflationary trap that has perplexed Japanese political leaders since the 1990s: a flat GDP of \$5.7 trillion and growing government debt that is now nearly 200% of GDP.<sup>9</sup>

The adoption of a theory which assumes free market optimality makes it very difficult for government to focus on ways in which to ameliorate the effects of these transformations in the “global economy.” In Britain in particular, older-established industries, such as shipbuilding, automobiles, textiles, steel, etc. contracted rapidly, and this raised fears of de-industrialization (Blackaby 1979). Similar fears in the United States have raised the possibility of increased trade protection and limits on immigration.<sup>10</sup> Just as in the 1930s, there is the beginning of competitive currency devaluation by countries as they attempt to maintain exports and limit the increase of unemployment.

The questions we wish to raise here may be listed as follows.

- (1) Is there any evidence that western governments have, in the past, intervened in the macro-economy for purely electoral reasons, in ways which, in the long run, may be deemed economically irrational?

This is different from asking whether particular macro-economic decisions can be seen, with hindsight, to be economically irrational. It asks whether the logic of the “political marketplace” is such as to produce economically suboptimal consequences. The literature that dealt with the question was based on a simple economic theory that supposed that inflation and unemployment could be traded off against one another in a fairly obvious fashion. This is clearly false; macro-economic intervention always produces unintended, and frequently surprising consequences. Even if governments wished to achieve “socially optimal” unemployment-inflation combinations, they would be unable to do so. Secondly, the analysis supposed that, in terms of electoral response, there were favorable unemployment-inflation combinations. This is equivalent to the assumption that the vote response can essentially be regarded as a social welfare function, and that “socially optimal” government behavior is the optimization of this social welfare function within the feasible macro-economic possibilities.

The model presented in Chaps. 5 and 6 suggests that although voters respond to economic choices by government, the policy responses by government include non-economic features, particularly the influence that activists exert. This implies that the vote maximizing functions of political agents incorporate many different

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capital/labor ratio has a lower capital/labor ratio in exports than in imports. See also [Helpman and Krugman \(1989\)](#).

<sup>9</sup>The European levels of total public debt/GDP are not as high as Japan (225%), but are larger than has been typical: Italy 115%, Greece 130%, Iceland 124%, Germany 77%, Ireland 94%, Spain 60%, Sweden 43%. Total external debt (both public and private) is generally higher: about 100% of GDP for the US, maybe 400% for the UK, 180% for France, 154% for Spain, 174% for Greece, and 217% for Portugal. It is external debt that has generated the euro crisis.

<sup>10</sup>See [Galiani et al. \(2010\)](#) for a political model of activist group responses to such changes in comparative advantage.

components. Electoral response to government behavior is also affected by transitory political events (as the current situation in Iraq illustrates).

- (2) Is there any evidence that political logic forces governments to accede to special interest groups, to the extent that they over-regulate, over-bureaucratize, over-provide public goods and welfare, etc.?

The general mode of argument of the literature that addresses this question is essentially that the political and economic cost benefit analyses are quite different and that the political calculus leads to an underestimation of the true economic costs of, for example, a public goods project. The difficulty with this kind of argument is that in order to allege overprovision it is necessary to give an indication of the “optimal” level of provision and a method for attaining it. For example, is there a procedure by which public goods could be created and distributed within a free market context and without the intervention of government, in such a way that the outcome is Pareto superior to the outcome when government intervenes? While a number of authors (Nozick 1974) have argued that public goods can be provided by protective associations, these arguments simply replace the Hobbesian world of every man against his neighbor with one of every coalition (or neighborhood) against every other. In any case, all such arguments depend in one way or another on an equilibrium optimality result. The arguments made by policy makers during the Reagan and Thatcher governments were that instead of intervening in the political economy it was much better to leave the operation of the economy to market forces. But the global market crashes that have occurred since then have left us in the current predicament. This leads us to the next question.

- (3) Is it reasonable to suppose that a free market economy will generally be in a state of Pareto optimal equilibrium?

At the heart of economic theory is the general equilibrium result, that the consequences of rational self-seeking behavior by agents is a Pareto optimal outcome. If this theory had any relevance at all for economic affairs, then one would expect market adaptation to the presence of unemployment not only to eliminate involuntary unemployment but to do it in such a way that the welfare of every individual increases. There is no strong empirical evidence that this is occurring, and it is worth asking whether there is a major flaw in the theory. The assumptions of the theory are of course very restrictive. The preferences of individuals are supposed to be defined on private goods—whether consumption bundles or production outputs. Secondly, complete Arrow and Debreu (1954) markets are assumed to exist in all commodities, so as to eliminate, or rationalize, all future risk. Finally, and most importantly, economic agents are assumed to treat prices parametrically, in the sense that agents treat prices as fixed and optimize on the fixed budget or production sets. This is a reasonable assumption when all agents are “small” relative to the economy. That is, if any agent is removed, then the others may move to a new equilibrium which they prefer at least as much as the original. If this strong “no-surplus” condition fails, for even one agent, then that agent may manipulate the economy to bring about outcomes that the agent prefers (Ostroy 1980). What this

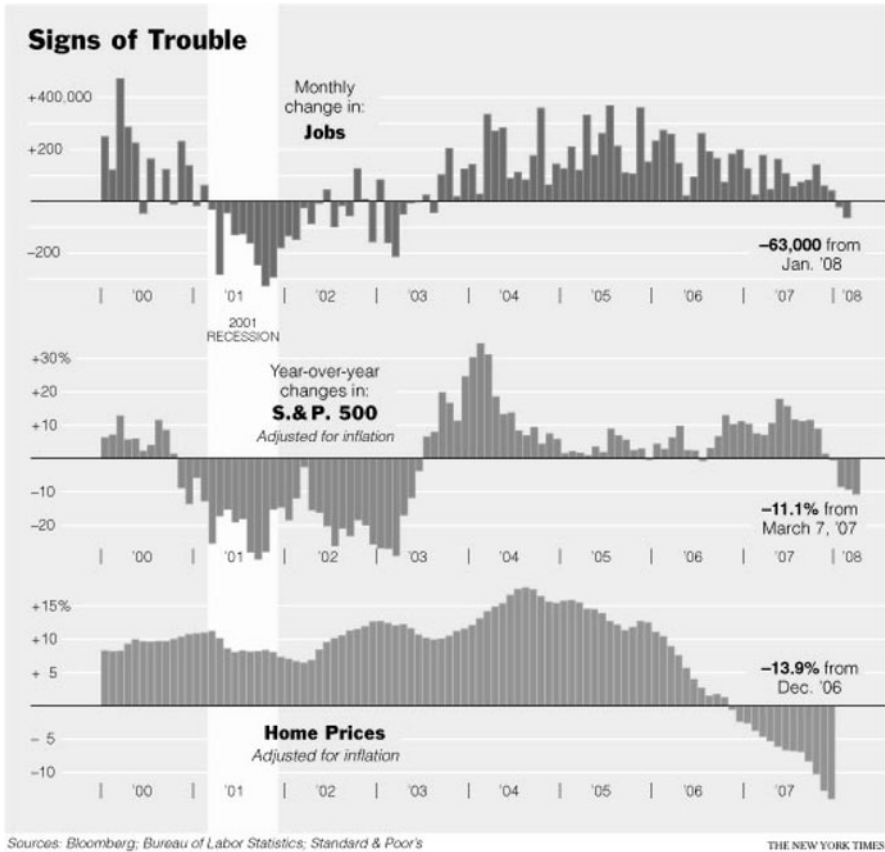
means is that the manipulator attempts to compute the effects its own behavior has on the eventual equilibrium outcome and then behaves in such a way as to produce a different outcome which it prefers. This notion of manipulation developed out of social choice theory and is proving to be of interest to general equilibrium theorists. It seems reasonable to believe that there will be at least one manipulator in any economy, in which case there is no reason to suppose that even a perfect market in private goods will achieve Pareto-optimality. [Hahn \(1980\)](#) has called this feature “the canker at the heart of the theory.”

At the same time the notion of manipulation may prove of considerable value in economic theory. It provides a theoretical mode of access to the analysis of monopoly or oligopoly behavior – such as transfer pricing and the construction of entry barriers. Using this theoretical notion, one may analyze national strategies of manipulation, including the erection of tariffs, and domestic redistribution of income to pick up the increasing returns to scale or the benefits of trade of a national economy.

- (4) In which aspects of the economy might one reasonably argue that government intervention is necessary for the attainment of long term optimal performance?

[Schofield \(2006a\)](#) suggests that the fundamental argument in [Keynes \(1936\)](#) was that markets in commodities, especially traded goods, may very well be governed by equilibrium theory, by the law of supply and demand. What concerned Keynes, however, was the degree to which instability or speculative bubbles in asset markets (by which he meant markets in stocks, currencies and houses, etc.) could undermine the stability of commodities markets. Given the events that had occurred in Keynes’ lifetime, his preoccupation was with effects of this kind not only in the labor market (where the result is persistent unemployment), but also in the international polity (leading to competitive devaluations).

Keynes accepted this weak version of the equilibrium hypothesis (only for commodities markets), because he saw a terrible danger to the Atlantic democracies. In a world of speculative disorder, the returns to capitalists and the wages of labor would have no legitimate basis. To escape this chaos, the citizens of a nation could rationally choose to give up their freedom to the agents of the state. Bound by such a Hobbesian contract to an autocrat, the citizens could at least hope for some certainty in their lives. Keynes was keenly aware that authoritarian state systems could solve the problem of unemployment, by paying the price of efficiency while necessarily depriving their citizens of their freedom. It seemed all too probable in the 1930s that citizens would be willing to pay the double price of inefficiency and loss of freedom to avoid the great and apparent risks of unemployment. We can also speculate that the disorder exhibited by the Russian political economy in the 1990s led the way to the electorate’s willingness to accept Putin’s concentration of political power in the early part of the twenty-first century. Keynes’ fears of market disorder seem quite justified in view of the currency crash of the late 1990s, the “dot-com” crash of 2000 and the problems in the “sub-prime” mortgage market in the United States in 2007 and early 2008.



**Fig. 3.1** Bubbles (*New York Times*, 8 March 2008)

In December 2007, Central Banks were desperately making capital available for fear of a liquidity crunch. Figure 3.1 illustrates the extent of the drop in house prices and in the stock market in 2008 while Fig. 3.2 contrasts the loss in confidence in January 2008 with other crashes in the period from 1973 on. On January 21, 2008, the DAX index in Germany closed down 7.16% while the CAC 40 in France lost 6.83% and the London stock market index, the FTSE 100, lost 5.48%. The Federal Bank cut its key interest rate to 2.25% in March, and then to 2% on April 30, 2008, in the face of the possibility of stagflation (see Fig. 3.3). Figure 3.4 shows the fall in the Dow from the peak in late 2007 to the bottom in early 2009. In March, the investment bank, Bear Stearns, faced bankruptcy and was bought by JP Morgan for next to nothing, while Lehman Brothers did file for bankruptcy on September 15, 2008. A week before, the Federal Housing Finance Agency (FHFA) placed the Federal National Mortgage Association (nicknamed Fannie Mae) and the Federal Home Mortgage Corporation (nicknamed Freddie Mac) under the conservatorship



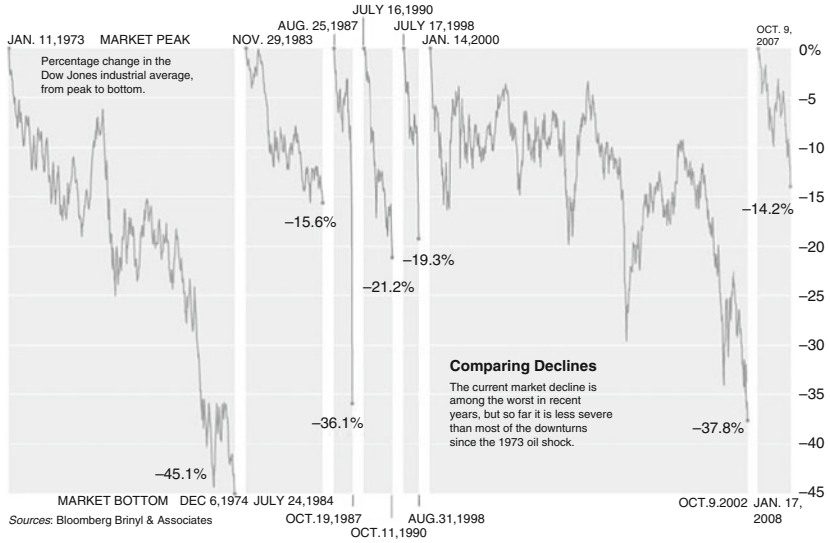


Fig. 3.2 Market crashes (*New York Times*, 18 January 2008)

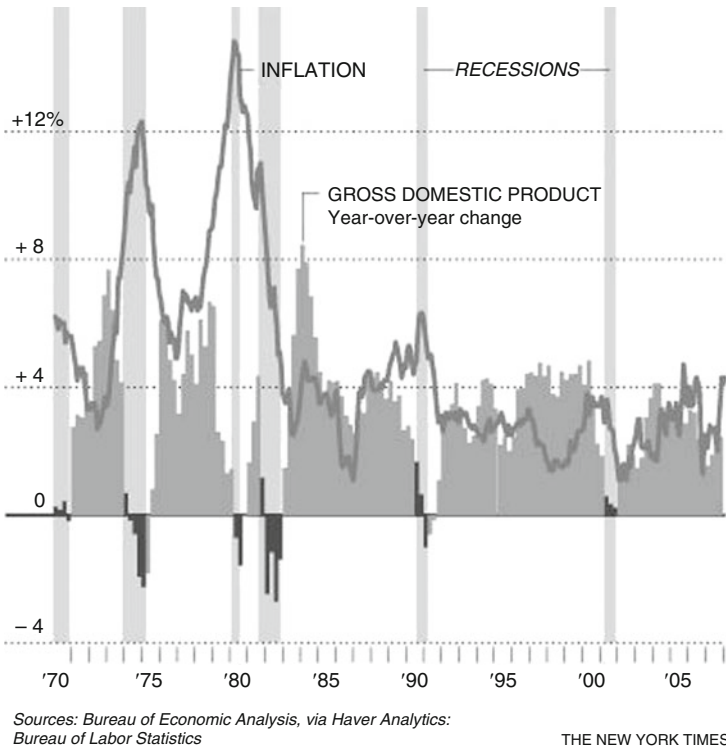
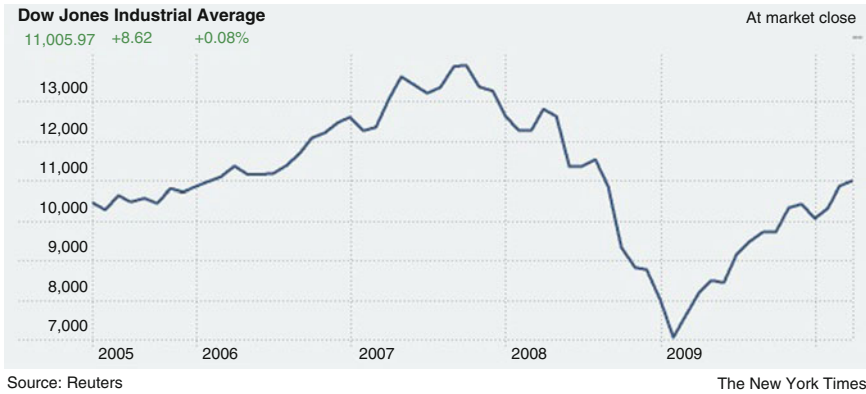


Fig. 3.3 The possibility of stagflation (*New York Times*, 21 February 2008)





**Fig. 3.4** The Dow from 2005 to 2010

of the FHFA.<sup>11</sup> The collapse of the companies, followed by that of the Lehman Brothers are often seen as starting the panic.<sup>12</sup> Eventually the Dow rebounded in 2010, but Fig. 3.5 shows the singularity in the Dow that occurred on May 6, 2010. Rising oil prices (illustrated in Fig. 3.6) seemed to suggest in 2008 that the 1970s had returned. See Phillips (2006, 2008) for comments on the causes of the interlinked problems of oil and debt.

From this Keynesian perspective, the fundamental purpose of government is to ameliorate the chaos of the marketplace, and to promote the human and economic opportunities available to citizens by curbing the degree of risk that they must face. This suggests that government does have a significant interventionist role to play. We concentrate on two related aspects of such intervention.

The most important characteristic of a developed economy is the level (and rate of change) of productivity. This depends, we would argue, on two structural features of the economy – the social organization and quality of labor and the level of technological innovation and utilization. Both features have fundamental public goods aspects. One important aspect of labor is the level of problem solving capacity that is exhibited – the ability to respond in subtle fashion to the micro-difficulties that any economic activity necessarily faces. This depends, in turn, on the quality of the human resources (education in the broadest sense) and on the way labor organizes itself. There have been concerns recently that the United States is falling far behind its competitors in the provision of education, and in the race to develop the new clean technologies that are appropriate in a period of climate change.

<sup>11</sup>These two entities had operated since 1968 as government sponsored enterprises (GSEs). Although the two companies are privately owned, they are protected financially by the support of the Federal Government. These protections include access to a line of credit through the US Treasury, exemption from state and local income taxes and exemption from SEC oversight.

<sup>12</sup>Kaletsky (2010) argues that the decisions by government regulators to let this happen was the cause of the ensuing panic.

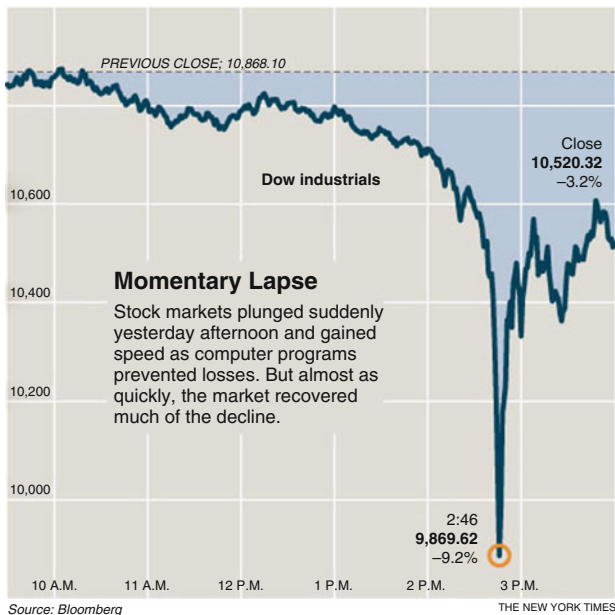


Fig. 3.5 The singularity in the Dow on May 6, 2010



Fig. 3.6 Real price of oil (New York Times, 4 March 2008)

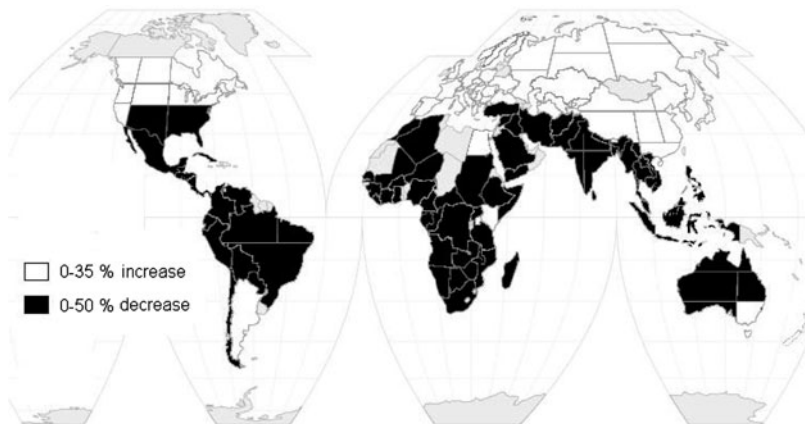
As regards education, an economist might argue that it is up to each individual to compute the extent of that individual's level of education, given the likely costs and anticipated returns. Since there are high social benefits from education, the aggregate of individuals' calculations need not be socially optimal. Consequently, there is an important role for government to intervene, so as to facilitate the enlargement of education, particularly in an era of intense technological competition.

As regards technological innovation, theoretical analysis by Reinganum (1981) and [Kamien and Schwartz \(1981\)](#) indicate that it is unlikely that the socially optimal rate of investment in innovation will occur naturally. In a completely competitive market, with many small firms, almost no investment will occur, since each firm will leave it up to the others and hope to pick up the benefits later. In an oligopoly, firms will invest but keep the benefits, in a socially non-optimal way, for themselves. The logical conclusion is for government to guide investment by subsidies, grants, etc., along the lines that it deems socially profitable. One problem, of course, with such a strategy is that it is not obvious that there is any connection between government preferred and socially optimal patterns of investment in research and innovation. A strong case can be made that there has been excess concentration by Britain and the US on defense related industries (see, for example, [Freeman 1979](#), and [Block 1975](#)). In the future, if climate change does turn out to be the major problem facing humanity, then socially necessary technological innovation to reduce greenhouse emissions will become vital.

These arguments suggest that government has an obligation to offset the suboptimal social choices of the marketplace. The “debate” between the European Union and the “Anglo-Saxon” polities of the United States and the United Kingdom concerns the degree to which intervention in the global economy by government is acceptable.

As the next chapter discusses, we face potentially unknown problems over climate change. New understanding about the effect of climate change on world food production as illustrated in [Fig. 3.7](#) suggests that the future may bring massive social unrest and population movement.

Keynes was concerned not just about speculation and market chaos, but about the degree to which uncertainty made the equilibrium theorems invalid. As he wrote



**Fig. 3.7** The possible effects of climate change on regional agricultural output (W. Cline, 2007)

By “uncertain” knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable . . . Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest 20 years hence. (Keynes 1937).

The possibility of positive feedback effects associated with human activity, particularly the rapid increase of energy utilization by growing economies such as China and India, has increased the uncertainty that is presented by the future. The concern that Keynes had about the difficulty of controlling market disorder is now even more pronounced, as controlling climate change will need the cooperative action of all states. This difficulty is made worse, because of the changes brought about in the beliefs of political leaders about the feasibility of controlling the global market. Bobbitt (2008) suggests that the constitutional order has changed since the 1980s. The nation state has begun to give way to what he calls “the market state.” The next two sections of this chapter consider attempts by political leaders to moderate the effects of market forces.

### 3.2 The Political Economy

The essential ideas underlying the literature on the Political Business Cycle are threefold:

1. The popularity of a government at some time is effectively determined by the level of unemployment and inflation at that time or in the recent past.
2. Government itself can manipulate various aspects of the macro-economy to effect changes in unemployment and inflation within some feasible range.
3. Incumbent governments will in fact manipulate the economy to bring about levels of unemployment and inflation which at election times are “socially optimal” in terms of resulting in the maximum number of votes for the party in government.

In their early paper, Goodhart and Bhansali (1970) first correlated government popularity (or the lead over the opposition) in Britain against unemployment and inflation, but were forced to add in cyclical dummies like euphoria and backswing, to account for apparently non-economic changes in popularity between elections. By stimulating the economy in the appropriate manner before an election, the “optimal” combination of unemployment/inflation on the Phillips curve could be attained. However, once inflation was induced into the system, this would trigger inflationary expectations and move the Phillips curve to the right.

As Brittan (1978) has observed,

over a run of political cycles the short term Phillips curve will drift upwards . . . democratic myopia and economic time lags will land the economy with an excessive rate of inflation.

Indeed as the Phillips curve moved to the right the socially optimal combinations would result in fewer votes, and each incumbent government would find itself

defeated. According to Goodhart and Bhansali, “a pure democracy, with all parties seeking to maximize public support, is doomed to increasing inflation and political disintegration.”

Further extensions by Nordhaus (1975), MacRae (1976) and Tufte (1978) postulated the existence of a political business cycle (PBC), in which government stimulates the economy near election time and then deflates to increase unemployment and bring inflation under some degree of control in preparation for the upswing at the next election.

These views have clearly been highly influential. The McCracken report to the OECD, for example, put the blame for the high levels of inflation in 1973–1974 on the bunching of elections in 1972 and the irresponsibility of governments in excessively stimulating their economies in 1971.

These models have been criticized from a number of different perspectives. Of course, it could well be the case that governments attempt to manipulate economic variables for political advantage, but find themselves unable to do so successfully because of events outside their control. However, the relationship between government popularity and economic variables appears to be extremely tenuous. Whitely (1979, 1984), on the basis of statistical analysis of poll data in Britain, has argued that government popularity is best modeled by a process of random fluctuation round a level which is itself subject to external shocks. As he says,

[A] whole series of adverse events have to occur to change government popularity drastically for the worse. Public opinion is ‘driven’ by a series of on-off events which act like shocks to the system over time. The inertia of opinion ensures that when a government enjoys above average popularity, it will retain that position for several months. If adverse events make it lose popularity, it will in turn remain unpopular for several periods. In this way irregular cycles are generated but they have no substantive significance of a political nature (Whiteley 1980).

To pursue this however, we have to leave the macro-political economic framework and consider individual responses to changing economic circumstance. Fiorina (1981) has used survey data to analyze these individual responses. He assumed “That in making a voting decision the citizen looks at the incumbent’s performance, the alternative platforms of the incumbent and challenger, and (perhaps) imagines a hypothetical past performance term for the previous challenger.” In his analysis Fiorina regressed voting behavior on party identification or PID (essentially a proxy for past individual evaluations), current comparative evaluations and future expectations. As he says, “Personally experienced and/or perceived economic judgments affect more general economic performance judgments, both types of evaluations feed into evaluations of presidential performance, and the more general judgments, at least, contribute to the modification of party identification.”

Fiorina’s micro-political economic analysis indicates that individuals behave in a rational way in using their own experience to interpret the political environment and to make evaluations of policy makers. Further research on the US by Kiewiet (1983) makes it clear that individuals’ personal experiences do matter, in that these affect evaluation of how an incumbent President is handling the situation. This, in

turn, influences the way the individual votes. The importance of this observation is that personal experience is something unique to the individual, and thus one might reasonably expect “idiosyncratic” response to government behavior, in a sense of a weakening of the relationship between class and voting. This phenomenon of “partisan dealignment” has been noted in Britain. A related phenomenon is the considerable decline of electoral support for the two main parties in Britain, even though the political consequence of this has been reduced because of the operation of the electoral system (Clarke and Stewart 1998; Clarke et al. 1997, 1998).

With the decay of partisan voting, the variation in individual experience and evaluation of government policy is likely to be sufficient to produce a kind of instability compatible with Whiteley’s interpretation of government popularity. Since individual learning is a continuous experience, the popularity of government could be expected to change fairly continuously, but in directions that are largely indeterminate. Recent work on Britain, Canada and the US has focused on electoral response to the valence (or perceived competence) of party leaders. (Clarke et al. 2009; Clarke et al. 2004, 2006, 2009). Chapters 5 and 6 continue with this research programme.

For the moment we note that there appears to be no stable relationship between macro-economic variables by themselves and government popularity. It is true however, that government behavior does appear to produce very different changes in unemployment and inflation rates in the United States, depending on whether there was a Democrat or Republican administration. Mueller (2003) estimates that unemployment rates dropped and inflation rates increased during Democrat administration (unemployment down by 1.9% and inflation up by 3.2% in 1960–1968; unemployment down by 3.5% and inflation up by 0.3% in 1992–2000). Since Democrat voters are likely to be more sensitive to unemployment increases, and Republican voters more sensitive to inflation, these observations are compatible with the electoral model presented below in Chap. 5. In that model, although individual preferences depend partly on the economic axis, on tax rates and the like, they also depend on voter perceptions about the policy declarations that candidates or party leaders make on social issues. Thus the electoral model of Chap. 5 would imply a weak relationship between macro-economic outcomes and government popularity, rather than the determinate relationship indicated by something like the Phillips curve.

The literature discussed above essentially concentrated on developed political systems, where interest focuses on the macroeconomic manipulation by government concerned with the results of infrequent elections. A separate research program has concentrated on the populist mode of government (Riker 1982a), generated by the rational self seeking behavior of political actors as they attempt to deliver “public goods” to particular constituencies. The classical justification of government was that public goods such as defense, etc., cannot, in general, be supplied by the competitive economy (Baumol 1965). The point here is that a good which is to be supplied to all is subject to various forms of manipulation, the most obvious of which is the free-rider problem—the tendency of recipients of the good to disguise

their desire for the good so as to avoid some or all of the costs of production (Olson 1965).

However, very few of the activities of government are concerned with the provision of “pure” public goods, and even then public goods have associated private effects. For example, any public project (a dam, road, defense establishment or whatever) is likely to have geographically local effects on employment and factor costs, as well as more widespread general equilibrium effects. Since any government activity has some distributional consequences, Thurow (1980) is right in one sense to refer to the “zero sum society.” While government activity is not entirely distributional, the conflicts of interest that are created are sufficient to bring about the instability effects mentioned above.

A number of authors have argued that political mechanisms, that are devised to deal with these public good conflicts, actually lead to an overprovision of the goods. The typical model has a political representative for each geographical constituency proposing a “pork barrel” project which if carried through, will benefit that particular constituency. The bundle of projects that are accepted are then paid for out of taxes levied on all. Formally this situation resembles a prisoner’s dilemma, since each constituency will demand “too much” of its local public goods, since it does not have to meet the full costs of production. If all projects are approved, then the outcome is socially non-optimal. However, to pass any single project a legislator has to logroll with others to form a winning coalition. The instability results, mentioned above, may lead to the inference that, in the absence of formal party discipline, anything can happen.

Weingast (1979) however, has argued that “universalist” coalitions of all, or nearly all, legislators are likely under certain conditions, and this assumption has been used to show the universalist coalitions will over provide public goods (Weingast et al. 1981). Similar arguments can be made that government intervention, in such areas as regulation and pollution control, is excessive. However without a determinate theory of logrolling based on a good equilibrium notion it is difficult to accept the logical basis of this argument. The second problem is that in the absence of any procedure to truly determine “society’s” preference it may as well be the case that public goods are under-provided. Indeed, Chap. 5 provides an illustration of how the Democrat and Republican parties in the United States are fragmented over some issues like immigration reform, which clearly is a public goods issue. Currently, in 2010 and 2011, there is considerable conflict between, and within, the parties over the relevance of maintaining tax cuts in the context of an unemployment rate over 9%.

As GNP increases, one might reasonably expect a greater than proportional increase in demand for public goods, and therefore an elasticity of government expenditure with respect to national income in excess of one. Chrystal and Alt (1979) argued that one should examine this problem only with respect to public expenditure  $G$ , excluding transfers. In their analysis of the case of Britain they find the elasticity of  $G$  with respect to national income,  $I$ , was significantly less than one. They note for example that government income tends to fluctuate more widely than



government non-transfer expenditure. In a many country analysis they found that the elasticity of  $G$  with respect to  $I$  was essentially unity.

In their original analysis of British government spending, [Peacock and Wiseman \(1961\)](#) suggested that there was a ratchet effect, with government expenditure increasing rapidly during wars, and remaining at a constant proportion to income between wars. [Burton \(1978\)](#) has contested this view and argued that the acceptance of Keynesian economics leads to an increasing budget deficit which was essentially politically motivated.

It is certainly true that government expenditure ( $G$ ) as a percentage of GDP has tended to increase from an average of about 28% in 1960 in the OECD economies, to around 45% in 1996 ([Mueller 2003](#)). As [Table 3.1](#) has shown, individual countries show wide variation. In France,  $G/GDP$  rose from about 35% in 1960 to 53% in 2010, while in Britain the increase was from 32% to 43%. The United States had a very low ratios in 1960 (27%) rising to 34% in 2010. Government spending also tends to be correlated with government deficits. The budget deficit in France was about 1% of GDP in 1960 but 8.4% in 2010.

Although the budget was in surplus in the United States in 2000, an increase of government expenditure on defence from 4.3% of GDP in 1999 to about 7.5% in 2010, and a decrease of tax revenue has led to an overall increase in government debt from 70% of GDP in 2000 to 117% of GDP in 2010. (These figures are discussed further in Chap. 4.) Thus a relatively small shift in the pattern of government expenditure and income, induced by politically motivated tax cuts and military expenditure, can cause fiscal difficulty.

As mentioned above, general (economic) equilibrium theory supposes that “small” agents respond to prices parametrically and shows that with sufficient price flexibility the outcome will be Pareto optimal with all markets cleared. It is obvious that this is an unrealistic assumption, since industrial economies contain organized “interest” groups which behave strategically with respect to the rest of the economy.

The general model proposed by [Olson \(1982a\)](#) supposes that the interaction of these interest groups is essentially a prisoner’s dilemma in the following sense. A particular group, a trade union for example, will defend its interests by, say, pushing for higher wage rates or restricting the implementation of new technology to maintain employment for its members. Olson’s argument is that such a strategy, while rational for the group, is socially “irrational” in that it effectively reduces total social output in the long run. Government has a small role to play in Olson’s model, since government is viewed only as reacting to, or accommodating, these interest group strategies, by increasing the money supply and stimulating inflation. As [Mueller \(1982\)](#) has observed, economic ineffectiveness of this type is likely to lead to an intensification of distributional conflicts and thus to even more extreme socially irrational strategies.

Formally speaking, Olson’s argument is based on an assumption that, with the complex externalities (or external effects) that exist in a modern economy, group strategies that are permissible within a pluralistic economy cannot generally result in an “efficient” outcome. This conclusion depends however on the nature of the coalition structure that holds in the economy. As [Olson \(1982b\)](#) says:



interest organizations that are quite large in relation to the society of which they are a part, will “internalize” much of the benefit of any action they take in the interest of the society, or (more pertinently) much of the cost of any action they take that reduces efficiency, raises prices, or slows growth in the society.

This suggests that as the concentration of the interest group pattern increases from a purely atomistic one to a single centrally organized structure, the disparity between actual and socially optimal outcomes will widen first of all and then finally fall. Olson contended that those countries that have experienced a severe crisis – such as a defeat in war – will have weakened interest group structures, and therefore exhibit higher than average rates of growth.

An alternative form of analysis is to concentrate on the procedures by which interest groups can bargain together, to recognize the existence of externalities and thus ameliorate the socially harmful effects of non-cooperative strategies. Crouch (1985), for example, concentrates on two important variables: consociationalism (or the degree to which bargaining and compromise dominates in the political arena) and centralization (of the trade union structure). (see also Lehbruch 1980; Lijphart 1976.)

Consociationalism is a term used to describe a political system where there is a tendency for no single party to command a majority. Crouch’s argument is that trade union centralization will occur either in the context of a consociationalist political system or in one where there is a dominant social democratic party that has been in office for considerable duration. In both cases there may exist the possibility for binding contracts between the trade union system and the political system. In Crouch’s view, therefore, qualitative characteristics of the political system bring about an institutional framework in the economic system which is conducive to economic “efficiency.” One could go further in following Mueller’s suggestion and infer that economic “optimality” is in turn conducive to the maintenance of the consociationalist features of the political system.

Any collective action coalition is intrinsically unstable, but under certain favorable conditions cooperation may be possible. Suppose that a relatively large coalition has, for some historical reason, come into existence. If this coalition is sufficiently large vis-à-vis the economy, then it will be forced to internalize the social externalities of its actions. Moreover, the coalition may be able to bargain with other “smaller, non-cooperative” proto-coalitions and which coalesce into cooperative coalitions. The more rapidly the economy is growing, or the less pronounced the distributional features within the social economy, the easier is this bargaining process and the more readily may a corporatist or centralized coalition come into existence. The point is that there is a crucial “size” (determined by “productivity”) for a coalition above which it will behave cooperatively. If economic growth slows down, then a cooperative coalition might suddenly fragment. Since its relative productivity declines, it is obvious too that the parliamentary coalition structure is of vital significance in this bargaining process. Although a fragmented parliamentary system may be relatively stable in good times, it is likely to become unstable in bad times.

**Table 3.2** Duration (in months) of government, 1945–1987

Country	Average duration	Effective number
		<i>ens</i>
Luxembourg	45	3.5
Ireland	39	2.6
Austria	38	2.2
Germany	37	2.9
Iceland	34	3.7
Norway	32	3.2
Sweden	28	3.2
Netherlands	27	4.5
Denmark	26	4.5
Belgium	22	4.0
Finland	15	5.0
Italy	13	3.5
<b>Average</b>	<b>26</b>	<b>3.7</b>

Table 3.2 presents some data on duration of governments in 12 European polities (Laver and Schofield, 1990, 1998). The effective number is a simple measure of the fragmentation of the legislature.<sup>13</sup> Because the electoral system is based on a method of proportional representation, government in these polities tends to be made up of a coalition of parties. Some of these polities have tended to have relatively short lived government.

The theory of elections presented in Chaps. 5–10 suggests that polities based on proportional representation will tend to encourage the formation of many heterogeneous activist groups, linked to particular parties. These activist groups may exercise some degree of veto power, so that difficult policy choices (over such issues as protection, immigration and agriculture) may tend to be avoided. While this risk avoidance may be associated with somewhat lower growth when times are good, it can be a rational choice, when times turn bad. The cost is the difficulty of reaching agreement. “Globalization”, or the integration of the global market, has brought about the economic growth in the past but this very interconnectedness has deepened the chaotic aspects associated with the collapse of asset bubbles. We now face increasing market uncertainty, and even greater long-run uncertainty because of climate change and global terrorism, In such an environment, attempts at risk avoidance are probably rational. The converse strategy of policy makers in the United States, of accepting risk by acquiescing to global market forces, while simultaneously exercising unilateral military force, could lead to catastrophe.

A theme of this book is that the purpose of social choice theory is to provide a grand theoretical framework for designing human institutions. Chapter 4 argues

<sup>13</sup>Fragmentation can be identified with the *effective number* (Laakso and Taagepera 1979). That is, let  $H_s$  (the Herfindahl index) be the sum of the squares of the relative seat shares and  $ens = H_s^{-1}$  be the *effective number of party seat strength*. In the same way we can define *env* as the effective number of party vote strength using shares of votes.

that the theoretical work asserting that markets optimally aggregate preferences needs to be generalized to extend preference-based theories to include belief formation. A consequence of this change is that the theory is no longer purely axiomatic, but draws on insights about human behavior from other disciplines and empirical analysis of the role institutions play in determining beliefs. Chapter 13 also discusses recent attempts to determine the basis for moral beliefs.

In our view what gives rational choice theory coherence is precisely that it is an attempt to construct a grand theory of human behavior. That is to say, the theory is a conceptual framework through which to analyze the interplay and consequences of human incentives within institutions. This may explain why, long before rational choice theory migrated from economics into political science, it had been used by the Marquis de Condorcet in late-eighteenth-century France to provide a framework for the design of good government and society.<sup>14</sup> A universal theory of human behavior should be equally applicable in either politics or economics. To assess the merits of rational choice theory, then, requires an understanding of how it has evolved, regardless of which discipline served as the site of the various stages of its evolution.

We shall argue that the primary motivation for practitioners of rational choice theory, in the course of its evolution since the 1950s, has been to create an integrated, empirical theory of market and polity that would serve the normative purpose of designing good institutions. It has become increasingly obvious that to create such a theory, it is necessary to understand how individuals form beliefs about empirical reality and how they act in response both to their normative preferences and their beliefs. As this theory evolved, it led to changes in our understanding of how to devise good political and economic institutions, inasmuch as the economists' equation of good with Pareto optimal no longer appeared adequate. Given that people's beliefs – their empirical models of the world, their private information, and so on – vary so much, the aggregation of people's preferences (or values) so as to achieve Pareto optimality could no longer be the normative basis for design. This realization has led to a return to Condorcet's original desire to evaluate human institutions as devices both to aggregate preferences and integrate beliefs.

We shall discuss in some detail below how only one component of Condorcet's concern, namely preference aggregation, was developed by economists, and particularly Kenneth Arrow (1951), in laying the foundation for a rational choice theory of political economy. Whereas the work in the tradition of Downs (1957) and Olson (1965) had the virtue of simplicity in construction and prediction, the more recent

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<sup>14</sup>As mentioned in the Preface, the period 1759–1788 saw the publication of major works on “social design” in Britain and the United States as well as France. These include Smith (1984 [1759], 1985 [1762]), Condorcet (1994 [1785], 1995 [1795]) and *The Federalist Papers* (1787). See Lasch (1991) for the notion of “progress” in Adam Smith. See also Commager (1977) for the influence of the French *philosophes* and Beer (1993) for the influence of Harrington (1992 [1656]) and other British writers on the debate in the United States. We emphasized the importance of Condorcet's *Essai* of 1785 in Chap. 1.

efforts have shown that the predictions of these preference-based models were not corroborated, in general, in the behavior of real polities.

In the following sections of this chapter we shall consider the various attempts to construct a closed (or consistent) preference-based theory of human behavior in both economics and politics and show, in each case, why there were logical reasons to extend the theory beyond preferences to beliefs. As the discussion proceeds, we hope to make it clear why the normative economic criterion of Pareto optimality began to appear less appropriate than the Condorcetian criterion of truth. We use “truth” as a shorthand for the property of a human institution to efficiently aggregate the dispersed information held by its individual members.

The earliest effort in this direction was Condorcet’s demonstration that, among a jury judging the innocence or guilt of a defendant, a majority vote will more often be correct than the response of an average juror. As the size of the jury, or society, becomes very large, the probability that the majority will be right approaches unity. This theorem seems to justify democratic procedures for belief aggregation (of a certain kind) as optimal.<sup>15</sup> Below we shall mention attempts to derive analogous results for markets.

As rational choice theory has evolved, it has been obliged to become less axiomatic in structure. Indeed, the increasing emphasis on beliefs suggests that it will, of necessity, have to draw on insights from other behavioral sciences, including anthropology, linguistics, and psychology. Since the theory also includes the role of institutions in determining human choice, it is likely that there will be continuing interaction between empirical and theoretical research on this topic.

Let us amplify these remarks by briefly discussing how the rational actor theory employed by economists in the 1950s was later obliged to address larger questions of social choice that were anticipated by Condorcet.

Neoclassical economic theory can be viewed as the analysis of human incentives in a particular restricted context of fixed resources, private goods, and a given technology. As such, it is a theory of preference aggregation. The work of [Arrow and Debreu \(1954\)](#) and of [McKenzie \(1959\)](#) did assert, however, that, in this restricted context, the competitive price equilibrium would be Pareto optimal. In discussions of market behavior, economists often go on to assert (a claim that, as far as we know, is unproven) that only a competitive market can efficiently aggregate the diverse beliefs of the members of a heterogeneous economy. If this were true, then nonmarket, planned economies would be inadequate to the task of integrating the dispersed information that underlies these divergent beliefs.<sup>16</sup>

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<sup>15</sup>As discussed in Chap. 1, the theorem assumes that the average juror probability of being correct exceeds one-half, and that the jurors’ choices are made independently. Recent results by [Ladha \(1992, 1993\)](#) indicate that the independence condition may be weakened, yet still preserve the Condorcet Jury Theorem.

<sup>16</sup>See, for example, the “calculation” argument of [Von Hayek \(1976\)](#). It should be noted that the recent collapse of the economic system of the USSR may be viewed as corroboration that such a system is, in the long run, not well adapted to the generation of technological innovation, one key aspect of information aggregation. This theoretical argument concerning markets is identical

Since the difference between preferences and beliefs is important, but subtle, it is worthwhile briefly discussing how market institutions do aggregate beliefs. Foreign exchange markets, futures markets, financial markets, and so forth may seem to be driven by the preferences of buyers or sellers, but in truth the motivations of the agents are derived from their own private information and their expectations of commodity price movements. Rational expectations, or the convergence of agents' expectational beliefs, can be thought of as the appropriate type of truth in markets. However, this convergence in beliefs need not occur.<sup>17</sup>

Thus, in an attempt to develop the analysis of human incentives, rational actor theory has been forced to go well beyond the preference-based study of private-goods markets. The intimate connection between preferences and beliefs has necessitated an attempt to reconstitute a general theory of rationality; this is exactly what game theory is about. Moreover, some goods are public, and jointly produced and consumed. Some such public goods (like technological innovation) may be produced and consumed within the economic system, but others, such as national defense and domestic security, are more traditionally created through the political system. Since one method of political choice is by some form of democracy, the need to extend the theory to public goods translates into a requirement to analyze democratic polities to determine not only preferences for such goods, but the incentives to produce them, given people's beliefs about others' willingness to pay for them. It should be noted here that the distinguishing feature of rational choice theory in its market-based form was its emphasis on the connection between preferences, equilibrium, and optimality. The attempt to enlarge the domain of the theory from economics to political economy retained these key concepts. Moreover, the non market institutions that constrain human behavior are obviously important for the way individuals construct their preferences and beliefs, and for the methods by which these are aggregated. The need to examine this question has become more important in the last few years, as research has attempted to model different political institutions. The general theme underlying this research has been, we believe, a desire to determine whether or not democratic political institutions are compatible, in some sense, with market efficiency.

A very extensive public choice literature, particularly in the 1970s and 1980s, argued that democratic political choice was not compatible with market efficiency. The various arguments are too numerous to list here, but in general they asserted that democratic polities created the context for political rent-seeking that constrained economic growth. Indeed, political representatives were viewed as creating rents for themselves, with the consequence that government growth was accompanied by deleterious economic consequences. The debate is, of course, still being carried on, and it underlies many of the tensions that exist between the Anglo-Saxon polities of the United Kingdom and the United States and the member states of the European

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in form to the Condorcetian argument concerning democracy. Thus the underlying question is how, exactly, different political economies aggregate information.

<sup>17</sup>Brian Arthur (1997) has recently shown the failure of models of rational expectations.

Union. The debate is even more intense in the United States, between Republicans who intend to reduce the size of government, and Democrats who believe that government should ameliorate the effect of the market.

The public choice literature, while influenced by theoretical, rational choice models, was also directed at explaining empirical facts. This mix of theoretical and empirical reasoning we shall term positive theory. Since positive theory attempts to explain facts of the world, it must address questions of empirical corroboration or falsification.

Early positive attempts to apply economic theory were based on a model of market behavior which assumed that agents are completely characterized by their preferences, and that they respond non-strategically to prices. To some degree the inferences of this model have been corroborated in relatively simple situations. However, this preference-based theory has had little success in either modelling choice under strong uncertainty<sup>18</sup> or explaining large-scale economic change over time.<sup>19</sup>

More importantly, the attempt to use rational actor theory as a basis for macroeconomics has not been particularly successful. Although macroeconomics purports to describe the real economic world, it often appears to be a tower of Babel, populated by Keynesians, monetarists, supply-siders, etc. On the other hand, most macroeconomists would accept, in general terms, the postulates of microeconomic theory, and the notion of rationality in particular. The empirical weakness of microeconomics has not led economists to reject this theory, but rather has led them to attempt to develop more complex models of rationality.<sup>20</sup> As we have suggested above, the imperative for game theory has been to extend simple models based on preferences so that agents' beliefs are made more explicit.

Is political science more like macroeconomics or microeconomics? Political science is driven by the age-old problem of how we are to be governed. The Founding Fathers and particularly the authors of *The Federalist*, were concerned precisely with the normative problem of the proper form of government. We would go so far as to suggest that Hamilton and the other Federalists were rational choice theorists of a kind. To substantiate this we might mention the recent observation of Gordon Wood (1991: 264) that the Federalist notion of government rested completely "on the assumption that most people were self-interested and absorbed in their private affairs." Of course, the Founding Fathers did not engage in empirical political science, as we would understand the term "empirical" today. Nonetheless, they were men of practical reason who made intelligent guesses about the way self-interested individuals were likely to behave under different systems of government. As discussed in Chap. 1, Madison argued in *Federalist X* that

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<sup>18</sup>See [Denzau and North \(1994\)](#).

<sup>19</sup>See the discussion of the work by [North et al. \(2009b\)](#) in Chap. 2.

<sup>20</sup>[Camerer \(1999, 2003\)](#).

the greater number of citizens and extent of territory may be brought within the compass of Republican, than of Democratic Government; and it is this circumstance principally which renders factious combinations less to be dreaded in the former, than in the latter.

Not only does Madison essentially apply a Condorcetian<sup>21</sup> form of argument in *Federalist X*, but he distinguishes between opinions (i.e., beliefs) and passions (i.e., preferences).

If we distinguish the normative political theory of the Founders from the current study of American, comparative, and international politics, and if we call the latter political science as opposed to political theory, then it is true that political science is now predominantly empirical, just as macroeconomics is. This by no means entails that empirical political science is epistemologically superior in any way to political theory (whether normative or rational choice). Our own view is that if political science focuses principally on empirical relationships rather than on the evaluation and design of government, then it is seriously wanting. An attempt within social choice theory to construct a normative basis for evaluation based on Pareto optimality will be discussed in the next section.<sup>22</sup>

Although rational choice theory is predominantly a theoretical discipline, the work presented in the later chapters of this volume is concerned with empirical corroboration. The mix of problem-based concerns and empirical testing displayed by rational choice theory has contributed significantly to its increasing importance in political science.

While Arrow (1951) was concerned with the normative task of aggregating preferences, the problem addressed by both Downs (1957) and Olson (1965) was to use microeconomic tools to explore the provision of public goods through voting and collective action. Neither Downs's prediction (that, in two-party competition, the parties will tend to converge) nor Olson's claim (about the failure of collective action when private incentives are absent) have been empirically substantiated. The reason is that while both Downs and Olson focused on preferences, it is evident that elections and collective action situations are games that cannot be fully described without modelling the beliefs of the participants.

More generally, it is important to model the way agents form beliefs about other agents' beliefs, and thus their behavior. This is often described as the common knowledge problem. In our view, it is at the heart of an understanding of economic as well as political behavior, and indeed all collective action.<sup>23</sup>

Preference-based models, whether of markets or elections, are relatively simple, with fairly clear predictions. Beliefs, on the other hand, are anything but simple: they involve, at the very least, some description of how people learn, update, and model

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<sup>21</sup>See also McLean and Urken (1992) and Urken (1991) for a different view on whether Condorcet influenced Madison.

<sup>22</sup>Important work in normative political theory by Rawls (1970) and Gauthier (1986), etc., is influenced, to some degree, by social choice theory. See also Binmore (1994) for an attempt to base normative political theory in game theory.

<sup>23</sup>See Schofield (1985a), Hinich and Munger (1994).

**Table 3.3** A classification of economic and political theories

	Economics	Political economy	Politics
Normative	Welfare economics	Social choice	Normative political theory
Theoretical	Market (equilibrium)	Game theory	Rational choice theory
Positive	Public economics	Public choice	Theory of institutions
Empirical	Macroeconomics	Institutional political economy	Political science

the world they live in. Condorcet, known both for his work on the aggregation of beliefs (the so-called Condorcet Jury Theorem) and for work on the aggregation of preferences, was unable to combine these two modes of analysis. In his honor, we shall call the venture of developing an integrated model of politics that includes both preferences and beliefs the Condorcetian research program. In the next sections of the chapter we shall present our view of the evolution of the preference-based models (what we call the Arrovian research program, in honor of Kenneth Arrow) to incorporate beliefs.

### 3.3 The Arrovian Research Program

Table 3.3 sets out our view of the relationships between the various branches of economics, political economy, and politics. As the table suggests, rational choice theory as applied to politics is only one among a number of different research activities, all characterized by their varying degrees of emphasis on the normative, the theoretical, the positive and the empirical.<sup>24</sup> The table is also meant to emphasize the close connections between game theory and the adjacent theoretical and positive subfields.

Market theory utilizes the idea of equilibrium to relate economic parameters (resources, preferences, technology) to an outcome or choice. Welfare economics and public economics (research fields that are subsidiary to market theory) are designed to address normative and positive aspects of the relationship between government behavior and the economy. Public economics deals with the appropriate relationship between government and the economy, while macroeconomics covers the empirical aspect of this relationship.

In an attempt to provide a formal basis for public finance and government, the economist must determine whether the domain of market theory can be enlarged to include non-market phenomena, such as preferences for public goods. Arrow

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<sup>24</sup>We distinguish here between empirical research and positive research. While the latter is based on theoretical arguments, it also attempts to make assertions about the empirical world.



took the first step in this program by asking if the preferences of the individuals making up a society could be aggregated to construct a measure of social welfare. Although his social choice theory addressed certain concerns that economists regard as essential, including the compatibility of the market and democracy, nothing about that theory restricts it to either welfare economics or political theory. Still, for an economist, the question of the compatibility of the market and democracy must be expressed in a formal language that is general enough to include economic theory.

Economic theory *ca.* 1954 used assumptions on the preferences and resources of individuals to demonstrate the existence of a market equilibrium. To enlarge its theoretical language so as to model democracy, the nature of citizen preference was extended from private goods to public goods. However, the fundamental concept of preference had to be retained. Since the question involved the degree to which the market equilibrium result could be generalized, it was necessary to pose it in terms of the existence (or otherwise) of equilibrium.

Microeconomics adopts the postulate that individual preferences are consistent. However, a variety of consistency axioms can be adopted. The most restrictive one, common in microeconomics, is that each individual's preference can be represented by a (numerical) utility function. This strong assumption implies that both strict preference and indifference are transitive: if  $a$  and  $b$  are equally preferable, as are  $b$  and  $c$ , then so are  $a$  and  $c$ . The standard example of non-transitive indifference, however, is a cup of coffee with no sugar, which is "indifferent" compared to a cup with a single grain of sugar, to one with two grains, and so on, but not to one with a thousand grains. A weaker consistency assumption is that of the transitivity of strict preference, but not of indifference. Even weaker is the assumption of acyclicity: if  $a$  is strictly preferred to  $b$ ,  $b$  is strictly preferred to  $c$ ,  $c$  to  $d$ , and so on to  $x$ , then  $x$  cannot be strictly preferred to  $a$ . Acyclicity guarantees that an individual may always make a "choice," that is, select an alternative, such that if  $a$  is chosen, none of the other alternatives can be preferred to  $a$ .

While economic theory concentrates on preferences, it usually adopts the postulate that individuals' behavior will be given by their choices (if such exist). Where the outcomes are uncertain, or involve risk, behavioral predictions may associate a list of probabilities with the final eventualities. Theorists often assume that preferences under risk behave as if they were weighted by these probabilities. Yet it is entirely possible that real individual preferences in the presence of risk may fail acyclicity, leading to apparently "irrational" or inconsistent behavior (Kahneman and Tversky 1984). In our view the postulate of acyclic consistency is reasonable in the absence of risk, but is less tenable in its presence.

Rationality postulates combine with various structural assumptions about the nature of the economic system to yield an economic equilibrium that is Pareto optimal in the sense that no other allocation of resources is preferred unanimously. In the absence of a price mechanism, as in politics, rational choice theorists utilized the notion of the "core." An outcome is in the core if no coalition of agents is able and willing to bring about a different state. The concept of a core was devised, in part, to cover situations involving public goods.

The genius of Arrow's result is that it suggests that, in general, a social utility function cannot be defined, negating the assumption that individual preferences could be aggregated so as to describe an optimal provision of public goods. In a sense, Arrow showed that the assumptions economists typically employ in modelling individual behavior are unlikely to hold where public goods are concerned. For while it is reasonable to assume that individuals prefer more rather than less of a private good, it is entirely possible that among them, individuals can have extremely complex preferences in the public domain. More of my public good may be more of your public bad. While we may want extensive military expenditure, you may loathe the military and prefer good schools, parks, environmental protection, and so forth. Since there is no obvious a priori restriction on the possible set of public preferences that individuals may have, Arrow adopted the unrestricted domain assumption. That assumption allows each individual to have any preference, as long as it satisfies transitivity of both strict preference and indifference. Under this assumption, the only social rule that satisfies the unanimity condition must be dictatorial. More generally, any social utility that can be used to make social choices based on individual preferences must necessarily be dictatorial.

If preferences could be equated with utilities, then social utility could be obtained simply by summing individual utilities. But economists believe in general that interpersonal comparisons of utility are scientifically meaningless, since it is impossible to "extract" the information required to construct such comparisons. Certainly markets and voting mechanisms, when viewed as methods of preference aggregation, do not provide the means of obtaining such information. However, if markets and politics are modelled as devices for aggregating both preferences and beliefs, then it is possible that the negative inferences of the Arrow impossibility theorem could be avoided. As Arrow (1986) himself observed, before this could be attempted, it would be necessary to deal with the question of *common knowledge* – the foundation of our beliefs about the beliefs of others.

Black (1958) reintroduced Condorcet's work to a modern audience and thus contributed to the extension of preference-based theory to include the analysis of beliefs. Almost all the elements of what has come to be known as spatial voting theory are present in Black's *The Theory of Committees and Elections*. Just as Arrow had investigated whether individual preferences could be aggregated into a social utility function, Black investigated the possibility of equilibrium in voting systems. In this context an equilibrium is a point or outcome that is unbeaten (although it need not beat every other conceivable point). Suppose that three voters have distinct preferred points on a left–right political continuum, and that each voter has single-peaked preferences (preferences that are maximized at a single point). Then the middle (or median) voter's preferred point cannot be beaten under majority rule, where a majority requires two out of three. Black called this equilibrium a "majority motion" in his book. In more recent work, the voting equilibrium is known as the *core*.

Suppose now that the decision problem involves more than a single continuum. For example, preferences for social liberalism or conservatism might be independent from preferences for economic liberalism or conservatism. Under such conditions,

even with single-peaked individual preferences, the likelihood of the existence of an equilibrium is negligible. As Black writes,

the conditions that must be satisfied before there can be any majority motion are highly restrictive. The frequency of occurrence as a fraction of the total number of cases possible . . . is infinitesimally small or ‘practically zero’ (Black 1958:139).

Indeed, Black seemed to equate cases without an equilibrium with the occurrence of cycles, so he apparently took it for granted that when there is more than one-dimension to voters’ preferences, voting cycles will occur. Economics postulates that any observed behavior must express an actor’s preference. A voting equilibrium, therefore, would be expected to manifest collective preferences. If there is no equilibrium, however, the theorist can make no behavioral predictions.

In the absence of a behavioral prediction based on preference theory, the natural step was to account for observed outcomes by modelling the way beliefs influenced behavior. To be more specific, it appeared plausible that the outcome would depend on the expectations of agents, their ability to bargain by making guesses about other agents’ behavior, and so on. One of the important results in the purely preference-based theory of voting was that voting cycles could, in principle, go everywhere in the policy space. Yet this occurrence of theoretical indeterminacy or chaos did not necessarily imply behavioral chaos, since there existed no belief-based model about what voters would actually do in the context of theoretical chaos. Indeed, experimental work by Fiorina and Plott (1978) and by Laing and Olmstead (1978) seemed to demonstrate that coreless games do not produce markedly more unstable outcomes than do games with cores. The empirical work did suggest that a rational choice theory that incorporates beliefs should smooth out the difference between games with and without a core.

The work on theoretical voting chaos<sup>25</sup> during the late 1970s induced a period of intense debate within rational choice political theory. Two of the protagonists in this debate, Riker (1980, 1982b, 1986) and Tullock (1981), drew quite different conclusions concerning the significance of chaos results for the study of legislatures (see also the essays in Ordeshook and Shepsle 1982). Our own criticism of Riker and Tullock is more fundamental. Formally, the chaos theorems on which they drew apply only to committees, where there is some foundation for supposing the voters have well-specified preferences. It is not at all clear that representatives in a legislature can be assumed to have “preferences” that are similar in kind to the members of a committee. It may be intuitively plausible that each legislator seeks to provide certain kinds of “goods” to constituency members. But until the voter-legislator connection is modelled in detail, there is no formal rational choice basis for the study of a US-style legislature.

Schofield (2008b) has argued however, that it is plausible that the models of committee voting are applicable to European-style legislatures involving well-disciplined parties. In particular, it appears reasonable to assume that party leaders

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<sup>25</sup>McKelvey (1976, 1979), Schofield (1977a, 1978, 1980, 1983), Cox (1984), Rubinstein (1979), McKelvey and Schofield (1986, 1987).

in such legislatures do have preferred policy outcomes, and that they attempt to construct legislative majorities to implement these policies. There is an extensive empirical literature on coalition formation in European legislatures (Laver and Schofield 1990) and recent attempts to use rational choice theory in this context do produce empirical predictions that have been substantiated. One insight that comes out of this work concerns the possibility that a large non-majority party may form a minority government when its preferred point is at the core or equilibrium position in the policy space. In general legislative political games, however, there will be no core. Instead it is possible to extend the notion of the core to that of the “heart” (Schofield 1999c). The heart is always non-empty and is continuous, in an appropriate sense, in all relevant parameters.<sup>26</sup>

Rational choice theory also provides a logical framework within which to make some sense out of some well-established empirical relationships that have been noted in multiparty political systems. For example, as Table 3.2 suggests, the fragmentation of parliamentary systems into many small parties is highly correlated with government brevity in the European systems (Dodd 1976). It should be obvious that in the absence of a core or policy equilibrium, any government that does form may be defeated by another majority coalition with a counter-policy proposal. Thus a connection between political fragmentation and the remote probability of a core would give insight into macropolitical relationships. In our view, the United States Congress is fundamentally different from European multiparty systems for a number of reasons.<sup>27</sup>

There is a venerable tradition on the connection between proportional representation and political fragmentation (Duverger 1954). The empirical work by Taagepera and Shugart (1989), for example, provides a detailed examination of this connection. European polities in general use proportional representation and typically have more than two parties. Duverger (1954) and Popper (1945) argued that this tends to result in weak government. By the same token, there is some evidence that (plurality) systems based on single-member constituencies tend to produce two parties and thus a clearer electoral choice. The British electoral system, for example, which clearly is a plurality, or first-past-the-post arrangement, has always tended toward two dominant parties. While this is consistent with some rational choice models of elections, Duverger’s argument, that small parties will wither away under plurality, is confounded by the continued presence of small British parties such as the centrist Liberal Democrat party in the United Kingdom. Indeed, this party became a member of the coalition government, with the Conservative Party, after the 2010 election.

On the other hand, although the United States is usually regarded as having a two-party system, its parties appear less disciplined, in general, than European-style parties. In particular, members of Congress are generally more heterogeneous in their voting behavior than one would expect within a European-style party system.

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<sup>26</sup>These notions of the core and heart will be used in Chaps. 7 and 8 to study legislative bargaining in Israel, Turkey and Poland.

<sup>27</sup>Chapters 6, 7, 8 and 9 set out the argument.

The political science literature, from Duverger onwards, is even more inadequate in terms of the theoretical (rather than empirical) analysis of these relationships. Our own view is that the formal analysis of elections should start with a general conception of electoral laws and deduce facts about the number and nature of political parties.

There are two distinct classes of models of electoral competition. The first class assumes that voting is *deterministic*. That is, the candidates make promises and each voter picks a candidate depending on which promise the voter prefers. Within this class of models, policy blind models assume that the candidates gain no utility except from winning, and that they attempt, therefore, to gain the maximum number of votes. Just as in the committee model examined by Black, if the space of possible outcomes is one-dimensional, then two rational candidates will make the same promise, attempting to occupy the point at the median voter position.

As an economist, Downs (1957) could be justified in viewing this as a solution to the equilibrium problem in political economy. From the perspective of public finance, two-party competition could be assumed to provide a “median” tax schedule which could then be used to cover the provision of the public good in question. Obviously, however, government provides more than one public good, so individual voter preferences must be described in more than one-dimension. The results from the committee voting model imply that, in such cases, there will be no core. In other words, no matter what one candidate promises, an opponent can promise something else that will obtain a majority. From the perspective of non-cooperative game theory, the non-existence of a core means there is no pure strategy Nash equilibrium (PSNE) in the two-candidate game.

The obvious theoretical response is to develop a more general notion than the core. Kramer (1978) showed that there will be a mixed strategy Nash equilibrium (MSNE) where candidates make ambiguous promises. The nice feature of the so-called *uncovered set* (McKelvey 1986) is that the support of the MSNE will belong to this set. Thus, the political economist can assert that actual political outcomes will lie in the uncovered set. To some extent, at least, the theoretical problem of equilibrium is thus solved.

However, the motivation for this modelling strategy comes from economics, not political science. Its sole purpose is to solve the formal requirements of public economics, not to describe actual politics. Indeed, any model that predicts that candidates will make identical promises cannot be considered to have made any effort to characterize real politics. It was this realization, perhaps, that led Wittman to observe that “the research on formal models has been almost devoid of empirical content.”

Wittman (1977, 1995), and others, have attempted to inject some political reality into the model by assuming the candidates are policy motivated, in the sense that the candidates’ own policy preferences are reflected in the promises they make. A candidate may, for example, contract with a group of supporters to constrain his or her personal policy objectives in a certain way in return for campaign contributions. A policy-motivated candidate may find a way to be more credibly committed to supporters’ objectives, and thus raise much greater campaign contributions, than a

pure election-seeking candidate. In any case, the possibility of a trade-off between contributions and voting suggests that a PSNE can exist where the candidates make quite different promises. The formal model of elections in the US, presented in Chap. 5, suggests that this is the case.

The second class of electoral models assumes that voters are *probabilistic* rather than deterministic. Once the candidate promises are made, a voter in the deterministic model chooses one of the candidates with certainty (except when the two candidates are identical in all respects). In the probabilistic model, on the other hand, the voter's behavior, after the candidate promises are known, is a random variable which is based on the voter's beliefs about the likely consequences of the choice. In particular, such beliefs should deal with the estimates each voter makes concerning the likelihood that the candidates will deliver on their promises.

The advantages of the probabilistic model are twofold. First, if voter preferences and candidate promises (or positions) are known, then it is possible to model the voter response econometrically. The early empirical work concentrated on two-candidate models (Enelow and Hinich 1982a), but recent research, discussed in Chaps. 5–11, has modelled multicandidate and multiparty competition (see also Schofield and Sened 2006).

It is important to note that the probabilistic model is continuous in voter and candidate positions, and the chaos theorems (mentioned above) do not apply. Because the total vote for each candidate is a random variable, it can be characterized by its expectation and variance. Probabilistic models typically assume “pure-election seeking” candidates who make promises to maximize their expected vote. The usual result in models of two-candidate competition is that there exists a PSNE where both candidates propose the mean rather than the median position (Lin et al. 1999; Coughlin 1992). This result solves the equilibrium problem of public economics very neatly.

However, there are a number of theoretical and substantive problems with this probabilistic model. Even policy-blind candidates make promises under risk, and the degree of risk depends not just on the expectation of voter response, but on the variance of this response. The models implicitly assume that the variance is independent of candidate positions, and this is untenable in the absence of a clear model of the formation of voter beliefs. The models also assume that each voter's behavior is statistically independent of the others'. This is unwarranted for the same reason. More importantly, however, the conclusions of the model are not empirically substantiated. The analysis presented in Chaps. 8 and 10 of elections in Israel, Turkey and Poland show the existence of a PSNE where the parties cluster into various groups. In fact, all the parties maintained separate identities and declared quite different policies to the electorate.

We infer that a more realistic variant of the probabilistic model must assume that candidates, or parties, are policy motivated, at least to the extent of choosing positions that balance their policy and electoral objectives. As one would expect, the Nash equilibrium causes party leaders to make very different promises (Cox 1997).

Our observations about these models are intended to highlight the differences in the requirements of public finance and formal political theory. For public finance, the motivation is to extract predictions about political choice that can be used to evaluate the optimality of public decisions concerning taxation and public goods provision. The need to add greater political verisimilitude has obliged political theorists to address questions of belief formation (particularly regarding what voters believe the winning candidate will do after the election) and candidate commitment. From the perspective of public finance, the more refined model appears untidy and less parsimonious. The political theorist, however, faces the quite difficult task not just of comparing predictions with reality, but of evaluating how reasonable the assumptions about belief formation are. It is only recently that these belief-based models have been developed to a degree sufficient to offer plausible predictions.

We have tried to suggest, in this section on elections, why the simple unidimensional two-candidate model of electoral competition is both theoretically and empirically inadequate. On the theoretical side, the attempt to base the analysis purely on techniques of preference aggregation has proved to be unsatisfactory. As we have implied above, Downs paid considerable attention to questions of risk or uncertainty in elections, but the formal techniques to address those problems were not available at that time. The observation that these simple models were also empirically unsatisfactory gives greater weight to the theoretical attempt to model both preferences and beliefs. In the next section, we shall attempt to enlarge the discussion about the nature of beliefs, and show the connection with Condorcet's Jury Theorem.

### 3.4 The Condorcetian Research Program

From the point of view of pluralistic political theory, no individual preference can be privileged over another. This could be taken to imply that no fundamental agreement may be reached among individuals who differ in their preferences. A Nash equilibrium in a game, or a voting equilibrium in a committee, specifies the nature of the compromise (rather than agreement) that individuals will accept given that they attempt to maximize what they prefer. In contrast to preferences, people with differing empirical beliefs about how the world works may come to agree with each other if they communicate and share information. Economists have recently attempted to model this process when beliefs are uncontaminated by preferences (Aumann 1976; McKelvey and Page 1986).

To some extent, political decision making is a matter of aggregating beliefs. Thus, while people may disagree about what action to take, debate may lead to an agreed solution. When two candidates offer differing courses of action (based on their own beliefs about the world), it is perfectly reasonable to suppose that the probability that a given voter chooses one candidate over the other is determined by the relative degree to which (s)he agrees with the two candidates' beliefs. From this point of view, the paradox of voter turnout does not exist, since voting is not based



on the desire to implement one's preferences but on the attempt to ascertain the truth. Moreover, convergence of candidates to the same (Nash equilibrium) position is no longer a problem but a virtue, inasmuch as the equilibrium position is the one that has the highest probability of being correct, given the distribution of beliefs in the society. Thus the Nash equilibrium result solves the optimality problem for political-economic theory.

Admittedly, this argument depends on the validity of the Condorcet Jury Theorem, which in turn depends on the assumption of the statistical independence of voter behavior (see [Ladha and Miller 1996](#)). This assumption may not be warranted when votes are determined by voters' beliefs. Moreover, if the candidates or voters are policy motivated, their policy concerns will contaminate the process of belief aggregation. Similarly, parties strong enough to impose policy objectives on candidates will also contaminate this process. Nonetheless, since the empirical evidence suggests that party discipline in the US Congress is weak, there may be a basis for inferring that successful congressional candidates at least approximate the belief optimum of their constituents.<sup>28</sup>

The Jury Theorem depends on beliefs that are, in turn, determined by the configuration of activist factions in the political economy. It should be possible, therefore, to use a more complex version of the theorem to resolve some of the questions raised by the Founding Fathers about the relationship between factions, institutional rules, and good government. On the other hand, the optimality question that formal democratic theory may now pose is whether institutional rules and legislators' and activists' private preferences will intrude on the formation of the outcome that best represents the diverse beliefs of the members of the society.

Pursuing these issues will require the development of rationality models that incorporate both preferences and beliefs. It is obvious that the interrelation between beliefs and preferences is fundamental in the context of social dilemmas. Olson's (1965) attempt to analyze the problem of collective action (including voluntary provision of public goods and voter turnout) adopted the simpler perspective of preference aggregation. In this context it is traditional to use game theory to model the situation, and indeed to describe it as a prisoner's dilemma.<sup>29</sup>

The paradox of the  $n$ -person prisoners' dilemma, of course, is that the dominant or best strategy for each individual is to defect rather than cooperate. This inference was used as the basis for the argument that public goods would not be provided, or that interest groups would collapse in the absence of private incentives. Recent work has suggested that it is far too simplistic to infer that defection will always occur. One possibility is that a dominant player may bribe or persuade the other members of a group to form a cooperative coalition. These theoretical observations provide the basis for the positive literature on hegemony in international relations (e.g., [Gilpin 2001](#)). However, the possibility that cooperative coalitions can form

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<sup>28</sup>Chapters 5 and 6 present models of voting that shows how activists may affect voter beliefs about the character traits of presidential candidates in the US and political leaders in Great Britain.

<sup>29</sup>Hardin (1971, 1982), [Taylor \(1976\)](#), [Axelrod \(1984\)](#).



entails that they may also collapse. Indeed, [Richards \(1990\)](#) has demonstrated the occurrence of chaos, or unpredictability, in the experimental prisoner's dilemma. More recent analysis has emphasized the importance of modelling the beliefs agents hold about the beliefs of others.<sup>30</sup> Because the analysis of an agent's choice necessarily requires a model of what the agent thinks others will do and why they will do it, analysis of the relationship between beliefs and preferences must deal with the common knowledge problem. In general this common knowledge problem comes down to whether or not the members of the society have similar knowledge structures: that is whether they hold similar views about how the world works.

While capitalism and democracy were initially viewed by rational choice theorists simply as methods of preference aggregation, the more recent work has had to view rational agents not simply as preference maximizers, but as rational modelers of other agents and the world in which they live. To model another agent means modelling how that agent models others. The problem of common knowledge is whether there can be a formal basis for this hierarchy of individual knowledge. Although the question of why voters vote or why soldiers fight may seem very similar from the point of view of preference-based game theory, no plausible understanding of their behavior can ignore voters' or soldiers' beliefs. In these two cases, the relationship between beliefs and preferences could, in principle, be very different. In the next chapter we address some of the relationships between preferences and beliefs, and apply the ideas of chaos theory to economics and climate.

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<sup>30</sup>There is now an extensive literature on a game theoretic analysis of the evolution of social norms. See [Kreps et al. \(1982\)](#), [Sugden \(1980\)](#), [Young \(1998\)](#), [Binmore \(1993, 1998, 2005\)](#), [Nyarko \(1997\)](#), [Bicchieri \(1993, 2006\)](#), [Aumann and Bradenburger \(1995\)](#), [Skyrms \(1996\)](#), [Gintis \(2009a,b\)](#).

# Chapter 4

## Models of the World and Society

### 4.1 Cultural and Linguistic Evolution

As the Arrovian and Condorcetian programs have intermingled over the last 50 years, two aspects of the resulting research program have become increasingly obvious. First, the attempt to extend closed, preference-based economic theory to the political economy has encountered a number of theoretical difficulties. The motivation of this economics program seems very similar in a sense to that of the Hilbert program of logically closing mathematics. Just as Gödel (1931) showed the Hilbert program to be impossible,<sup>1</sup> so, we believe, did Arrow demonstrate the inadequacy of the preference-based rational choice program.<sup>2</sup> A theory of rationality based on both preference and belief is likely to be open, both in the sense that it is not completely mathematized, but also in the sense that it incorporates non-rationalist or at least non-logical, aspects of thought and language.<sup>3</sup>

Penrose (1994) makes a strong case that the Gödel-Turing problem forbids any purely formalistic or computational account of self-awareness. Penrose's argument suggests that there must be fundamental constraints on our ability to model our own behavior. However, we feel these constraints apply not only to theoretical work, but even more importantly to all empirical accounts of behavior.

As the inadequacy of the formalism of pure preference-based game theory is increasingly appreciated, we predict that the flow of ideas between the theoretical and empirical aspects of political economy will increase. This is already evident in attempts to relate the positive theory of institutions to empirical work in political

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<sup>1</sup>See Wang (1987) for a discussion of Gödel's work.

<sup>2</sup>See Binmore (1993) and Schofield (1995b) for a discussion of connections between rational choice theory and the work of Gödel (1931) and Turing (1937). In fact, both the game-theoretic assumption that agents learn about their opponents and that they choose their best response have recently been shown to be incompatible because of the Turing halting problem. See Nachbar (1997, 2001, 2005) and Foster and Young (2001).

<sup>3</sup>See Margolis (1987, 1993) for some interesting views on such a possibility.

economy. For example, while the work by [North \(1990, 2005\)](#) and [North et al. \(2009b\)](#) on institutions and economic performance grew out of earlier empirical work in economic history [North \(1981\)](#), it was also informed by the developments in game theory that we have mentioned above. Researchers on the positive aspects of political economy are increasingly aware of the way different institutions, whether economic or political, determine the “rules of the game” and thus the formation and maintenance of beliefs. This, in turn, can create the context for work of a predominantly empirical nature, but situated in political economies very unlike those of developed societies. Thus while political economy will retain the normative and theoretical focus of the Condorcetian and Arrovian research programs, it will also increasingly sustain empirical work of a truly comparative nature.

These remarks are to remind the reader that our ability to juxtapose theoretical and empirical analysis of human behavior is limited by the fundamental Gödel–Turing constraints on the consistency and completeness of self-knowledge. These theoretical observations attest to the following remark:

[T]he fundamental theoretical problem underlying the question of cooperation is the manner by which individuals attain knowledge of each others’ preferences and likely behavior. Moreover, the problem is one of common knowledge, since each individual,  $i$ , is required not only to have information about others’ preferences, but also to know that the others have knowledge about  $i$ ’s own preferences and strategies. [Schofield \(1985b\)](#)

The early work by [Hamilton \(1964\)](#) and [Trivers \(1971\)](#) used arguments based on kinship and reciprocity to model cooperation in a small family or society.<sup>4</sup> Much work has been done recently on modelling the cultural or informational basis of cooperation. For example, [Pinker and Bloom \(1990\)](#) have pointed out that

humans, probably early on, fell into a lifestyle that depended on extended cooperation for food, safety, nurturance, and reproductive opportunities. This lifestyle presents extraordinary opportunities for evolutionary gains and losses. On the one hand it benefits all participants by surmounting prisoners’ dilemmas. On the other it is vulnerable to invasion by cheaters. The minimum cognitive apparatus needed to sustain this lifestyle is memory for individuals and the ability to enforce social contracts.

They argue that the logic of surmounting the prisoner’s dilemma provided the selection pressure for the evolution of language. Recent research suggests that there was a fairly rapid increase of technological and cultural efficiency somewhere between 30 and 60 KYBP, that led to a diaspora of humans out of Africa ([Mellars 2006](#)).<sup>5</sup> A plausible conjecture is that this cultural transformation was based on the coevolution of language and cultural techniques to avoid the costs of the prisoner’s dilemma. On the other hand, [Choi and Bowles \(2007\)](#) present a game theoretical simulation of altruism in prisoner dilemma like situations that seems to indicate that altruism – “benefiting fellow group members at a cost to oneself” – cannot be evolutionary stable. Choi and Bowles suggest, on the contrary, that altruism can

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<sup>4</sup>See also [Hamilton \(1996, 2001\)](#), [Trivers \(1985\)](#).

<sup>5</sup>As in Chap. 2, we use KYBP to mean thousand years before the present.

co-evolve with parochialism – “hostility towards individuals not of the same group.” (See also [Bowles, 2006](#)).

One obvious way that people can determine whether others are of the same or different group is whether they speak the same language. It seems quite clear that language tends to exhibit rapid evolution [Kenneally \(2007\)](#). In Chap. 2, we mentioned the argument by [Anthony \(2007\)](#) that all Indo-European languages evolved in a few thousand years from a single population originally inhabiting an area north of the Black Sea.

Putting these various ideas together suggests the hypothesis that altruism, together with parochialism, and language co-evolved. Within a single speech community, cooperation is enhanced by mutual intelligibility, but conflict between speech communities drives group competition and war.

Later in this chapter, we mention the argument by [Calvin \(1991, 2006\)](#) that human cultural evolution has been dramatically influenced by the chaotic climatic changes that have occurred since the end of the Ice Age, about 16 KYBP. At about 7.6 KYBP, the end of a mini ice age caused the flooding of the fresh-water Euxine Lake to create the Black Sea. This may have been the trigger for a flow of agricultural communities into Western Europe. Drought in the Aegean about 3.2 KYBP destroyed the Hittite empire in Anatolia and the Mycenaean late bronze age civilization. As we discussed in Chap. 2, the longevity of the Roman Empire may have been a function of the stability of the Mediterranean climatic or ecological zone from 2.3 KYBP to 1.6 KYBP. A climatic change around 1.6 KYBP (400 CE) may have shifted this ecological zone and precipitated the movement of peoples into Western Europe, bringing the Roman Empire to an end.

The Medieval Warm Period, 900 to 1200 CE, tended to benefit Western Europe, and led, for example to the colonization of Greenland about 985 CE. However, it also brought drought and collapse to the Mayan civilization (750 to 1025 CE) and the Mesa Verde, Chaco Canyon and Mimbres cultures in North America (1276–1299 CE).<sup>6</sup> A cold period, the little ice age, after 1200 CE, brought widespread famine in Europe. It is also thought that this climate change contributed to the virulence of the black death about 1340 CE.<sup>7</sup> After the end of the little ice age, about 1740 CE, agricultural productivity started to increase. As we discussed in Chap. 2, this had important ramifications for the beginning of the industrial revolution. Even so, climatic oscillations caused poor harvests. In France in 1788/89, bread riots led to the dismissal of the director-general of the finances, Jacques Neckar, on July 12, by Louis XVI, and the storming of the Bastille a few days after.

We may reasonably call these climatic changes *chaotic* because they are caused by complex feedback loops, involving, among other things, the North Atlantic Oscillation, the El Nino Southern Oscillation and the Great Ocean Conveyer Belt. Fagan calls this the “dance of air and ocean,” the interaction of periodicities in the orbit of Earth, solar radiation, and deep ocean currents generated by the Coriolis

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<sup>6</sup>[Diamond \(2005\)](#).

<sup>7</sup>See the various books by [Fagan \(1999, 2001, 2004, 2008\)](#).

force. Rapid transformations are possible in these dynamic systems, to the extent that they can become structurally unstable: a relatively small perturbation can induce a qualitatively very different system.

In our time, a small humanly induced increase in CO<sub>2</sub> concentration in the atmosphere could enhance the green house effect, inducing catastrophic collapses of the Greenland and Antarctic ice sheets. As we discuss later in this chapter, the Greenland collapse would turn off the Gulf Stream, freeze Europe and flood the low-lying land where great cities lie. Drought would cause massive fires in Asia and probably destroy the Amazon forest, causing further positive feedback and increased green house effects. The theoretical and empirical evidence strongly suggests that this threat to the survival of the human race is far more severe even than the threat of nuclear war in the last century. The problem is that we desire economic growth, and the most readily available energy sources to sustain this growth are oil and coal, whose use exacerbates the green house effect. Reliance on markets seems only to bring about chaos. As drought and famine occur throughout the world, attempts to deal with this global problem will become less and less effective. Indeed, it has been conjectured that climate change already contributes to the widespread stress and civil war currently seen in Africa (Miguel et al. 2004). Recent books by [Khanna \(2008\)](#) and [Zakaria \(2008\)](#) discuss aspects of the probably unpleasant world of the future. We shall be caught in the last and most terrifying prisoners' dilemma of all.

There are elements of the world and society, such as climate and the pattern of economic development, that are chaotic. This presents us with quandaries about how to make decisions with regard to the future. The most mathematical of our theories about society, namely general equilibrium, may also be deeply flawed, and we may need to think again about how to orchestrate our institutions to guard against risk.

Since chaos and uncertainty are inextricably linked, a discussion of varieties of chaos can suggest to us why the future is so uncertain, and perhaps provide a better understanding of how to deal with the externalities that we are currently imposing on future generations.<sup>8</sup> The rest of this chapter presents some recent notions about chaos as applied to the economy, to the heavens and to climate.

## 4.2 Chaos in the Market and the Heavens

### 4.2.1 *The Market*

John Maynard Keynes's work, *The General Theory of Employment, Interest and Money* (1936) was very probably the most influential book on economics in the twentieth century. *The General Theory* is, in a sense, a continuation of Keynes's

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<sup>8</sup>Indeed, according to [Hawking and Mlodinow \(2010\)](#), without a theory that builds on chaos and uncertainty, we will have no understanding of our future.

earlier writing on the foundation of probability, completed in the period 1906 to 1914, and published eventually as the *Treatise on Probability* (1921). In the *Treatise*, Keynes was concerned to construct a formal theory of probability defined as a degree of belief.<sup>9</sup> But he also wrote in a sceptical vein.

[T]he old assumptions, that all quantity is numerical and that all quantitative characteristics are additive, can no longer be sustained. Mathematical reasoning now appears as an aid in its symbolic rather than its numerical character. I, at any rate, have not the same lively hope as Condorcet, or even as Edgeworth, “Eclairer le Science morales et politiques par le flambeau de l’Algebre.” ..

French philosophy of the latter half of the eighteenth century was profoundly affected by the supposed conquests of the calculus of probability in all fields of thought. . . It was under these influences that Condorcet evolved his doctrine of the perfectability of the human race. . . The continuity of modern European thought may be illustrated by the reflection that Condorcet derived from Bernoulli, that Godwin was inspired by Condorcet, that Malthus was stimulated by Gorwin’s folly into stating his famous doctrine, and that from the reading of Malthus on *Population Darwin* received his earliest impulse.<sup>10</sup>

Macro-economics as it is practiced today tends to put a heavy emphasis on the empirical relationships between economic aggregates, while micro-economics emphasizes the logic of equilibrium and market efficiency. Keynes’ views, in the *Treatise*, suggest that he was impressed neither by econometric relationships nor by algebraic manipulation. Moreover, his ideas on “speculative euphoria and crashes” would seem to be based on an understanding of the economy grounded neither in econometrics nor mathematics alone, but in the qualitative aspects of its dynamics.

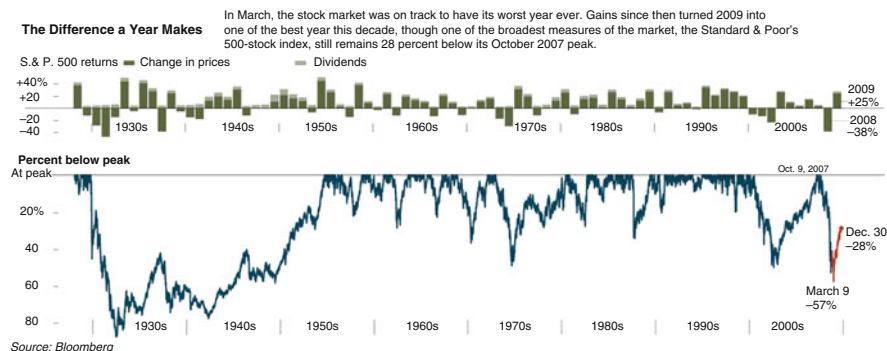
Schofield (1999) has argued that a dominant core belief, the *economic equilibrium hypothesis*, had won universal acceptance among policy makers in the aftermath of the chaotic events of the 1970s. The International Financial Crisis of 1997–1998, involving Russia, Indonesia, Malaysia, and many countries in Latin America, indicated that the global economy faced a fundamental quandary derived from the realization that this core belief was wrong. A resolution of this quandary could be based on accepting that Keynes was correct in his understanding of the global economy. While commodities markets, governed by risk, might well display equilibrium, asset markets, governed by speculation, do not. For Keynes, asset markets display fundamental uncertainty. The earlier article argued that the events of the late 1990s indicated that fundamental reform of international institutions was necessary to avoid chaos.

The crisis of 1997–1998 was followed shortly after by the collapse of the dot.com bubble. Figure 4.1 shows the magnitude of changes in the US stock market in the long period from the 1920s to the present (the figure normalizes the changes by setting all peaks to unity). It is noticeable that the fall from a peak in the Dow

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<sup>9</sup>The *Treatise* extended the arguments by Condorcet and Laplace, written over a hundred years before, and also provoked Popper’s rejection of induction. See Popper ([1935], 1992, 1992, [1935]).

<sup>10</sup>Keynes (1921:90). Here Keynes seems to accept Hume’s scepticism about the basis for probability. The *Treatise* also provoked Popper’s rejection of induction. See Popper (1992, [1935]).



**Fig. 4.1** Chaotic stock market prices 1930–2009 (Source: New York Times, December 31, 2009)

of 11,723 on January 14, 2000, to its next low of 7,286 on October 9, 2002, was followed by a peak of 14,164 on October 9, 2007. The next low was 6,547 on March 9, 2009. These violent oscillations are compatible with Hyman Minsky's theory of market volatility, based on Keynesian uncertainty (Minsky 1975, 1986). Minsky's argument is that periods of economic growth eventually lead to irrational beliefs about the degree of risk embedded in the market. Increasing risk taking leads to a bubble, and this eventually collapses when the true level of risk becomes apparent. Minsky's work therefore denies the core principle of market efficiency associated with the equilibrium hypothesis.

The collapse of the global property/housing bubble from late 2006 destroyed trillions of dollars of assets, not just in the US but worldwide, and almost destroyed the global market itself. Rapidly rising unemployment showed that disorder in financial markets could have real macroeconomic effects.

Many theories have been put forward recently to account for this bubble. One of these is that China's mercantilism meant that its purchases of dollar assets, to maintain its cheap currency, provided cheap money to US consumers, fueling the bubble and US economic growth.<sup>11</sup> While there is some truth to this argument, it does not provide a basis for understanding the periods of high and low volatility apparent from Fig. 4.1.

In this chapter, we shall focus on the idea of chaos that underlies Keynes's arguments about uncertainty. To do this we shall first discuss the economic equilibrium and efficient market hypotheses. The idea of chaos first occurred in constructing models of the weather, climate and celestial mechanics, and we shall use such models to give an idea of what chaos is all about. In discussing climate, we shall argue that our civilization developed during a period known as the holocene. We conjecture that the prior period of market stability resembles the holocene, and we should prepare ourselves for a future of increasing chaos. How we might defend

<sup>11</sup>Ferguson (2008).

against this future chaos will depend on building dynamical models of the economy and climate that are not based on false equilibrium arguments, but incorporate at least some of the complex feedback mechanisms that we now know govern our society.

First consider a thought experiment to about the global economy. There must be local periodicities due to climatic variation.<sup>12</sup> Since hurricanes and monsoons, etc. effect the economy, one would expect small chaotic events. More importantly, however, some of the behavior of economic agents will be based on their future expectations about the nature of economic growth, etc. Thus one would expect long term expectations to affect large scale decisions on matters such as investment, fertility etc.

It is evident enough that the general equilibrium (GE) emphasis on the existence of price equilibria, while important, is probably an incomplete way to understand economic development. In particular, GE theory tends to downplay the formation of expectations by agents, and the possibility that this can lead to unsustainable “bubbles.”

It is a key assumption of GE that agents’ preferences are defined on the commodity space alone. If, on the contrary, these are defined on commodities *and* prices, then it is not obvious that the Arrow Debreu Theorem can be employed to show existence of a price equilibrium.<sup>13</sup> More generally one can imagine energy engines (very like hurricanes) being generated in asset markets, and sustained by self-reinforcing beliefs about the trajectory of prices. It is true that modern decentralized economies are truly astonishing knowledge or data-processing mechanisms. From the perspective of today, the argument that a central planning authority can be as effective as the market in making “rational” investment decisions is very controversial. Hayek’s “calculation” argument used the fact that information is dispersed throughout the economy, and is, in any case, predominantly subjective. He argued essentially that only a market, based on individual choices, can possibly “aggregate” this information.<sup>14</sup>

Recently, however, theorists have begun to probe the degree of consistency or convergence of beliefs in a market when it is viewed as a game. It would seem that when the agents “know enough about each other”, then convergence in beliefs is a possibility.

In fact the issue about the “truth-seeking capability” of human institutions is very old and dates back to the work of Condorcet. Recent work suggests that there may be “belief cascades” or bubbles, which generate multiple paths of beliefs which diverge away from the “truth.”<sup>15</sup>

We have in mind a dynamical representation of the economy somewhere in between macro-economics and general equilibrium theory. The laws of motion of

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<sup>12</sup>We shall discuss climate more fully below.

<sup>13</sup>Arrow and Debreu (1954).

<sup>14</sup>Von Hayek (1945).

<sup>15</sup>This idea can be applied to chaotic social changes, such as the fall of the Iron Curtain or the onset of revolution. See Lohmann (1994) and Schofield (2006).



such an economy would be derived from modelling individuals' "rational" behavior as they process information, update beliefs and locally optimize.

As Akerlof and Shiller argue,

the business cycle is tied to feedback loops involving speculative price movements and other economic activity – and to the talk that these movements incite. A downward movement in stock prices, for example, generates chatter and media response, and reminds people of longstanding pessimistic stories and theories. These stories, newly prominent in their minds, incline them toward gloomy intuitive assessments. As a result, the downward spiral can continue: declining prices cause the stories to spread, causing still more price declines and further reinforcement of the stories.<sup>16</sup>

At present it is not possible to construct such a micro-based macro-economy because the laws of motion are unknown. Nonetheless, just as simulation of global weather systems can be based on local physical laws, so may economic dynamics be built up from the local "rationality" of individual agents. However, the GE models discussed in this chapter are based on the assumption that the political economic world is contractible, that is, it has the topological characteristic of a ball. This seems an unlikely assumption.<sup>17</sup> Although the total set of resources may well be bounded, it does not appear to be the case that technological possibilities are similarly bounded. Indeed, the Enlightenment argument between Malthus and Condorcet seems, at least in the developed world, to have been carried by the optimistic Condorcet. However, the less developed world, particularly Africa and parts of the Middle East, faces Malthusian constraints that engender economic and political disorder.<sup>18</sup> North (2005) argues that the growth of the developed world is due to its sophisticated institutions, what Kling and Schultz call "protocols," namely the social ability to solve social and economic problems.<sup>19</sup>

Although we might have reason to be optimistic about technological advance, recent economic events have caused concern about the validity of current economic theory. Since our social protocols are crucial to our society, it is imperative they work in an efficient manner. This concern has led to an extensive literature, in the last few years, dealing with the efficiency of our market protocols, the theory of efficient markets. This literature discusses the nature of herd instinct, the way markets respond to speculative behavior, the power law that characterizes market price movements and the cause and effect of such financial crises.<sup>20</sup> Some of these analyses are based on a version of the market equilibrium theorem. In fact, much of the work on efficient markets is based on the Black–Scholes partial differential

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<sup>16</sup>Akerlof and Shiller (2009). See also Akerlof and Kranton (2010).

<sup>17</sup>See Krugman (2009), for a recent argument that the assumptions of economic theory are unrealistic.

<sup>18</sup>Condorcet (1955, [1795]) and Malthus (1870 [1798], [1830]), and the discussion in Chap. 1.

<sup>19</sup>King and Scultz (2009) and Stiglitz (2010).

<sup>20</sup>See, for example, Mandelbrot and Hudson (2004), Shiller (2003, 2005), Taleb (2004, 2007), Barbera (2009), Cassidy (2009), Fox (2009), James (2009), Tett (2009), Roubini and Mihm (2010).

equation used to price options.<sup>21</sup> The recent collapse of the economy suggests that this equation is subject to chaotic singularities, whose qualitative nature is not understood.

As discussed above, Minsky's interpretation of Keynes's general theory focuses on the proposition that asset pricing is subject to an extreme degree of uncertainty. The underlying idea is that individuals do not know the true probability distribution on the various states of the world, but only have personal probability distributions, in the sense of Savage (1954). They make stochastic choices on the basis of this personal uncertainty. Agents may also differ widely in how they treat "black swan" low probability events. Since investment decisions are based on these uncertain evaluations, and these are the driving force of an advanced economy, the flow of the market can exhibit singularities, of the kind that recently nearly brought on a great depression. These singularities are time-dependent, and can be induced by endogenous belief-cascades, rather than by any change in economic or political fundamentals.<sup>22</sup>

More abstractly, the space in which economic and political behavior occurs may be thought of as a "manifold" of very high dimension. While GE asserts that there are "equilibria", these will depend on the dynamical domain in which they are defined. These domains are separated by singularities, where the qualitative nature of the system may be radically transformed. To illustrate this point by the stock market, shown above in Fig. 4.1, the flow does not look like a slowly changing equilibrium, responding to exogenous changes in population and resources. A period of relative stability, or low volatility, as in the 1990s, would give a false impression of risk prior to the singularity in 2000. This stable period was followed by collapse, then euphoria, then by collapse again, then the current partial recovery. The period of disorder associated with such a singularity we can call "chaos."<sup>23</sup>

#### 4.2.1.1 Discovery of Chaos

"Empirical chaos" was probably first discovered by Lorenz (1963, 1993). He found that slight changes in the coefficients of a simple system, with three variables and three parameters, used to model the weather, gave rise a qualitatively different dynamical process. Figure 4.2 gives a pictorial representation of the dynamical system he found, the so-called "butterfly."

Given that chaos can be found in such a simple meteorological system, it is worthwhile engaging in a thought experiment to see whether "climatic chaos" is a plausible phenomenon. Weather occurs on the surface of the earth, so the spatial

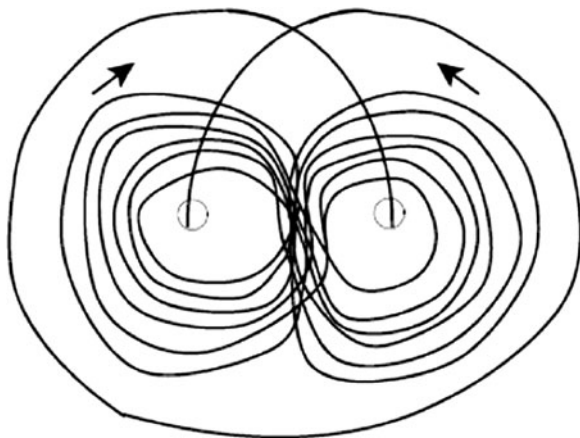
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<sup>21</sup>Black and Scholes (1973). We shall argue below that this equation is structurally similar to the Ricci flow equation in celestial mechanics, and can be regarded as a method of computing the "geodesic" of the financial economy.

<sup>22</sup>All of these ideas are present in Keynes's work, especially as interpreted by Minsky.

<sup>23</sup>See, for example, Boldrin and Woodford (1990).

Fig. 4.2 The “butterfly”



context, or “geosphere,” is the two-dimensional sphere, the surface of the earth,  $S^2 \times I$ , where  $I$  is an interval corresponding to the depth of the atmosphere. Purely theoretical arguments show that a certain kind of dynamical system on  $S^2 \times I$  will exhibit a singularity. For example, the impact of different weather systems can be seen as a singularity. But the effect of their impact will often be indeterminate.

The system of plate tectonics occurs in the “lithosphere” also in  $S^2 \times I$ , so volcanoes can also be seen as singularities. Earthquakes and volcanoes on the tectonic boundaries are locally chaotic because of the non-linearity of the dynamical system that governs their behavior.<sup>24</sup> The domain of the dynamical system near a singularity can be called a portal, and it is within a portal that the dynamics becomes chaotic.

Climate is affected by temporal periodicities, induced by the orbit of the earth round the sun and wobbles in the earth’s rotation.<sup>25</sup> In addition there are spatial periodicities or closed orbits in the geosphere. Chief among these must be the jet stream and the oceanic orbit of water from the southern hemisphere to the North Atlantic (the Gulf Stream) and back. The most interesting singularities are the hurricanes generated each year off the coast of Africa and channeled across the Atlantic to the Caribbean and the coast of the USA. Hurricanes are self-sustaining heat machines that eventually dissipate if they cross land or cool water. It is fairly clear that their origin and trajectory is chaotic. While the topological structure of the geosphere allows us to infer the existence of a singularity, understanding weather, and more generally, climate itself, involves the analysis of an extremely complex dynamical system that is affected by periodicities in the solar system. We now turn briefly to the notion of structural stability or chaos in the heavens.

<sup>24</sup>For example, the earthquakes in Haiti on January 12, and in Chile on 27 February 2010, as well as the eruption of the Eyjafjallajökull volcano in Iceland in April 2010, were completely unpredictable.

<sup>25</sup>We discuss celestial and climatic chaos below.

### 4.2.2 *The Heavens*

When Galileo Galilei turned his telescope to the heavens in August 1609, he inaugurated the modern era in science. In his *Sidereal Messenger* he wrote of the myriad stars in the milky way, the moons of Jupiter, each at a different period and distance from Jupiter. Jupiter's moons suggested it was a planet just like the earth. Moreover the phases of Venus also suggested that it was a planet orbiting the Sun. These observations, together with Kepler's empirical "laws" on planetary orbits made it clear that the Copernican heliocentric model of the solar system was not just a mathematical theory but a truth. Galileo waited 22 years before publishing *Dialogue concerning the Two Chief World Systems, Ptolemaic and Copernican*, for fear that he would be accused of heresy by the Church. Indeed, in 1633, he was found guilty of "vehement suspicion of heresy" and spent the years until his death under house arrest, but writing *Two New Sciences* (1638). Within 50 years Newton published *Philosophiae Naturalis Principia Mathematica*, giving a mathematical model of physical reality, including celestial mechanics that provided the theoretical foundations for Kepler's Laws.<sup>26</sup>

Even with the Newtonian mathematical model, it was unclear whether the solar system was "structurally stable". Although it was possible to compute the orbit of a single planet round the sun, the calculation of the influence of many planets on each other seemed technically difficult. Could these joint influences cause a planet to slowly change its orbit, perhaps causing it to spiral in to the sun? Structural stability for the orbital system of the planets means that the perturbations, caused by these interactions, do not change the overall dynamic system. The failure of structural stability means that a slight perturbation of the dynamical system induces a change in the qualitative characteristics of the system. As in the previous discussion, we can use the term "chaos" to refer to this breakdown.

It is only in the last 20 years or so that the implications of "chaos" have begun to be realized. In a recent book, [Kauffman \(1993\)](#) commented on the failure of structural stability in the following way.

One implication of the occurrence or non-occurrence of structural stability is that, in structurally stable systems, smooth walks in parameter space must [result in] smooth changes in dynamical behavior. By contrast, chaotic systems, which are not structurally stable, adapt on uncorrelated landscapes. Very small changes in the parameters pass through many interlaced bifurcation surfaces and so change the behavior of the system dramatically.

It is worth mentioning that the idea of structural stability is not a new one, though the original discussion was not formalized in quite the way it is today. The laws of motion written down by Newton in *Principia Mathematica* could be solved precisely giving a dynamical system that for the case of a planet (a point mass) orbiting the sun. However, the attempt to compute the entire system of planetary orbits had to face the problem of perturbations. Would the perturbations

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<sup>26</sup>Galileo Galilei ([1992](#) [1610], [1967](#) [1632], [1974](#) [1638]), Newton ([1995](#) [1687]).

induced in each orbit by the other planets cause the orbital computations to converge or diverge? With convergence, computing the orbit of Mars, say, can be done by approximating the effects of Jupiter, Saturn perhaps, on the Mars orbit. The calculations would give a prediction very close to the actual orbit. Using the approximations, the planetary orbits could be computed far into the future, giving predictions as precise as calculating ability permitted. Without convergence, it would be impossible to make predictions with any degree of certainty. Laplace in his work *Mécanique Céleste* (1799–1825) had argued that the solar system (viewed as a formal dynamical system) is structurally stable (in our terms).<sup>27</sup> Consistent with his view was the use of successive approximations to predict the perihelion (a point nearest the sun) of Haley’s comet, in 1759, and to infer the existence and location of Neptune in 1846.

Structural stability in the three-body problem (of two planets and a sun) was the obvious first step in attempting to prove Laplace’s assertion. In 1885, a prize was announced to celebrate the King of Sweden’s birthday. Henri Poincaré submitted his entry “Sur le problème des trois corps et les Equations de la Dynamique.” This attempted to prove structural stability in a restricted three body problem. The prize was won by Poincaré although it was later found to contain an error. His work on differential equations in the 1880s and his later work, *New Methods of Celestial Mechanics* in the 1890s, developed qualitative techniques (in what we now call differential topology).<sup>28</sup> The Poincaré conjecture, that “a compact manifold, with the same algebraic invariants as the three-dimensional sphere, is indeed a three sphere” was one of the great unproven theorems of the twentieth century. The theorem has recently been proved by Grigori Perelman.<sup>29</sup>

The earlier efforts to prove this result has led to new ideas in topological geometry, that have turned out, surprisingly, to have profound implications for a better understanding of general relativity and the large scale structure of the universe. Our physical universe is a three-dimensional manifold, probably bounded and thus compact. The Ricci flow on this manifold is given by a certain partial differential equation. This equation is a way of characterizing the curvature of geodesics on this manifold. The equation has a deep relationship with the topological structure of the universe. Perelman’s proof depends on understanding the nature of singularities associated with this equation.

One of the notions important in understanding structural stability and chaos is that of *bifurcation*. Bifurcation refers to the situation where a particular dynamical system is on the boundary separating qualitatively different systems. At such a bifurcation, features of the system separate out in pairs. However Poincaré also discovered that the bifurcation could be associated with the appearance of a new solution with period double that of the original. This phenomenon is central to the

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<sup>27</sup>See Galison (2003).

<sup>28</sup>Poincaré (1993).

<sup>29</sup>O’Shea (2007). Perlman recently won a million dollar Millenium prize for his theorem from the Clay Mathematics Institute. For an outline of Perlman’s result, see Morgan and Gang Tian (2007).

existence of a period-doubling cascade as one of the characteristics of chaos. Near the end of his *Celestial Mechanics*, Poincaré writes of this phenomenon:

Neither of the two curves must ever cut across itself, but it must bend back upon itself in a very complex manner ...an infinite number of times.... I shall not even try to draw it...nothing is more suitable for providing us with an idea of the complex nature of the three body problem. (Galison 2003:74)

Although Poincaré was led to the possibility of chaos in his investigations into the solar system, he concluded that though there were an infinite number of such chaotic orbits, the probability that an asteroid would be in a chaotic orbit was infinitesimal. Arnol'd showed in 1963 that for a system with small planets, there is an open set of initial conditions leading to bounded orbits for all time.<sup>30</sup> Computer simulations of the system far into time also suggest it is structurally stable. This property of the solar system was a necessary condition for life to have evolved on Earth. Even so, there are events in the system that affect us and appear to be chaotic (perhaps catastrophic would be a more appropriate term).<sup>31</sup> It is certainly the case that the “N-body system” can display exceedingly complex, or chaotic phenomena (Saari and Xia 1985).

Although space is three-dimensional, the Einsteinian universe also involves time, and the behavior of geodesics near space-time singularities may also be very complex.<sup>32</sup> The point of this discussion about celestial mechanics is the we know the Newtonian laws of motion, but even these relatively simple laws generate phenomena that can defeat prediction. Analysis under the more complex Einsteinian laws of motion become even more difficult. The Black–Scholes partial differential equation, which we referred to above, can be seen as the analogue of the computation of the geodesic in cosmology. Once we have rejected the notion that the economy seeks equilibrium, then we are obliged to accept the real possibility of singularity and chaos in its behavior.

As a result of his research in celestial mechanics, Poincaré (2007, [1908]) was led to the realization that any deterministic system could, in principle, be chaotic. As he wrote:

If we knew exactly the laws of nature and the situation of the universe at the initial moment, we could predict exactly the situation of that same universe at a succeeding moment. [B]ut even if it were the case that the natural laws had no longer any secret for us, we could still only know the initial situation approximately. If that enabled us to predict the succeeding situation with the same approximation, that is all we require, and we should say that the phenomenon had been predicted, that it is governed by laws. But it is not always so; it may happen that small differences in the initial conditions produce very great ones in the final phenomena. A small error in the former will produce an enormous error in the latter. The meteorologists see very well that the equilibrium is unstable, that a cyclone will be formed

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<sup>30</sup>See Arnol'd (1963) and Message (1984).

<sup>31</sup>Like the comet Shoemaker-Levy 9 which collided with Jupiter in 1994.

<sup>32</sup>See the discussion of space-time singularities, such as black holes, in Hawking and Ellis (1973) and in Penrose (2003). Penrose (2011) discusses the possibility of a chaotic portal to a singularity as suggested by the Belinsky–Khalatnikov–Lifshitz conjecture.

somewhere, but exactly where they are not in a position to say; a tenth of a degree more or less at any given point, and the cyclone will burst here and not there, and extend its ravages over districts it would otherwise have spared... Prediction becomes impossible, and we have the fortuitous phenomenon.<sup>33</sup>

Poincaré's argument even holds in the very long run for the solar system. Current simulation can estimate all planetary orbits forwards and back for about 5 million years, the *horizon of predictability*. These simulations of the solar system suggest that perturbing the initial conditions of the system can lead to growing changes in the planetary orbits (Thuan 2001).

We now turn to the possibility of chaos in climate, and its influence on humankind.

### 4.3 Climate and Evolution

The impact of large asteroids may have a dramatic effect on the biosphere of the Earth, and these have been suggested as a possible cause of mass extinction. The onset and behavior of the ice ages over the last 100,000 years is very possibly chaotic, and it is likely that there is a relationship between these violent climatic variations and the recent rapid evolution of human intelligence.<sup>34</sup>

More generally, evolution itself is often perceived as a gradient dynamical process, leading to increasing complexity. However, Gould has argued over a number of years that evolution is far from gradient-like: increasing complexity coexists with simple forms of life, and past life has exhibited an astonishing variety. Evolution itself appears to proceed at a very uneven rate, and Gould used the term "punctuated equilibrium" to refer to these singularities that differentiated domains of evolutionary volatility.<sup>35</sup>

By analogy with the use of the term *singularity* in celestial mechanics, we shall use it to refer to a "gate" or portal between qualitatively different dynamical systems. To illustrate, although topology asserts that there are singularities in a flow on the geosphere, as described above, it is necessary to use chaos theory in an attempt to understand the creation of a hurricane or an earthquake. The same point holds more generally for any attempt to model the qualitative changes that can occur in weather and climate.<sup>36</sup>

#### The Holocene

One of the concerns about climate is that it may exhibit complex singularities. For example, the spatially periodic, oceanic flow of water, including the Gulf stream,

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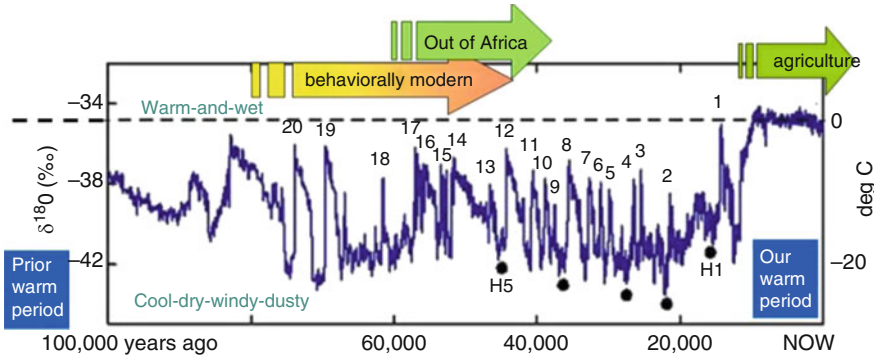
<sup>33</sup>Poincaré ([1908], 2007:68).

<sup>34</sup>Calvin (1991, 2008).

<sup>35</sup>Gould (1989), and Eldridge and Gould (1972).

<sup>36</sup>Sometimes climate does hit an equilibrium, when the planet becomes an ice ball. It only escapes such an equilibrium because of tectonic activity. See Macdougall (2004).





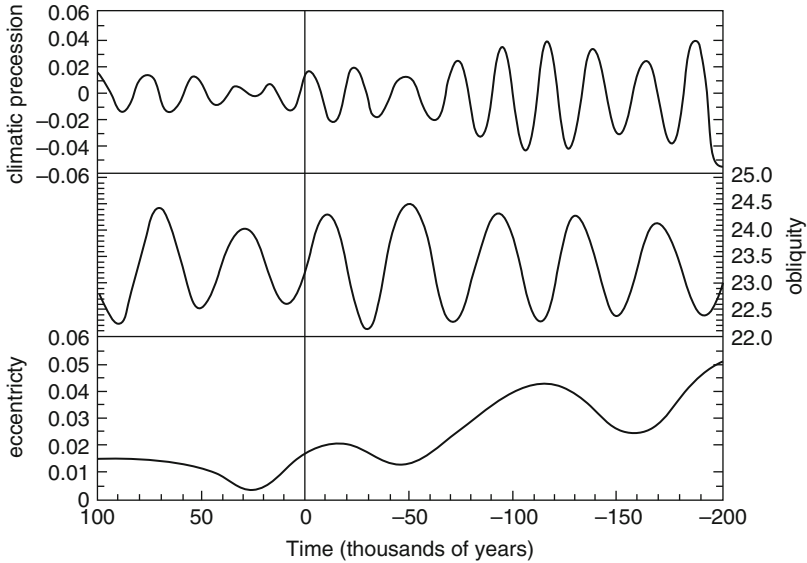
**Fig. 4.3** Climate 100 KYBP to now: Chaos from 90 to 10 KYBP (Source: Global-Fever.org)

has switched off, and then on again, in the past. These switches can be interpreted as singularities that have caused catastrophic changes in climate, and have, in turn, been caused by subtle changes in the underlying periodicities of the system. Since the end of the last ice age, during the period of the *holocene* of the last twelve thousand years, humankind has benefited from a structurally stable and mild climate domain, conducive to agriculture. Figure 4.3 shows average global temperature for the last 100K years, taken from Greenland ice cores. There is a singularity about 90K years ago, then a long chaotic period of about 80K years, and then a singularity about 12K years ago, leading to the holocene. Just before the holocene, there was a brief ice age, the “Younger Dryas,” lasting approximately 1,300 years, from about 12.8 to 11.5 KYBP. Broecker (1997, 2010) describes how the global climate “flickered” in a particularly chaotic fashion, over periods of between 5 and 45 years, just before passing through the singularity that heralded the Holocene.<sup>37</sup> Richerson, Boyd and Bettinger (2001) argue that, before the holocene, agriculture was impossible because rapid climatic variations hindered the experiments that are the precursor to agriculture. About 15 KYBP intensive foraging was underway in the Near East, but it was only at about 11.5 KYBP, at the beginning of the Holocene, that agriculture started. For reasons suggested by Diamond (2005), agriculture was delayed until about 5.7 KYBP in Mexico and about 5.2 KYBP in the Andes. Once agriculture started in the Near East, it diffused quite rapidly, reaching Europe about 7 KYBP.

The dynamical system of the “biosphere”, the whole system of life on Earth, is so intertwined with that of the geosphere and the celestial system that computer-based quantitative analysis can only hint at the connections. As we noted above, the earth’s climate is affected by periodicities in the rotation of the Earth, as shown in Fig. 4.4, as well as by the oscillatory behavior of the Solar irradiation (with an 11 year sunspot cycle). The celestial cycles are associated with the *eccentricity* of the orbit (with a period of order 95,000 years), the Earth’s tilt or *obliquity* (with a period

<sup>37</sup>There was also a very brief ice age about 8,200 years before the present.





**Fig. 4.4** Oscillations in precession, obliquity and eccentricity

of about 41,000 years), and *precession* (of period about 26,000 years). The current obliquity of Earth is  $23^\circ$ , and as the figure shows, obliquity stays with a range of  $22.5^\circ$ – $24^\circ$ . This is due to the Moon’s stabilizing effect.<sup>38</sup> Without the moon, the obliquity would range much more widely, and life on Earth would be much more precarious (Ward and Brownlee, 2000). The changes in eccentricity are due to the perturbations on Earth’s orbits induced by the other planets. See Hays, Imbrie and Shackleton (1976) for a discussion of the work of Milutin Milankovitch, who first hypothesised that these “celestial” oscillations affected climate. See also Hansen (2009) for the resulting correlated changes in temperature,  $\text{CO}_2$  concentration and sea-levels over the last 400 thousand years induced by these celestial oscillations.

As Fig. 4.4 illustrates these oscillations are periodic and non-chaotic in themselves. However, their interactive effect on the Earth can induce transformations in climatic behavior that are chaotic over certain domains. Clearly the oscillatory celestial events, as illustrated in Fig. 4.4, cannot, by themselves, account for the climatic behavior presented in Fig. 4.3. In other words there may be two entirely different domains, a stable one like the holocene, and a chaotic one, like the period just before the holocene. In addition, exotic celestial events, like the collision with the asteroid, 65 million years ago, can induce major singularities and flip the biosphere into a different domain. See Luis Alvarez et al. (1980) for this most recent mass extinction. See also Benton (2003) for the much more severe Permian mass

<sup>38</sup>Thuan (2001) notes that many of these fortuitous aspects are purely contingent. The Moon is the result of the Earth’s impact with a large asteroid over 4 billion years ago.

extinction about 250 million years ago. It is believed that extensive volcanic activity released enormous amounts of CO<sub>2</sub> and chlorine, causing a runaway greenhouse effect. The effect was further stimulated by the melting of frozen gas hydrates, and led to a global 6 degree Celsius rise in temperature. About 90% of all species became extinct. Since the “ice-ball” extinction of 700 million year ago, there have been six major mass extinctions (Ward and Brownlee, 2000).<sup>39</sup>

It is increasingly understood that the dynamics of the geosphere and biosphere interact through multiple feedback mechanisms. Over the very long run, these mechanisms are influenced by plate tectonics (Broecker 1985). In the shorter run, the melting of the ice caps resulting from a temperature change modifies their albedo, reflecting less heat energy, further raising world temperature, increasing oceanic volume, affecting forest evapotranspiration as well as the global algae populations. The oceanic conveyor (and thus the Gulf Stream) can, and has, shut down. Methane can be liberated from deep ocean domains and from land, due to the decay of permafrost. Cloud formations may change as the weather system is transformed, and intense families of hurricanes spawned in the oceans. All these possible changes are deeply chaotic because they involve fundamental transformations in the nature of the balance between our civilization, the oceans, the land and the atmosphere.<sup>40</sup>

It is now well established that even relatively small changes in climate, over the last few thousand years, have had profound effects on our civilization, the *anthrosphere*.<sup>41</sup> Over the longer run of 100K years, our rapid evolution was the consequence of the chaotic climate prior to the holocene. The population growth from about six million, at 12K years ago, to over six billion now is due, of course, to the spread of agriculture, but this was possible only because of a relatively stable climate.<sup>42</sup>

We have only recently realized that population growth and economic activity have induced links from the anthrosphere to the biosphere and geosphere. In fact it is now believed that these effects have been present since the beginning of agriculture about 12K years ago, but the relative stability of the holocene obscured this connection. It is precisely because small changes can induce singularities that we now fear that human activity may be sufficient to “force” the biosphere through a new singularity into a “hot zone,” with a qualitatively different dynamical system. Metaphorically speaking, it would be like passing through a black hole into a totally different universe. The point is that the portal to the singularity would be chaotic.

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<sup>39</sup>These extinctions may be regarded as catastrophes. See the work on catastrophe theory in mathematics by Zeeman (1977).

<sup>40</sup>See McKibben (1989), Edwards (2010) and Flannery (2005) on modelling these complex systems of climate change.

<sup>41</sup>See Fagan (1999, 2008) and Diamond (1997) on the Medieval Warm (800 to 1300 CE) and the Little Ice Age (1300 to 1850 CE).

<sup>42</sup>World population growth rate increased from about 0.07% 12K years ago to about 0.08% 2K years ago to about 0.4% in 1650. The “Malthusian barrier” was broken about 1950 with a growth rate of about 1.6%. See Chap. 2 and Kremer (1993).

Indeed it has been suggested that our behavior may have brought the Holocene to an end, and we should note this by calling the new world the *Anthropocene*.

### The Anthropocene

While GE may assert the existence of a general full-employment equilibrium, recent events seem to support the thesis presented here that economic behavior in our sophisticated markets may also induce complex or chaotic singularities in the flow of the economy. Indeed, it has dawned on us that these lurches from one crisis to another make it even more difficult to see how to plan for the future. If the onset of climate change induces the kind of chaos that occurred prior to the holocene, then we can expect economic hurricanes in the future. More to the point, well before we hit a climatic singularity, there may occur totally unexpected eventualities, such as Malthusian crashes, or Katrina events. For this reason, the future we face exhibits the kind of fundamental uncertainty that Keynes emphasized.

It can be argued that the degree of uncertainty is so pronounced that we should plan for the future with extreme risk aversion.<sup>43</sup>

The National Academy of Sciences has recently published three reports on climate change and has asserted that

A strong, credible body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural systems.<sup>44</sup>

Of course, what we should do depends on what we think the costs of climate change are. The global downturn has, however, focused attention on the present, not the future, and led to severe disagreement about how to attempt to deal with climate change at the international level. As noted in Chap. 1, it was only because of pressure from President Obama that the Copenhagen Accord was agreed to, in December 2009, by the United States together with the four emerging economies of China, Brazil, India and South Africa.

To preserve democracy, Keynes believed that government intervention to control market volatility was the answer, coupled with the preservation of the free market in commodities.<sup>45</sup> But as ever, to constrain or regulate a market, it is necessary to control assets sufficient to do the job, and the scale of these required assets depends on the size of the market and its inherent volatility. The decades long growth and globalization of the international economy means that the assets used for control

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<sup>43</sup>See the quotation from [Stem \(2007\)](#) in Chap. 2, and [Stem \(2009\)](#). This uncertainty stems essentially from the very limited horizon of predictability that we can reasonably impose on the interaction of the anthrosphere and climate.

<sup>44</sup>National Academy of Sciences reports, “Limiting the Magnitude of Future Climate Change”, “Adapting to the Impacts of Climate Change”, “Advancing the Science of Climate Change”. See <http://dels-old.nas.edu/climatechange>.

<sup>45</sup>As did Hayek, Keynes believed the free market in commodities was conducive to both efficiency and liberty.

must be of the order of many trillions of dollars. The United States does not control sufficient assets.

Schumpeter was sanguine about the consequences of market volatility. As he wrote

This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in.. It must be seen in its role in the perennial gale of creative destruction. (Schumpeter, 1942).

If the volatility of the market is no more than a cyclic phenomenon, then we can agree with Schumpeter. Minsky, a student of Schumpeter, was much less sanguine. While accepting Schumpeter's view of the transformative role of technology, he feared the consequences of financial chaos.<sup>46</sup>

## 4.4 Quandaries

In fact, it seems that the globalization and transformation of the world economy in the last few decades has created much more complex feedback mechanisms than ever existed before. It is this increased complexity in the international system that has made it more susceptible to belief cascades, and to the possibility of singularity.

In a sense, our own hubris has brought this on ourselves. If we can no longer trust the market to behave in a fairly stable fashion, then we have to understand it better, in order to regulate it, or partially control it. At the same time however, we also face the possibility of climatic chaos, generated by the additional complexity of our own behavior affecting an already subtle dynamical system. Mathematics will be essential to the task of understanding. However, the attempt to model risk through computer models during the economic holocene contributed to our current situation. Indeed, the use of mathematical models of finance contributed to the current economic disaster because they failed to incorporate the complexity of belief cascades.

We face a quandary of uncertainty, since we neither understand the Anthropocene that we have created, nor the way in which it is affected by the biosphere and climate. This global quandary creates many localized quandaries about how to proceed in the short and medium term. Sachs (2008: 58), for example, argues that "the current trajectory of human activity is not sustainable."<sup>47</sup>

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<sup>46</sup>Kurzweil (2006) welcomes the singularity that he believes will be generated by the coming scientific and computer-based changes. See also Ridley (2010) for an equally optimistic viewpoint. The application of sophisticated computer and mathematical tools to finance is described in Derman (2007) and the consequences of these techniques in Patterson (2011). Johnson and Kwak (2010) basically argue that the crisis was due to oligopoly capitalism.

<sup>47</sup>There may be signs that the transition is already under way. 2010 was the hottest year on record, and may have led to the drought and fires in the wheat-producing regions of Russia, Ukraine and Kazakhstan. As a result world prices for cereals started to rise in Fall 2010.

Although President Obama seems aware of the these quandaries associated with economic disorder and climate change, he faces a divided Congress, and a Senate, conservative in its policy preferences, because of its use of a supermajoritarian voting rule. It would seem that facing the quandary of the future will depend on our ability to better understand the global economy that we have created. A high degree of risk aversion would seem like a good first step. But to do this requires concerted and cooperative action by all the major powers, including at a minimum, the United States, the European Union and China. An appreciation of the failure of our theories about economic equilibrium and an acknowledgement of fundamental uncertainty and chaos may help us proceed with caution.

In the next chapter we address the question of political choice in the United States, and argue that it is strongly influenced by activist groups. The policy areas of energy and climate are likely in the future to be of global significance, and activists with particular financial interests in these areas will continue to attempt to influence policy choices in ways that are unlikely to be optimal for the society as a whole.

Later chapters extend the analysis to consider elections in a variety of different polities. These various models of elections are a first start at modelling the pattern of social beliefs, the “soul”, that forms the basis of the political economy.

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The floods in Pakistan in summer 2010 were the result of intense rainfall, as might be expected from climate change.

See [Smith \(2010\)](#) for further discussion of the affects of climate change on the future.

# Chapter 5

## Elections in the United States

### 5.1 Introduction

“This referendum has the potential to rip our party apart,” said Missouri Republican Kenny Hulshof, speaking of a ballot measure that would constitutionally guarantee the right to conduct stem cell research.<sup>1</sup> The measure is strongly supported by the leading businesses and by their pro-business Republican allies. However, it is even more vehemently opposed by the social conservative wing of the Missouri Republican party, who regard stem cell research as tantamount to abortion.

Is this issue just a flash in the pan, or does it have long-term implications for the evolving identity of both the Republican and Democratic parties? [Miller and Schofield \(2003\)](#) have argued that the two-dimensional nature of American politics guarantees long-run instability in the US party system. Any given winning coalitional basis for a party must inevitably generate possibilities for the losers, by appealing to pivotal groups on one-dimension or another.

Americans have strong feelings about economic ideology – favorable toward business or else favorable toward the use of governmental power to shield consumers and labor from the market risks of monopoly, shoddy consumer products, and environmental degradation. While the particular issues on the agenda may vary, the shared ideological dimension allows for a degree of structure and predictability in policy. Knowing that a voter is a member of a labor union or an executive of a Fortune 500 company allows one to predict that voter’s position on a consumer protection bill or a trade treaty. However, it does not necessarily allow one to predict that same voter’s feelings about social policies – race, abortion, prayer in schools, or other traditional issues.

The independence of electoral perceptions on the policy dimensions is illustrated by the analysis of [Schofield et al. \(2003\)](#) who examined National Election Survey

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<sup>1</sup>*New York Times* (12 March 2006), quoted in Miller and Schofield (2008: 433)

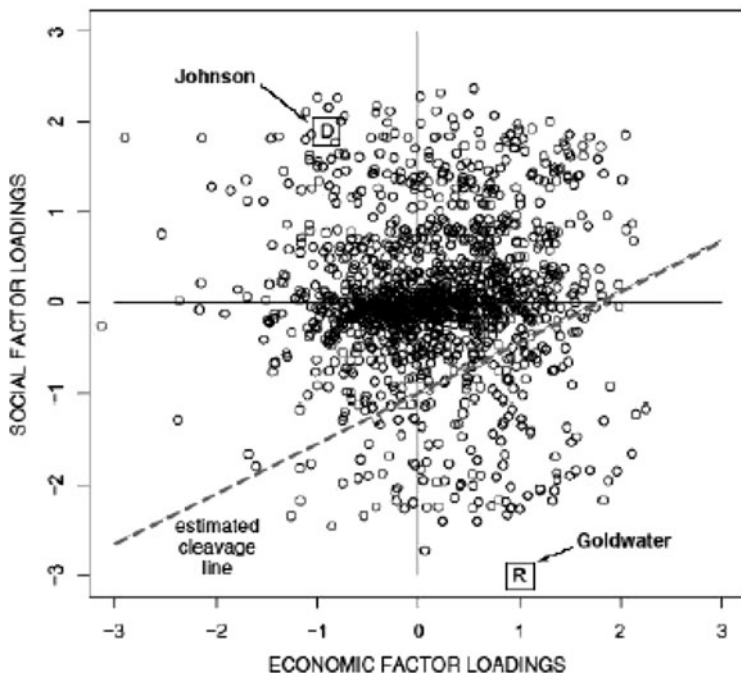


Fig. 5.1 Voter distribution in 1964

Data for the US elections of 1964 and 1980 and used factor analysis to produce two policy dimensions, one economic and one social.

The points in Fig. 5.1 for 1964 represent the ideal or most preferred points of the citizens who undertook the survey, while the candidate positions were estimated on the basis of a simple binomial logit model, based on the information from the survey about voter intentions. The analysis merely confirmed the previous results of [Poole and Rosenthal \(1984a\)](#) on US Presidential elections. Poole and Rosenthal noted that there was no evidence of convergence to an electoral center, as suggested by the “mean voter theorem.”<sup>2</sup> Notice that the voter distribution in Fig. 5.1 is essentially normal, with little correlation between the two axes. This implies that these two-dimensions of policy are statistically independent. A further finding of Poole and Rosenthal was that the statistical model was enhanced when intercept terms were added to the voter model. [Schofield et al. \(2003\)](#) argued that these intercept terms be interpreted as *valence*, as proposed by [Stokes \(1963, 1992\)](#), where the valence of a candidate should be regarded as the non-policy innate attractiveness or *quality*

<sup>2</sup>[Hinich \(1977\)](#).

of the candidate, as judged by the average member of the electorate.<sup>3</sup> We use the symbol  $\lambda_j$  to refer to the intrinsic or exogenous valence of candidate  $j$ .

A recent formal analysis of the stochastic electoral model has suggested why convergence to an electoral mean need not occur. Because voter behavior is probabilistic, Schofield (2007a) supposed that candidates adopt policy positions so as to maximize their *expected vote share*. In fact, because a candidate's optimal position will depend on the opponent's position, it is necessary to use the concept of *Nash equilibrium*.<sup>4</sup> When the valence difference between the candidates is significant, then the lowest valence candidate, in equilibrium, must move away from the electoral mean in order to be positioned at an equilibrium, vote maximizing position.<sup>5</sup> In response, the higher valence candidate will adopt a position opposite the lower valence candidate. In Fig. 5.1, the *estimated cleavage line* shows the set of voters who are indifferent between Johnson and Goldwater. This line goes through Goldwater's side of the mean, suggesting that Johnson not only had a higher valence than Goldwater, but had captured the center. The figure suggests that neither candidate was located at the electoral center.

It has been traditional to speak one-dimensionally, of conservative and liberal candidates, but Fig. 5.1 suggests that it is necessary to speak of social liberals, economic liberals, social conservatives and economic conservatives, reflecting the fundamental fact that there are actually four quadrants of the policy space, as in Fig. 5.2. This figure is a version of Fig. 1.8 in Chap. 1. The idea behind the figure is that Goldwater's policy position was influenced by conservative economic activists, located at E, and conservative social activists located at C. The interaction between these two groups is indicated by the "contract curve" between the positions of the two groups. The optimal position of a presidential candidate such as Goldwater will be located on a "balance locus" that reflects the valences of the two candidates, as well as the influence of the various activist groups. The Appendix to this chapter presents the formal definition of these concepts. The purpose of this figure is to illustrate the likelihood that within each party there will be intrinsic conflicts, as suggested above, between economic and social activists. The figure presents ellipsoidal indifference curves for the different activist groups, which are intended to indicate that economic activists, located at E are less interested in social policy, while social activists are less interested in economic policy.

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<sup>3</sup>Stokes used the term *valence issues* to refer to those that "involve the linking of the parties with some condition that is positively or negatively valued by the electorate." Stokes observation is validated by recent empirical work on many polities, as well as a study on the psychology of voting by Westen (2007).

<sup>4</sup>A Nash equilibrium is a set of party positions so that no party may unilaterally change position to gain an advantage.

<sup>5</sup>Schofield (2007a) showed that convergence to the electoral center will occur in equilibrium only if a certain convergence coefficient,  $c$ , is bounded above by the dimension of the policy space. As discussed in Chap. 1, and later in this chapter, for a large enough valence difference,  $c$  will exceed the dimension of the policy space, and then convergence, in equilibrium, *cannot* occur.



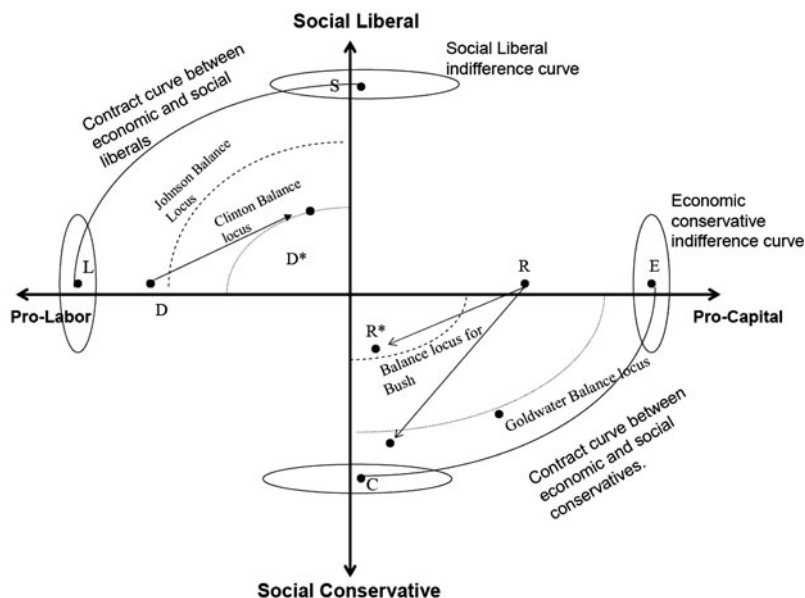


Fig. 5.2 Activists in the US 1964 to 1992

Much of the existing literature in political economy relies on a one-dimensional spatial model of democracy to understand the inter-relationship between politics and economics.<sup>6</sup> However, this spatial model treats vote choice as a function of voters' policy preferences only, and tends to predict convergence towards an electoral center. Yet, in almost every polity there seem to be electoral or policy outcomes that the pure one-dimensional spatial model cannot easily explain. Increasing polarization of party or candidate positions in the United States is just one example.<sup>7</sup> There also appears to be increased radicalism in many European countries, as well as the occurrence of unusual coalitions spreading across the ideological spectrum in many eastern European countries.<sup>8</sup>

The current chapter focuses on constructing a formal apparatus that extends the spatial model to include multiple dimensions as well as voter judgments about the competence or quality of party leaders and candidates. An earlier version of this

<sup>6</sup>See, for example, [Acemoglu and Robinson \(2006a\)](#) and the applications of the model in [Acemoglu et al. \(2008\)](#).

<sup>7</sup>This appears to have occurred even though survey data suggest that the electoral distribution remains concentrated round a centrist position. See, for example, [McCarty et al. \(2006\)](#), [Fiorina et al. \(2005\)](#), [Layman et al. \(2006, 2010\)](#) and [Schofield et al. \(2011a,b\)](#), and earlier work by [Poole and Rosenthal \(1984b\)](#).

<sup>8</sup>The severe economic problems over budget deficits has made political compromise very difficult.

model has already proved useful in accounting for party or candidate position in a variety of countries.<sup>9</sup>

Voter judgments about candidate and leader competence are modeled by the notion of (*exogenous*) *valence*. In this respect, the formal model can be linked to Madison's understanding of the nature of the choice of Chief Magistrate (Madison 1999 [1787]). As Chap. 1 has suggested, the elegant argument of Madison on the "extended Republic" may well have been influenced by Condorcet's work on the so-called "Jury Theorem" (Condorcet 1994 [1785]). This aspect of Condorcet's work is based on the notion of electoral judgment rather than preference, and it has recently received renewed attention (McLennan 1998). Formal models involving valence have been developed recently and can be seen as a contribution to the development of a Madisonian conception of elections in representative democracies as methods of aggregation of both preferences and judgments.<sup>10</sup>

The standard spatial model is based on the assumption that it is only candidate *positions* that matter to voters. Within the context of the spatial model, there has been controversy over whether rational candidates will converge to an electoral center, as suggested by the work of Downs (1957) and many other theorists, or whether elections will be fundamentally chaotic, as argued by Riker (1980; 1982a,b, 1986).

However, as Stokes (1963, 1992) emphasized many years ago, the non-policy evaluations, or valences, of candidates by the electorate are just as important as electoral policy preferences. Based on the empirical and theoretical work presented here, we argue that neither the Downsian convergence result nor the chaos theorems gives an accurate picture of democratic elections. Instead, both position and valence matter in a fundamental way.

Earlier work developed an empirical stochastic electoral model based on multinomial conditional logit methodology (MNL).<sup>11</sup> In this model, each *agent*,  $j$ , was characterized by an *exogenous valence*,  $\lambda_j$ . This model can be considered to be Downsian, since it was based on a pure spatial model, where the estimates of valence were obtained from the intercepts of the model. It was possible to obtain the conditions for existence of "a local Nash equilibrium" (LNE) under vote maximization for a parallel formal model using the same stochastic assumptions as the MNL empirical model. A LNE is simply a vector of agent positions with the property that no agent may make a small unilateral move and yet increase utility (or vote share).

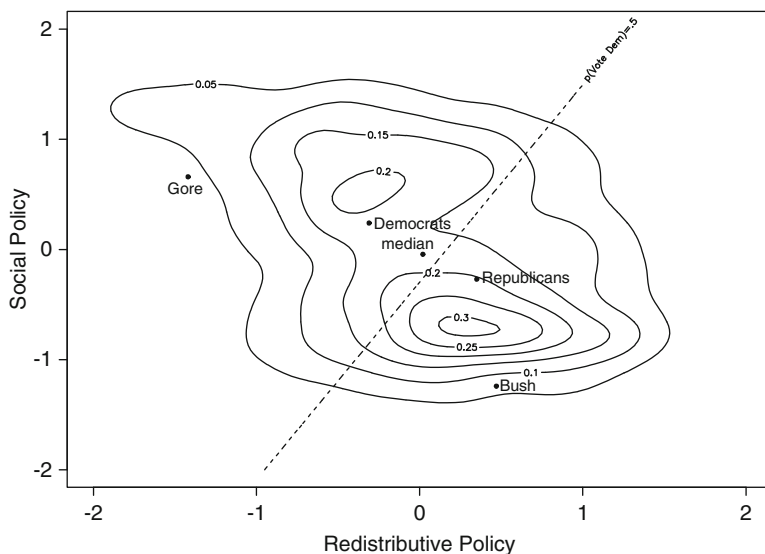
This work led to results (Schofield 2006b, 2007a) on the necessary and sufficient conditions for the validity of the *mean voter theorem for the pure spatial model with intrinsic valence*. The mean voter theorem asserts that all candidates should

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<sup>9</sup>Schofield and Sened (2006) presented models for Israel, the Netherlands and the United Kingdom. Here we extend these models to a larger set of countries.

<sup>10</sup>Aragones and Palfrey (2002); Argimon et al. (1995), Groseclose (2001), and Zakharov (2009).

<sup>11</sup>See the earlier work in Schofield and Sened (2005a,b).



**Fig. 5.3** Contour plot of the voter distribution in 2000 with the equiprobable cleavage line

converge to the electoral mean.<sup>12</sup> Analysis of recent US elections, presented below corroborates the earlier work by Enelow and Hinich (1989) and shows, by simulation on the basis of the MNL models, that presidential candidates should converge to the electoral mean. However, the empirical work also suggests that presidential candidates do not in fact adopt positions close to the electoral center. Figures 5.3 and 5.5 for example, show the estimated positions of the presidential candidates and the voter distributions in the 2000 and 2004 elections in the US.<sup>13</sup> These estimates were obtained from the American National Election Surveys (ANES) for these two election years. Factor analysis gave the two policy dimensions, one economic and one social, just as in 1964. In addition, the surveys provided data on which respondents provided support to the candidates, and these data allowed us to distinguish between the average positions of activists in contrast to those who voted for the two parties, as indicated in Figs. 5.4 and 5.6.<sup>14</sup> Figures 5.3 and 5.5 also include the cleavage lines obtained from simple binomial logit models of the elections.

This chapter offers a more general model of elections that, we suggest, accounts for the difference between the estimates of equilibrium positions and actual

<sup>12</sup>The electoral mean is the average of the distribution of voter preferred points.

<sup>13</sup>For discussion of the 2004 election, for example, see [Ceaser and Busch \(2005\)](#) and [Abramson et al. \(2007\)](#).

<sup>14</sup>These figures include the standard errors of these estimates, where the larger error bars correspond to the activist estimates.

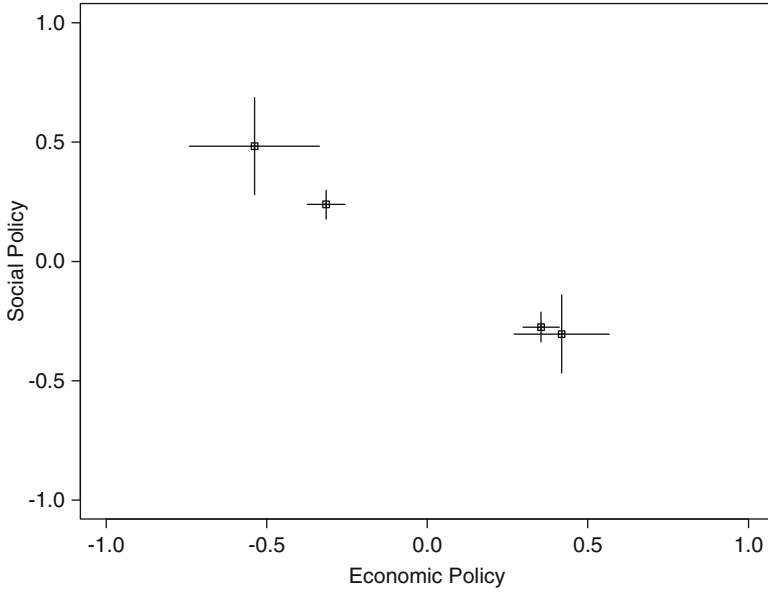


Fig. 5.4 Comparison of voter and activist means in 2000

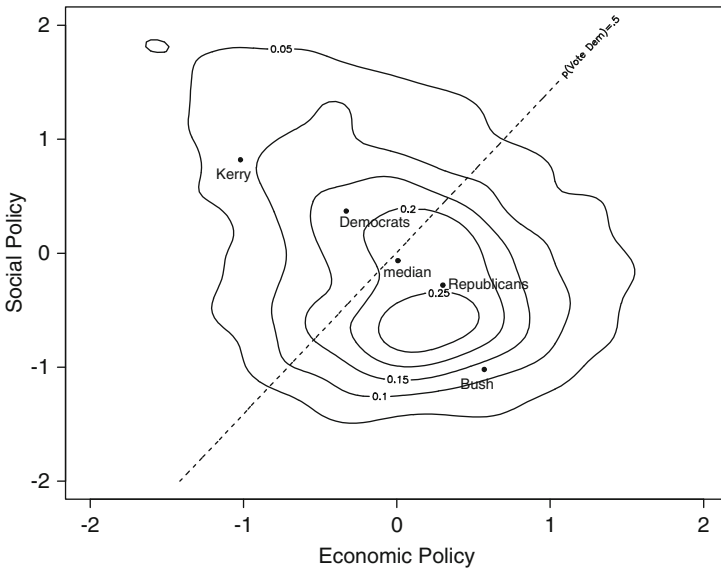
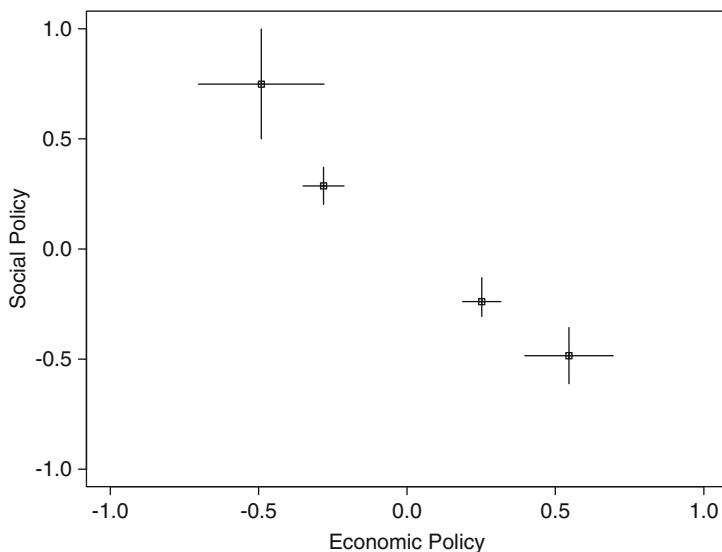


Fig. 5.5 Electoral distribution and candidate positions in the United States in 2004



**Fig. 5.6** Comparison of voter and activist means in 2004

candidate positions. The model is based on the assumption that there is a second kind of valence is known as *activist valence*. When party, or candidate  $j$  adopts a policy position  $z_j$ , in the policy space,  $X$ , then the activist valence of the party is denoted  $\mu_j(z_j)$ . Implicitly we adopt a model originally due to Aldrich (1983). In this model, activists provide crucial resources of time and money to their chosen party, and these resources are dependent on the party position.<sup>15</sup> The party then uses these resources to enhance its image before the electorate, thus affecting its overall valence. Although activist valence is affected by party position, it does not operate in the usual way by influencing voter choice through the distance between a voter's preferred policy position, say  $x_i$ , and the party position. Rather, as party  $j$ 's activist support,  $\mu_j(z_j)$ , increases due to increased contributions to the party in contrast to the support  $\mu_k(z_k)$  received by party  $k$ , then (in the model) all voters become more likely to support party  $j$  over party  $k$ .

The problem for each party is that activists are likely to be more extreme than the typical voter. By choosing a policy position to maximize activist support, the party will lose centrist voters. The party must therefore determine the "optimal marginal condition" to maximize vote share. The Balance Theorem, presented in Appendix 4, gives this as a (first order) *balance condition*. Moreover, because activist support is denominated in terms of time and money, it is reasonable to suppose that the activist function will exhibit decreasing returns. The Theorem points out that when

<sup>15</sup>For convenience, it is assumed that  $\mu_j(z_j)$  is only dependent on  $z_j$ , and not on  $z_k, k \neq j$ , but this is not a crucial assumption.

these activist functions are sufficiently concave, then the vote maximizing model will exhibit a local Nash equilibrium (LNE).

It is intrinsic to the model that voters evaluate candidates not only in terms of the voters’ preferences over intended policies, but also in terms of electoral judgments about the quality of the candidates. These judgments are in turn influenced by the resources that the candidates can raise from their activist supporters.

In the next section we sketch the model and then apply it to consider the 2008 election in the US. Appendix 4 to this chapter presents the formal model.

## 5.2 Activist Support for the Parties

To present the model, suppose there are two-dimensions of policy, one economic, and one social. These are found usually by factor analysis of survey data.

As Fig. 5.7 indicates, we can represent the set of conflicting interests or bargains between the two activist groups of supporters for the Republican Party, located at  $R$  and  $C$ , by a “contract curve.” This represents the set of policies that these two groups would prefer their candidate to adopt. It can be shown (Miller and Schofield 2003) that this contract curve is a *catenary* whose curvature is determined by the eccentricity of the utility functions of the activist groups. We call this the *Republican contract curve*. The Democrat activist groups may be described by a similar contract curve (This is the simplest case with just two activist groups for each candidate. As the formal model in the Appendix 4 shows, this idea can be generalized to many activist groups).

The Balance Theorem presented in the Appendix gives the first order condition for the candidate positions ( $z_{dem}^*, z_{rep}^*$ ) to be a Nash equilibrium in the vote share maximizing game. This condition is that the party positions satisfy a *balance equation*. This means that, for each party,  $j = dem$  or  $rep$ , there is a weighted electoral mean for party  $j$ , given by the expression

$$z_j^{el} = \sum_i \varpi_{ij} x_i. \tag{5.1}$$

This is determined by the set of voter preferred points  $\{x_i\}$ . Notice that the coefficients  $\{\varpi_{ij}\}$  for candidate  $j$  will depend on the position of the other candidate,  $k$ . The *balance equation* for each  $j$  is given by:

$$\left[ z_j^{el} - z_j^* \right] + \frac{1}{2\beta} \left[ \frac{d\mu_j}{dz_j} \Big|_z \right] = 0. \tag{5.2}$$

The locus of points satisfying this equation is called the *balance locus* for the party. It is also a catenary obtained by shifting the appropriate activist catenary towards the weighted electoral mean of the party. The symbol  $\mu_j(z_j)$  refers to the endogenous or activist valence of candidate  $j$ . Unlike the exogenous valence term,  $\lambda_j$ , which

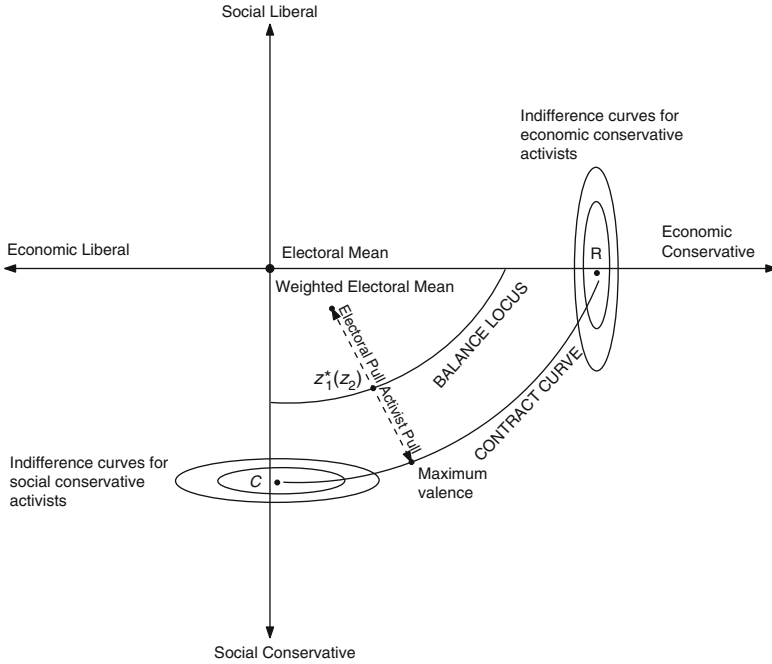


Fig. 5.7 Optimal Republican position

is independent of  $z_j$ , the term  $\mu_j(z_j)$  is a function of  $z_j$ . The gradient vector  $\frac{d\mu_j}{dz_j}$  is called *the marginal activist pull for party j* (at the position  $z_j^*$ ) and represents the marginal effect of the activist groups on the party's valence. The gradient term  $[z_j^{el} - z_j^*]$  is the *marginal electoral pull of party j* (at  $z_j^*$ ). Obviously, this pull is zero at  $z_j^* = z_j^{el}$ . Otherwise, it is a vector pointing towards  $z_j^{el}$ . In Fig. 5.7, the point  $z_1^*(z_2)$  is the balance solution for a Republican candidate responding to a Democrat candidate at  $z_2$ . The point  $z_1^*(z_2)$  lies on the balance locus of the Republican party, and is also a function of the Democrat candidate location. A similar balance locus can be constructed for the Democrat candidate. The formal model as illustrated in Fig. 5.7 appears compatible with the estimates of candidate positions, as well as estimates of average activist positions, as given in Figs. 5.3–5.6.

### 5.2.1 The Lead-Up to the 2008 Election

These various figures are intended as an indication of the complexities of US politics. As Fig. 5.2 may suggest, to win it is necessary to create a coalition of activists who may very well be enemies in some policy domains, but who may be able to agree to disagree on one dimension in order to prevail on the other. As

saliences have diverged within the two classes of activist groups, the groups have become more heterogeneous and fragmented. The fact that the electoral distribution has come to vary dramatically in various parts of the country means that activist coalitions, ostensibly in support of one of the parties in one region, may conflict with activist groups for the same party, but in a different region. Indeed, the changing frontiers between the preferred points of activist party coalitions may cause activist groups to change their affiliation. Because of the plurality nature of presidential and Congressional elections, activist coalitions must be aware that fragmentation creates losers. Thus there is a permanent tension between the desire to influence policy, and the winning of elections.

This potential conflict between activist coalitions was given expression in 2005 by John Danforth, a long-standing traditional Republican:

When government becomes the means of carrying out a religious program, it raises obvious questions under the First Amendment... At its best, religion can be a unifying influence, but in practice, nothing is more divisive. For politicians to advance the cause of one religious group is often to oppose the cause of another.

Take stem cell research. Criminalizing the work of scientists doing such research would give strong support to one religious doctrine, and it would punish people who believe it is their religious duty to use science to heal the sick . . . But in recent times, we Republicans have allowed [our] shared agenda to become secondary to the agenda of Christian conservatives. As a senator, I worried every day about the size of the federal deficit. I did not spend a single minute worrying about the effect of gays on the institution of marriage. Today it seems to be the other way around. The historic principles of the Republican Party offer America its best hope for a prosperous and secure future. Our current fixation on a religious agenda has turned us in the wrong direction. It is time for Republicans to rediscover our roots.<sup>16</sup>

A second area of policy conflict lay in immigration reform in 2006. As Table 5.1 shows, in the Senate on 18 July 2006, 32 Republicans voted against reform, while 23 pro-business Republicans voted aye. Almost all Democratic Senators voted for reform, as a matter of civil rights, but four Democrats voted nay, presumably out of fear that immigration would put downward pressure on wages.

This tension provides the energy that drives the constant transformation of politics in the United States.

The previous section has suggested that a candidate's valence at election time is due to the ability of activist groups to raise resources for the candidate. At the same time, the candidate positions are the result of a balancing act between choosing an electorally optimal position and being able to persuade activist groups to provide these resources. Figure 5.8 gives estimates of candidate positions during the election primaries in 2008, while Figs. 5.9 and 5.10 show the relationship between expenditure for various candidates in these primaries. See Schofield and Schnidman (2011).

Estimating the residuals between the linear regression line and the popularity level gives a way of obtaining the intrinsic valences of the various candidates. The

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<sup>16</sup>Danforth (2005).



**Table 5.1** Votes of Democrat and Republican senators on immigration reform in July 2006

	Democrats		Republicans
Yea	Akaka-HI	Lautenberg NJ	Bennett UT
	Baucus MT	Leahy VT	Brownback KS
	Bayh IN	Levin MI	Chafee RI
	Biden DE	Lieberman CT	Coleman MN
	Bingaman NM	Lincoln AR	Collins ME
	Boxer CA	Menendez NJ	Craig ID
	Cantwell WA	Mikulski MD	DeWine OH
	Carper DE	Murray WA	Domenici NM
	Clinton NY	Nelson FL	Frist TN
	Conrad ND	Obama IL	Graham SC
	Dayton MN	Pryor AR	Gregg NH
	Dodd CT	Reed RI	Hagel NE
	Durbin IL	Reid NV	Lugar IN
	Feingold WI	Sarbanes MD	Martinez FL
	Feinstein CA	Schumer NY	McCain AZ
	Harkin IA	Wyden OR	McConnell KY
	Inouye HI		Murkowski AK
	Jeffords VT		Smith OR
	Johnson SD		Snowe ME
	Kennedy MA		Specter PA
Kerry MA		Stevens AK	
Kohl WI		Voinovich OH	
Landrieu LA		Warner VA	
Total	39		23
	Democrats	Republicans	
Nay	Byrd WV	Alexander TN	Lott MS
	Dorgan ND	Allard CO	Roberts KS
	Stabenow MI	Allen VA	Santorum PA
	Nelson NE	Bond MO	Sessions AL
		Bunning KY	Shelby AL
		Burns MT	Sununu NH
		Burr NC	Talent MO
		Chambliss GA	Thomas WY
		Coburn OK	Thune SD
		Cochran MS	Vitter LA
		Cornyn TX	
		Crapo ID	
		DeMint SC	
		Dole NC	
		Ensign NV	
		Enzi WY	
		Grassley IA	
		Hatch UT	
		Hutchison TX	
		Inhofe OK	
	Isakson GA		
	Kyl AZ		
Total	4	32	

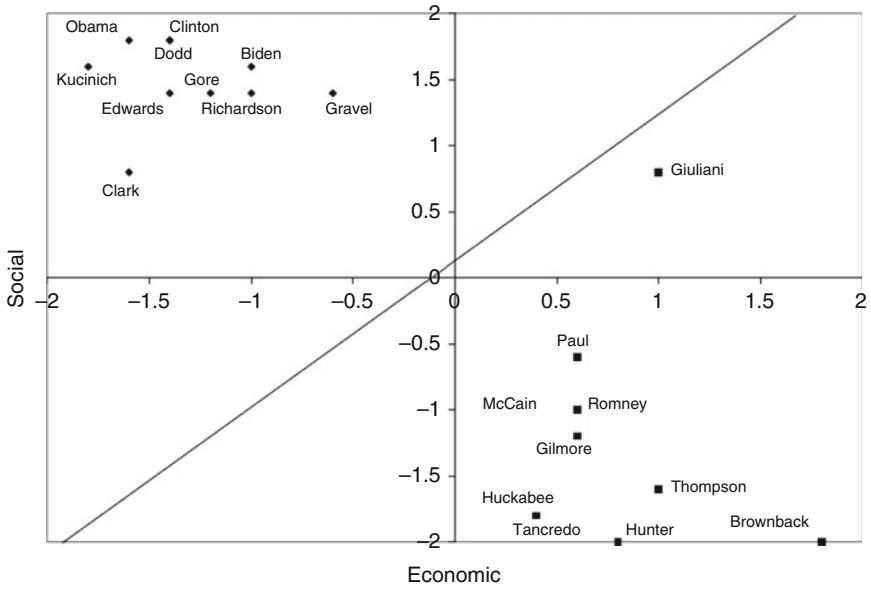


Fig. 5.8 Positions of Republican and Democrat candidates in the run up to the election of 2008

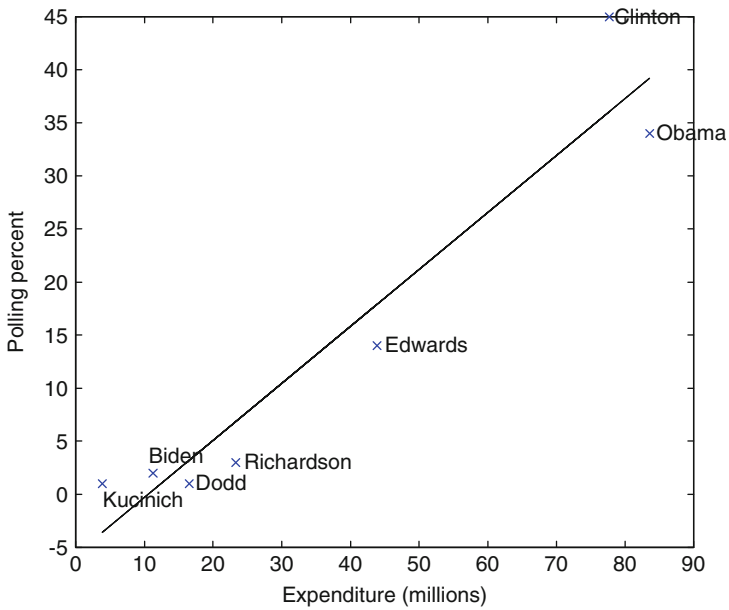
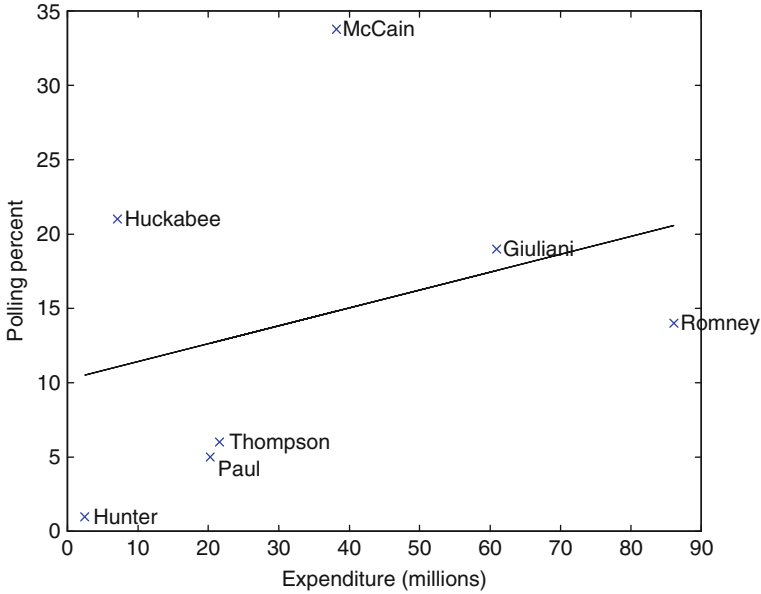


Fig. 5.9 Democrat candidate spending and popularity, January 2008

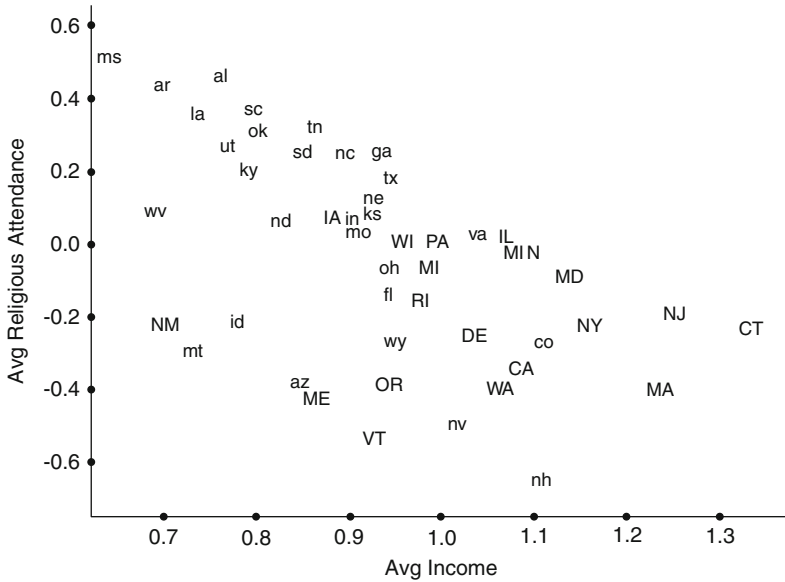


**Fig. 5.10** Republican candidate spending and popularity, January 2008

figures suggest that Huckabee and McCain (among the Republicans) had relatively high valences, while the contest between Clinton and Obama would depend on their activist contributions. On 3 January 2007, Huckabee won the Iowa Republican caucus while Obama won the Democrat caucus (with 38% to Clinton's 29%). In the New Hampshire primary a few days later, Clinton was the Democrat winner with 39% to Obama's 36%.

After "Super Tuesday" on February 5, and the various contests leading to Pennsylvania on April 22, Clinton and Obama had won 1,245 and 1,310 delegates, respectively, while McCain dominated the Republican race, with 1,162 delegates to Huckabee's 262 and Romney's 142. On May 6, Obama won North Carolina by 56 to 44%, while Clinton only just won Indiana.<sup>17</sup> By May 2008, Clinton had raised about \$173 million (\$132,000/delegate), Obama \$197 million (\$143,000/delegate), McCain \$66 million (\$57,000/delegate) and Huckabee \$16 million (\$69,000/delegate). Finally Paul gained five delegates for \$34 million, Giuliani spent \$65 million for nothing, and Romney spent \$110 million (\$612,000/delegate). Both Romney and Giuliani left the race after February 6th, while Huckabee conceded after

<sup>17</sup>The Republican Party uses a "first past the post" or plurality selection rule for delegates, whereas the Democrat party uses a proportional rule. This accounts for McCain's lead, while neither Clinton nor Obama dominated in terms of delegates. It is plausible that the Republican rule causes activist groups to coalesce round the leader, whereas Democrat activist leaders perceive no clear winner.



**Fig. 5.11** Relationship between average income and average religious attendance by state in 2008. (States that voted Democrat are capitalized, states that voted Republican are lower case)

McCain’s successes on March 4. These expenditure/delegate figures give a fairly clear indication of the contenders’ intrinsic valences.

Figure 5.9 suggests that Barack Obama and Hilary Clinton were both very successful in raising campaign resources, and that these were highly correlated with the electoral support.<sup>18</sup> Other candidates fell far behind and dropped out of the race. Figure 5.10 suggests that McCain was also extremely popular, even though his campaign, in January 2008, had not been very successful in raising contributions. This inference is compatible with McCain’s estimated fairly moderate position in Fig. 5.8. By the time of the election, Obama had raised about \$745 million and spent \$730 million, while McCain had only raised \$368 million and spent \$333 million. Winning elections is clearly a matter of money. [Kenski et al. \(2010\)](#) provide an estimate of the influence of money and thus advertising on the contest between McCain and Obama.

Figure 5.11 suggests that Cosmopolitan states like Connecticut and New Jersey form the base of the Democratic Party while poor, religious states like Mississippi form the base of the Republican Party. These affiliations change with time, as a result of irregular realignments but comprise the background to the 2008 election. See [Bartels \(2008\)](#), and [Merrill et al. \(2008\)](#) for empirical evidence of changes in

<sup>18</sup>The Washington Post noted, on January 1, 2008, that both Clinton and Obama had raised about \$100 million for their campaigns.

electoral patterns over time. [Asmussen \(2010\)](#) presents data on the importance of religion, or the evangelical movement in this realignment.

### 5.3 The Election of 2008 in the United States

#### 5.3.1 *Empirical Analysis*

The 2008 American National Election Study (ANES) introduced many new questions on political issues in addition to the existing set. Assignment of respondents into the “new” or “old” set was random, with 1,059 respondents assigned to the “new” condition and having completed the follow-up post-election interview.

The post-election interviews asked respondents whom they voted for, if at all. Since we use a conditional logit model, which requires data for both respondents and candidates (which we only have for the major party candidates) we removed observations where respondents claimed to have voted for a presidential candidate other than McCain or Obama, or not to have voted at all.

To create the two-dimensional policy space, 23 survey items were selected to broadly represent the economic and social policy dimensions of American political ideology (see Appendix 2 for question wording). There were multiple questions for abortion, gay and African American issues. These three sets of questions were combined using factor analysis to give three separate scales.

Factor analysis of the survey was then used to obtain measures of individual locations in the policy space. The factor loadings are given in Table 5.2. Tables 5.2–5.7 for the election of 2008 are in Appendix 4 to this chapter.<sup>19</sup>

The ANES also includes questions on seven qualities or traits associated with Obama and McCain, asking respondents about the traits of the candidates, including the terms “moral, caring, knowledgeable, strong, dishonest, intelligent, out of touch.” Factor analysis of these questions gave two factors, and the resulting factor scores were used as estimates of voter perceptions of the candidate’s personal traits.

As [Sanders et al. \(2011\)](#) comment, valence theory is based on the assumption that “voters maximize their utilities by choosing the party that is best able to deliver policy success.” The authors go on to note that an overall assessment of a party leader by a voter “provides a simple affective heuristic for arriving at an evaluation of that leader’s party.” We therefore use these electoral perceptions of character traits as an additional measure of candidate valence.<sup>20</sup>

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<sup>19</sup>In these tables we include the Log Likelihoods, and the Akaike (AIC) and Bayesian (BIC) Information Criterion. Lower values of AIC and BIC indicate better model performance.

<sup>20</sup>These electoral estimates of character traits can also be used to examine the change of electoral perceptions in the lead up to the election, as in [Scotto et al. \(2010\)](#).

To calculate the presidential candidate positions, we took advantage of new survey questions which asked respondents to locate the positions of Obama and McCain on seven distinct issues.

These seven questions (government spending, universal health care, citizenship for immigrants, abortion when non-fatal, abortion when gender incorrect, aid to blacks, and liberal-conservative) were otherwise worded the same as the corresponding items from the 23 policy issue questions. (See questions 1, 2, 10, 12a,g, 19 and 23 in Appendix 1).

To find McCain’s ideal point, we simply took the average response for each of his seven candidate location questions. We then repeated the process using Obama’s candidate location questions. See Tables 5.3 and 5.4 for the descriptive data and the estimated positions of the two candidates.

Respondents were coded as activists if they claimed to have donated money to a candidate or party. The survey data gave information on whether the respondent was African American, Hispanic, female, working class, from the South. Additional data on age, number of years of education and level of income were used to construct eight different sociodemographic variables. Figures 5.12 and 5.13 show the voter and activist positions, as well as the estimated positions of two candidates.

As noted above, the positions of the major presidential candidates, McCain and Obama, in 2008 were estimated using the perceptions of the sampled individuals.

These positions are denoted  $(z^*_{Obama}, z^*_{McCain})$  and given by:

$$z^*_{Obama} = (x_{Obama}, y_{Obama}) = (-0.22, 0.75),$$

$$z^*_{McCain} = (x_{McCain}, y_{McCain}) = (0.59, -0.37).$$

We now use the formal model to analyze this election.

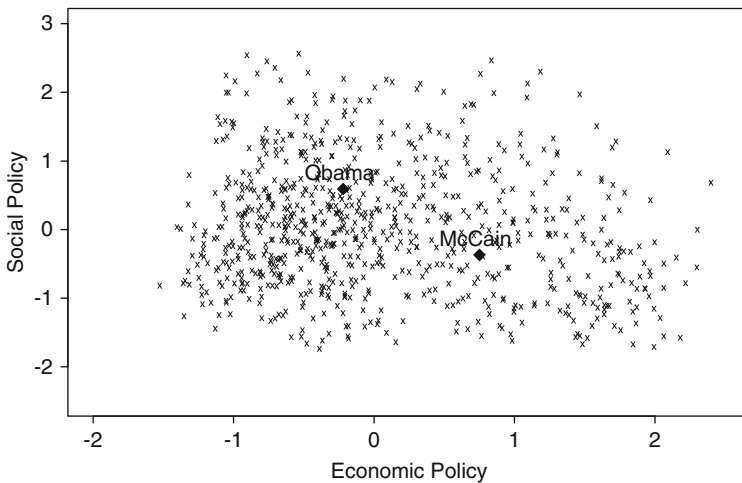


Fig. 5.12 Distribution of voter ideal points and candidate position in 2008

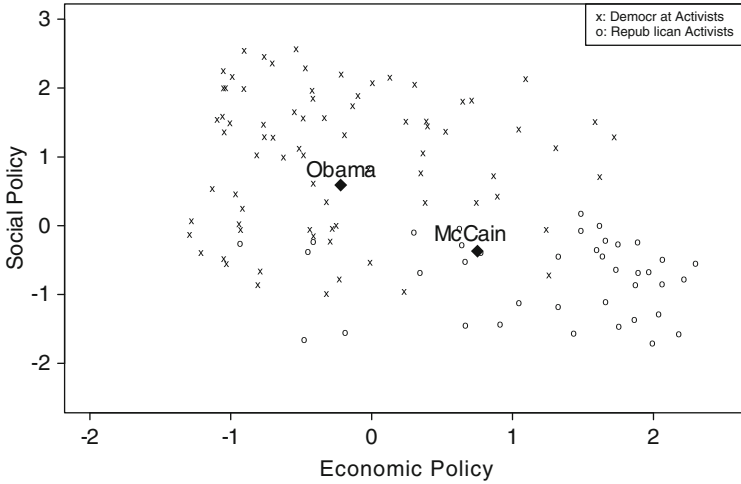


Fig. 5.13 Distribution of activist ideal points and candidate positions in 2008

### 5.3.2 Estimation of Political Equilibria

Obama’s victory on November 4, 2008 suggests that it was the result of an overall shift in the relative valences of the Democrat and Republican candidates from the election of 2004. In fact, since Obama took 52.3% of the vote, a simple estimate of the probability,  $\rho_{obama}$ , of voting for Obama is given by

$$\rho_{obama} = [0.523] = \frac{\exp[\lambda_{obama}]}{1 + \exp[\lambda_{obama}]}$$

It immediately follows that an estimate of  $\lambda_{obama}$  relative to  $\lambda_{McCain}$  is given by

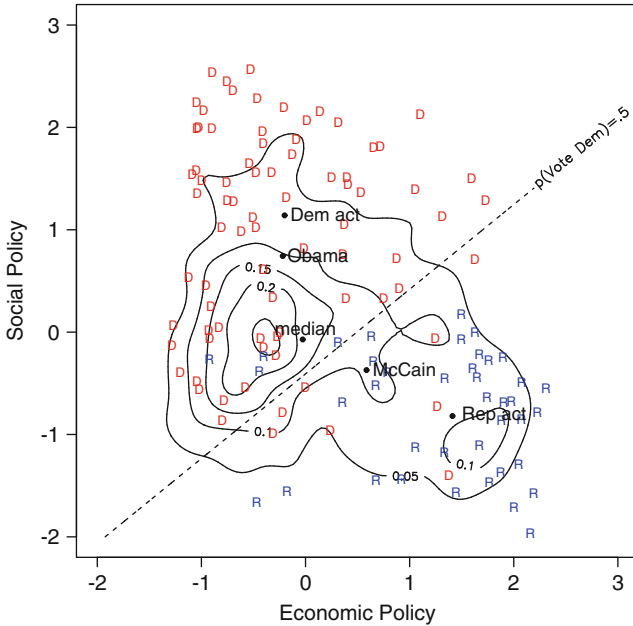
$$\begin{aligned} \log_e \left[ \frac{0.523}{0.477} \right] &= \log_e [1.096] \\ &\simeq 0.09. \end{aligned}$$

In fact there were differential shifts in different regions of the country. In a region of the country from West Virginia through Tennessee, Arkansas and Oklahoma, there was a shift of 20% in the increase in the Republican vote, suggesting a change of about 0.6 in McCain’s valence advantage.

To model this election we first constructed a *pure positional binomial logit model*.

According to this positional model, a voter  $i$ , with preferred position  $(x_i, y_i)$  is estimated to vote Republican with probability

$$\rho_{rep} == \frac{\exp(\lambda_r + bx_i + cy_i)}{1 + \exp(\lambda_r + bx_i + cy_i)}. \tag{5.3}$$



**Fig. 5.14** The cleavage line in 2008. Democrat activists given by D, Republican activists given by R

We estimated these coefficients to be  $(\lambda_r, b, c) = (-0.74, 1.49, -1.80)$ , with standard errors  $(0.11, 0.13, 0.15)$  respectively. All were significant with at the 0.001 level.

This cleavage line derived from this equation gives the locus of voting with equal probability for one or other of the candidates. This cleavage line is given by the equation

$$y = 0.82x - 0.4. \tag{5.4}$$

This cleavage line misses the mean, and goes through the point  $(0, -0.4)$ , indicating a slight valence advantage of Obama. The coefficient  $\lambda_r$  is a measure of the (negative) relative valence of McCain with respect to Obama for this positional model. This cleavage line is given in Fig. 5.14, and is similar to those shown above for the elections of 2000 and 2004.

The positional model does not explicitly involve the candidate positions, and so cannot be used to determine political equilibria. We now discuss the spatial models, presented in Table 5.6 as given in Appendix 2.

We define the electoral covariance matrix,  $\nabla_0$ , to be the 2 by 2 matrix giving the variance of the electoral distribution on each axis, together with the covariance between the two axes. For the ANES sample this is given by

$$\nabla_0 = \begin{bmatrix} 0.80 & -0.13 \\ -0.13 & 0.83 \end{bmatrix}.$$



The principal component of the electoral distribution is given by the vector  $(1.0, -1.8)$  with variance 1.02, while the minor component is given by the orthogonal eigenvector  $(1.8, 1.0)$  with variance 0.61.

Model (1) in Table 5.6 shows the coefficients in 2008 for the pure spatial model,  $\mathbb{M}(\lambda, \beta)$ , to be

$$(\lambda_{Obama}, \lambda_{McCain}, \beta) = (0, -0.84, 0.85).$$

As Table 5.6 indicates, the loglikelihood, Akaike information criterion (AIC) and Bayesian information criterion (BIC) are all quite acceptable, and all coefficients are significant with probability  $<0.001$ .

Note that these parameters are estimated when the candidates are located at the estimated positions. Again,  $\lambda_{McCain}$  is the relative negative exogenous valence of McCain, with respect to Obama, according to the pure spatial model  $\mathbb{M}(\lambda, \beta)$ . We define this model formally in Appendix 4 to this chapter. We assume that the parameters of the model remain close to these values as we modify the candidates positions in order to determine the equilibria of the model.

According to the model  $\mathbb{M}(\lambda, \beta)$ , the probability that a voter chooses McCain or Obama when both are positioned at the electoral mean,  $\mathbf{z}_0$ , is given by

$$(\rho_{McCain}, \rho_{Obama}) = \left( \frac{e^0}{e^0 + e^{0.84}}, \frac{e^{0.84}}{e^0 + e^{0.84}} \right) = (0.30, 0.70).$$

Equation 5.29 in the Appendix 4 and the calculation in Appendix 5 show that the characteristic matrix (essentially the Hessian of McCain's vote function at  $\mathbf{z}_0$ ) is:

$$C_{McCain} = \begin{bmatrix} -0.46 & -0.09 \\ -0.09 & -0.44 \end{bmatrix}.$$

Appendix 4 to this chapter shows that the necessary and sufficient condition for convergence to the electoral mean,  $\mathbf{z}_0$ , is that this characteristic matrix has negative eigenvalues.<sup>21</sup> Clearly this is the case here. Appendix 4 also defines a "convergence coefficient",  $c$ , which characterizes the local equilibrium. The Mean Voter Valence Theorem shows that the necessary condition for convergence to the electoral mean,  $\mathbf{z}_0$ , is that  $c < 1$ , while a necessary condition is that  $c < w$ . Note that  $c$  is dimensionless, and therefore independent of the units of measurement. We compute  $c$  as follows:

$$c = 2\beta(1 - 2\rho_{McCain})\text{trace}\nabla_0 = 2(0.85)(0.4)(1.63) = 1.1.$$

The estimate for  $c$  exceeds this critical value for convergence. However, the determinant of  $C_{McCain}$  is positive and trace is negative so both the eigenvalues of

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<sup>21</sup>Standard results of calculus show that in this case, the electoral mean is a local maximum of McCain's vote share function.

$C_{McCain}$  are negative.<sup>22</sup> Simulation of the pure spatial model confirmed that  $\mathbf{z}_0$  was a local Nash equilibrium (LNE) to the vote maximizing game. Indeed it was shown to be a pure strategy Nash equilibrium (PNE).

We now turn to the models with traits, denoted  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\alpha}, \beta)$ , with sociodemographic variables,  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$ , and the full spatial model,  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$  with traits and sociodemographics. Table 5.5 gives the factor analysis of the candidates traits which was used in the trait models, while Table 5.6 models (2), (3), (4) give the results of these various extensions with additional “valences” determined by traits and sociodemographics.

We found that the loglikelihoods of the pure sociodemographic model,  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$ , and pure traits model,  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\alpha}, \beta)$ , to be to be  $-427$  and  $-356$  respectively. Comparison of the loglikelihoods of these models, as given in Table 5.6 shows that the perception of character traits is important for the statistical significance of the model. As Table 5.7 shows, the difference in the loglikelihoods of the spatial model with traits and the pure traits model is  $-243 + 357 = 114$ , while the difference between the full spatial model with both traits and sociodemographics against the pure traits model is  $-207 + 357 = 150$ . (The t-value associated with the  $\beta$ -coefficient in all spatial models was of order 10, suggesting that the spatial component was statistically very significant.)

Recent empirical work by Clarke et al. (2009: 159) has compared a “Downsian” or pure spatial models of the 2000 and 2004 US presidential elections with valence models of the same elections. Their overall conclusion was that the two classes of models had “approximately equal explanatory power.” The results presented in Table 5.6 corroborate this conclusion, as we have found that the spatial model augmented the traits model in the 2008 US presidential election.

We also constructed traits models for the elections of 2000 and 2004, as shown in Tables 5.8 and 5.9 in Appendix 3. The tables show that traits and the  $\beta$  coefficients are highly significant in these years. Whereas Clarke et al. (2009) obtained an AIC of 238.9 for a joint traits model for 2004, we obtained 137.8, while for 2000 they obtained 444.82, and we obtained 549.4. Like us they found the spatial coefficients, their analogue of  $\beta$ , to be highly significant.

Simulation of the full spatial model,  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ , with traits and sociodemographics showed that the LNE (and PNE) was one where the candidates adopted the positions  $z_{Obama}^{el}$  and  $z_{McCain}^{el}$ .

As Appendix 4 shows, we may use this estimated LNE,  $\mathbf{z}^{el}$ , as an estimate for the weighted electoral mean for the two candidates. Thus:

$$\mathbf{z}^{el} = (z_{Obama}^{el}, z_{McCain}^{el}) = ((+0.10, -0.07), (+0.13, -0.12)).$$

This equilibrium is only a slight perturbation from the joint mean, which we normalized at (0,0). We can infer that though the traits add to the statistical

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<sup>22</sup>We verified this was also true when we examined the upper 95% probability bounds on the matrix.

significance of the stochastic model they do not significantly affect the equilibrium. Analysis of the relationship between perceptions of candidate traits and vote choice showed that there were weak correlations and these had only a slight effect on the strong convergence induced by the electoral pull.

The model in Appendix 4 is one where the candidates are committed to contracts with activists, and can be regarded as having policy preferences that are induced from the policy preferences of the activists. Using our estimates of the candidate locations

$$z_{Obama}^* = (x_{Obama}, y_{Obama}) = (-0.22, 0.75),$$

$$z_{McCain}^* = (x_{McCain}, y_{McCain}) = (0.59, -0.37),$$

we then obtain

$$\begin{aligned} \mathbf{z}^* - \mathbf{z}^{el} &= \begin{bmatrix} & McCain & Obama \\ x & 0.59 & -0.22 \\ y & -0.37 & +0.75 \end{bmatrix} - \begin{bmatrix} & McCain & Obama \\ x & +0.13 & +0.10 \\ y & -0.12 & -0.07 \end{bmatrix} \\ &= \begin{bmatrix} & McCain & Obama \\ x & 0.46 & -0.32 \\ y & -0.25 & 0.82 \end{bmatrix}. \end{aligned}$$

Using the balance equations

$$\frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) = [\mathbf{z}^{el} - \mathbf{z}^*].$$

$$\frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) + \frac{1}{2\beta} \frac{d\mu}{d\mathbf{z}}(\mathbf{z}^*) = 0.$$

and the estimate  $\beta = 0.83$  we find

$$\begin{aligned} \frac{d\mu}{d\mathbf{z}}(\mathbf{z}^*) &= 2\beta \begin{bmatrix} & McCain & Obama \\ x & 0.46 & -0.32 \\ y & -0.25 & 0.82 \end{bmatrix} \\ &= \begin{bmatrix} & McCain & Obama \\ x & 0.76 & -0.53 \\ y & -0.42 & 1.36 \end{bmatrix} \end{aligned}$$

is an estimate of the pair of direction gradients, induced by activist preferences, acting on the two candidates. The difference between  $\mathbf{z}^*$  and  $\mathbf{z}^{el}$  thus provides an estimate of the activist pull on the two candidates. In this election, we estimate that activists pull the two candidates into opposed quadrants of the policy space. The estimated distributions of activist positions for the two parties, in these two opposed

quadrants (as given in Fig. 5.13 are compatible with this inference. The means of these activist positions are:

$$\begin{bmatrix} & \text{Rep Act} & \text{Dem Act} \\ x & 1.41 & -0.2 \\ y & -0.82 & 1.14 \end{bmatrix}.$$

If we assume that the Democrat activists tend to be more concerned with social policy and Republican activists tend to be more concerned with economic policy, then we have an explanation for the candidate shifts from the estimated equilibrium. The means of the party voters are

$$\begin{bmatrix} & \text{Rep Voters} & \text{Dem Voters} \\ x & 0.72 & -0.17 \\ y & -0.56 & 0.36 \end{bmatrix}.$$

Note in particular that the distribution of activist positions for the two parties, given in Fig. 5.13, looks very different from the voter positions, given in Fig. 5.12. The latter is much more heavily concentrated near the electoral origin, while the former tends to be dispersed. Since the trace of the electoral covariance matrix is 1.83, the *electoral standard deviation* (or *esd*) is its square root, 1.35, so another way of normalizing  $\mathbf{z}^* - \mathbf{z}^{el}$  is to take

$$\begin{aligned} \frac{1}{\sigma}[\mathbf{z}^* - \mathbf{z}^{el}] &= \frac{1}{\sigma} \begin{bmatrix} & \text{McCain} & \text{Obama} \\ x & 0.46 & -0.32 \\ y & -0.25 & 0.82 \end{bmatrix} \\ &= \begin{bmatrix} x & 0.34 & -0.23 \\ y & -0.19 & 0.61 \end{bmatrix}. \end{aligned}$$

The norms of these two vectors are 0.37 and 0.64, respectively, giving us a dimensionless measure of activist influence. In principle, this equation could be used to estimate the influences of the various activist groups on the two candidates.

When the candidates are at their estimated positions, the estimated vote shares, according to the traits model, are  $(V_{Obama}, V_{McCain}) = (0.68, 0.32)$ . Since the actual vote shares were  $(0.52, 0.48)$ , it appears that the trait model may give a statistically plausible account of voter choice, but it does not provide, by itself, a good model of how candidates obtain votes. We suggest that the missing characteristic of this model of the election is the effect on the vote by the contributions of party activists.

Indeed, we suggest that the addition of activists to the model can account for the difference between convergent, equilibrium positions and the divergent, estimated candidate positions, as obtained by Enelow and Hinich (1989) and Poole and Rosenthal (1984), respectively, in their various analysis of US elections.

As we noted above, we could also interpret  $\frac{d\mu}{dz}(\mathbf{z}^*)$  as the gradient obtained from a model where candidates have policy preferences derived from utility functions  $(\mu_{mc}, \mu_{ob})$ . Duggan and Fey (2005) have explored such a model for the case of a deterministic vote model, and obtained symmetry conditions for equilibrium similar to those obtained earlier by McKelvey and Schofield (1987). However, in such a model of policy seeking candidates, a candidate must be willing to adopt a losing position because of strong preferences for particular policies.

It is possible that our estimates of the candidate positions are incorrect since we used average voter perceptions, based on only seven of the possible survey questions. However, these estimated positions give us a statistically significant model of voter choice. We argue that the most plausible account for the difference in the estimated and equilibrium positions of the two candidates is the nature of activist competition.<sup>23</sup>

Note also that this model can be applied to the determination of policy positions of members of the House and Senate of the United States. In particular, we would expect local activist groups to be very heterogenous across states and House constituencies. As a result, policy positions of members of Congress can be expected to be very heterogenous, even within parties.

## 5.4 After the Election: 2009–2011

Obama's victory in 2008 suggests that policy outcomes from 2009 onwards will lie in the upper left hand quadrant of the policy space, and all indications are that Obama's policy position is close to the estimate of Gore's position in 2000. The precise policy outcome from Obama's administration will, of course, depend on the degree to which Republicans in the Senate will be able to block Democratic policies through the use of the filibuster.<sup>24</sup> However, all the indications in the early phase of the new administration are that Obama's policy initiatives will pass. This is indicated by the vote, on January 15, 2009, in the Senate of 52 against 42 in support of Obama's economic recovery program. On February 6, an agreement was reached in the Senate to reduce the size of the stimulus bill to \$780 billion, in return for the support of three Republican senators. On February 9, 2009, the Senate did indeed vote by the required majority of 61 to halt discussion of the stimulus bill, thus blocking a filibuster. A compromise bill of \$787 billion, including some tax cuts, was agreed by House and Senate within a few days, which the House passed with 245 Democrats voting against 183 Republicans, while the Senate passed it with just 60 votes. The bill was immediately signed by Obama.

As Obama commented afterwards:

Now I have to say that given that [the Republicans] were running the show for a pretty long time prior to me getting there, and that their theory was tested pretty thoroughly and

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<sup>23</sup>See also the figures earlier in this chapter for the elections of 2000 and 2004.

<sup>24</sup>See Miller and Schofield (2008) for a discussion of Republican blocking tactics in recent years.

its landed us in the situation where we've got over a trillion dollars' worth of debt and the biggest economic crisis since the Great Depression, I think I have a better argument in terms of economic thinking.

On February 26, Obama proposed a 10 year budget that revised the priorities of the past, with an estimated budget deficit for 2009 at \$1.75 trillion (or over 12% of GDP). It included promises to address global warming and to reverse the trend of growing inequality. A \$3.6 trillion Federal budget proposal passed the House on April 2, by 233 to 196, with even “blue dog” conservative Democrats supporting it, but, again, no Republicans. Finally, the Waxman–Markey climate change bill, formally called the American Clean Energy and Security Act (ACES), passed on a 219 to 212 vote in the House on June 26, 2009. The long delayed victory by Franken, junior senator for Minnesota as of June 30, briefly gave the Democrats 60 votes in the Senate, sufficient to overcome Republican filibusters.

Obama's social policies may eventually pass, as indicated by the vote in the Senate of 61 to 36, on January 22, 2009, for a bill against pay discrimination. The House also gave final approval on February 4, by 290 to 135, to a bill extending health insurance to millions of low-income children. Forty Republicans voted for the bill, and 2 Democrats voted against it. When the bill was signed by President Obama, it was seen as the first of many steps to guarantee health coverage for all Americans.

Obama gained another important victory when the Senate confirmed Sonia Sotomayor as Supreme Court Justice on August 6, 2009, by a vote of 68 to 31. She will be the first Hispanic and the third woman to serve on the Court. On May 9, 2010, President Obama announced that he had chosen Elena Kagan as his nominee to succeed Supreme Court Justice John Paul Stevens.

Events in 2009 and 2010 are consistent with the model presented in this chapter. Obama is attempting to attract and retain pro-business social liberals with his response to the economic crisis. His massive budget proposal addresses the economic down-turn but has angered most Republicans. It is possible that the Republican Party will eventually gain votes from the blue-collar voters who are suffering the most from the economic collapse. However, if there is any economic recovery by the 2012 election, it is likely that most of the pro-business group in the country will respond to Obama's attempt to get the economy moving by supporting him. That will leave the Republican Party with nothing but the old-style populism of William Jennings Bryan: anti-Wall Street, anti-banking, anti-Detroit, anti-immigration, and pro-evangelical religion. This will result in a party realignment to a situation where the predominantly socially and economically liberal “cosmopolitan” Democrats are opposed to a coalition of populist and economically conservative Republicans. It is possible that the Republican Party will move to the lower left, populist quadrant of the policy space, while business interests in the upper right quadrant will switch to the Democrats. It is indicative of this trend that on April 28, Arlen Specter, the senator from Pennsylvania, shifted his allegiance from the Republican Party to the Democrats. However, Specter lost the Democrat primary in May 2010, suggesting that Democrat activists are hostile to pro-business interests.

In October 2009, the so-called “tea party activists” opposed to Obama’s policies on health care began lining up against the centrist Governor Charlie Crist in the GOP Senate primary. On November 1, the centrist Republican candidate, Dede Scozzafava, decided to drop out of the special election in New York’s 23rd congressional district and endorse the Democrat candidate, Bill Owens. He won the election in a district that had been Republican since 1872. Increasingly, the Democrats in Congress represent the richest and the poorest constituencies, while the Republican Party no longer is the party of the wealthy. In the health bill vote in the House in early November, 219 Democrats with 1 Republican voted for the bill, while 176 Republicans and 39 “Blue Dog” Democrats voted against.<sup>25</sup> By December 19, Senator Bernie Sanders of Vermont, an independent who caucuses with the Democrats, as well as Democrat Senators Ben Nelson and Sherrod Brown, had agreed to a compromise bill. This brought the size of the coalition to the critical size of 60 votes, sufficient to force a motion of cloture and bring about a decision in the Senate.<sup>26</sup>

Finally on Christmas Eve, 2009, the health bill passed in the Senate, again by 60 votes with 39 Republicans opposed. However, the victory by Republican Scott Brown in the special Senate election in Massachusetts on January 19 deprived the Democrats of the 60 seat majority required to push through the legislation.<sup>27</sup> On February 25, 2010, an attempt to reach a bipartisan compromise failed, and there was talk of using a maneuver known as “reconciliation” to force through a health bill using majority rule.

These political difficulties appear to have distressed the electorate. For example, the CNN Opinion Research Corp. poll, conducted on February 12–15, 2010, with 1,023 respondents, found that 86% thought government was “broken.” Of these, 81% felt it could be “fixed.” In fact, “gridlock”<sup>28</sup> can be overcome, as illustrated by the 62 to 30 vote in the Senate on February 22 to implement a multi-billion “jobs creation” program. Gridlock over health care also seemed to be broken on March 25, after strenuous efforts by President Barack Obama and House speaker, Nancy Pelosi, when the House voted 220 to 207 for the health care bill. Republicans had voted unanimously against the legislation, joined by 33 dissident Democrats. The President had signed a draft of the bill, the “Patient Protection and Affordable Care Act” on March 23, and the Senate passed the bill by simple majority of 56 to 43, as required for reconciliation.

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<sup>25</sup>On Saturday, November 21, the Senate voted 60 to 40, along partisan lines, to move to the final discussion on the health care bill.

<sup>26</sup>Cloture is a motion aimed at bringing debate to an end. It originally required a two-thirds majority, but since 1975 has required a super-majority of 60. As [Mann and Ornstein \(2008\)](#) observe, until the 1950s there was only an average one cloture motion a year. After 2008, the number increased to about one a week. [Ornstein \(2010\)](#) notes that in the current Congress there are now two a week. See also [Koger \(2010\)](#) and [Binder \(2003\)](#) and the earlier work by [Binder and Smith \(1996\)](#).

<sup>27</sup>However, Scott Brown did vote with the Democrats in the Finance Bill in July.

<sup>28</sup>[Brady and Volden \(2005\)](#) use this phrase when discussing politics from Carter to Bush.

On the other hand, on May 19, the vote to end debate on the Financial Regulation bill failed to obtain the required supramajority, but passed the next day on a vote of 59 to 39 (i.e., a majority of 60.2%). Finally, on July 15, the Senate voted 60-39 for the Dodd–Frank Wall Street Reform and Consumer Protection Act, and this was signed into law by President Obama on July 21.<sup>29</sup> President Obama also signed into law a bill to restore unemployment benefits for millions of Americans who have been out of work for 6 months or more.

As of early July 2010, there remained four major bills to put through Congress: A Deficit Reduction Act, an Expanded Trade and Export Act, a Comprehensive Immigration Act, and an Energy Independence and Climate Change Act. On July 22, 2010, the effort to push forward with the Climate Change Act collapsed due to Republican opposition to a carbon tax. A major problem also remains with regard to the Bush tax cuts of 2001 and 2003, which are due to expire at the end of 2010. If these bills, and the resolution of the tax cuts, prove impossible to enact because of Republican opposition, the electorate may blame the G.O.P.

Given these uncertainties surrounding policy choices in the legislature, it is hardly surprising that voters in the United States doubt that government can be effective. Part of the problem would appear to be the degree of political polarization that results from the power of interest groups located in the opposed quadrants of the policy space.

We have followed [Miller and Schofield \(2008\)](#) and emphasized the potential conflict between economically conservative and socially conservative Republican activists. In Indiana in February 2010, the incumbent Democrat Senator, Evan Bayh, announced that he would retire, because of “strident partisanship, unyielding ideology and a corrosive system of campaign financing.” His announcement set off a contest by local “tea party” social conservatives against the Republican National Committee’s support for Dan Coats, an economically conservative contender for the Senate seat. On May 18, Rand Paul, a Tea Party libertarian, won the Republican nomination in the primary for the Senate seat for Kentucky. His remarks after the election suggested that he thought that the Civil Rights Act of 1964 was too broad. These remarks triggered considerable controversy. These examples just illustrate the degree to which contenders for political office face opposition from activist groups with very different agendas. This is very clear from the response to Obama’s policies from economically conservative business interests, located at R in Fig. 5.7, and the tea party, socially conservative interests located at C in the figure.<sup>30</sup>

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<sup>29</sup>This complex bill was 2300 pages long. Russ Feingold, a Democrat, voted against the bill, because it was not strong enough. Three moderate New England Republicans, Snowe and Collins of Maine, and Scott Brown of Massachusetts, voted for the bill. The death of Senator Robert Byrd of West Virginia made it more difficult to summon the required 60 votes for cloture.

<sup>30</sup>Krugman noted in the *New York Times* (May 24, 2010) that most of the business interests are spending heavily on supporting Republican opposition to Democrat policies. See [Rasmussen and Schoen \(2010\)](#) for the growth of the tea party.



For example, in 2009, health care, pharmaceutical and insurance lobbyists<sup>31</sup> spent approximately \$650 million on lobbying itself, and about \$210 million on media advertising, while the oil and gas industry spent about \$560 million.<sup>32</sup> It would seem inevitable that the importance of lobbying can only increase in the future.<sup>33</sup> The Supreme Court decision, *Citizens United vs. Federal Election Commission*, on January 21, 2010, removed limits on campaign contributions and will further increase the importance of activist contributions. An earlier Court decision, *Federal Election Commission vs. Wisconsin Right to Life Inc.* had allowed corporations to buy advertisements supporting candidates as long as they did not appeal explicitly for the election or defeat of a particular candidate. *Citizens United* removed this limitation.

In his State of the Union address in late January, 2010, President Obama said the court had “reversed a century of law that I believe will open the floodgates for special interests – including foreign corporations – to spend without limit in our elections.” Dworkin (2010) later called the Supreme Court decision “an unprincipled political act with terrible consequences for the nation.”

In July 2010, the Federal Election Commission approved the creation of two “independent” campaign committees, one each from the left and right, expressly designed to take advantage of the lack of spending limits. One committee is being set up by the Club for Growth, the conservative advocate for low taxes and less government. The other, called Commonsense Ten, with close ties to the Democrats, will raise money from individuals, corporations and unions. Both groups will be able to spend unlimited amounts, thanks to the *Citizens United* decision. A Democrat effort to impose new campaign finance regulations before the November congressional election was defeated on July 27 when all 61 Senate Republicans blocked a vote on a bill that would force special interest groups to disclose their donors when purchasing political advertisements. A second attempt at cloture on the bill failed by 59 to 39 in the Senate on September 23.<sup>34</sup>

### 5.4.1 *The 2010 Election*

In the November 2010 mid-term election large amounts of money were funneled through non-profit advocacy groups that can accept unlimited donations and are not required to disclose their donors. As of November 1, 2010, it was estimated

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<sup>31</sup>The pharmaceutical industry was a strong supporter of reform of health care, because of an agreement with Obama to protect the industry’s profits.

<sup>32</sup>Tomasky (2010) gives a figure of \$3.47 billion for spending by lobbyists in the non election year of 2009, citing data from the Center for Responsive Politics.

<sup>33</sup>Indeed, Herrera et al. (2008) observe that spending by parties in federal campaigns went from 58 million dollars in 1976 to over 1 billion in 2004 in nominal terms.

<sup>34</sup>As usual it required 60 votes.

that these groups had spent \$280 million, 60% from undisclosed donors. Three activist groups, the US Chamber of Commerce, American Crossroads and the American Action Committee had spent \$32.8 million, \$21.6 million and \$17 million respectively.

Former Bush advisors, Karl Rove and Ed Gillespie, first formed American Crossroads as a 527 independent-expenditure-only committee, but was required to disclose donors. They then formed Crossroads Grassroots Policy Strategies (GPS) as a 501(c)(4) social welfare nonprofit, which means it does not need to disclose donors, but is not supposed to be used for political purposes. GPS spent \$17 million. The Chamber of Commerce is a 501(c)(6) nonprofit, but corporations that donate to the Chamber must disclose these contributions in their tax filings. These corporations include Dow Chemical, Goldman Sachs, Prudential Financial and Murdoch's New Corporation.

South Carolina Senator, Jim DeMint, used the Senate Conservatives Fund as a PAC to funnel about a \$1 million to many of the more radical Tea Party candidates. Indeed, a key element of the campaign was that these activist bodies were able to target House and Senate races where incumbent Democrats were weak. Total campaign spending was about \$4 billion, with Republican spending somewhat higher than total Democrat spending.

The extremely high level of expenditure (especially for a midterm election) is particularly interesting because there is evidence that the policy positions of activists on the social axis has become more polarized over the last 40 years (Layman et al. 2010). This polarization appears to have benefited the wealthy in society and may well account for the increase in inequality in income and wealth distribution that has occurred (Hacker and Pierson, 2006, 2010; Pierson and Skocpol 2007).

Ultimately, the electorate seems to have blamed incumbents, particularly Democrats, for economic woes. The Democrats lost 63 seats in the House, leading to a Republican majority of 242 to 192. In the Senate the Democrats lost six seats but retained a majority of 51 to 46 (with three generally pro-Democrat Independents).<sup>35</sup> Many of the newly elected members of Congress received the backing of the Tea Party and vocally subscribed to extreme policy stances like abolishing the Federal Reserve, unemployment benefits, and even income taxes. Further, preliminary demographic studies of the Tea Party indicate that they are predominantly older, middle class suburban and rural white Americans.<sup>36</sup> This demographic make-up leads one to postulate that the Tea Party is a representation of a populist movement supported primarily by elites in the South and West. Although tea party supporters are opposed to deficit spending, they generally are supportive of social security and medicare, and want to reduce the deficit by cutting other programs. Perhaps most

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<sup>35</sup>This was the backlash predicted by Bunch (2010). However, the Democrat losses may be due to the spending pattern. The *New York Times* analysis suggested that in 21 House districts where groups supporting Republican candidates spent about \$2 million, they won 12.

<sup>36</sup>Skocpol and Williamson (2010) have been collecting survey and interview data on the Tea Party since its emergence and although their findings are only preliminary, all indications are that Tea Party members are a very specific demographic sub-group with traditional populist concerns. See also Rasmussen and Schoen (2010).

striking about the Tea Party is the immediate impact they are having on Congress itself; as of this writing the Republican House leadership has just created a special leadership post for an incoming freshman Representative from the Tea Party wing.

Because of the plurality nature of the US electoral system, parties have to build a winning coalition of mobilized disaffected activists and current party activists (Miller and Schofield 2003). Many of the tea party activists see themselves as conservative independents, opposed to big business, despite the fact that large corporations and wealthy individuals heavily funded many of the tea party candidates campaigns. Even before the 112th Congress entered session the Republican Party supported the wealthy benefactors by insisting on blocking all legislation during the lame duck session until the wealthiest two percent of Americans received the same extension on their tax cuts that the other 98% were set to receive.

This Republican measure included blocking discussion on repealing the “Don’t Ask, Don’t Tell” legislation, immigration reform legislation, a nuclear arms treaty and even legislation allocating funds to provide healthcare to September 11, 2001 first responders.

In an effort to close his career with parting advice about compromise retiring Connecticut Senator Chris Dodd gave his valedictory speech on the Senate floor on November 30, 2010 with remarks including the following:

From the moment of our founding, America has been engaged in an eternal and often pitched partisan debate. That’s no weakness. In fact, it is at the core of our strength as a democracy, and success as a nation. Political bipartisanship is a goal, not a process. You don’t begin the debate with bipartisanship – you arrive there. And you can do so only when determined partisans create consensus – and thus bipartisanship. In the end, the difference between a partisan brawl and a passionate, but ultimately productive, debate rests on the personal relationships between Senators.

Another elder statesman in the Senate, Indiana’s Richard Lugar, clearly felt the same way as Senator Dodd after the 2010 election as he defied the Republican Party over their various demands. Senator Lugar has said that the environment in Washington was the most polarized he had seen since joining the Senate in 1977. John C. Danforth, the former Republican senator from Missouri, remarked that

If Dick Lugar, having served five terms in the US Senate and being the most respected person in the Senate and the leading authority on foreign policy, is seriously challenged by anybody in the Republican Party, we have gone so far overboard that we are beyond redemption.

President Obama eventually struck a deal to allow the tax cuts to be extended for all Americans (in exchange for an extension of unemployment benefits) despite the fact that even the most positive economic forecasts do not predict these tax cuts to the wealthy will bring unemployment down by more than 0.1% over the 2 year lifespan of the tax cut extension. Other provisions of the \$801 billion bill would grant tax breaks for schoolteachers, mass transit commuting expenses and landowners who invest in conservation techniques. This compromise angered many in the liberal wing of Democratic Party as they saw compromise as a betrayal of President Obama’s progressive values. In the wake of persistent attack by

several prominent liberal Democrats, Obama invited former President Bill Clinton to give a White House press conference in support of the compromise. On Monday 13 December, the Republican bargaining ploy worked. The Senate voted to halt debate on the tax cut bill, and the bill passed the Senate by 81 to 19 two days later. The House speaker, Nancy Pelosi of California, accused Republicans of forcing Democrats “to pay a king’s ransom in order to help the middle class.” Nonetheless, at midnight on 16 December, 139 House Democrats voted with 138 House Republicans for the bill, against 112 Democrats and 36 Republicans. President Obama signed the bill into law the next day.

After this initial compromise was struck, the logjam seemed to have broken as Congress struggled to assemble a stopgap measure to finance the government at least into the first months of 2011. However, House and Senate Republicans derailed a \$1.2 trillion spending measure put forward by Senate Democrats, and promised to use their majority in the new House to shrink government.

On December 18, the “Dream Act” Bill, to allow illegal immigrant students to become citizens, failed on a Senate vote of 55-41, but the Senate did vote 65 to 31 to repeal the “Don’t Ask, Don’t Tell” legislation, making it possible for gays to serve openly in the military. The House had previously approved this repeal by 250 to 175.

The Senate also voted 59 to 37 to reject an amendment to the arms control treaty, New Start, with Russia. The amendment would have killed the treaty because any change to the text would have required the United States and Russia to renegotiate the treaty. On December 22, the Senate voted 71 to 26 for the treaty. This treaty was seen as the most tangible foreign policy achievement of President Obama. Thirteen Republicans joined a unanimous Democratic caucus to vote in favor, exceeding the two-thirds majority required by the Constitution.

The Senate also voted for a \$4.3 billion bill to cover medical costs for rescue workers after the 2001 terrorist attack. The House immediately voted for the bill 206 to 60, and it was sent to President Obama to sign into law. Congress also passed a defense authorization bill covering costs for Afghanistan and Iraq.<sup>37</sup> However, the bill made it more difficult to transfer detainees from Guantánamo.

As Obama said:

I think it’s fair to say that this has been the most productive post-election period we’ve had in decades, and it comes on the heels of the most productive 2 years that we’ve had in generations. If there’s any lesson to draw from these past few weeks, it’s that we are not doomed to endless gridlock. We’ve shown in the wake of the November elections that we have the capacity not only to make progress, but to make progress together.

One of the first moves by the House in the new 112th Congress was to vote, on January 19, 2011, to repeal the Health Care Bill by a margin of 245 to 189. However, this repeal cannot pass the Democrat majority in the Senate. The budget that Obama released on February 14, 2011 attempted to deal with a record deficit

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<sup>37</sup>On December 21, Prime Minister Nuri Kamal al-Maliki of Iraq was able to get approval from the Iraq Parliament for a government coalition, consisting of Shia, Sunni and Kurd.

of \$1.6 trillion. The growing costs of social security, Medicare and Medicaid make this very difficult, particularly in view of the Republican demand for reductions in tax. Partisan conflict continued in the House, as the Republican majority pushed through a plan to cut the budget by \$60 billion, on a vote of 235 to 189, together with amendments that would stop government funding for Planned Parenthood, and block money for the health care overhaul. These steps threatened to cause a shutdown of Federal government in March.

A shutdown of government in early April, 2011, was only just averted by a compromise that cut the budget by \$38 billion. After much wrangling, the House passed legislation on April 14, to finance the federal government for some of the remaining fiscal year. The final House vote was 260 to 167, with 59 members of the House Republican majority and more than half the Democratic minority voting against the legislation. The bill also passed the Senate 81 to 19, again with many Republicans opposed. On May 16, 2011, the Federal debt reached its legal ceiling of \$14.3 trillion, and as of July 14, no agreement had been reached to extend the limit.

## 5.5 Concluding Remarks

President Obama, in the first stage of his administration, made every effort to recreate the American New Deal compact, and possibly a new global compact, to begin to deal with the possibility of economic collapse and a fractured world facing the possibility of catastrophic climate change. This compact could be an analogue of the Bretton Woods system created after World War II. A start has been made in this direction, as indicated by the agreement, in April 2009, of the G-20 group of Industrial countries, under pressure from Obama, to make \$850 billion, as well as \$150 billion in Special Drawing Rights, available through international financial institutions such as the IMF and World Bank. As noted before, Obama also pushed through the Copenhagen Accord in December 2009, a possible beginning of an attempt to deal with climate change. However, opposition by the Republican Party suggests that major legislation on climate change is very unlikely in the near future. It seems that China is likely to be more successful at curbing carbon emissions and developing clean energy.

It is possible that Obama will be able to continue with some of the policy changes that he hoped to implement.

In his speech in Westminster Hall, London, on March 25, 2011, Obama clearly showed his awareness of the problems he faces:

“Our action, our leadership is essential to the cause of human dignity. And so we must act, and lead with confidence in our ideals, and an abiding faith in the character of our people, who sent us all here today.”

Barack Obama,

Nonetheless it seems to be the case that formal models of elections based on position and valence alone are quite inadequate to account for political outcomes. The following remarks and inferences suggest that any formal model of US elections must explicitly include activist groups:

1. The equilibrium analysis of spatial models of US presidential elections indicates that candidates should converge to positions very close to the electoral mean in order to maximize vote shares.
2. However, estimates of candidate positions indicate that they are located in opposed quadrants of the policy space.
3. The incompatibility of the equilibrium locations and the estimated positions can be explained by the influence of activists in US elections.
4. Activist influence has increased over the past decade, and will probably become even more important.
5. Although the distribution of voter positions may not change dramatically, so the distribution cannot be seen to be polarized, the positions of candidates for office have become more polarized. The system of primaries in US elections is likely to further enhance the influence of activists on candidates.
6. Because of this polarization of candidate positions, a shift in the party controlling the presidency will have significant policy implications.
7. The same argument holds for members of Congress, and we would expect activist influence to increase the degree of polarization in Congress.<sup>38</sup>
8. The influence of activists in the strongly majoritarian polity of the United States is the fundamental cause of these policy shifts.
9. Because the winner of the presidential election will generally be located some distance from the electoral center, the policies supported by the President will generally not be supported by an electoral majority. This phenomenon can be seen with regard to the reform of health care, supported by Obama in 2009/2010. This policy is certainly located in the upper left quadrant of the policy space. In January 22, 2010, it was estimated that about 39% of the electorate supported the health plan while 55% did not.
10. In between elections, diametrically different policy positions will be aggressively supported by opposed lobbying groups.
11. Actual policy choices will depend on complex bargaining between the President and Congress. As the health care issue illustrates, the supramajoritarian voting rule in the Senate will tend to favor the *status quo*.
12. The heterogeneity of activist-induced policy preferences in Congress,<sup>39</sup> together with a non-centrist presidential policy position can thus result in so-called “gridlock.”<sup>40</sup>
13. There is an increasing perception in the electorate that Congress has become dysfunctional. More importantly, as Fiorina and Abrams (2009) noted, there seems to be a “disconnect” between the distribution of electoral preferences and the policy options offered by competing Presidential candidates.

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<sup>38</sup>Conflict between the parties over health care, in 2009 and 2010, as discussed above, is just one illustration of this phenomenon.

<sup>39</sup>Work by Jeong et al. (2011) estimated the policy positions of US senators with regard to the 2006 immigration reform act and found the Republican senator positions to be very heterogenous, but all clearly in the lower right hand quadrant of the policy space.

<sup>40</sup>This of course contradicts the argument by Bernhardt et al. (2009) that divergence is welfare enhancing.

14. In the future, health, energy and climate are likely to continue to be important policy areas that will attract powerful activist groups that will influence political choices in ways that are unlikely to be Pareto optimal for the society at large.
15. Religion, and evangelical interest groups will likely become increasingly important in both Presidential and Congressional elections.
16. There is evidence that the policy positions of activists on the social axis has become more polarized over the last 40 years (Layman et al. 2010).
17. This polarization appears to have benefited the wealthy in society and may well account for the increase in inequality in income and wealth distribution that has occurred (Hacker and Pierson 2006, 2010; Pierson and Skocpol 2007). Kaletsky (2010) has suggested a fundamental reason why pro-business activists are so willing to provide resources to political agents who are willing to institute and maintain tax cuts for the rich in the US. It is simply that the US tax system is quite progressive. The richest 10% pay 48% of total household taxes, so the rich stand to gain substantially from bribing political agents.<sup>41</sup>

It thus appears that the political institutions in the US, including both the plurality nature of the electoral system and the structure of the tax system, have a profound effect on the way political choices are made.

In the following chapters we shall first model elections in other polities whose elections are based on plurality rule, namely Canada and Great Britain. We shall also examine elections in polities which have electoral systems that are more “proportional” than the US. These polities include the Netherlands, Belgium, Turkey, Israel, and Poland. In Chap. 9 we shall examine the “partial democracies” of Russia, Georgia and Azerbaijan, sometimes called “anocracies,” where only a limited aspect of full democracy is institutionalized.

Our purpose will be to determine the extent to which electoral systems have an impact on the convergence coefficients, and therefore on the likelihood that electoral considerations can induce convergence to an electoral mean

## Appendix 1: Questions for the 2008 ANES

1. Do you think the government should provide more services than it does now, fewer services than it does now, or about the same number of services as it does now?
2. Do you favor, oppose, or neither favor nor oppose the US government paying for all necessary medical care for all Americans?
3. A proposal has been made that would allow people to put a portion of their Social Security payroll taxes into personal retirement accounts that would be invested in stocks and bonds. Do you favor this idea, oppose it, or neither favor nor oppose it?

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<sup>41</sup>European taxes are focused on consumption rather than income taxes, so the share in France of the richest 10% is only 28%.



I am going to ask you three questions, and ask you to choose which of two statements in these questions comes closer to your own opinion.

4. One, the main reason government has become bigger over the years is because it has gotten involved in things that people should do for themselves. Two, government has become bigger because the problems we face have become bigger.
5. One, we need a strong government to handle today's complex economic problems. Two, the free market can handle these problems without government being involved.
6. One, the less government, the better. Two, there are more things that government should be doing.
7. This country would be better if we worried less about how equal people are. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
8. Do you think that big companies should pay a larger percent of their profits in taxes than small businesses do, that big companies should pay a smaller percent of their profits in taxes than small businesses do, or that big companies and small businesses should pay the same percent of their profits in taxes?
9. Should federal spending on welfare programs be increased, decreased, or kept about the same?
10. Do you favor, oppose, or neither favor nor oppose the US government making it possible for illegal immigrants to become US citizens?
11. Do you think the number of immigrants from foreign countries who are permitted to come to the United States to live should be increased a lot, increased a little, left the same as it is now, decreased a little, or decreased a lot?
12. I'd like to describe a series of circumstances in which a woman might want to have an abortion. For each one, please tell me whether you favor, oppose, or neither favor nor oppose it being legal for the woman to have an abortion in that circumstance.
  - (a) Staying pregnant would hurt the woman's health but is very unlikely to cause her to die.
  - (b) Staying pregnant could cause the woman to die.
  - (c) The pregnancy was caused by sex the woman chose to have with a blood relative.
  - (d) The pregnancy was caused by the woman being raped.
  - (e) The fetus will be born with a serious birth defect.
  - (f) Having the child would be extremely difficult for the woman financially.
  - (g) The child will not be the sex the woman wants it to be.
13. Do you favor or oppose laws to protect homosexuals against job discrimination?
14. Do you think homosexuals should be allowed to serve in the United States Armed Forces or don't you think so?
15. Do you think gay or lesbian couples, in other words, homosexual couples, should be legally permitted to adopt children?



16. Should same-sex couples be allowed to marry, or do you think they should not be allowed to marry?
17. This country would have many fewer problems if there were more emphasis on traditional family ties. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
18. Do you think the federal government should make it more difficult for people to buy a gun than it is now, make it easier for people, or keep the rules the same?
19. Some people feel that the government in Washington should make every effort to improve the social and economic position of blacks. Others feel that the government should not make any special effort to help blacks because they should help themselves. Where would you place yourself on this scale, or haven't you thought much about this?
20. Irish, Italians, Jewish and many other minorities overcame prejudice and worked their way up. Blacks should do the same without any special favors. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
21. Generations of slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
22. It's really a matter of some people not trying hard enough; if blacks would only try harder they could be just as well off as whites. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
23. We hear a lot of talk these days about liberals and conservatives. Where would you place yourself on a scale from liberal to conservative?

## Appendix 2: Tables for 2008

**Table 5.2** Factor loadings for economic and social policy

Question	Economic policy	Social policy
1. Government services	0.53	0.12
2. Universal health care	0.51	0.22
4. Government bigger	0.50	0.14
5. Government or market	0.56	
9. Welfare spending	0.24	
6. Less government	0.65	
7. Equality	0.14	0.37
8. Tax Companies	0.28	0.10
12. Abortion scale		0.55
11. Immigrant scale	0.12	0.25
13–16. Gay scale		0.60
17. Traditional values		0.53
18. Gun access	0.36	
19–22. Afr. Amer. scale	0.14	0.45
23. Liberal vs conservative	0.30	0.60
Eigenvalue	1.93	1.83

**Table 5.3** Descriptive data

	Econ Mean	Policy s.e.	95% C.I.	Social Mean	Policy s.e.	95% C.I.	<i>n</i>
<b>Activists</b>							
Democrats	-0.20	0.09	[-0.38, -0.02]	1.14	0.11	[0.92, 1.37]	80
Republicans	1.41	0.13	[1.66, 1.16]	-0.82	0.09	[-0.99, -0.65]	40
<b>Non-activists</b>							
Democrats	-0.17	0.03	[-0.24, -0.11]	0.36	0.04	[0.29, 0.44]	449
Republicans	0.72	0.06	[0.60, 0.84]	-0.56	0.05	[-0.65, -0.46]	219
							788

**Table 5.4** Obama and McCain perceived positions

Question	Obama	McCain
Estimated position on economic policy	-0.22	0.59
Estimated position on social policy	0.75	-0.37

**Table 5.5** Factor loadings for candidate traits scores 2008

Question	Obama traits	McCain traits
Obama moral	0.72	-0.01
Obama cares	0.71	-0.18
Obama knowledgeable	0.61	-0.07
Obama strong	0.69	-0.13
Obama honest	0.68	-0.09
Obama intelligent	0.61	0.08
Obama optimistic	0.55	0.00
McCain moral	-0.09	0.67
McCain cares	-0.17	0.63
McCain knowledgeable	-0.02	0.65
McCain strong	-0.10	0.70
McCain honest	-0.03	0.63
McCain intelligent	0.11	0.68
McCain optimistic	-0.07	0.57
Eigenvalue	3.07	3.00

**Table 5.6** Spatial logit models for USA 2008<sup>a</sup>

Variable	(1) Spatial <sup>b,c</sup>	(2) Sp. & Traits	(3) Sp. & Dem.	(4) Full
McCain valence $\lambda$	-0.84*** (7.6)	-1.08*** (8.3)	-2.60** (2.8)	-3.58*** (3.4)
Spatial $\beta$	0.85*** (14.1)	0.78*** (10.1)	0.86*** (12.3)	0.83*** (10.3)
McCain traits		1.30*** (7.6)		1.36*** (7.15)
Obama traits		-1.02*** (6.8)		-1.16*** (6.44)
Age			-0.01 (1.0)	-0.01 (1.0)
Gender (F)			0.29 (1.26)	0.44 (0.26)
African American			-4.16*** (3.78)	-3.79*** (3.08)
Hispanic			-0.55 (1.34)	-0.23 (0.51)
Education			0.15* (2.5)	0.22*** (3.66)
Income			0.03 (1.5)	0.01 (0.50)
Working class			-0.54* (2.25)	-0.70** (2.59)
South			0.36 (1.5)	-0.02 (0.07)
Observations	788			
log likelihood (LL)	-299	-243	-250	-207
AIC	601	494	521	438
BIC	611	513	567	494

<sup>a</sup>Vote for Obama is the baseline outcome

<sup>b</sup> $|t - stat|$  in parentheses

<sup>c</sup>Throughout this volume we use the convention

\* :  $prob < 0.05$ ; \*\* :  $prob < 0.01$ ; \*\*\* :  $prob < 0.001$

**Table 5.7** Comparison of LL for US spatial models in 2008

	JST <sup>a</sup>	ST	S	T
JST <sup>a</sup>	na	36	92	150
ST	-7	na	55	114
S	-92	-55	na	58
T	-150	-114	-58	na

<sup>a</sup>JST = Joint spatial with traits, ST = spatial with traits, S = pure spatial, T = Pure traits

### Appendix 3: Tables for 2000 and 2004

**Table 5.8** Spatial logit models for USA 2000 (Base = Gore)

Variable	(1) $M(\lambda, \beta)$ .	(2) $M(\lambda, \alpha, \beta)$ .	(3) $M(\lambda, \theta, \beta)$ .	(4) $M(\lambda, \theta, \alpha, \beta)$ .
	Spatial <sup>a,b</sup>	Sp. & Traits	Sp. & Dem	Full
Bush valence $\lambda$	-0.43*** (5.05)	-0.69*** (5.64)	-0.39 (0.95)	0.48 (0.72)
Spatial $\beta$	0.82*** (14.9)	0.35*** (3.69)	0.89*** (14.8)	0.38*** (3.80)
Bush trait		3.559*** (13.84)		3.58*** (13.60)
Gore trait		-3.22*** (14.25)		-3.15*** (13.64)
Age			-0.14** (2.33)	-0.22* (2.17)
Gender (F)			-0.139 (1.00)	-0.39 (1.41)
African American			-1.57*** (5.85)	-1.45*** (3.67)
Hispanic			-0.27 (0.77)	-0.23 (0.49)
Class			-0.20 (1.30)	-0.12 (0.47)
Education			0.18*** (3.60)	0.11 (1.32)
Income			0.042*** (3.6)	-0.01 (0.32)
Observations	1238	1238	1238	1238
Log likelihood (LL)	-708	-277	-661	-264
AIC	1420	563	1341	549
BIC	1431	586	1393	613

<sup>a</sup>  $|t - stat|$  in parentheses

<sup>b</sup> \* :  $prob < 0.05$ ; \*\* :  $prob < 0.01$ ; \*\*\* :  $prob < 0.001$

**Table 5.9** Spatial logit models for USA in 2004 (Base=Kerry)

Variable	(1) $\mathbb{M}(\lambda, \beta)$ .	(2) $\mathbb{M}(\lambda, \alpha, \beta)$ .	(3) $\mathbb{M}(\lambda, \theta, \beta)$ .	(4) $\mathbb{M}(\lambda, \theta, \alpha, \beta)$
	Spatial <sup>a,b</sup>	Sp. & Traits	Sp. & Dem	Full
Bush valence $\lambda$	-0.43*** (5.05)	-0.15 (1.00)	-1.72*** (3.50)	-0.670 (0.70)
Spatial coeff. $\beta$	0.95*** (14.21)	0.47*** (3.49)	1.09*** (13.76)	0.475*** (3.125)
Bush trait		4.18*** (11.49)		4.22*** (11.40)
Kerry trait		-4.20*** (11.58)		-4.14*** (11.13)
Age			-0.16** (2.61)	0.03 (0.25)
Gender (F)			0.08 (0.44)	-0.38 (1.18)
African American			-1.62*** (6.11)	-1.13** (2.30)
Hispanic			-0.26 (0.75)	0.14 (1.75)
Class			0.22 (1.20)	0.26 (0.75)
Education			0.15* (2.37)	0.136 (1.12)
Income			0.056*** (3.29)	0.012 (0.038)
Observations	935	935	935	935
Log likelihood (LL)	-502	-145	-448	-138
AIC	1007	299	914	298
BIC	1018	321	964	359

<sup>a</sup>  $|t - stat|$  in parentheses

<sup>b</sup> \* :  $prob < 0.05$ ; \*\* :  $prob < 0.01$ ; \*\*\* :  $prob < 0.001$

## Appendix 4: The Formal Stochastic Model

A recent literature on elections has focussed on the effects of campaign expenditure on US election results (Coate, 2004; Meirowitz, 2008). Herrera et al. (2008) suggest that electoral volatility forces candidates to spend more, while Ashworth and Bueno de Mesquita (2009) suppose that candidates buy valence so as to increase their election chances. Snyder and Ting (2008) model the contracting game between interest groups and politicians. Grossman and Helpman (1991, 1994, 2001) provide some game theoretic foundations of a model of campaign contributions. In particular, Grossman and Helpman (1996: 265) define two distinct motives for activists:

Contributors with an *electoral* motive intend to promote the electoral prospects of preferred candidates. Those with an *influence motive* aim to influence the politicians' policy pronouncements.

Ansolahehere et al. (2003) provide an empirical analysis of Congressional and Presidential election campaign contributions up to 2000. They note that candidates, parties and organizations raised and spent about \$3 billion in the 1999–2000 election cycle. However, the federal government at that time spent about \$2 trillion, so the prize from influencing politics was of considerable value. The reason they offer that so little is spent is that contributions are a consumption good, rather than an investment good. However, they do note that the electoral motive is not insignificant: they suggest that the marginal impact of \$100,000 spent in a House race is about 1% in vote.

The essence of the model presented here is that it attempts to combine the electoral and influence motives: the resources used by candidates in seeking election victory come from the *contracts* they can make with their supporting activists. Essentially there is an arms race between candidates over these resources due to a feedback mechanism between politics and economics.

As the outcome of the election becomes more important, activists become increasingly aware that the resources they provide have become crucial to election victories, and they become more demanding of their chosen candidates. Because of the offer of resources, candidates are forced to move to more radical positions, and polarization increases.

We model this mechanism using an electoral model, based on Schofield (2006b), that is an extension of the multiparty stochastic model of McKelvey and Patty (2006), modified by inducing asymmetries in terms of valence. The justification for developing the model in this way is the empirical evidence that valence is a natural way to model the judgments made by voters of party leaders and candidates.<sup>42</sup> There are a number of possible choices for the appropriate model for multiparty competition. The simplest one, which is used here, is that the utility function for the agent  $j$  is proportional to the anticipated vote share,  $V_j$ , of the party in the election.<sup>43</sup>

With this assumption, we can examine the conditions on the parameters of the stochastic model which are necessary for the existence of a pure strategy Nash equilibrium (PNE). Because the vote share functions are differentiable, we use calculus techniques to obtain conditions for positions to be locally optimal. Thus we examine what we call *local pure strategy Nash equilibria* (LNE). From the definitions of these equilibria it follows that a PNE must be a LNE, but not conversely.

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<sup>42</sup>We can use the model either for party leaders or candidates for office, as in the United States. In the following we shall use the term *agents* to mean either one.

<sup>43</sup>For refining the model, and for empirical analysis, we can adapt the model so that parties choose positions to maximize their seat shares, relative to a given constituency structure. We adopt the simplifying vote share assumption in order to present the essential structure of the formal model.

The key idea underlying the formal model is that party leaders attempt to estimate the electoral effects of policy choices, and choose their own positions as best responses to other party declarations, in order to maximize their own vote share. The stochastic model essentially assumes that candidates cannot predict vote response precisely, but that they can estimate the effect of policy proposals on the expected vote share. Implicitly we assume that party leaders rationally anticipate the electoral outcome of any policy decision they make. Parties use focus groups in addition to regularly polling voters in order to determine the electoral response to local policy changes in the period leading up to the election. In the model with valence, the stochastic element is associated with the weight given by each voter,  $i$ , to the average perceived quality or valence of the agent.

The valence of each party, or candidate,  $j$ , is affected by the activist functions, which specify the resources available to  $j$ .

**Definition 5.1.** The Stochastic Vote Model  $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$  with Activist Valence.

The data of the spatial model is a distribution,  $\{x_i \in X\}_{i \in N}$ , of voter ideal points for the members of the electorate,  $N$ , of size  $n$ . We assume that  $X$  is a compact convex subset of Euclidean space,  $\mathbb{R}^w$ , with  $w$  finite. Without loss of generality, we adopt coordinate axes so that  $\frac{1}{n} \sum x_i = 0$ . By assumption  $0 \in X$ , and this point is termed the *electoral mean*, or alternatively, the *electoral origin*. Each of the parties in the set  $P = \{1, \dots, j, \dots, p\}$  chooses a policy,  $z_j \in X$ , to declare prior to the specific election to be modeled.

Let  $\mathbf{z} = (z_1, \dots, z_p) \in X^p$  be a typical vector of candidate policy positions.

We define a stochastic electoral model, which utilizes socio-demographic variables and voter perceptions of character traits. For this model we assume that voter  $i$  utility is given by the expression

$$\mathbf{u}_i(x_i, \mathbf{z}) = (u_{i1}(x_i, z_1), \dots, u_{ip}(x_i, z_p))$$

where

$$\begin{aligned} u_{ij}(x_i, z_j) &= \lambda_j + \mu_j(z_j) + (\theta_j \cdot \eta_i) + (\alpha_j \cdot \tau_i) - \beta \|x_i - z_j\|^2 + \varepsilon_j \\ &= u_{ij}^*(x_i, z_j) + \varepsilon_j. \end{aligned} \tag{5.5}$$

Here  $u_{ij}^*(x_i, z_j)$  is the observable component of utility. The constant term,  $\lambda_j$ , is the exogenous *valence* of agent  $j$ , and the exogenous valence vector  $\lambda = (\lambda_1, \lambda_2, \dots, \lambda_p)$  is assumed to satisfy  $\lambda_p \geq \lambda_{p-1} \geq \dots \geq \lambda_2 \geq \lambda_1$ . In empirical multinomial logit models, the valence vector,  $\lambda$ , is given by the intercept terms for each agent. The points  $\{x_i : i \in N\}$  are the preferred policies of the voters and  $\mathbf{z} = \{z_j : j \in P\}$  are the positions of the agents. The term  $\|x_i - z_j\|$  is simply the Euclidean distance between  $x_i$  and  $z_j$ . The error vector  $\boldsymbol{\varepsilon} = (\varepsilon_1, \dots, \varepsilon_j, \dots, \varepsilon_p)$  is distributed by the type I extreme value distribution, as assumed in empirical MNL estimation (Train 2003), and defined below. The variance of  $\varepsilon_j$  is fixed at

$\frac{\pi^2}{6}$ . By definition  $\beta$  has dimension  $\frac{1}{L^2}$ , where  $L$  is whatever unit of measurement is used in  $X$ .

Sociodemographic aspects of voting are modeled by  $\theta$ , a set of  $k$ -vectors  $\{\theta_j : j \in P\}$  representing the effect of the  $k$  different sociodemographic parameters (class, domicile, education, income, gender, ethnicity, religious orientation, etc.) on voting for party  $j$  while  $\eta_i$  is a  $k$ -vector denoting the  $i$ th individual’s relevant “sociodemographic” characteristics. The compositions  $\{(\theta_j \cdot \eta_i)\}$  are scalar products, called the *sociodemographic valences* for  $j$ .

The terms  $\{(\alpha_j \cdot \tau_i)\}$  are scalars giving voter  $i$ ’s perceptions and beliefs. These can include perceptions of the character traits of agent  $j$ , or beliefs about the state of the economy, etc. We let  $\alpha = (\alpha_1, \dots, \alpha_p)$ . A *traitscore* can be obtained by factor analysis from a set of survey questions asking respondents about the traits of the agent, including ‘moral’, ‘caring’, ‘knowledgable’, ‘strong’, ‘honest’, ‘intelligent’, etc. The perception of traits can be augmented with voter perception of the state of the economy, etc. in order to examine how anticipated changes in the economy affect each agent’s electoral support.

The terms  $\{\mu_j : j \in P\}$  are the *activist valence functions*. In essence, these terms are endogenous to the model, so we may regard these as *endogenous*, rather than exogenous valence functions. The full endogenous model including activists is denoted  $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$ . The partial models include a pure spatial model,  $\mathbb{M}(\lambda, \beta)$ , a pure sociodemographic model,  $\mathbb{M}(\lambda, \theta)$ , a spatial trait model,  $\mathbb{M}(\lambda, \alpha, \beta)$ , and joint models, with or without traits,  $\mathbb{M}(\lambda, \theta, \alpha, \beta)$  and  $\mathbb{M}(\lambda, \theta, \beta)$ .

In all models, voter behavior is modeled by a probability vector. The probability that a voter  $i$  chooses party  $j$  at the vector  $\mathbf{z}$  is

$$\rho_{ij}(\mathbf{z}) = \Pr[[u_{ij}(x_i, z_j) > u_{il}(x_i, z_l)], \text{ for all } l \neq j]. \tag{5.6}$$

$$= \Pr[\varepsilon_l - \varepsilon_j < u_{ij}^*(x_i, z_j) - u_{il}^*(x_i, z_j), \text{ for all } l \neq j]. \tag{5.7}$$

Here  $\Pr$  stands for the probability operator generated by the distribution assumption on  $\varepsilon$ . The *expected vote share* of agent  $j$  is

$$V_j(\mathbf{z}) = \frac{1}{n} \sum_{i \in N} \rho_{ij}(\mathbf{z}). \tag{5.8}$$

This definition assumes that each voter has equal weight,  $\frac{1}{n}$ . The following analysis can be carried out when voters have different weight. The differentiable function

$$\mathbf{V} = (V_1, \dots, V_p) : X^p \rightarrow \mathbb{R}^p$$

is called the *agent profile function*.

**Definition 5.2.** The Type I Extreme Value Distribution,  $\Psi$ .

- (i) The cumulative distribution,  $\Psi$ , has the closed form



$$\Psi(h) = \exp[-\exp[-h]],$$

with probability density function

$$\psi(h) = \exp[-h] \exp[-\exp[-h]]$$

and variance  $\frac{1}{6}\pi^2$ .

- (ii) For each voter  $i$ , and agent  $j$ , the probability that a voter  $i$  chooses agent  $j$  at the vector  $\mathbf{z}$  is

$$\rho_{ij}(\mathbf{z}) = \frac{\exp[u_{ij}^*(x_i, z_j)]}{\sum_{k=1}^p \exp u_{ik}^*(x_i, z_k)}. \quad (5.9)$$

In this stochastic electoral model it is assumed that each agent  $j$  chooses  $z_j$  to maximize  $V_j$ , conditional on  $\mathbf{z}_{-j} = (z_1, \dots, z_{j-1}, z_{j+1}, \dots, z_p)$ .

**Definition 5.3.** Equilibrium Concepts.

- (i) A strategy vector  $\mathbf{z}^* = (z_1^*, \dots, z_{j-1}^*, z_j^*, z_{j+1}^*, \dots, z_p^*)$  is a *local Nash equilibrium* (LNE) of  $\mathbf{V}$  iff, for each agent  $j$ , there exists a neighborhood  $X_j$  of  $z_j^*$  in  $X$  such that

$$V_j(z_1^*, \dots, z_{j-1}^*, z_j^*, z_{j+1}^*, \dots, z_p^*) \geq V_j(z_1^*, \dots, z_j, \dots, z_p^*) \text{ for all } z_j \in X_j.$$

- (ii) A strategy vector  $\mathbf{z}^* = (z_1^*, \dots, z_{j-1}^*, z_j^*, z_{j+1}^*, \dots, z_p^*)$  is a *pure strategy Nash equilibrium* (PNE) iff  $X_j$  can be replaced by  $X$  in (i)..
- (iii) The strategy  $z_j^*$  is termed a *local strict best response*, a *local weak best response*, or a *global best response*, respectively to  $\mathbf{z}_{-j}^* = (z_1^*, \dots, z_{j-1}^*, z_{j+1}^*, \dots, z_p^*)$  depending on which of the appropriate conditions is satisfied. We can also define strict local Nash equilibria (SLNE) and strict Nash equilibria (SPNE) by requiring strict inequalities in the definition.

From the definitions, it follows that if  $\mathbf{z}^*$  is a PNE it must be an LNE.

Notice that in this model, each agent is uncertain about the precise electoral outcome, because of the stochastic component of voter choice.

In real life, agents use focus groups and opinion poll data to estimate the effect of their policy decisions on their vote shares at the time of election. The model essentially assumes that agents utilize such information by searching for a “local equilibrium” policy position, in order to gain as many votes as possible.

It follows for the model  $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$ , that for voter  $i$ , with ideal point,  $x_i$ , the probability,  $\rho_{ij}(\mathbf{z})$ , that  $i$  picks  $j$  at  $\mathbf{z}$  is given by

$$\rho_{ij}(\mathbf{z}) = [1 + \sum_{k \neq j} \exp(f_{kj})]^{-1} \quad (5.10)$$

where

$$f_{kj} = u_{ik}^*(x_i, z_k) - u_{ij}^*(x_i, z_j). \quad (5.11)$$

Thus

$$\frac{d\rho_{ij}}{dz_j} = \left\{ 2\beta(x_i - z_j) + \frac{d\mu_j}{dz_j}(z_j) \right\} [\rho_{ij} - \rho_{ij}^2]. \quad (5.12)$$

Here we use the notation  $\frac{d\rho_{ij}}{dz_j}$  to mean the gradient. The first order condition for  $\mathbf{z}^*$  to be a LNE is given by

$$\frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} = 0. \quad (5.13)$$

We then use the gradient equation for  $\frac{d\rho_{ij}}{dz_j}$  to show that an equilibrium  $\mathbf{z}^*$  must be a *balance solution*.

**Definition 5.4.** The balance solution for the model  $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$ .

Let  $[\rho_{ij}(\mathbf{z})] = [\rho_{ij}]$  be the  $n$  by  $p$  matrix of voter probabilities at the vector  $\mathbf{z}$ , and let

$$[\varpi_{ij}] = \left[ \frac{\rho_{ij} - \rho_{ij}^2}{\sum_{k=1}^n (\rho_{kj} - \rho_{kj}^2)} \right] \quad (5.14)$$

be the  $n$  by  $p$  matrix of weighting coefficients.

The *balance equation* for  $z_j^*$  is given by expression

$$z_j^* = \frac{1}{2\beta} \frac{d\mu_j}{dz_j} + \sum_{i=1}^n \varpi_{ij} x_i. \quad (5.15)$$

The vector  $\sum_i \varpi_{ij} x_i$  is a convex combination of the set of voter ideal points.

This vector is called the *weighted electoral mean* for agent  $j$ . Define

$$z_j^{el} = \sum_i \varpi_{ij} x_i \quad (5.16)$$

and

$$\mathbf{z}^{el} = (z_1^{el}, \dots, z_p^{el}).$$

The balance equations for  $j = 1, \dots, p$  can then be written as

$$\frac{d\mathcal{E}_j^*}{dz_j}(z_j^*) + \frac{1}{2\beta} \frac{d\mu_j}{dz_j}(z_j^*) = 0. \quad (5.17)$$

The first term in this equation is termed the *centripetal marginal electoral pull of agent  $j$*  and is defined at  $z_j$  by

$$\frac{d\mathcal{E}_j^*}{dz_j}(z_j) = [z_j^{el} - z_j].$$

It is a gradient vector pointing from  $z_j$  towards the *weighted electoral mean*,  $z_j^{el}$ , of the agent. This weighted electoral mean is that point where the electoral pull is zero. Notice that the each entry in the vector  $\mathbf{z}^{el} = (z_1^{el}, z_2^{el}, \dots, z_p^{el})$  depends on all other entries. The vector  $\frac{d\mu_j}{dz_j}$  is called *the marginal activist pull for agent  $j$* .

In vector notation we write:

$$\begin{aligned} \frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) &= [\mathbf{z}^{el} - \mathbf{z}^*]. \\ \frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) + \frac{1}{2\beta} \frac{d\boldsymbol{\mu}}{d\mathbf{z}}(\mathbf{z}^*) &= 0. \end{aligned}$$

If the vector  $\mathbf{z}^*$  satisfies the system of balance equations, for all  $j$ , then call  $\mathbf{z}^*$  a *balance solution*.

The following theorem is proved in [Schofield \(2006b\)](#).

**The Balance Theorem.** *Consider the electoral model  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\mu}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$  based on the Type I extreme value distribution, and including both exogenous and activist valences.*

- (i) *The first order condition for  $\mathbf{z}^*$  to be an LNE is that it is a balance solution.*
- (ii) *If all activist valence functions are highly concave, in the sense of having negative eigenvalues of sufficiently great magnitude, then a balance solution will be a LNE.*

Notice that if  $X$  is open, then this first order condition at  $\mathbf{z}^*$  is necessary for  $\mathbf{z}^*$  to be a PNE. We implicitly assume that any relevant  $\mathbf{z}^*$  will lie in the interior of  $X$ .

In the case that the activist valence functions and sociodemographic terms are identically zero, we call this the *pure spatial model*, denoted  $\mathbb{M}(\boldsymbol{\lambda}, \beta)$ .

In this case, the first order condition is

$$\frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} \quad (5.18)$$

$$= \frac{1}{n} \sum_{i \in N} \{2\beta(x_i - z_j)\} [\rho_{ij} - \rho_{ij}^2] = 0. \quad (5.19)$$

Suppose that all  $z_j$  are identical. Then all  $\rho_{ij}$  are independent of  $\{x_i\}$  and thus of  $i$ , and  $\rho_{ij}$  may be written as  $\rho_j$ . Then for each fixed  $j$ , the first order condition is

$$\frac{dV_j(\mathbf{z})}{dz_j} = 2\beta[\rho_j - \rho_j^2] \sum_{i \in N} [(x_i - z_j)] = 0. \quad (5.20)$$

Thus, when there is only exogenous valence, then for all  $j$ , balance solution satisfies  $z_j^* = \frac{1}{n} \sum_{i \in N} x_i$ , the *electoral mean*. We denote by  $\mathbf{z}_0$  the vector where each  $z_j$  is given by the electoral mean, and call this vector the *joint electoral mean*.<sup>44</sup>

However, when the valence functions  $\{\mu_j\}$  are not identically zero, then it is the case that generically  $\mathbf{z}_0$  cannot satisfy the first order condition. Instead the vector  $\frac{d\mu_j}{dz_j}$  “points towards” the position at which the activist valence is maximized. When this marginal or gradient vector,  $\frac{d\mu_j}{dz_j}$ , is increased (as activists become more willing to contribute to the agent) then the equilibrium position is pulled away from the weighted electoral mean of agent  $j$ , and we can say the “activist effect” for the agent is increased. In the two agent case, if the activist valence functions are fixed, but the exogenous valence,  $\lambda_j$ , is increased, or  $\lambda_k$ , (for  $k \neq j$ ) is decreased, then the weighted electoral mean,  $z_j^{el}$ , approaches the electoral origin. Thus the local equilibrium of agent  $j$  is pulled towards the electoral origin. We can say the “electoral effect” is increased. Notice also that when the sociodemographic or trait terms are included, in the *joint spatial models*, denoted  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$  and  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$  then again the weighted electoral means and the electoral mean  $\mathbf{z}_0$  need not coincide. For the joint models the weighted electoral mean can be found by simulation.

The second order condition for an LNE at  $z^*$  depends on the negative definiteness of the Hessian of the activist valence function. If the eigenvalues of these Hessians are negative at a balance solution, and of sufficient magnitude, then this will guarantee that a vector  $z^*$  which satisfies the balance condition will be a LNE. Indeed, this condition can ensure concavity of the vote share functions, and thus of existence of a PNE.

### ***Model with Multiple Activist Groups***

We adapt the model,  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\mu}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ , presented in [Schofield and Cataife \(2007\)](#), where there are multiple activist groups for each agent.

- (i) For each agent,  $j$ , let  $\{A_j\}$  be a family of potential activists, where each  $k \in A_j$  is endowed with a utility function,  $U_k$ , which is a function of the position  $z_j$ . The resources allocated to  $j$  by  $k$  are denoted  $R_{jk}(U_k(z_j))$ . The total activist valence function for agent  $j$  is the linear combination

$$\mu_j(z_j) = \sum_{k \in A_j} \mu_{jk}(R_{jk}(U_k(z_j))). \quad (5.21)$$

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<sup>44</sup>Since we can renormalize and set  $\sum x_i = 0$ , we can write  $\mathbf{z}_0 = (0, \dots, 0)$  and call this vector the joint origin.

where  $\{\mu_{jk}\}$  are functions of the contributions  $\{R_{jk}(U_k(z_j))\}$ , and each  $\mu_{jk}$  is a concave function of  $R_{jk}$ .

- (ii) Assume the marginal change of  $\mu_{jk}$  is given by  $\frac{d\mu_{jk}}{dz_j} = a_k^*(z_j) \frac{dR_{jk}}{dz_j}$  where  $a_k^*(-)$  is a differentiable and positive function of  $z_j$ ,
- (iii) Assume also that the marginal provision of resources is given by  $\frac{dR_{jk}}{dz_j} = a_k^{**}(z_j) \frac{dU_k}{dz_j}$  where again  $a_k^{**}(-)$  is a differentiable and positive function of  $z_j$ .
- (iv) Then the valence functions for  $j$  are given by

$$\frac{d\mu_{jk}}{dz_j}(z_j) = a_k^*(z_j) \frac{dR_{jk}}{dz_j} = a_k^*(z_j) a_k^{**}(z_j) \frac{dU_k}{dz_j}. \quad (5.22)$$

- (v) Let  $b_k^*(z_j) = a_k^*(z_j) a_k^{**}(z_j)$ . Then under these assumptions, the first order equation  $\frac{d\mu_j}{dz_j} = 0$  becomes

$$\frac{d\mu_j}{dz_j} = \sum_{k \in A_j} \frac{d}{dz_j} [\mu_{jk}(R_{jk}(U_k(z_j)))] \quad (5.23)$$

$$= \sum_{k \in A_j} b_k^*(z_j) \frac{dU_k}{dz_j} = 0. \quad (5.24)$$

Now renormalize so that

$$b_k(z_j) = \frac{b_k^*(z_j)}{\sum_{k \in A_j} b_k^*(z_j)} \text{ with all } b_k(z_j) > 0. \quad (5.25)$$

Then the *Contract Set* generated by the family  $\{A_j\}$  is the locus of points satisfying the gradient equation

$$\sum_{k \in A_j} b_k(z_j) \frac{dU_k}{dz_j} = 0, \text{ where } \sum_{k \in A_j} b_k(z_j) = 1 \text{ and all } b_k(z_j) > 0. \quad (5.26)$$

These coefficients  $\{b_k(z_j) : k \in A_j\}$  specify how the activist groups coalesce to provide support for the agent  $j$ , at  $z_j$ . For some position,  $z_j^*$  on this contract set, the activist valence,  $\mu_j(z_j^*)$  will be maximized. This will not however maximize the vote share. The vote share maximizing point will lie on the *Balance Locus* for the agent  $j$ , defined for the family,  $\{A_j\}$ , as the solution to the first-order gradient equation

$$\left[ z_j^{el} - z_j^* \right] + \frac{1}{2\beta} \left[ \sum_{k \in A_j} b_k(z_j^*) \frac{dU_k}{dz_j} \right] = 0. \quad (5.27)$$

In principle, this equation allows each agent to contract with its set of activists to choose a policy position. The agents, in return, provide resources prior to the election. As we noted previously, Grossman and Helpman (1996), in their game theoretic model, consider two distinct motives for interest groups:

Contributors with an *electoral motive* intend to promote the electoral prospects of preferred candidates, [while] those with an *influence motive* aim to influence the politicians' policy pronouncements.

The above model allows both motives. It remains however, to solve the commitment problem, over whether the agent does indeed move to a policy position that is compatible with the contracts made with the activists.

The simplest case, discussed in Schofield and Cataife (2007) is in two-dimensions, where each leader or agent has two activist groups. In this case, the contract set for each agent's supporters will, generically, be a one-dimensional arc. Miller and Schofield (2003) also supposed that the activist utility functions were ellipsoidal, mirroring differing saliences on the two axes. In this case the contract curves would be *catenaries*, and the balance locus would be a one-dimensional arc. The balance solution for each leader naturally depends on the positions of opposed leaders, and on the coefficients, as indicated above, of the various activists. The determination of the balance solution can be obtained by computing the vote share Hessian along the balance locus. Because the activist valence functions can be expected to be concave in the activist resources, the Hessian of the overall activist valence,  $\mu_j$ , can be expected to have negative eigenvalues. For this reason, the Balance Theorem gives a formal reason to expect existence of a PNE.

Notice that because of the way  $z_j^{el}$  is defined, the position  $z_j^*$  can be interpreted as a *weighted utilitarian welfare function*, where the weights refer to voters and activists.<sup>45</sup>

### *The Model Without Activist Valence Functions*

We now apply the theorem to the pure spatial model  $\mathbb{M}(\lambda, \beta)$ , by setting  $\mu = \theta = \alpha \equiv \mathbf{0}$ .

As we have shown above, the *joint electoral mean*  $\mathbf{z}_0$  satisfies the first order condition for a LNE. We now consider the second order condition.

**Definition 5.5.** The Convergence Coefficient of the Model  $\mathbb{M}(\lambda, \beta)$  when the space  $X$  has dimension  $w$ .

(i) Define

$$\rho_1 = \left[ 1 + \sum_{k=2}^p \exp[\lambda_k - \lambda_1] \right]^{-1}. \tag{5.28}$$

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<sup>45</sup>See Acemoglu and Robinson (2006a), Proposition A.5, for a somewhat similar model.

- (ii) Let  $X$  be endowed with an orthogonal system of coordinate axes  $(1, \dots, s, \dots, t, \dots, w)$ . For each coordinate axis let  $\xi_t = (x_{1t}, x_{2t}, \dots, x_{nt}) \in \mathbb{R}^n$  be the vector of the  $t$ th coordinates of the set of  $n$  voter ideal points. Let  $(\xi_s, \xi_t) \in \mathbb{R}$  denote scalar product. The covariance between the  $s$ th and  $t$ th axes is denoted  $(\sigma_s, \sigma_t) = \frac{1}{n}(\xi_s, \xi_t)$  and  $\sigma_s^2 = \frac{1}{n}(\xi_s, \xi_s)$  is the electoral variance on the  $s$ th axis. Note that these variances and covariances are taken about the electoral means on each axis.
- (iii) The symmetric  $w \times w$  electoral covariance matrix  $\nabla_0$  is defined to be  $\frac{1}{n}[(\xi_s, \xi_t)]_{t=1 \dots w}^{s=1 \dots w}$ .
- (iv) The electoral variance is

$$\sigma^2 = \sum_{s=1}^w \sigma_s^2 = \frac{1}{n} \sum_{s=1}^w (\xi_s, \xi_s) = \text{trace}(\nabla_0).$$

- (v) The  $w$  by  $w$  characteristic matrix, of agent 1 is given by

$$C_1 = 2\beta(1 - 2\rho_1)\nabla_0 - I. \tag{5.29}$$

- (vi) The convergence coefficient of the model  $\mathbb{M}(\lambda, \beta)$  is

$$c \equiv c(\lambda, \beta) = 2\beta[1 - 2\rho_1]\sigma^2. \tag{5.30}$$

Observe that the  $\beta$ -parameter has dimension  $L^{-2}$ , so that  $c$  is dimensionless. We can therefore use  $c$  to compare different models.

Note also that agent 1 is by definition the agent with the lowest valence, and  $\rho_1$ , as defined above, is the probability that a generic voter will choose this agent when all agents are located at the origin. The estimate of the probability  $\rho_1$  depends only on the comparison functions  $\{f_{kj}\}$ , as given above and these can be estimated in terms of the valence differences.

The following result is proved in Schofield (2007a).

**The Mean Voter Valence Theorem.** (i) *The joint mean  $\mathbf{z}_0$  satisfies the first order condition to be a LNE for the model  $\mathbb{M}(\lambda, \beta)$ .*

- (ii) *The necessary and sufficient second order condition for SLNE at  $\mathbf{z}_0$  is that  $C_1$  has negative eigenvalues.*<sup>46</sup>
- (iii) *A necessary condition for  $\mathbf{z}_0$  to be a SLNE for the model  $\mathbb{M}(\lambda, \beta)$  is that  $c(\lambda, \beta) < w$ .*
- (iv) *A sufficient condition for convergence to  $\mathbf{z}_0$  in the two-dimensional case is that  $c < 1$ .*

Notice that (iii) follows from (ii) since the condition of negative eigenvalues means that

$$\text{trace}(C_1) = 2\beta[1 - 2\rho_1]\sigma^2 - w < 0.$$

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<sup>46</sup>In the usual way, the condition for an LNE is that the eigenvalues are negative semi-definite.

In the case  $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = w$ , then  $\text{trace}(C_1) = 0$ , which means either that all eigenvalues are zero, or at least one is positive. This degenerate situation requires examination of  $C_1$ . The additional condition  $c < 1$  is sufficient to guarantee that  $\det(C_1) > 0$ , which ensures that both eigenvalues are negative.

The expression for  $C_1$  has a simple form because of the assumption of a single distance parameter  $\beta$ . It is possible to use a model with different coefficients  $\boldsymbol{\beta} = \{\beta_1, \beta_2, \dots, \beta_w\}$  on each dimension. In this case the characteristic matrix can readily be shown to be

$$C_1 = 2(1 - 2\rho_1)\boldsymbol{\beta}\nabla_0\boldsymbol{\beta} - \boldsymbol{\beta},$$

where  $\boldsymbol{\beta}$  is the diagonal matrix of the  $\beta$  coefficients, while  $\boldsymbol{\beta}\nabla_0\boldsymbol{\beta}$  is the covariance matrix where each axis is weighted by the coefficients  $\boldsymbol{\beta} = (\beta_1, \beta_2, \dots, \beta_w)$ . The necessary condition in this case is that  $\text{trace}(C_1) < 0$ , or

$$2(1 - 2\rho_1)\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta}) < \beta_1 + \beta_2 \dots + \beta_w.$$

The convergence coefficient in this case is

$$c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_1)\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta})}{\frac{1}{w}(\beta_1 + \beta_2 \dots + \beta_w)}$$

again giving the necessary condition of  $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) < w$ .

Note that if  $C_1$  has negative eigenvalues, then the Hessians of the vote shares for all agents are negative definite at the joint mean,  $\mathbf{z}_0$ . When this is true, then the joint mean is a candidate for a PNE, and this property can be verified by simulation.

When the convergence condition  $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) < w$  is violated the joint origin cannot be a SPNE.

In the degenerate case  $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = w$  it is again necessary to examine the characteristic matrix to determine whether the joint mean can be a PNE.

To estimate the standard error on  $\rho_j$ , and thus on  $c(\boldsymbol{\lambda}, \boldsymbol{\beta})$ , we use Taylor's Theorem, which asserts that

$$\rho_j(\lambda_j + h) = \rho_j(\lambda_j) + h \frac{d\rho_j}{d\lambda_j} = \rho_j(\lambda_j) + h\rho_j(1 - \rho_j). \quad (5.31)$$

### ***The Spatial Model with Agent Policy Preferences***

For the model  $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \boldsymbol{\beta})$ , if we associate the utilities  $\{U_k\}$  with leaders of the activist groups for the agents, then the combination  $\sum_{k \in A_j} b_k \frac{dU_k}{dz_j}$  from the multiple agent model may be interpreted as the marginal policy utility of agent  $j$ , induced by the activist support.

To see this suppose that each agent were to maximize a utility function,  $\mathbb{V}$ , given by



$$\mathbb{V}_j(\mathbf{z}) = \delta_j \mu_j(z_j) + \frac{1 - \delta_j}{n} \sum_i \rho_{ij}(\mathbf{z})$$

where  $\mu_j$  is no longer an activist function, but a policy determined component of the agent's utility function, while  $\delta_j \in [0, 1]$  is the weight given to the policy preference. Models involving candidate preferences have been proposed by [Wittman \(1977\)](#), [Calvert \(1985\)](#), [Duggan and Fey \(2005\)](#), [Bernhardt et al. \(2007, 2009a,b\)](#) and [Peress \(2010\)](#).

In this equation we assume that there are no activist functions, so  $\{\rho_{ij}(\mathbf{z})\}$  can be computed using the model  $\mathbb{M}(\lambda, \theta, \alpha, \beta)$ .

If we let  $\{z_j^{\mathbb{V}^*}\}$  be the LNE solution with these policy preferences, then the solutions for  $\{z_j^{\mathbb{V}^*}\}$  will depend on  $j$ , and so  $\rho_{ij}$  will depend  $\{x_i \in X\}_{i \in N}$ . Thus the  $\rho_{ij}$  cannot be written as  $\rho_j$ , and the first order condition becomes

$$\frac{d\mathbb{V}_j(\mathbf{z})}{dz_j} = \delta_j \frac{d\mu_j}{dz_j}(z_j) + \frac{1 - \delta_j}{n} \sum_{i=1}^n 2\beta(x_i - z_j)[\rho_{ij} - \rho_{ij}^2] = 0$$

or

$$z_j^{\mathbb{V}^*} (1 - \delta_j) \sum_{k \in N} [\rho_{kj} - \rho_{kj}^2] = \frac{n\delta_j}{2\beta} \frac{d\mu_j}{dz_j} + (1 - \delta_j) \sum_{i=1}^n [\rho_{ij} - \rho_{ij}^2] x_i.$$

Thus

$$\begin{aligned} z_j^{\mathbb{V}^*} &= \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j} + \sum_{i \in N} [\varpi_{ij}] x_i \\ &= \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j} + z_j^{el}. \end{aligned}$$

where

$$n^* = \frac{n}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]}.$$

The new “balance equation” becomes

$$\left[ z_j^{el} - z_j^{\mathbb{V}^*} \right] + \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j}(z_j^{\mathbb{V}^*}) = 0.$$

Here  $\frac{d\mu_j}{dz_j}(z_j)$  is a gradient at a position,  $z_j$ , which points towards the policy preferred position of the agent.

Suppose now that each agent,  $j$ , has contracted with the various activists groups in  $A_j$ , and the activists have provided resources which have been deployed to influence voters. If we now estimate the spatial model,  $\mathbb{M}(\lambda, \theta, \alpha, \beta)$  without activists, at the time of the election, then the effect of these resources will be

incorporated in the parameters of the model. Simulation of this model will give a weighted electoral mean,  $z_j^{el}$ . Suppose further that the agent is *committed* to the contract with the activists, so that the agent's equilibrium position,  $z_j^{V*}$ , is that which is obtained from the model where the agent has a policy position induced from this contract. This gives our final result.

**The Activist Theorem.** Suppose each agent,  $j$ , is committed to a contract with a family of activists  $\{A_j\}$  with utility functions  $U_k : k \in A_j$ . Let  $z_j^{el}$  be the estimated equilibrium position according to the model  $\mathbb{M}(\lambda, \theta, \alpha, \beta)$  at the time of the election. Then the influence of the activists is given by the set of equations

$$\left[ z_j^{V*} - z_j^{el} \right] = \frac{n^* \delta_j}{2(1 - \delta_j) \beta} \frac{d\mu_j}{dz_j}(z_j^{V*}) \equiv \frac{n^* \delta_j}{2(1 - \delta_j) \beta} \sum_{k \in A_j} b_k \frac{dU_k}{dz_j} \text{ for } j \in P.$$

The advantage of this version of the result is that while the activist resources affect the voter probabilities, these are already included in the estimation of the model  $\mathbb{M}(\lambda, \theta, \alpha, \beta)$  and the estimated weighted means  $\{z_j^{el}\}$ . Thus the effect of activist support is subsumed in the empirical estimates of the various measures of valences. If the activist utility functions, or activist preferred positions are known, then this equation can be used to estimate the activist effects.

Of course, this does not allow us to solve for the nature of the contracts, but it does give a way of estimating the effects of the contracts between agents and activists.

We may readily extend this model to consider situations where the activist groups have the option of choosing from among a set of possible agents, all with varying exogenous valences and preferences (Schofield and Sened 2006). In principle, we can also have interest groups contributing to many agents.

In the applications of this model, we shall with some abuse of notation write  $z_j^*$  for  $z_j^{V*}$ . When we do not know the activist locations, we shall use the simple balance equation as in the Balance Theorem.

### ***Extension of the Activist Model: Targeting Voters***

As before we let  $\{A_j\}$  be the family of activist supporters for  $j$  and now write

$$\mathbf{R}_j(z_j) = \sum_{k \in A_j} R_{jk}(U_k(z_j)). \quad (5.32)$$

for the total resources obtained by agent  $j$  from the various activist groups. These resources are denominated in terms of time (times skilled labor rate) or money, so we can take the units as dollars, or a convenient unit of currency.

These resources are now used to target the individual voters and the voter utility function is now

$$\begin{aligned} u_{ij}(x_i, z_j) &= \lambda_j + \mu_i(m_{ij}) + (\theta_j \cdot \eta_i) + (\alpha_j \cdot \tau_i) - \beta \|x_i - z_j\|^2 + \varepsilon_j \\ &= u_{ij}^*(x_i, z_j) + \varepsilon_j. \end{aligned}$$

Here  $\mu_i(m_{ij})$  is the valence effect of the expenditure of resources ( $m_{ij}$ ) on the targeting of voter  $i$  by agent  $j$ . We assume that the greater the resources  $m_{ij}$  spent on persuading voter  $i$ , the greater the implicit valence associated with candidate  $j$ , so  $\frac{d\mu_i(m_{ij})}{dm_j} > 0$ . We may also assume decreasing returns:  $\frac{d^2\mu_i(m_{ij})}{dm_j^2} < 0$ . Obviously we can partition the voters into different categories, in terms of their sociodemographic valences. Note that different agents may target the same voter or group of voters.

We assume that, for each  $j$ , the budget constraint is satisfied:

$$\mathbf{R}_j(z_j) = \sum_{k \in A_j} \mu_{jk}(R_{jk}(U_k(z_j))) \quad (5.33)$$

$$= \sum_{i \in N} m_{ij} \quad (5.34)$$

We now assume that  $j$  solves the optimization problem that we now construct. Since  $\mathbf{R}_j(z_j)$  determines the budget constraint for  $j$ , we can write  $m_{ij} \equiv m_{ij}(z_j)$ , so

$$\mu_i(m_{ij}) \equiv \mu_i(m_{ij}(z_j)) \equiv \mu_{ij}(z_j).$$

We shall also assume that the solution to the optimization problem is smooth, in the sense that  $\mu_{ij}$  is a differentiable function of  $z_j$ . Just as in (5.12) we can now obtain the first order condition:

$$\frac{d\rho_{ij}(\mathbf{z})}{dz_j} = \{2\beta(x_i - z_j) + \frac{d\mu_{ij}}{dz_j}(z_j)\}[\rho_{ij} - \rho_{ij}^2].$$

This gives a more general balance condition as follows:

$$\begin{aligned} 0 &= \frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} \\ &= \frac{1}{n} \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2] \left\{ 2\beta(x_i - z_j) + \frac{d\mu_{ij}}{dz_j}(z_j) \right\}. \end{aligned}$$

So

$$z_j \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2] = \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2] \left\{ x_i + \frac{1}{2\beta} \frac{d\mu_{ij}}{dz_j}(z_j) \right\}.$$

Hence

$$z_j^* = \frac{\sum_i \left[ [\rho_{ij} - \rho_{ij}^2] \left[ x_i + \frac{1}{2\beta} \frac{d\mu_{ij}}{dz_j}(z_j) \right] \right]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]}$$

or  $z_j^* = \sum_{i=1}^n \varpi_{ij} (x_i + \gamma_i)$  where  $\gamma_i = \frac{1}{2\beta} \frac{d\mu_{ij}}{dz_j}(z_j)$

and

$$\varpi_{ij} = \frac{[\rho_{ij} - \rho_{ij}^2]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]}$$

This can be written

$$[z_j^* - z_j^{el}] = \sum_{i=1}^n \varpi_{ij} \gamma_i \text{ where } z_j^{el} = \sum_{i=1}^n \varpi_{ij} x_i.$$

When

$$\frac{d\mu_{ij}}{dz_j}(z_j) = \frac{d\mu_j}{dz_j}(z_j)$$

this reduces to the previous result.

The difference now is that instead of there being a single *centrifugal marginal activist pull*  $\frac{1}{2\beta} \frac{d\mu_j}{dz_j}(z_j)$  there is an *aggregate activist pull*

$$\sum_{i=1}^n \varpi_{ij} \gamma_i = \frac{1}{2\beta} \sum_{i=1}^n \frac{[\rho_{ij} - \rho_{ij}^2]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]} \frac{d\mu_{ij}}{dz_j}(z_j)$$

determined by the budget constraint

$$\begin{aligned} \mu_j(z_j) &= \sum_{k \in A_j} \mu_{jk}(R_{jk}(U_k(z_j))) \\ &= \sum_{i \in N} m_{ij}. \end{aligned}$$

Notice that the first order condition depends on the marginal terms,  $\frac{d\mu_{ij}}{dz_j}(z_j)$ , associated with policy positions, and these will depend on the marginal valence effects  $\frac{d\mu_i(m_{ij})}{dm_j}$ . Although these valence effects can be assumed to exhibit decreasing returns, these will vary across different classes of voters. The plausibility of existence of Nash equilibria turns on whether the induced second order terms

$\frac{d^2\mu_{ij}}{dz_j^2}(z_j)$  have negative eigenvalues. The assumption of negative eigenvalues would give a useful corollary to the activist theorem.

Note also that if  $\rho_{ij}$  is close to 0 or 1, then  $\varpi_{ij}$  will be close to 0, so the optimal calculation will be complex, though in principle solvable. It is plausible the agent should expend resources on pivotal voters for whom  $\rho_{ij}$  is close to 1/2.<sup>47</sup>

To sketch an outline of a general model to endogenize activist support, we first let

$$\rho : X^p \times \mathbb{B}^{n \times p} \rightarrow [0, 1]^{n \times p}$$

specify the electoral mapping in terms of candidate positions in  $X^p$  and the distribution, in  $\mathbb{B}^{n \times p}$ , of resources  $\{m_{ij}\}$  to all voters.<sup>48</sup>

We then let

$$\mathbf{V} = V_1 \times \dots \times V_p : X^p \times \mathbb{B}^{n \times p} \rightarrow [0, 1]^p$$

be the *agent profile function*, mapping agent positions and voter distributions to vote shares, as given by the above models. Indeed, for a more general model we could consider multiparty systems where agents form beliefs about coalitions behavior, as suggested in [Schofield and Sened \(2006\)](#). In this case the mapping would be

$$\mathbf{V} = V_1 \times \dots \times V_p : X^p \times \mathbb{B}^{n \times p} \rightarrow \mathbb{R}^p.$$

We let the  $\mathbf{k}$  activists have preferences over the positions taken by the  $p$  political agents and agent vote shares, so the *activist profile function* is a map

$$\mathbf{U} : X^p \times [0, 1]^p \rightarrow \mathbb{R}^k.$$

It is reasonable to suppose that both  $\mathbf{V}$  and  $\mathbf{U}$  are differentiable. We now regard the activists as principals who choose offers to make to the political agents. This offer can be regarded as a mapping

$$\mathbf{U}^* : X^p \rightarrow \mathbb{B}^p,$$

which specifies the provision of activist resources to the agents. Note that we assume that these principals make inferences about how the agents will respond to the offer mapping, on the basis of common knowledge about the electoral mapping,  $\rho$ .

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<sup>47</sup>[Stokes \(2005\)](#) make a somewhat similar inference, discussing clientist models of politics, where  $m_{ij}$  is a monetary bribe to  $i$ . Obviously the marginal benefit to a poor voter is greater than to a wealthy voter, under the usual assumption of decreasing marginal utility for money. However, it would seem necessary to translate the bribe into a valence component, as outlined here. [Dal Bo \(2007\)](#) also considers a model of bribery but does not consider income effects per se.

<sup>48</sup>It is reasonable to assume that the resource distributions lie in a compact ball, namely  $\mathbb{B}^{n \times p}$ .

The agents in turn choose a best response to  $\mathbf{U}^*$ . We seek is an equilibrium to a game form which may be written

$$\begin{aligned} \mathbf{U}^* \otimes \mathbf{V} : X^p &\rightarrow X^p \times \mathbb{B}^p \rightarrow X^p \times \mathbb{B}^{n \times p} \rightarrow \mathbb{R}^k \times [0, 1]^p. \\ &: (\mathbf{z}) \rightarrow (\mathbf{z}, \mathbf{U}^*(\mathbf{z})) \rightarrow (\mathbf{z}, \mathbf{m}) \rightarrow ((\mathbf{U}(\mathbf{z}, \mathbf{V}((\mathbf{z}, \mathbf{m}))), \mathbf{V}((\mathbf{z}, \mathbf{m}))). \end{aligned}$$

On the basis of the offer mapping,  $\mathbf{U}^*$ , the agents choose a position vector  $\mathbf{z}$  and a distribution matrix,  $\mathbf{m} \in \mathbb{B}^{n \times p}$ , such that  $(\mathbf{z}, \mathbf{m})$  a LNE for the agent profile function,  $\mathbf{V}$ , subject to the constraint that  $\mathbf{m}$  is compatible with the offer  $\mathbf{U}^*(\mathbf{z})$ .

This is an extremely complex dynamical game, and we do not attempt to explore the full ramifications of this model here.<sup>49</sup> If we assume that the offer mapping  $\mathbf{U}^*$  is differentiable, then we can deploy a result by Schofield (2005) which uses differentiability and a boundary condition on the compact space  $X^p \times \mathbb{B}^p$ , to assert that a LNE for a game form of this type will generically exist. Notice, however, that the game form just presented attempts to endogenize activist choices. It is quite possible that, in actual applications of the model, the activist offer mapping may be non differentiable, as activists may switch allegiance from one agent or party to another.<sup>50</sup>

Earlier results of Schofield (1978) and McKelvey (1979) had suggested chaos could be generic in electoral models.<sup>51</sup> The application of this model (in Chap. 1) to the historical development of the US political economy suggests that the equilibria of the model are subject to both “circumferential” and “radial” transformations over time.

## Appendix 5: Computations for the Empirical Model for the US in 2008

From Table 5.6, we obtain

$$\begin{aligned} (\lambda_{Obama}, \lambda_{McCain}, \beta) &= (0, -0.84, 0.85). \\ (\rho_{McCain}, \rho_{Obama}) &= \left( \frac{e^0}{e^0 + e^{0.84}}, \frac{e^{0.84}}{e^0 + e^{0.84}} \right) = (0.30, 0.70) \end{aligned}$$

<sup>49</sup>See Coram (2010) for a dynamical version of a similar model. Acemoglu and Robinson (2008) also develop a model based on Markov Perfect Equilibrium where the elite, activists, have different preferences for the public good, in  $X$  and contribute to the de facto power of the political leader. However, they do not assume competing political leaders.

<sup>50</sup>The “matching” model proposed by Jackson and Watts (2010) embeds the Nash equilibrium within a coalition game, and would allow the principals to switch from one agent coalition to another.

<sup>51</sup>See also Riker (1980, 1982, 1986).

Thus

$$\begin{aligned}
 C_{McCain} &= [2\beta(1 - 2\rho_{McCain})\nabla_0] - I = [2 \times 0.85 \times 0.4 \times \nabla_0] - I \\
 &= (0.68)\nabla_0 - I \\
 &= (0.68) \begin{bmatrix} 0.80 & -0.13 \\ -0.13 & 0.83 \end{bmatrix} - I = \begin{bmatrix} 0.54 & -0.09 \\ -0.09 & 0.56 \end{bmatrix} - I \\
 &= \begin{bmatrix} -0.46 & -0.09 \\ -0.09 & -0.44 \end{bmatrix}.
 \end{aligned}$$

$$c = 2\beta(1 - 2\rho_{McCain})\text{trace}\nabla_0 = 2(0.85)(0.4)(1.63) = 1.1.$$

The determinant of  $C_{McCain}$  is positive and the trace negative, so both eigenvalues are negative, showing that the mean is an LNE. The lower 95% estimate for  $\rho_{McCain}$  is 0.26, and the upper 95% estimate for  $\beta$  is 0.97, so a very conservative upper estimate for  $\beta(1 - 2\rho_{McCain})$  is  $0.97 \times 0.48 = 0.47$ , so the upper estimate for  $c = 1.53$ , giving an estimate for  $C_{McCain}$  of

$$\begin{aligned}
 (0.94) \begin{bmatrix} 0.80 & -0.09 \\ -0.09 & 0.83 \end{bmatrix} - I \\
 = \begin{bmatrix} 0.75 & -0.13 \\ -0.13 & 0.78 \end{bmatrix} - I \\
 = \begin{bmatrix} -0.25 & -0.13 \\ -0.13 & -0.22 \end{bmatrix},
 \end{aligned}$$

which still has negative eigenvalues.

We also considered a spatial model where the  $x$  and  $y$  axes had different coefficients,  $\beta_1 = 0.8$ ,  $\beta_2 = 0.92$ .

Using

$$c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_{lib})\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta})}{\frac{1}{w}(\beta_1 + \beta_2 \dots + \beta_w)}$$

with  $\frac{1}{2}(\beta_1 + \beta_2) = \frac{1}{2}(0.80 + 0.92) = 0.86$  and  $\rho_{McCain} = 0.3$ , we find

$$\begin{aligned}
 c(\boldsymbol{\lambda}, \boldsymbol{\beta}) &= \frac{2(0.4)}{0.86}\text{trace} \begin{bmatrix} (0.80)^2(0.80) & (0.80)(0.92)(-0.13) \\ (0.80)(0.92)(-0.13) & (0.92)^2(0.83) \end{bmatrix} \\
 &= (0.93)\text{trace} \begin{bmatrix} 0.51 & -0.09 \\ -0.09 & 0.70 \end{bmatrix} = (0.93)(1.21) = 1.23.
 \end{aligned}$$

For the characteristic matrix,

$$\begin{aligned}
 \mathbf{C}_{McCain} &= 2(1 - 2\rho_{McCain})\boldsymbol{\beta}\nabla_0\boldsymbol{\beta} - \boldsymbol{\beta} \\
 &= 2(0.4) \begin{bmatrix} 0.51 & -0.09 \\ -0.09 & 0.70 \end{bmatrix} - \begin{bmatrix} 0.80 & 0 \\ 0 & 0.92 \end{bmatrix} \\
 &= \begin{bmatrix} -0.41 & -0.07 \\ -0.07 & -0.56 \end{bmatrix} - \begin{bmatrix} 0.80 & 0 \\ 0 & 0.92 \end{bmatrix} \\
 &= \begin{bmatrix} -0.39 & -0.07 \\ -0.07 & -0.36 \end{bmatrix}.
 \end{aligned}$$

The analysis showed the Hessian for this case had negative eigenvalues, so again  $\mathbf{z}_0$  is a LNE. This model is essentially the same as the model with a single  $\beta$ .



# Chapter 6

## Elections in the United Kingdom

### 6.1 Introduction

In recent years there has been much discussion, using both theoretical and empirical tools, about the fundamental electoral incentives of political leaders in democratic societies. One model that is employed has been based on *partisan constituencies*. The idea here is that party leaders can fairly easily obtain information about the policy positions of their supporters,<sup>1</sup> and each can respond by advocating policies that are close to the mean of the preferences of their respective supporters. Such a feature would satisfy the ideological congruence between citizens and policy makers (Huber and Powell, 1994; Ezrow, 2010). The term “responsible parties” (Adams, 2001) has been used to characterize the divergent policy choices that are likely in such a system of political competition. It has also been shown by Bernhardt et al. (2009c), in a variant of such a model, that the choice between different policy options, induced by responsible parties, can, under some circumstances, enhance electoral welfare.

On the other hand, as we have discussed in Chap. 5, the standard Downsian (1957) model of political competition is that of “opportunistic,” office seeking parties. Each voter is assumed to choose the party whose policy position is closest while parties are assumed to maneuver so as to gain as many votes as possible. The usual Downsian spatial models suggest that convergence to the electoral mean is to be expected. In contrast, Roemer (2001, 2011) has offered a hybrid model of political competition where each party comprises various groups with different agendas: Downsian “opportunists” who simply want to maximize their party’s vote share and “guardians” who champion the interests of the party’s core constituency.<sup>2</sup>

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<sup>1</sup>See Bernhardt et al. (2009a,b) and the many papers and books by Adams and his co-authors.

<sup>2</sup>Roemer focuses on tax policy and only considers a two party model, but does show the existence of a non-centrist equilibrium. See also Laver and Sergenti (2011).

As discussed in Chap. 5, Stokes (1963, 1992) emphasized many years ago that the non-policy judgments, or *valences*, of party leaders by the electorate are just as important as electoral policy preferences. These judgments may effect the centripetal tendency to the electoral mean.

Schofield (2005b) used the notion of valence to examine the 1992 and 1997 elections in Great Britain and found some evidence that the Labor<sup>3</sup> party position had moved closer to the electoral mean between 1992 and 1997, while the Conservative party position had moved further away. However, there was no evidence of the convergence predicted by the Downsian theory of election. In a recent analysis of party movement from 1945 to 2005, Nagel and Wiezien (2010) also find no evidence of convergence, though they only consider one-dimension of policy, using the data obtained by Budge et al. (2001).

In this chapter we use the results of the British Election Study (BES) for 2005 and 2010 to construct a pure spatial models of these elections. We use a variety of measures of valence, in order to obtain a better estimate of the extent to which the electoral center exerts a centripetal attraction on the parties. Although we mention the election results in Northern Ireland, we only examine the elections in England Scotland and Wales. Using vote information, we can infer a preferred policy point,  $x_i$ , in a policy space  $X$ , for each voter. Consistent with the notion of *partisan constituency*, we assume each party,  $j$ , say, is located at the mean position,  $z_j$ , in  $X$ , of its voters.

Following the results in Chap. 5, we assume that valence can be measured in a number of ways. The first kind of valence, *exogenous valence*,  $\lambda_j$ , is a measure of the voters' *overall common* evaluation of the ability of a party leader or to provide good governance. Since voters' perceptions are formed prior to the election, we regard these variables as held constant at the time of an election. Thus they are independent of the party's position. Exogenous valence can also be called *bias* in favor of one or other of the party leaders.

In addition to exogenous valence, the models also incorporate *sociodemographic* valences. Whereas exogenous valence measures a common bias across all voters, sociodemographic allows these perceptions of the candidates to vary across relevant sociodemographic categories.

We use these valence models to determine the response of party leaders to the electoral situation: that is we compute the equilibrium candidate positions in the context of these various models.<sup>4</sup> Our simulation of the combined model, based on both position and sociodemographic valences, allows us to estimate the *local Nash equilibria (LNE)* to the vote maximizing game. As before, we use a simulation routine to determine the LNE. Our estimation lead us to conclude that the LNE for the pure spatial models are at *the electoral origin* for both elections. For the pure spatial models that we construct, we compute the *convergence coefficient*, denoted  $c$ , as before. Chapter 5 has shown that a sufficient condition for convergence is that

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<sup>3</sup>We use the US spelling for labor.

<sup>4</sup>Just as in Clarke, Sanders et al. (2009), we use factor analysis of the survey responses to obtain a two-dimensional representation of the voter preferred positions.

$c < 1$ , while a necessary condition is  $c < w$ , where  $w$  is the dimension of the policy space. Our computations show that the convergence coefficients are all quite similar,  $c = 0.84$  in 2005 and  $c = 0.98$  in 2010. For the regional models in 2005 we find the convergence coefficients to be 0.75 for England, 0.97 for Scotland and 0.80 for Wales. In 2010, the regional convergence coefficients are 1.09 for England, 1.51 for Scotland, and 2.12 for Wales. Aside from Plaid Cymru in Wales, in 2010, these results suggest that vote maximizing party leaders should adopt positions at the electoral origin.<sup>5</sup>

As Sanders et al. (2011) comment, valence theory is based on the assumption that “voters maximize their utilities by choosing the party that is best able to deliver policy success.” The authors go on to note that an overall assessment of a party leader by a voter “provides a simple affective heuristic for arriving at an evaluation of that leader’s party.”

We follow this logic and utilize estimates of the electoral perception of character traits. Electoral models involving electoral perceptions of leader traits has formed the basis for recent extensive analysis of British, Canadian and US electoral response by Clarke, Sanders et al. (2004, 2006, 2009) and Clarke, Komberg et al. (2005, 2009).

For elections in Britain, they argue that electoral responses

were a reflection largely of [the] changing perceptions of the decision-making competence of the main political parties and their leaders. At any point in time, [the] preferences were strongly influenced by their perceptions of the capacity of the rival parties – the putative alternative governments of the day – to solve the major policy problems facing the country.

We incorporate electoral perceptions of political leaders of the three major parties as well as the two regional parties, the Scottish National Party and Plaid Cymru. In comparing the 2005 and 2010 elections, we find very strong evidence that Gordon Brown’s exogenous valence, in all the 2010 models relative to the other party leaders, was much lower than Blair’s exogenous valence in 2005. This was the fundamental reason why Labor essentially lost the election, and Cameron, leader of the Conservative Party, was able to form a majority coalition with the Liberal Democrats, under the leadership of Clegg. For the spatial model we find that Brown’s low valence meant that the LNE was not at the origin (more precisely, at the electoral mean).

Moreover, in all models we find that the versions involving traits are superior to the pure spatial models. However, combining the spatial model with traits gives the statistically superior model. All  $\beta$ -coefficients (the measure of the importance of the spatial component) were found to have t-values of order 10. As in the analysis in Chap. 5, we can reject the null hypothesis that the spatial component is statistically insignificant.

While the traits model has the virtue of statistical significance, and can be used to estimate the changing electoral perceptions in the lead-up to an election, it gives

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<sup>5</sup>Aside from the Welsh example for 2010, we estimate that with probability greater than 95%, all the Hessians have negative eigenvalues.

only one half of the relationship between voters and parties. The trait characteristics are presumed to be based, to some extent at least, on integrating the quality of policy decisions in the past, or by estimating the likelihood of good decisions in the future (Penn, 2009). Suppose these estimates are independent of current declared policies. If the spatial element is statistically relevant, then, as in the Downsian model, the party could make a policy move so as to increase its vote, perhaps by attracting voters who do not have a strong opinion about the quality of the party leaders.

To examine this possibility we examine the difference in vote shares attained at the local Nash equilibrium and at the initial position. We focus on whether the LNE is a stable attractor, in the sense that parties will have an incentive to shift their positions towards the equilibrium.

Assuming that parties are initially located at the *partisan constituency* vector,  $\mathbf{z}^*$ , say, then we can use the stochastic model to compare the estimate of the vector of vote shares,  $\mathbf{V}(\mathbf{z}^*)$ , at the positions,  $\mathbf{z}^*$ , with the vote shares,  $\mathbf{V}(\mathbf{z}^{el})$ , at the local Nash equilibrium,  $\mathbf{z}^{el}$ . Because the structure of the formal model, it is convenient to use the criterion that the lowest valence leader, say  $j = 1$ , will be advantaged. However, the stochastic model involves statistical risk, and to deal with risk we take the estimate for the vote share for party  $j$  to be the *lower 95% estimate of the vote share at the equilibrium*, denoted  $V_j(\mathbf{z}^*)$ . We then define the *vote margin* for a low valence party,  $j = 1$ , to be  $\delta = V_1(\mathbf{z}^{el}) - V_1(\mathbf{z}^*)$  and say that  $\mathbf{z}^{el}$  is a *stable attractor* if  $\delta > 0$ . In this case the opportunists in the party can argue that it is worth changing position to  $\mathbf{z}^{el}$  to gain votes. If the equilibrium is not a stable attractor, however, then the core supporters of the party would insist on positioning at, or close to,  $\mathbf{z}^*$ .

Almost all equilibria in the spatial traits models for Britain and the regions had LNE that were close to the electoral means. Moreover, the lower 95% lower estimates of vote shares at the electoral means in these various regional models were less than the sample shares. We infer that any centripetal tendency towards the electoral mean would be quite weak. Indeed, by our definition, none of these equilibria were stable attractors.<sup>6</sup>

For the 2010 election, however, we also found that the trait indices for Gordon Brown, the Labor leader, were much lower than the other two party leaders, Clegg and Cameron. Our equilibrium analysis suggests that the equilibrium vote maximizing position for Brown under the traits model was very close to his estimated position. We estimate that the Labor party vote share would be *lower* at this equilibrium than at  $\mathbf{z}^*$ . By our definition, such an equilibrium is not even an attractor.

While much recent research has modeled the trait characteristics of political leaders in a number of countries, here we are interested in the optimal response of leaders to these electoral perceptions. Since these perceptions are distributed in the electorate, a rational leader should adjust policies to take advantage of this distribution, if possible.

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<sup>6</sup>The electoral mean in the Welsh election in 2010 was not an LNE, but a saddlepoint, and the LNE away from the origin involved Plaid Cymru changing its policy significantly.

However, electoral success also depends on the resources made available by party activists.<sup>7</sup> The preferred positions of activists can be assumed to influence the location of the parties. In our analysis we use various methods to estimate the positions of activists, and find these positions to be very similar to those of party partisans. This provides additional support for inferring that parties adopt positions at, or very close to, the partisan constituency positions. While equilibrium analysis have suggested that parties will tend to the electoral mean, we contend that these models do not provide an accurate picture of party positioning.

In order to account for the discrepancy between the estimated positions and the positions obtained by equilibrium analysis, we focus on the fourth kind of valence, namely *activist valence*. The estimated positions of activists for the two major parties were, on average, somewhat more extreme than that of party voters. Thus suggests that activists had the effect of further anchoring parties close to their partisan constituency positions.

### 6.1.1 Activist Influences

Earlier work by [Schofield \(2005b\)](#) suggests that when Tony Blair took over from John Smith as leader of the Labor<sup>8</sup> Party, then the exogenous valence,  $\lambda_{lab}$ , of the party increased up to the 1997 election. Conversely, the exogenous valence,  $\lambda_{con}$ , for the Conservatives, under John Major, fell.<sup>9</sup> Major resigned after the 1997 election, and William Hague became leader of the Conservatives. In the June 2001 election in the United Kingdom, the Labor Party, under Tony Blair repeated its election victories of 1997 by taking 413 (out of 646) seats against the Conservative Party, under Hague, and the Liberal Democrats, led by Charles Kennedy. Hague resigned after this second electoral defeat, and Iain Duncan Smith became leader of the Opposition. In need of more popular leadership, Michael Howard took over as Leader of the Opposition in November 2003.

In the election of May 2005, Blair again repeated his success by leading the party to victory with 356 seats. It was generally assumed that the Labor Party lost 57 seats, while the Conservatives gained 32, because of the British involvement in Iraq. Michael Howard stepped down as opposition leader in December 2005 and David Cameron became leader of the Conservative Party.

Since the coefficients in the equation for the electoral pull for the Conservative Party depend on  $\lambda_{con} - \lambda_{lab}$ , the valence Theorem in Chap. 5 implies that the

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<sup>7</sup>[Roemer \(2011\)](#) uses the term “militants” for those who are concerned to defend the principles of the party.

<sup>8</sup>As noted above throughout we use the American spelling labor, rather than the British spelling labour.

<sup>9</sup>For discussion of the nature of party competition in Britain from 1992 on see [Clarke et al. \(1997\)](#); [Clarke and Stewart \(1998\)](#).

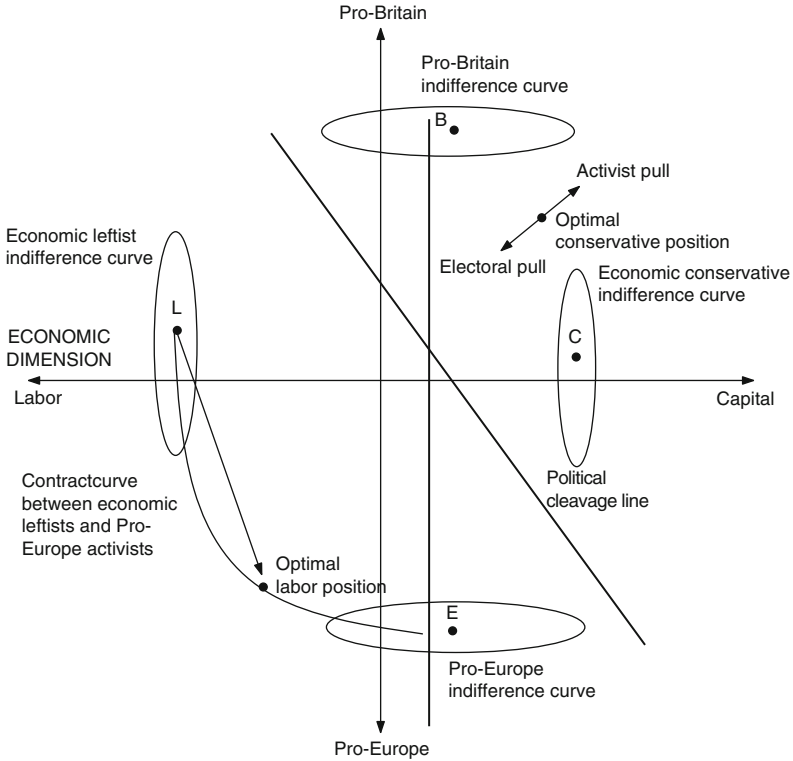


Fig. 6.1 Activists in Britain in 1997

effect of an increase in  $\lambda_{con} - \lambda_{lab}$  would be to increase the marginal effect of activism for the Conservative Party, thus pulling the optimal position away from the party’s weighted electoral mean. The opposite conclusion holds for the Labor Party, since increasing  $\lambda_{lab} - \lambda_{con}$  has the effect of reducing the marginal activist effect. Figure 6.1 gives an illustration based on an activist model for Britain for recent elections. There are two-dimensions. The Labor Party, under Blair, benefits from resources from two potential activist groups, with preferred policy positions at L and E. The contract curve, or activist catenary, connects the preferred positions of an activist group (L) on the economic left and an activist group (E), supporting membership of the European Union.

The optimal Labor position will be determined by a version of the balance equation

$$\left[ \frac{d\mathcal{E}_{lab}^*}{dz_{lab}} - z_{lab}^* \right] + \frac{1}{2\beta} \left[ \frac{d\mu_{lab,L}}{dz_{lab}} + \frac{d\mu_{lab,E}}{dz_{lab}} \right] = 0 \tag{6.1}$$

which equates the “electoral pull” against the two “activist pulls,” generated by the two different activist functions,  $\mu_{lab,L}$  and  $\mu_{lab,E}$ . In the same way, if there are two activist groups for the Conservatives, generated by functions  $\mu_{con,B}$  for pro-British

activists and  $\mu_{con,C}$  for economic conservatives, then we obtain a balance equation:

$$\left[ \frac{d\mathcal{E}_{con}^*}{dz_{con}} - z_{con}^* \right] + \frac{1}{2\beta} \left[ \frac{d\mu_{con,C}}{dz_{con}} + \frac{d\mu_{con,B}}{dz_{con}} \right] = 0. \tag{6.2}$$

In the elections of May 2005 and 2010, the optimal positions of the two major parties would depend on the overall valences of the party leaders.

## 6.2 The Election in 2005

In the June 2001 election in the United Kingdom, the Labor Party, under Tony Blair repeated its election victories of 1997 by taking 413 (out of 646) seats against the Conservative Party, led by William Hague, and the Liberal Democrats, led by Charles Kennedy. Hague resigned after the election, and Iain Duncan Smith became leader of the Opposition. In need of more popular leadership, Michael Howard became leader of the Conservative Party in November 2003. In the election of May 2005, Blair again repeated his success by leading the party to victory with 356 seats. It was generally assumed that the Labor Party lost 57 seats, while the Conservatives gained 32, because of the British involvement in Iraq. Howard stepped down as opposition leader in December 2005 and David Cameron became leader of the Conservative Party.

Tables 6.1, 6.2 and 6.3 give the election results for the United Kingdom as a whole, as well as separate Tables for England, Scotland, Wales and Northern Ireland in 2005. Figure 6.2 illustrates the pattern of party success in the United Kingdom.

We use the results from the British Election Study (BES) to construct a pure spatial model of the election. This model suggests that Labor won the election because of the significant valence difference between Blair and Howard. We also ran separate models for England, Scotland and Wales. These models show that the valence differences between Blair and Howard were particularly pronounced in Scotland and Wales.

Tables 6.7–6.10 gives the questionnaire from the BES, and the details of the factor analysis (Tables 6.7–6.27 are in the Appendices to this chapter). The first

**Table 6.1** 2005 election in United Kingdom

Party	Vote <sup>a</sup> %	Seats <sup>b</sup>	Seat %
Conservative Party:	32.3	198	30.7
Labor Party	35.3	356	55.1
Liberal Democrat Party	22.1	62	9.6
Scottish National Party	1.5	6	0.9
Plaid Cymru	0.6	3	0.45
Total	91.8	625+3 <sup>c</sup>	96.7

<sup>a</sup>Percentage of total UK vote, including approximately 670,000 votes (2.8%) in Northern Ireland

<sup>b</sup>Excluding 18 seats (2.8%) in Northern Ireland

<sup>c</sup>Others: Independent, Respect, Health Concern, Greens with about 5.4% vote and 0.5% seats

**Table 6.2** 2005 Great Britain election by region

Party <sup>a</sup>	England			Scotland			Wales		
	Vote %	Seats	Seat %	Vote %	Seats	Seat %	Vote %	Seats	Seat %
Con	35.6	194	36.8	15.8	1	1.7	21.4	3	7.5
Lab	35.4	286	54.2	39.5	41	69.5	42.5	29	72.5
LibDem	22.8	47	8.9	22.6	11	18.6	18.5	4	10.0
SNP				17.7	6	10.2			
PC							12.6	3	7.5
Total	93.8	527		95.6	59	100	95.2	40	100

<sup>a</sup>Con: Conservative Party; Lab: Labor Party; LibDem: Liberal Democrat Party  
 SNP: Scottish National Party; PC: Plaid Cymru

**Table 6.3** Election in Northern Ireland in 2005

Party	Vote share <sup>a</sup> %	Seat	Seat share <sup>b</sup> %
Independent	—	—	—
Democratic Unionist	0.9	9	1.3
Ulster Unionists	0.1	1	0.15
Social Dem and Labor	0.5	3	0.46
Sinn Féin	0.6	5	0.77
Total	2.1	18	2.8

<sup>a</sup>Percentage of total UK vote

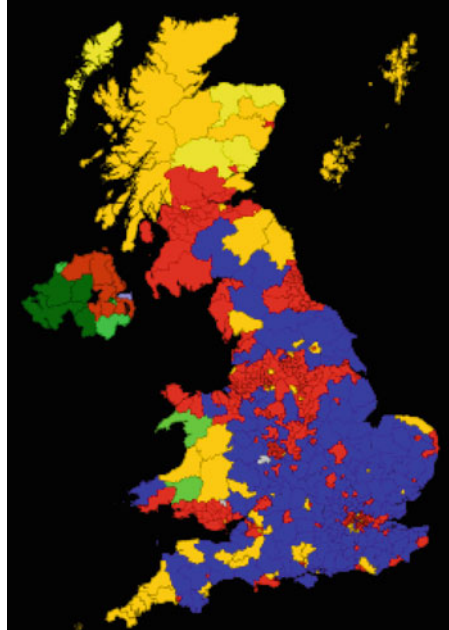
<sup>b</sup>Seat share as percentage of total UK seats

and second factors explain about 41% of the variance of the 13 question responses. As can be seen in Table 6.8, the first factor is strongly associated with the issue of EU, Immigrants, Asylum seekers and Terrorism. We call this the *nationalism* dimension. We have oriented this axis so that a high value means stronger nationalism. The second dimension is *economic*. The items of “tax/spend”, “free market”, “international monetary transfer”, “international companies” and “worry about job loss overseas” have strong influence in this dimension. In the economic dimension, a higher value indicates a market oriented attitude. We used the economy as the x-axis and nationalism as the y-axis.

We also considered other questions measuring social values such as voters views’ on minorities, gender role, censorship, environment, and death penalty, but the loadings were less than 0.20 in the first two factors. The analysis is based on responses to these 13 questions, with 1,564 respondents from England, Scotland and Wales. On the 0–10 scale, those who reported relatively stronger voting intention (>7) for a party were taken as the party’s voter. Respondents who said they “volunteered to get involved in politics” were coded as activists. The factor analysis then gives a set  $\{x_i\}$  of voter positions, that we regard as the voters ideal points.

The positions of Labor, the Conservative Party and the Liberal Democrats on the two-dimensions were estimated using the result of the factor analysis and the respondents’ voting intentions. The position of party  $j$  is denoted  $z_j$  and is estimated by taking the mean value,  $z_j$ , of those voters for the party, using these high scores of the respondents who intended to vote for the party. As mentioned in the introduction,





**Fig. 6.2** The electoral map in the UK 2005, with conservative constituencies in *dark*, Labor in *dark grey*, Lib Dems in *light tone* in Wales, NE England and Scotland, SNP in *light grey* in Scotland, and PC in *light grey* in Wales. Northern Ireland is split between four other small parties

we call  $z_j$  the *partisan constituency* position of the party. We later examine elections in England, Scotland and Wales, based on a sample size of 1,564 consisting of those respondents who voted for either the three large parties or the two regional parties. We thus were able to obtain estimates of the positions of the two regional parties, the Scottish National Party and Plaid Cymru in Wales. Figure 6.3 presents the smoothed electoral distribution and the estimated partisan constituency positions of the parties.<sup>10</sup> The distribution of activists and the activist means, by party, are given in Fig. 6.4.

Table 6.12 (Model 1) gives the pure spatial model for just the three largest parties, with a single  $\beta$ -coefficient.<sup>11</sup>

We used the LibDem party as the baseline for the pure spatial model, for Great Britain, with 1,114 respondents (i.e., those who voted for the Labor, Conservative and Liberal Democratic parties in Great Britain). Below, we give the regional models for England, Scotland and Wales based on a sample size of 1,564 consisting of those respondents who voted for either the three large parties or the two regional

<sup>10</sup>We use LAB (Labor), CON (Conservatives), LIB (Liberal Democrats), SNP for the Scottish Nationalists and PC for Plaid Cymru to denote these estimated positions.

<sup>11</sup>In these tables and those for 2010 we include the Log Likelihoods, the Akaike Information Criterion (AIC) and McFadden's  $R^2$ . Lower values of AIC indicate better model performance. We also estimated the spatial model with separate  $\beta$ -coefficients,  $(\beta_{Econ}, \beta_{Nat})$ .

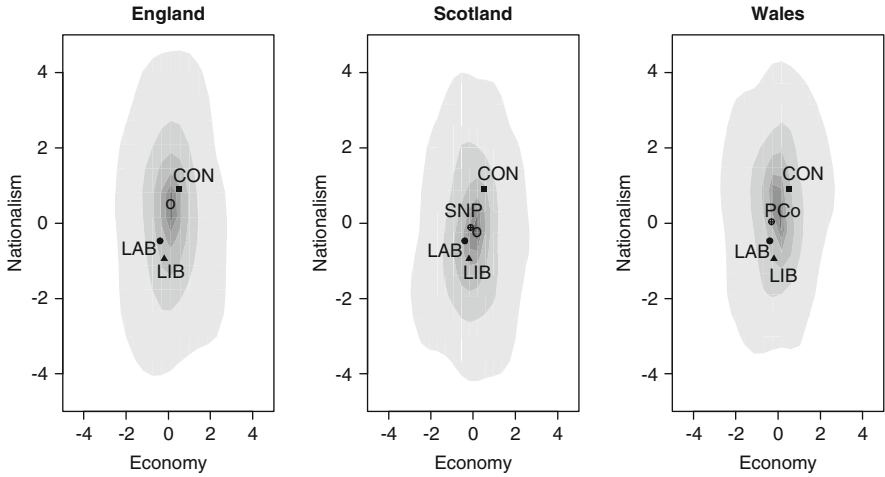


Fig. 6.3 Smoothed electoral distributions and party locations in the regions in 2005

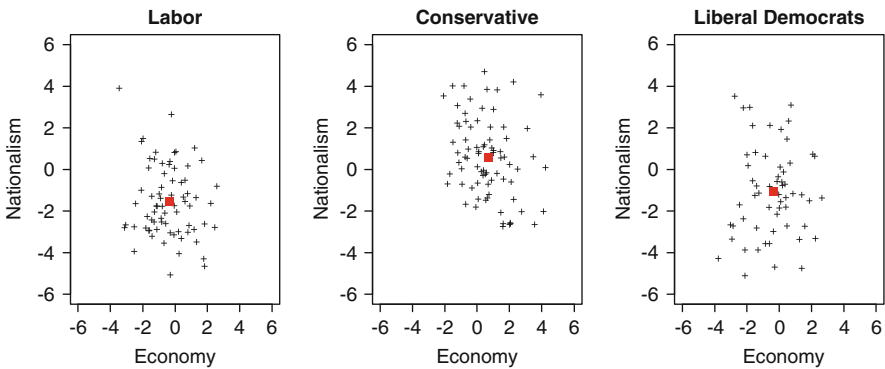


Fig. 6.4 Activists and activist means (grey square) by party in 2005

parties. The sample proportions for the three major parties in Great Britain were 41.5, 34.0, and 24.5%, respectively. These are similar to the actual vote shares in Great Britain, excluding minor parties and Northern Ireland of 39.4, 36.0, 24.6%, respectively.<sup>12</sup>

The estimates for the positions of these five parties were:

$$\mathbf{z}_{2005}^* = \begin{bmatrix} \text{Party} & \text{Lab} & \text{Lib} & \text{Cons} & \text{SNP} & \text{PC} \\ \text{Econ} & -0.393 & -0.192 & 0.522 & -0.12 & -0.31 \\ \text{Nat} & -0.470 & -0.949 & 0.907 & -0.11 & 0.04 \end{bmatrix},$$

<sup>12</sup>We can call this a three-way set of vote shares, since it gives the shares just between these three parties.

while the activist means, for the three major parties were:

$$\mathbf{z}_{2005}^{act} = \begin{bmatrix} Party & Labor & Lib & Cons \\ Econ & -0.404 & -0.216 & 0.998 \\ Nat & -1.608 & -1.508 & 0.856 \end{bmatrix}.$$

This suggests that Conservative Party activists, on average, are much more right wing (on the  $x$ -axis) than Conservative voters, while activists for the Labor Party and Liberal Democratic Party tend to be more supportive of the EU.

### 6.2.1 Pure Spatial Models for Great Britain in 2005

The pure spatial model in Table 6.12 gives

$$(\lambda_{Lab}, \lambda_{Con}, \lambda_{Lib}, \beta) = (0.52, 0.27, 0, 0.15).$$

Thus the probability a generic voter picks the Liberal Democratic party, when all parties are at the origin, is:

$$\rho_{lib} = \frac{\exp(0)}{\exp(0.52) + \exp(0.27) + \exp(0)} = 0.25.$$

Under the pure spatial model, the probability that a generic voter picks each of the parties is given by the vector:

$$\boldsymbol{\rho}_s = (\rho_{Lab}, \rho_{Con}, \rho_{Lib}) = (0.42, 0.33, 0.25).$$

Appendix 3 to this chapter shows formally that the convergence coefficient for this three party game is  $c(\boldsymbol{\lambda}, \beta) = 0.84$ .<sup>13</sup> We also show that the upper 95% bound on  $c(\boldsymbol{\lambda}, \beta)$  is 0.97. Table 6.13 gives the 95% bounds on these estimates of  $\boldsymbol{\rho}_s$ .

This implies that the joint mean,  $\mathbf{z}_0 = (0.0, 0.0)$ , is an LNE. This was confirmed by simulation. The predicted three way vote shares among these parties at  $\mathbf{z}_0$  are given by  $\boldsymbol{\rho}_s$ .

These compare with the three way split of sample shares:

$$(s_{Lab}, s_{Con}, s_{Lib}) = (0.415, 0.34, 0.245).$$

and the actual three-way split of vote shares among these parties:

$$(v_{Lab}, v_{Con}, v_{Lib}) = (0.394, 0.36, 0.246).$$

<sup>13</sup>We show in Appendix 3 that the upper 95% bound on  $c(\boldsymbol{\lambda}, \beta)$  is 1.08, but that the Hessian has negative eigenvalues with probability in excess of 95%.

Comparison of the estimated equilibrium vote shares under the pure spatial model and the sample shares at the estimated partisan constituency positions suggests that the Liberal Democrat Party's lower 95% vote share, taken just with the three parties, would be 0.22 which is lower than three way sample vote share of 0.245. Since the vote margin is negative, then by our definition, the equilibrium for the pure spatial model in Britain is not a *stable attractor*. To examine this inference more closely, we consider the regional models.

### 6.2.1.1 Pure Spatial Models for England Scotland and Wales in 2005

Table 6.14 gives the results of the pure spatial model for the regions of England, Scotland and Wales, while Fig. 6.3 gave the electoral distributions and party positions in the regions. The sample sizes in the three regions were 942, 362 and 260 respectively. We did not consider the spatial model in Great Britain previously with the small regional parties, the SNP and PC, because they only competed in the regions. These regional models included these regional parties. In these regional estimations, all  $\beta$ -coefficients are low and the convergence coefficients take very similar values to those obtained for the election in Great Britain.

The regional convergence coefficients can be estimated to be

$$(c^{eng}, c^{sct}, c^{wales}) = (0.75, 0.97, 0.80).$$

Moreover, with 95% probability, all the Hessians of the low valence parties have negative eigenvalues in the three regional models. We infer that convergence to the joint regional means is an equilibrium prediction for all parties.<sup>14</sup> Table 6.13 gives further details on the various 95% bounds for the regional estimates for 2005.

Predicted vote shares at the regional joint means by the pure spatial models are:

England	(Lab, Con, Lib)	=(0.376, 0.360, 0.264)
Scotland	(Lab, Con, Lib, SNP)	=(0.403, 0.212, 0.202, 0.184)
Wales	(Lab, Con, Lib, PC)	=(0.416, 0.248, 0.222, 0.114)

The three or four way sample vote shares are:

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<sup>14</sup>In the estimations, the valences of the SNP in Scotland and Plaid Cymru in Wales are not significantly different from zero. Assuming valences of zero would give *higher* estimates of  $\rho_{snp}^{sct}$  and  $\rho_{con}^{wales}$ , and therefore *lower* values of  $c^{sct}$  and  $c^{wales}$ . Using the 95% bounds to construct appropriate bounds on our estimates of the convergence coefficient provides a more robust confirmation of our conclusion. The calculations can be found at the working paper, [Schofield et al. \(2011c\)](#).

England	(Lab, Con, Lib)	=(0.364, 0.384, 0.251)
Scotland	(Lab, Con, Lib, SNP)	=(0.406, 0.202, 0.207, 0.185)
Wales	(Lab, Con, Lib, PC)	=(0.412, 0.262, 0.208, 0.119)

Actual three or four way vote shares are:

England	(Lab, Con, Lib)	=(0.38, 0.38, 0.24)
Scotland	(Lab, Con, Lib, SNP)	=(0.413, 0.165, 0.237, 0.185)
Wales	(Lab, Con, Lib, PC)	=(0.448, 0.226, 0.194, 0.132)

The valence of the Conservative Party is obviously much lower in Scotland ( $\lambda_{Con}^{sct} = 0.05$ ) and in Wales ( $\lambda_{Con}^{wales} = 0.11$ ), than in England ( $\lambda_{Con}^{eng} = 0.31$ ), so we obtain  $\rho_{Con}^{eng} = 0.36$ ,  $\rho_{Con}^{sct} = 0.212$ ,  $\rho_{Con}^{wales} = 0.248$  for the vote shares for this party if the parties were at the regional equilibria.<sup>15</sup> When the parties are at their partisan constituency positions, then the four-way vote shares of the Conservative Party are lower in Scotland (16.5%) and Wales (22.6%) than in England (38%).

We argue that this difference in the vote shares is because the party is located far from the center in contrast to the Liberal Democrats, Scottish Nationals and Plaid Cymru. We infer that the Conservative Party obtains almost its votes in England (about 8.1 million out of a total of 8.8 million), and does not compete effectively in Scotland or Wales.

The valence of the Labor Party is  $\lambda_{Lab}^{sct} = 0.69$  in Scotland and  $\lambda_{Lab}^{wales} = 0.63$  in Wales, which are both much higher than in England ( $\lambda_{Lab}^{eng} = 0.35$ ), giving  $\rho_{Lab}^{sct} = 0.40$ , and  $\rho_{Lab}^{wales} = 0.42$ , in contrast to  $\rho_{Lab}^{eng} = 0.38$ . These estimations are close to the four-way vote shares in these regions (41.3% and 44.8% in Scotland and Wales, respectively). This suggests that Labor gained from the more extreme position of the Conservatives. The 80 seats Labor won in Scotland and Wales, as well as its relatively high valence in these regions, gave it an electoral advantage in general.

Notice that the vote share of the SNP of 1.5% in Britain is due entirely to a vote share in Scotland of 17.7% while  $\rho_{SNP}^{sct} = 0.18$ . Similarly, the vote share of 0.6% for PC (Plaid Cymru) in Britain is due to a vote share of 13.2% in Wales, while  $\rho_{PC}^{wales} = 0.12$ . We estimate that the two regional parties also gained because of their centrist positions in comparison to the more extreme position of the Conservative Party.

In Scotland and Wales the four-way vote shares for the Liberal Democrats were 23.7 and 19.4%, while  $\rho_{Lib}^{sct} = 0.20$  and  $\rho_{Lib}^{wales} = 0.22$ . We infer that the difference between the actual vote shares and the estimated regional probabilities for this party at the joint regional mean is due to the location of the Liberal Democrats at a quite pro-Europe position on the Nationalism axis. In Scotland it gains votes because of the more extreme position of the Conservative Party, and in Wales it loses votes

<sup>15</sup>The 95% lower bound on  $\rho_{Con}^{sct}$  is 0.16 and the lower bound on  $\rho_{Con}^{wales}$  is 0.18. See Table 6.15.

because of the slightly more centrist positions of Plaid Cymru, and even Labor.<sup>16</sup> Notice that the seat share of the Liberal Democrats is much higher in Scotland than in England, even though the vote shares are almost the same. We infer this advantage is enhanced because the relative valence of the Conservative Party is much lower in Scotland and the Liberal Democrats gain as a result.

It is obvious from these estimates that Labor depends to a considerable degree on electoral support in Scotland and Wales, with its main competitors in Scotland being the Lib Dems followed by the SNP. In Wales, Labor has only weak competition from the Conservatives and Lib Dems. The electoral distributions suggest that voters in Scotland are slightly more supportive of Europe, and voters in Wales are slightly less supportive of Europe, than in Great Britain as a whole. Devolution and increased support for the SNP in Scotland will affect the electoral chances for Labor. In the 2010 election that we next examine Labor was able to retain its 41 seats in Scotland, but lost 3 seats in Wales.

For 2005, we see that in England, the predicted vote share of the LibDems at the LNE was 0.26, but the lower 95% estimate was 0.23, which was below its sample vote share (0.251) at the vector of partisan constituency positions. In Scotland, the lower vote share of the SNP at the LNE was  $\rho_{SNP}^{sc} = 0.14$  which is less than the sample share of  $s_{SNP} = 0.185$ . In Wales, the lower vote share of PC was  $\rho_{PC}^{sc} = 0.08$  which is less than the sample share  $s_{PC} = 0.12$ . (Table 6.13 gives the sample vote shares in the regions, together with lower and upper estimates of these predicted vote shares at the LNE.)

None of the regional equilibria for the pure spatial models are a *stable attractors*.

Comparing voters and activists for the three main parties we can infer that Conservative activists on average strongly prefer a policy position that is the upper right quadrant of the policy space. Activists for the Liberal Democrats and Labor are even more supportive of Europe than their party voters, on average, while their activists have similar preferences to the party voters on the economic axis. These activist preferences restrain the party from moving to the LNE that we have identified. We now examine the effects of traits.

## 6.2.2 The Spatial Model with Traits in 2005

We used survey questions on the party leader traits (in Table 6.9) to construct a trait index using factor analysis, as in Table 6.11. Table 6.12 gives the result of the various models with traits alone, the spatial model with traits, with and without sociodemographic variables. Tables 6.15–6.17 in Appendix 1 give further results on the regional aspects of the 2005 election.<sup>17</sup>

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<sup>16</sup>We can infer that the vote shares of the three smaller parties are due to their positions relative to the two larger parties.

<sup>17</sup>Additional details on these models can be found at Schofield et al. (2011c).

Notice that Q.1 in Table 6.9 refers to voters’ feelings about the party leaders. The response to this question gives an indication of the valence, or attractiveness of the leader. However, Q.2 and Q.4 deal with competence and trust, while Q.3 asks whether the leader is responsive to voter concerns.

The pure spatial model for Great Britain, just for the three major parties has a Log Likelihood (LL) of  $-1,136$ , while the pure traits model has a LL of  $-754$ . Table 6.12 shows that when the spatial component is added the LL becomes  $-748$  (a significant change of  $+6$ ). The  $\beta$ -coefficients are still highly significant in the spatial models with traits and sociodemographics, with t-values of 3.7 and 4.7 respectively. The valence terms for Blair in these two models are dominated by the traits measures and the estimates for the exogenous valence terms for Blair are not statistically significant in the traits models, with or without sociodemographics. (See Table 6.23 at the end of the Appendix for a comparison of overall loglikelihood differences for the models for 2005.)

We redid the traits analysis for the three regions, obtaining measures for the trait indices for the SNP leader, Salmond, in Scotland and the Plaid Cymru leader, Llwyd, in Wales, and analyzed all trait, spatial and sociodemographic models by region. The loglikelihoods are obviously superior for the general models with traits and sociodemographics. For example, in England, the LL of the pure spatial model is  $-945$  (as shown in Table 6.14) while we found the traits model had a far superior value of  $-463$ . Adding the spatial component to traits we find the LL becomes  $-460$ , while adding the sociodemographics we obtain a LL of  $-440$ . In the regional spatial traits models, the  $\beta$ -coefficients are significant ( $t > 2.5$ ) in England and Scotland, but not in Wales, while the exogenous valence term for Blair is significant only in Scotland ( $t = 3.5$ ) in the spatial traits model, but not when the sociodemographic terms are included.

These analysis suggest that the spatial and traits models do complement on another.

Since the spatial component is significant for these models, we can estimate local Nash equilibria under vote maximizing behavior by the parties. for the various spatial traits models.

For example, the local equilibrium for the spatial traits model including sociodemographics is

$$\mathbf{z}_{sts}^{el} = \begin{bmatrix} Party & Lab & Lib & Con \\ Econ & -0.07 & -0.04 & 0.16 \\ Nat & -0.31 & -0.20 & 0.14 \end{bmatrix}$$

with an expected vote share of

$$\rho_{sts} = (\rho_{Lab}, \rho_{Con}, \rho_{Lib})_{sts} = (0.41, 0.34, 0.25),$$

We see the vote share of the LibDems at the estimated spatial trait equilibrium is almost identical to the sample vote share at the partisan constituency positions. Although the traits models are statistically superior to the pure spatial models, the equilibria are little changed, and by the criterion we use, these joint traits equilibria are not stable attractors.

### 6.3 The Election of 2010

Gordon Brown became leader of the Labor Party and Prime Minister on 27 June 2007 after the resignation of Tony Blair, while Nicholas Peter Clegg became leader of the Liberal Democrats on 18 December 2007. Brown's popularity fell dramatically as a result of various scandals involving the Labor Party as well as the economic crisis.<sup>18</sup> The outcome of the May 6, 2010 election was a hung Parliament with no majority party. Gordon Brown formally resigned as Prime Minister on May 11 and David Cameron formed the next government, in alliance with the Liberal Democrats, with Clegg as deputy Prime Minister.

Fairly obviously, the electorate lost any faith it may have had in Gordon Brown because of the dire consequences of the recession. On September 25, 2010, Edward Miliband was elected leader of the Labor Party.

After the election it became obvious that the United Kingdom faced a deficit (the public sector borrowing requirement) of £140 billion (about \$240 billion, or 11% of GDP) and a total debt of £820 (about 56% of GDP).<sup>19</sup> The new coalition government of Conservative and Liberal Democrat had to deal with the issue, and by September had begun to propose various cuts in government spending, of about £83 billion (or \$130 billion), including possibly a 20% cut in defense. The government announced in October that it intended to cut the child welfare benefit (about \$32/week for the first child) for any family making over \$70,000/annum. These cuts were followed by a proposed substantial reduction in the support for British universities, increase in student fees, and the elimination of hundreds of thousands of public sector jobs. In a vote on 9th December 2010, the coalition government voted 323 in favour and 302 against, with a majority of only 21, to raise university fees to a maximum of £9,000 per annum from £3,000.<sup>20</sup> There were quite violent student protests on November 12 and later on December 9 in London.

#### 6.3.1 *Modelling the Election of 2010*

We proceeded in the same way as for 2005 to construct a factor space based on the 2010 BES. Tables 6.19 give the survey questions and Table 6.20 gives the Factor

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<sup>18</sup>The UK public net debt had increased from about 53% of GDP to about 68% in 3 years. This however was much lower than the US, which reached 120%, as well as Germany, about 77% and Greece 108%.

<sup>19</sup>The North Sea oil windfall of about \$400 billion had been dissipated without very much to show. It is not unlikely that Scotland will in the future try to capture for itself some of the 30 billion barrels of oil estimated to still lie under the North Sea.

<sup>20</sup>Obviously, many Liberal Democrats voted against the government.



**Table 6.4** 2010 UK election: Great Britain

Party	Vote <sup>a</sup> %	Seats	Seat %
Conservative Party	36.1	307	47.0
Labor Party	29.0	257	39.6
Liberal Democrat Party	23.0	57	8.8
Scottish National Party	1.7	6	0.9
Plaid Cymru	0.6	3	0.46
Total	90.4 <sup>b</sup>	630+2 <sup>b</sup>	96.76

<sup>a</sup>Percentage of total UK vote

<sup>b</sup>Others: Independent, Greens, British National Party, UK Independence Party, etc. with about 7.4% vote in total, in Great Britain, plus approx. 675,000 votes (2.2%) of the vote for parties in Northern Ireland with 18 seats (2.3%)

Analysis. To construct the factor space, we used the eight survey items specified in Table 6.20.<sup>21</sup>

The sample ( $n = 6,409$ ) included respondents who participated both in pre- and post-election surveys, voted for Lab, Con, Lib, SNP or PC, and were without missing data points in the variables regarding vote choice, issue dimensions, traits and sociodemographic. The sample contained 5,466, 636 and 307 respondents from England, Scotland and Wales, respectively. The sample party vote shares were

$$(Lab, Con, Lib, SNP, PC) = (0.281, 0.40, 0.289, 0.025, 0.05).$$

comparable to the national vote shares shown in Table 6.4.

The first dimension is *Nationalism* and the second one is *Economy*. A larger value in the *Nationalism* dimension is strongly associated with disapproval of Britain's EU membership and disagreement with Britain's further cooperation with the EU. On the *Economic* dimension, those who prefer tax-cut, disagree to increasing tax-free allowance to £10,000, to the "mansion" tax, to limiting pension tax relief, and to "ecotax" have higher values. In sum, a larger value on the first dimension indicates stronger nationalism while on the second dimension it indicates pro-market attitudes. Following the usual convention, we represent the economic dimension as the  $x$ -axis and the nationalism dimension as the  $y$ -axis. Using the factor scores, we estimated the party positions. Each party position is estimated as the mean of the voters who intended to vote for the party before the election using the (Vote Intention item in pre-election surveys). Note that the number of respondents whose voting intention was for one of the five parties is different from the number of respondents whose actual vote was for the parties. Among those who voted for one of the five parties on the election day, 5,627 respondents said they would vote for the parties in the following way: 1,801 for Lab, 2,456 for Con, 1,174

<sup>21</sup>We also included several other policy related items such as War-in-Afghan and Reducing crime vs. the rights of suspects. However, the contribution of these items was very low in either of the dimensions.

for LibDem, 165 for SNP and 31 for PC. Note that 782 respondents answered that they would vote for other parties or did not answer the voting intention question, but then voted for one of those parties on the election day. By this method, the party partisan constituency positions were estimated to be

$$\mathbf{z}_{2010}^* = \begin{bmatrix} \text{Party} & \text{Lab} & \text{Lib} & \text{Con} & \text{SNP} & \text{PC} \\ \text{Econ} & -0.205 & -0.349 & 0.392 & -0.392 & -0.074 \\ \text{Nat} & -0.437 & -0.431 & 0.449 & -0.25 & 0.229 \end{bmatrix}.$$

To determine activists, we used the survey question “on a scale of 0 to 10, where 10 means a great deal of influence and 0 means no influence, how much influence do you have on politics and public affairs?”

Those who answered 6 or higher values were regarded as activists ( $n = 774$ ).

Figures 6.5 and 6.6 shows the voter and activist distribution by region, as well as the party constituency positions. Figure 6.7 shows the activist distributions by party. Using the post-election response to the question “who did you vote for”, we partitioned the sample into various classes depending on vote choice and whether the voter was an activist or not. The mean position of all respondents ( $n = 6,218$ ) who did vote for one of the three major parties was (0.010, 0.003), while the activist mean was (−0.048, −0.277). The partition of the 746 activists for the three major parties was: 309 for Lab, 241 for Con, 196 for LibDem, about 12% of the sample. We thus found the activist means by party to be given by the following:

$$\mathbf{z}_{2010}^{act} = \begin{bmatrix} & \text{Lab} & \text{Lib} & \text{Con} \\ \text{Econ} & -0.18 & -0.42 & 0.42 \\ \text{Nat} & -0.63 & -0.58 & 0.40 \end{bmatrix}.$$

Activists for both the Labor and the Liberal Democrat parties appear to be more favorably disposed to the European Union than the party voters. Conservative

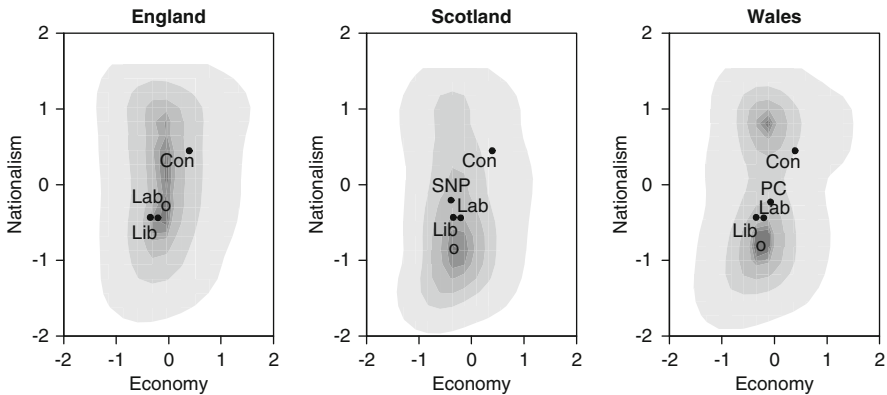


Fig. 6.5 Voter distributions and party positions in the regions in 2010

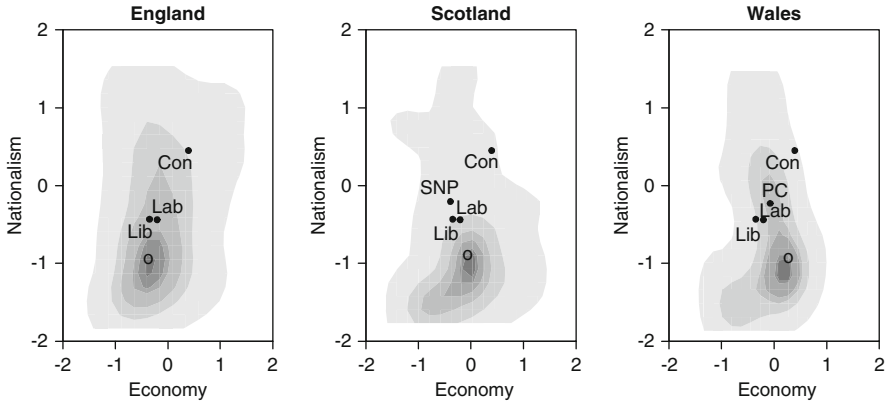


Fig. 6.6 Smoothed activist distributions in the regions in 2010

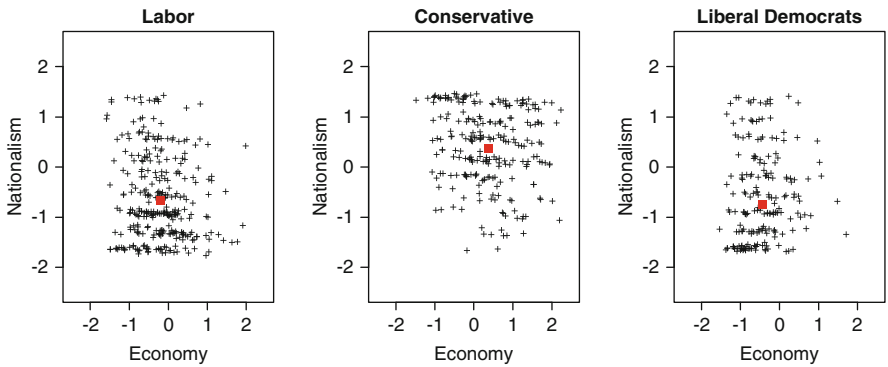


Fig. 6.7 Activist distributions and activist means (*dark square*) by party in 2010

activists are only slightly more right wing on the economic axis, and slightly less opposed to Europe, on average, than the party voters.

We also used the trait perceptions of the party leaders, given in Table 6.19 to perform a factor analysis of the trait perceptions. Table 6.21 reports the factor loadings for the three major party leaders, while Table 6.22 reports the results for the various logit models: pure spatial, pure traits, spatial with traits and joint (spatial, traits and sociodemographics). Table 6.24 makes clear that the traits model is far superior to the pure spatial model. However, the difference in loglikelihoods between the pure traits model and the spatial model with traits is a significant +123 (while the  $\beta$ -coefficient in the spatial traits model has a  $t$ -value of 14.9). Adding sociodemographics gives a significant difference in loglikelihoods of +37 (Again the  $\beta$ -coefficient in the spatial traits model with sociodemographics has a  $t$ -value of 14.7). The AIC measures also drop significantly, as new variables are added.

Comparing Table 6.12 (Model 1), the pure spatial model for 2005, with Table 6.22 (Model 1), the pure spatial model for 2010, we see immediately that

Brown has low exogenous valence<sup>22</sup> relative to Clegg in 2010, and this value was much lower than Blair's exogenous valence<sup>23</sup> relative to Kennedy in 2005. Even when trait perceptions are included, the valence estimates for Blair are significantly positive and higher<sup>24</sup> for the two nested models with traits, and spatial with traits, than for Brown in the same models:<sup>25</sup>

### 6.3.2 *Pure Spatial Models for Great Britain and the Regions in 2010*

We also ran the pure spatial model for the three regions, England, Scotland and Wales, with sample sizes for the regional models of 5,465, 636, and 307 respectively. Table 6.19 gives the results of the pure spatial model for the regions of England, Scotland and Wales. Figures 6.5 and 6.6 show the voter and activist distributions in the three regions along with the party positions. We use the same criteria as in the national model for activists. The numbers of activists are 718, 87 and 43 in England, Scotland, and Wales, respectively. Clearly the activist distributions are quite different from the respondent distributions. The sample vote share in each region is as follows:

England	(Lab, Con, Lib)	(0.268, 0.434, 0.298)
Scotland	(Lab, Con, Lib, SNP)	(0.362, 0.162, 0.230, 0.247).
Wales	(Lab, Con, Lib, PC)	(0.349, 0.293, 0.251, 0.107).

Compared with the actual election results given in Table 6.5, the sample used in this analysis is somewhat biased toward the Liberal Democratic party. The predicted vote shares at the regional LNE were found to be:

England	(Lab, Con, Lib)	(0.284, 0.395, 0.321)
Scotland	(Lab, Con, Lib, SNP)	(0.364, 0.151, 0.234, 0.251)
Wales	(Lab, Con, Lib, PC)	(0.353, 0.252, 0.270, 0.126).

Table 6.26 gives the predicted vote shares at the joint means, together with the lower 95% estimates. For Wales, the regional mean was not an LNE. Instead the

<sup>22</sup> $\lambda_{Lab}^{2010} = -0.04$  with  $t = 1.3$ .

<sup>23</sup> $\lambda_{Lab}^{2005} = +0.52$  with  $t = 6.8$ .

<sup>24</sup>Table 6.12 (models 2 and 3) show that ( $\lambda_{Lab}^{2005} = +0.19; +0.18$ ) are both statistically significant but with  $t \simeq 1.7$ .

<sup>25</sup>Table 6.22 (models 2 and 3) show that ( $\lambda_{Lab}^{2010} = -0.96; -0.98$ ) are both statistically significant and negative, with  $t > 15.0$ . The lower 95% bounds on Blair's valence are higher than the upper 95% bounds on Brown's valence. These comparisons are not strictly valid, but they are indicative.

**Table 6.5** 2010 elections in Great Britain by region

Party <sup>a</sup>	England			Scotland			Wales		
	Vote <sup>b</sup> %	Seats	Seat <sup>c</sup> %	Vote <sup>b</sup> %	Seats	Seat <sup>c</sup> %	Vote <sup>b</sup> %	Seats	Seat <sup>c</sup> %
Con	43.0	297	55.9	16.7	1	16.9	26.1	8	20.0
Lab	30.6	191	36.0	42.0	41	69.4	36.2	26	65.0
LibDem	26.4	43	8.1	18.9	11	18.6	20.1	3	7.5
SNP				19.9	6	10.1			
PC							11.3	3	7.5
Total	100	531	100	97.5	59	100	93.7	40	100

<sup>a</sup>Con: Conservative Party; Lab: Labor Party; LibDem: Liberal Democrat Party, SNP: Scottish National Party; PC: Plaid Cymru

<sup>b</sup>Percentage regional vote share

<sup>c</sup>Percentage regional seat share

**Table 6.6** 2010 election in Northern Ireland

Party	Vote share <sup>a</sup> %	Seat	Seat share <sup>b</sup> %
Alliance	0.1	1	0.15
Democratic Unionist	0.6	8	1.20
Independent (N.Down)	0.1	1	0.15
Social Dem and Labor	0.4	3	0.45
Sinn Féin	0.6	5	0.75
Total	1.8	18	2.8

<sup>a</sup>Percentage total UK vote

<sup>b</sup>Percentage total UK seat share

Hessian of the PC had a saddle at the mean, and the LNE was some distance from the mean. It is possible that the LNE,  $\mathbf{z}_s^{wales}$ , is a stable attractor, although none of the other regional equilibria are stable attractors.

Comparing the valences of Blair in 2005 and of Brown in 2010 across the regions we see again that Brown’s exogenous valences are significantly lower than Blair’s. For Blair we have ( $\lambda_{Lab}^{eng} = 0.35, \lambda_{Lab}^{sct} = 0.69, \lambda_{Lab}^{wales} = 0.63$ ) and for Brown, ( $\lambda_{Lab}^{eng} = -0.12, \lambda_{Lab}^{sct} = 0.44, \lambda_{Lab}^{wales} = 0.33$ ).<sup>26</sup>

### 6.3.3 Traits Models for 2010

Table 6.27 gives the regional traits models. Comparing the valences of Blair in 2005 and of Brown in 2010 across the regions we see again that Brown’s exogenous valences are significantly lower than Blair’s. For the spatial traits models for Blair we have ( $\lambda_{Lab}^{eng} = -0.23, \lambda_{Lab}^{sct} = 0.89, \lambda_{Lab}^{wales} = 0.97$ ) and for Brown, ( $\lambda_{Lab}^{eng} = -1.02, \lambda_{Lab}^{sct} = -0.96, \lambda_{Lab}^{wales} = -0.37$ ).<sup>27</sup>

<sup>26</sup>For England and Scotland the *t*-values exceed 3.0.

<sup>27</sup>For England and Scotland the *t*-values exceed 4.0.

The  $\beta$ -coefficients in the spatial traits models are highly significant,  $t > 38.0$ , for Great Britain and all regions, so we can examine the spatial traits model.

Estimation of vote maximizing equilibria for the models in Great Britain with three parties with traits were as follows:

(1) Spatial traits model

$$\mathbf{z}_{st}^{el} = \begin{bmatrix} & Lab & Lib & Con \\ Econ & -0.21 & -0.10 & 0.07 \\ Nat & -0.34 & -0.11 & 0.19 \end{bmatrix}$$

with vote shares

$$(\rho_{Lab}, \rho_{Con}, \rho_{Lib})_{st} = (0.29, 0.41, 0.30).$$

(2) Spatial traits model with sociodemographics:

$$\mathbf{z}_{sts}^{el} = \begin{bmatrix} & Lab & Lib & Con \\ Econ & -0.21 & -0.11 & 0.05 \\ Nat & -0.34 & -0.14 & 0.15 \end{bmatrix}$$

with vote share

$$(\rho_{Lab}, \rho_{Con}, \rho_{Lib})_{sts} = (0.30, 0.42, 0.29).$$

The sample vote share was

$$(s_{Lab}, s_{Con}, s_{Lib})^{GB} = (0.290, 0.412, 0.298)$$

so again these LNE were not stable attractors.

Because the various estimates of Brown's trait valence are much lower than the other two leaders, we find that the Labor party equilibrium position is fairly close to its estimated position. According to the model, Cameron would have gained 42% of the three party vote by moving closer to the origin.

## 6.4 Conclusion

Comparing 2005 and 2010, it is clear that Labor lost the 2010 election because of Brown's low exogenous valence, as measured in all nested models, including the regional models. In particular, the drop in Brown's exogenous valence, as measured by the spatial traits model, meant that in England in 2010, the Conservatives took 43% of the vote to Labor's 30.6%. In 2005, these two parties each took about 35%. The Lib Dems increased their vote share in England from 22.8% in 2005 to 26.4%,

in 2010, because both Brown and Cameron had exogenous valences lower than the LibDem leader, Clegg.<sup>28</sup>

We have based the analysis in this chapter on the supposition that parties are located at the *partisan constituency positions*. On this assumption we have shown that the spatial component adds statistical significance to the pure traits model. We have performed the thought experiment to locate local equilibria to these various models. To deal with the stochastic uncertainty of the spatial model, we have argued that an equilibrium needs to be a stable attractor for a low valence party so that the opportunists in the party would be able to persuade the party to shift position to the equilibrium.

The local vote maximizing equilibrium at the joint origin is confirmed for the pure spatial models for the election in Great Britain, in 2005, considering just the three major parties, as well as in the regions when small regional parties are included. We obtain the same result for 2010, except possibly for Plaid Cymru in Wales. However, these local equilibria do not appear to be local attractors.

In 2010, the large traits differences between Brown and the other two leaders gives divergent equilibria, with Brown's equilibrium position relatively close to his estimated position. Because activists for the parties tend to have somewhat more extreme positions than the party voters, activists will exert themselves to maintain the party at a position they find more congenial.

## Appendices: Tables for the British Elections in 2005 and 2010

### *Appendix 1: Tables for the Election of 2005*

**Table 6.7** 2005 survey questions for Great Britain

- 
1. Thinking of the Euro, which of the following statements on this card would come closest to your own view?
  2. The first issue is Britain's membership in the European Union. You'll see on this show card that the end of the scale marked 0 means that Britain should definitely get out of the EU, and the end of the scale marked 10 means that Britain should definitely stay in the EU. Where would you place yourself on this scale?
  3. Using the 0–10 scale on this card, where the end marked 0 means that government should cut taxes and spend much less on health and social services, and the end marked 10 means that government should raise taxes a lot and spend much more on health and social services. Where would you place yourself on this scale? Please tick one box on each line to show how much you agree or disagree with each of these statements:
- 

*(continued)*

---

<sup>28</sup>In Blair's new book (Blair, 2010) he writes of Gordon Brown, "Political Calculation, yes. Political feelings, no. Analytical intelligence, absolutely. Emotional intelligence, zero". The British electorate appear to have had the same feelings.

**Table 6.7** (continued)

- 
4. Immigrants make Britain more open to new ideas and cultures.
  5. Immigrants take jobs away from people who were born in Britain.
  6. Private enterprise is the best way to solve Britain's economic problems.
  7. The government has the right to put people suspected of terrorism in prison without trial.
  8. Immigrants increase crime rates.
  9. Immigrants generally are good for Britain's economy.
  10. Most asylum seekers who come to Britain should be sent home immediately.
  11. The ability of banks and companies to move money across borders seriously undermines the British government's ability to manage the economy.
  12. Big international companies are a threat to democratic government in Britain.
  13. I am very concerned about the loss of British jobs to countries overseas.

**Voters and Activists**

14. **Voters.** Using the scale of 0 to 10 where 0 means very unlikely and 10 means very likely, how likely it is that you would ever vote for the following parties.  
Vote choice was given by a response >7 to this question.
  15. **Activists:** Over the past few years, have you ever volunteered to get involved in politics or community affairs?  
Those who answered yes were coded as activists.  
Total sample size for regional models = 1,564.  
Total sample size for voters for major parties in Great Britain = 1,149.  
Sample size for activists = 210.
- 

**Table 6.8** Sociodemographic survey items in 2005

- 
1. **Age** What is your year of birth? We subtracted the year from 2010.
  2. **Gender** What is your gender?(1) Male (2) Female
  3. **Education** At what age did you finish full-time education?  
(1) 15 or younger – (5) 19 or older  
Those who are still at school or university are recoded as(5),  
since all the respondents are older than 19.
  4. **Income** Which of the following represents the total income of your household from all sources before tax-including benefits, saving and so on?  
(1) Less than £5,000 – (16) More than £100,000.
- 

**Table 6.9** Survey items used for party leader traits in 2005

- 
1. Using a scale that runs from 0 to 10, where 0 means strongly dislike and 10 means strongly like, how do you feel about ....?
  2. Using a scale that runs from 0 to 10, where 0 means a very incompetent and 10 means a very competent leader, how would you describe ....?
  3. Now, please use the 0 to 10 scale to indicate the extent to which the leaders respond to voters' concerns. How would you describe ....?
  4. Now, please use the 0 to 10 scale to indicate how much trust you have for each of the party leaders, where 0 means no trust and 10 means a great deal. How much do you trust ....?
-



**Table 6.10** 2005 factor loadings for British election

<i>n</i> = 1,149	Nationalism	Economy
Euro	0.30	-0.17
EU membership	-0.32	0.14
Tax/Spend	-0.10	0.39
Immigrant culture	0.32	-0.03
Immigrant jobs	-0.34	-0.00
Free market	-0.07	0.40
Terrorism	-0.28	-0.04
Immigrant crime	-0.38	0.02
Immigrant economy	0.36	-0.03
Asylum seekers	-0.38	0.01
Int'l money transfer	-0.17	-0.48
Int'l companies	-0.04	-0.53
Job loss overseas	-0.24	-0.34
SD	1.99	1.28
Cumulative variance	0.31	0.43

**Table 6.11** 2005 factor loadings for traits in Great Britain

	Blair traits	Howard traits	Kennedy traits
Blair feeling	0.91	-0.12	
Blair competent	0.79		0.20
Blair responsive	0.86		0.13
Blair trust	0.94		
Howard feeling	-0.18	0.82	
Howard competent		0.87	0.11
Howard responsive		0.78	0.17
Howard trust		0.90	
Kennedy feeling			0.82
Kennedy competent	0.13		0.85
Kennedy responsive	0.14		0.83
Kennedy trust	0.15	0.13	0.85
Variance	0.26	0.24	0.24
Cumulative variance	0.26	0.51	0.75

**Table 6.12** 2005 Model comparisons for Great Britain (base LibDem)

Models		Pure spatial (1)	Traits only (2)	Spatial+Traits (3)	Spatial+Traits +Socios (4)
Party	Variable	Est ( t-stat )	Est ( t-stat )	Est ( t-stat )	Est ( t-stat )
	$\beta$	0.15*** (12.56)	–	0.06*** (3.71)	0.08*** (4.73)
Lab	$\lambda_{Lab}$	0.52 (6.84)	0.19 (1.84)	0.18 (1.68)	0.70 (1.43)
	Blair trait		1.72*** (12.83)	1.72*** (12.87)	1.74*** (12.86)
	Howard trait		–0.63*** (5.25)	–0.64*** (5.34)	–0.64*** (5.30)
	Kennedy trait		–0.74*** (6.78)	–0.71*** (6.42)	–0.70*** (6.21)
	Age				–0.01 (1.66)
	Education				0.03 (0.39)
	Gender (F)				–0.11 (0.60)
	Income				0.0 (0.04)
Con	$\lambda_{Con}$	0.27*** (3.22)	–0.28* (2.32)	–0.26* (2.18)	–2.63** (4.42)
	Blair trait		–0.83*** (6.46)	–0.72*** (5.48)	–0.66*** (5.04)
	Howard trait		1.90*** (12.25)	1.79*** (11.29)	1.72*** (10.67)
	Kennedy trait		–1.31*** (10.26)	–1.15*** (8.56)	–1.16*** (8.35)
	Age				0.02** (2.91)
	Education				0.13 (1.69)
	Gender (F)				0.05 (0.24)
	Income				0.14*** (4.08)
<i>n</i>		1149	1149	1149	1149
Log Likelihood (LL)		–1136	–754	–748	–728
AIC		2279	1518	1505	1475
McFadden's $R^2$		0.08	0.39	0.40	0.41

**Table 6.13** 2005 sample vote shares and  $\rho$  by region

Party	Great Britain			England		
	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>
Lab	0.41	0.42	[0.39,0.46]	0.36	0.38	[0.34,0.42]
Con	0.34	0.33	[0.29,0.36]	0.38	0.36	[0.32,0.40]
LibDem	0.25	0.25	[0.22,0.28]	0.25	0.26	[0.23,0.30]
<i>c</i> <sup>c</sup>	[0.62,0.84,1.08]			[0.53,0.75,1.00]		
	Scotland			Wales		
Party	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>
Lab	0.41	0.40	[0.34,0.47]	0.41	0.42	[0.34,0.50]
Con	0.20	0.21	[0.16,0.27]	0.26	0.25	[0.20,0.32]
LibDem	0.21	0.20	[0.16,0.26]	0.21	0.22	[0.17,0.29]
SNP	0.19	0.18	[0.14,0.24]	–		
PC				0.12	0.12	[0.08,0.17]
<i>c</i> <sup>c</sup>	[0.53,0.97,1.47]			[0.35,0.80,1.30]		

<sup>a</sup> Sample vote shares among respective parties

<sup>b</sup> Lower and upper 95% bounds on  $\rho$

<sup>c</sup> Lower 95% bound, best estimate and upper 95% bound on *c*

**Table 6.14** 2005 Pure spatial models for regions

base LibDem	England	Scotland	Wales
Var	Est	Est	Est
	( t-stat )	( t-stat )	( t-stat )
$\beta$	0.14*** (11.32)	0.14*** (5.93)	0.11*** (4.13)
$\lambda_{Lab}$	0.35*** (4.17)	0.69*** (4.82)	0.63*** (3.75)
$\lambda_{Con}$	0.31*** (3.42)	0.05 (0.27)	0.11 (0.55)
$\lambda_{SNP}$		–0.10 (0.56)	
$\lambda_{PC}$			–0.66** (2.92)
<i>n</i>	942	362	260
LL	–944	–459	–327
AIC	1895	927	662
McFadden's <i>R</i> <sup>2</sup>	0.09	0.05	0.04

**Table 6.15** 2005 Pure traits models by region (base LibDem)

Party	Variable	England $n = 717$		Scotland $n = 241$		Wales $n = 108$	
		Est.	t-stat	Est.	t-stat	Est.	t-stat
Lab	$\lambda_{Lab}$	-0.21	1.46	0.88***	3.47	1.01**	2.75
	Blair traits	1.83***	10.07	1.55***	5.33	1.26***	3.40
	Howard traits	-0.61***	3.96	-0.45	1.66	0.01	0.03
	Kennedy traits	-0.63***	4.52	-0.88**	3.25	-0.65	1.87
	Salmond traits			-0.20	0.77		
	Llwyd traits					-0.51	1.31
Con	$\lambda_{Con}$	-0.08	0.60	-0.59	1.63	-0.93	1.49
	Blair traits	-0.99***	5.94	-0.43	1.38	-0.03	0.08
	Howard traits	2.02***	10.35	1.89***	4.82	2.71***	3.83
	Kennedy traits	-1.22***	7.99	-1.31***	3.84	-2.41***	3.63
	Salmond traits			-0.76*	2.50		
	Llwyd traits					-0.78	1.28
SNP	$\lambda_{SNP}$			-0.12	0.40		
	Blair traits			-0.44	1.50		
	Howard traits			0.10	0.34		
	Kennedy traits			-1.30***	4.22		
	Salmond traits			0.95**	3.10		
PC	$\lambda_{PC}$					-0.81	1.30
	Blair traits					0.13	0.28
	Howard traits					1.24*	2.30
	Kennedy traits					-1.85**	2.78
	Llwyd traits					2.37**	3.20
LL		-463		-205		-84	
AIC		943		440		199	
McFadden's $R^2$		0.40		0.35		0.41	

**Table 6.16** 2005 spatial and traits models by region (base LibDem)

Party	Variable	England		Scotland		Wales	
		Est.	t-stat	Est.	t-stat	Est.	t-stat
Lab	$\beta$	0.05**	2.64	0.100**	2.59	0.03	0.53
	$\lambda_{Lab}$	-0.23	1.55	0.89***	3.50	0.97**	2.60
	Blair traits	1.84***	10.13	1.51***	5.20	1.24***	3.35
	Howard traits	-0.63***	4.05	-0.46	1.69	0.02	0.04
	Kennedy traits	-0.59***	4.25	-0.83**	3.07	-0.62	1.77
	Salmond traits			-0.18	0.71		
	Llwyd traits					-0.50	1.28
Con	$\lambda_{Con}$	-0.07	0.48	-0.42	1.14	-0.97	1.54
	Blair traits	-0.85***	4.98	-0.40	1.27	-0.00	0.00
	Howard traits	1.89***	9.49	1.75***	4.35	2.66***	3.75
	Kennedy traits	-1.06***	6.60	-1.09**	3.06	-2.27**	3.21
	Salmond traits			-0.78*	2.49		
	Llwyd traits					-0.75	1.22
SNP	$\lambda_{SNP}$			-0.09	0.29		
	Blair traits			-0.48	1.62		
	Howard traits			0.05	0.16		
	Kennedy traits			-1.20***	3.89		
	Salmond traits			0.94**	3.02		
PC	$\lambda_{PC}$					-0.88	1.38
	Blair traits					0.13	0.28
	Howard traits					1.21*	2.26
	Kennedy traits					-1.79**	2.68
	Llwyd traits					2.41**	3.23
LL		-460		-201		-84	
AIC		938		435		201	
McFadden's $R^2$		0.41		0.36		0.41	

**Table 6.17** 2005 Spatial, Traits and Sociodem. models by region (base LibDem)

Party	Variable	England		Scotland		Wales	
		Est.	t-stat	Est.	t-stat	Est.	t-stat
Lab	$\beta$	0.09***	4.11	0.08	1.72	0.07	1.11
	$\lambda_{Lab}$	0.58	0.78	1.54	1.16	1.27	0.61
	Blair traits	1.84***	10.10	1.44***	4.64	1.36***	3.48
	Howard traits	-0.61***	3.90	-0.47	1.64	-0.01	0.02
	Kennedy traits	-0.60***	4.14	-0.76**	2.66	-0.72	1.85
	Salmond traits			-0.19	0.74		
	Llwyd traits					-0.50	1.26
	Gender (F)	-0.21	0.90	-0.14	0.30	0.27	0.36
	Age	-0.01	1.54	0.01	0.41	-0.02	0.73
	Education	0.06	0.75	-0.11	0.65	-0.11	0.45
Income	0.00	0.01	-0.07	1.00	0.11	0.81	
Con	$\lambda_{Con}$	-2.85**	3.28	-2.12	1.22	-3.80	1.23
	Blair traits	-0.85***	4.78	-0.64	1.86	0.30	0.58
	Howard traits	1.90***	9.10	1.79***	4.25	2.45***	3.35
	Kennedy traits	-1.13***	6.62	-1.03**	2.79	-2.37**	3.15
	Salmond traits			-0.76*	2.36		
	Llwyd traits					-0.65	0.95
	Gender (F)	-0.05	0.20	-0.07	0.12	0.56	0.58
	Age	0.02*	2.07	0.04	1.86	0.01	0.29
	Education	0.28**	2.96	-0.12	0.48	-0.12	0.30
	Income	0.17***	3.83	0.00	0.02	0.34	1.92
SNP	$\lambda_{SNP}$			0.92	0.62		
	Blair traits			-0.66**	2.06		
	Howard traits			0.12	0.35		
	Kennedy traits			-1.18***	3.56		
	Salmond traits			0.91**	2.87		
	Gender (F)			-1.33**	2.51		
	Age			0.03	1.31		
	Education			-0.07	0.36		
	Income			-0.04	0.44		
PC	$\lambda_{PC}$					-4.92	1.65
	Blair traits					0.42	0.85
	Howard traits					1.20	1.91
	Kennedy traits					-2.10**	2.68
	Llwyd traits					2.40**	3.14
	Gender (F)					1.24	1.31
	Age					0.01	0.23
	Education					0.04	0.13
	Income					0.30	1.95
LL		-440		-193		-79	
AIC		914		441		214	
McFadden's $R^2$		0.43		0.39		0.45	

## ***Appendix 2: Tables for the Election of 2010***

**Table 6.18** 2010 survey questions for Britain

For the May 2010 British election, we use the result of BES Campaign Internet Panel Survey (BES CIPS), which was released on May 31, 2010. Both pre- and post-election surveys were utilized. The questions used in this analysis are the following:

**Issue dimensions** from both pre- and post-election surveys

1. Overall, do you approve or disapprove of Britain's membership in the European Union? (1) Strongly approve – (5) Strongly Disapprove.
2. Please indicate if you agree or disagree with the following policy proposal. Have Britain cooperate more closely with the European Union. (1) Strongly agree – (5) Strongly disagree.
3. Please indicate if you agree or disagree with the following policy proposal. Scrap Britain's Trident nuclear deterrent. (1) Strongly agree – (5) Strongly disagree.
4. Using the 0 to 10 scale, where the end marked 0 means that government should cut taxes a lot and spend much less on health and social services, and the end marked 10 means the opposite where would you place yourself on this scale?
5. Please indicate if you agree or disagree with the following policy proposal. Exempt the first £10,000 of earnings from income tax. (1) Strongly agree – (5) Strongly disagree.
6. Please indicate if you agree or disagree with the following policy proposal. Charge a 'mansion' tax on properties worth over £2 million. (1) Strongly agree – (5) Strongly disagree.
7. Please indicate if you agree or disagree with the following policy proposal. Limit tax relief on pensions to the basic rate of tax. (1) Strongly agree – (5) Strongly disagree.
8. Please indicate if you agree or disagree with the following policy proposal. Introduce new econ taxes including a fuel tax for airline flights. (1) Strongly agree – (5) Strongly disagree.

**Voters and Activists**

**Vote choice** from post-election surveys

Which party did you vote for in the General Election?

- (1) Labor (2) Conservative (3) Liberal Democrat (4) Scottish National Party (5) Plaid Cymru

**Vote intention** from pre-election surveys

If 'yes' to the question "Have you decided which party you will vote for?", which party is that?

If 'no' to the question, which party do you think you are most likely to vote for?

- (1) Labor (2) Conservative (3) Liberal Democrat (4) Scottish National Party (5) Plaid Cymru.

**Activists**

**Political Influence** On a scale from 0 to 10, where 10 means a great deal of influence and 0 means no influence, how much influence do you have on politics and public affairs?

Those who answered 6 or more to this question were regarded as activists ( $n = 746$ ).

**Table 6.19** 2010 survey questions for Britain: Sociodemographic and traits

**Sociodemographic** pre-election survey items were the same as in Table 6.8.

**Traits** from both pre- and post-election surveys

**1. Feeling** Using a scale that runs from 0 to 10, where 0 means strongly dislike and 10 means strongly like, how do you feel about [Gordon Brown, David Cameron, Nick Clegg, Alex Salmond, Ieuan Wyn Jones]?

**2. Competence** Using a scale that runs from 0 to 10, where 0 means a very incompetent leader and 10 means a very competent leader, how would you describe [Gordon Brown, David Cameron, Nick Clegg, Alex Salmond, Ieuan Wyn Jones]?

**3. Knowledge** When you listen to what [Gordon Brown, David Cameron, Nick Clegg] has to say, do you think that in general he knows what he is talking about, or that he doesn't know? Please use the following scale where 0 means that [...] really doesn't know what he is talking about and 10 means he know very much what he is talking about.

(0) Really does not know what he is talking about – (10) Knows very much what he is talking about

**4. Interests** When you listen to what [Gordon Brown, David Cameron, Nick Clegg] has to say, do you think he has your best interests in mind, or that he does not think about your best interests? Please use the following scale where 0 means that Brown never has your best interests in mind, and 10 means that he always does.

**5. Trustworthy** When you listen to what [Gordon Brown, David Cameron, Nick Clegg] has to say, do you think generally that he tells the truth, or that he does not tell the truth? Please use the following scale where 0 means that he never tells the truth and 10 means that he always tells the truth.

**Table 6.20** 2010 factor analysis

<i>n</i> = 6,409	Nationalism	Economy
1. EU membership	0.89	
2. EU cooperation	0.85	0.18
3. Nuclear plan	0.28	0.41
4. Tax-spend	-0.34	-0.37
5. Tax exemption		0.39
6. Mansion tax	0.13	0.64
7. Tax relief		0.30
8. Ecotax	0.28	0.39
<i>n</i>	6409	
Variance	0.224	0.142
Cumulative variance	0.224	0.366



**Table 6.21** 2010 factor loadings for traits in Great Britain

		Brown trait	Cameron trait	Clegg trait
Brown	Feeling	0.87	-0.35	
	Competence	0.88	-0.30	
	Knowledge	0.81	-0.22	0.14
	Interests	0.87	-0.26	
	Trustworthy	0.87	-0.24	0.10
Cameron	Feeling	-0.38	0.83	
	Competence	-0.27	0.82	0.11
	Knowledge	-0.23	0.83	0.11
	Interests	-0.27	0.85	
	Trustworthy	-0.20	0.84	
Clegg	Feeling			0.82
	Competence			0.84
	Knowledge			0.82
	Interests	0.16		0.76
	Trustworthy	0.13	0.16	0.71
<i>n</i>		6218		
Variance		0.28	0.26	0.21
Cumulative variance		0.28	0.54	0.75

**Table 6.22** 2010 Models for Great Britain (base LibDem)

Models		Pure spatial (1)	Traits only (2)	Spatial+Traits (3)	Spatial+Traits +Socios (4)
Party	Variable	Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )
	$\beta$	0.86*** (38.45)		0.47*** (14.87)	0.47*** (14.71)
Lab	$\lambda_{Lab}$	-0.04 (1.31)	-0.96*** (15.20)	-0.98*** (15.59)	-0.78** (3.26)
	Brown trait		1.76*** (27.25)	1.77*** (27.32)	1.77*** (27.09)
	Cameron trait		-0.71*** (12.86)	-0.74*** (13.37)	-0.74*** (13.22)
	Clegg trait		-0.97*** (18.50)	-0.94*** (18.07)	-0.93*** (17.65)
	Age				-0.01* (2.49)
	Education				-0.21*** (6.71)
	Gender (F)				0.07 (0.85)
	Income				-0.01 (0.61)

(continued)

**Table 6.22** (continued)

Models		Pure spatial (1)	Traits only (2)	Spatial+Traits (3)	Spatial+Traits +Socios (4)
Con	$\lambda_{Con}$	0.17*** (4.50)	-0.52*** (9.25)	-0.55*** (9.46)	-0.34** (2.85)
	Brown trait		-1.60*** (25.03)	-1.28*** (19.22)	-1.26*** (18.53)
	Cameron trait		2.75*** (32.40)	2.45*** (28.23)	2.42*** (27.71)
	Clegg trait		-1.41*** (21.86)	-1.15*** (17.24)	-1.16*** (17.23)
	Age				0.01** (2.74)
	Education				-0.05 (1.29)
	Gender (F)				0.17 (1.73)
	Income				0.05*** (3.32)
<i>n</i>		6218	6218	6218	6218
LL		-5490	-3421	-3298	-3261
AIC		10983	6850	6606	6540
McFadden's $R^2$		0.19	0.49	0.51	0.52

**Table 6.23** Comparison of Log Likelihood for Britain 2005

		$M_2$		
		Traits	Spatial+Traits.	Joint <sup>a</sup>
$M_1$	Traits	na	7	-26
	Spatial and Traits	-7	na	-19
	Joint <sup>a</sup>	26	19	na

<sup>a</sup>Joint = spatial model with traits and sociodemographics

**Table 6.24** Comparison of Log Likelihood for Britain 2010

		$M_2$		
		Traits	Spatial+Traits.	Joint <sup>a</sup>
$M_1$	Traits	na	-123	-160
	Spatial+Traits	123	na	-37
	Joint <sup>a</sup>	160	37	na

<sup>a</sup>Joint = spatial model with traits and sociodemographics

**Table 6.25** 2010 Pure spatial models for the regions

base = LibDem	England	Scotland	Wales
Variable	Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )
$\beta$	0.86*** (36.12)	0.78*** (10.17)	0.92*** (8.39)
$\lambda_{Lab}$	-0.12*** (3.40)	0.44*** (4.16)	0.33* (2.22)
$\lambda_{Con}$	0.21*** (5.36)	-0.44** (2.90)	-0.02 (0.10)
$\lambda_{SNP}$		0.07 (0.60)	
$\lambda_{PC}$			-0.85*** (4.03)
$n$	5465	636	307
LL	-4769	-784	-341
AIC	9545	1575	690
McFadden's $R^2$	0.19	0.08	0.16

**Table 6.26** 2010 sample vote shares and  $\rho$  by region

Party	Great Britain			England		
	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>
Lab	0.29	0.31	[0.29,0.32]	0.27	0.28	[0.27,0.30]
Con	0.41	0.38	[0.36,0.39]	0.43	0.40	[0.38,0.41]
LibDem	0.30	0.32	[0.30,0.33]	0.30	0.32	[0.31,0.34]
$c^c$	[0.86,0.98,1.10]			[0.96,1.09,1.22]		
Party	Scotland			Wales		
	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>	S.vote <sup>a</sup>	$\rho$	[L,U] <sup>b</sup>
Lab	0.36	0.36	[0.32,0.41]	0.35	0.37	[0.30,0.44]
Con	0.16	0.15	[0.12,0.19]	0.30	0.26	[0.19,0.34]
LibDem	0.23	0.23	[0.20,0.28]	0.25	0.26	[0.21,0.33]
SNP	0.25	0.25	[0.21,0.30]			
PC				0.11	0.11	[0.09,0.14]
$c^c$	[1.07,1.51,1.98]			[1.53,2.12,2.75]		

<sup>a</sup> sample vote shares among respective parties

<sup>b</sup> Lower and upper 95% bounds on  $\rho$

<sup>c</sup> Lower 95% bound, best estimate and upper 95% bound on  $c$

**Table 6.27** 2010 traits models for the regions, for Major Parties (base=LibDem)

Party	Variable	Pure trait			Spatial+trait		
		England	Scotland	Wales	England	Scotland	Wales
		Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )	Est. ( t-stat )
	$\beta$				0.48*** (14.30)	0.30* (2.37)	0.57*** (3.72)
Lab	$\lambda_{lab}$	-0.99*** (14.71)	-0.95*** (4.16)	-0.33 (1.16)	-1.02*** (15.08)	-0.96*** (4.21)	-0.37 (1.29)
	Brown	1.75*** (25.02)	1.87*** (8.44)	1.72*** (6.06)	1.76*** (25.10)	1.86*** (8.45)	1.73*** (5.97)
	Cameron	-0.73*** (12.26)	-0.68*** (3.71)	-0.37 (1.48)	-0.76*** (12.74)	-0.70*** (3.81)	-0.39 (1.56)
	Clegg	-0.97*** (17.14)	-0.85*** (4.90)	-1.27*** (4.69)	-0.94*** (16.77)	-0.83*** (4.81)	-1.19*** (4.43)
Con	$\lambda_{con}$	-0.51*** (8.55)	-1.00*** (4.38)	-0.24 (0.87)	-0.53*** (8.63)	-1.07*** (4.47)	-0.40 (1.34)
	Brown	-1.64*** (23.89)	-1.24*** (5.02)	-1.23*** (4.14)	-1.31*** (18.41)	-1.00*** (3.78)	-0.77* (2.44)
	Cameron	2.78*** (30.61)	2.78*** (7.95)	2.22*** (6.20)	2.47*** (26.64)	2.56*** (7.18)	1.96*** (5.21)
	Clegg	-1.42*** (20.65)	-1.63*** (5.97)	-1.28*** (4.27)	-1.16*** (16.30)	-1.44*** (5.14)	-0.84* (2.50)
$n$		5465	479	274	5465	479	274
LL		-2983	-268	-157	-2868	-265	-149
AIC		5884	545	322	5745	539	306
McFadden's $R^2$		0.49	0.46	0.47	0.51	0.47	0.50

### Appendix 3: Pure Spatial Models for Great Britain for 2005

The Appendix 4 to Chap.5 has defined the electoral covariance matrix for any election. For the 2005 survey this was estimated to be

$$\nabla_0 = \begin{bmatrix} & x & y \\ x & 1.646 & 0.00 \\ y & 0.00 & 3.961 \end{bmatrix}$$

with esd (electoral standard deviation) =  $\sigma = 2.36$ . The pure spatial model in Table 6.12 gives

$$(\lambda_{Lab}, \lambda_{Con}, \lambda_{Lib}, \beta) = (0.52, 0.27, 0, 0.15).$$

Thus the probability a generic voter picks the Liberal Democratic party, when all parties are at the mean, is:

$$\rho_{lib} = \frac{\exp(0)}{\exp(0.518) + \exp(0.272) + \exp(0)} = 0.250,$$

which is similar to the actual share of 24.6% and the sample share of 24.5% (with respect to the three major parties) in Great Britain.. The probabilities that a generic voter picks the various parties when all three parties are located at the electoral mean is given by the vector:

$$(\rho_{Lab}, \rho_{Con}, \rho_{Lib}) = (0.42, 0.33, 0.25).$$

Table 6.13 compares these estimates with the three way sample party shares, and also gives the lower and upper 95% estimates on  $\rho$ .

These values give the best estimate, on the basis of the pure spatial model, of the three-way vote shares when all parties are at the mean. The actual three-way split of vote shares among these parties was

$$(v_{Lab}, v_{Con}, v_{Lib}) = (0.394, 0.36, 0.246),$$

and the split of sample shares was

$$(s_{Lab}, s_{Con}, s_{Lib}) = (0.415, 0.34, 0.245).$$

The estimated vote shares at the joint mean, and the actual and sample three party vote shares are quite close. We now show formally that, when all parties are at the joint mean, then the Liberal Democrat Party has no unilateral incentive to move away from the mean. From the Appendix we obtain:

$$\begin{aligned} C_{Lib} &= 2\beta(1 - 2\rho_{lib})\nabla_0 - I \\ &= 2(0.150)(0.5) \begin{bmatrix} 1.646 & 0 \\ 0 & 3.961 \end{bmatrix} - I = \begin{bmatrix} 0.246 & 0 \\ 0 & 0.593 \end{bmatrix} - I \\ &= \begin{bmatrix} -0.754 & 0 \\ 0 & -0.407 \end{bmatrix}, \end{aligned}$$

$$\begin{aligned} \text{with } c(\lambda, \beta) &= 2\beta(1 - 2\rho_{lib})\text{trace}(\nabla_0) \\ &= 2(0.15)(0.5)(5.6) = 0.84. \end{aligned}$$

Here the Lib Dems is the low valence party. From the Valence Theorem, the sufficient condition for convergence is satisfied, and we estimate that the joint mean is an LNE for the pure spatial model with three parties.

The 95% confidence interval of  $\beta \in [0.15 \pm 1.96 \times 0.01] = [0.13, 0.17]$ . Using Taylors Theorem gives the 95% bounds on  $\rho_{lib}$  as  $[0.22, 0.28]$ . Thus the lower and upper bounds of  $c^{GB}$  and  $C_{lib}$  are given by,

$$c^{GB} = [2(0.13)(1 - 2 \times 0.28)(5.61), 2(0.17)(1 - 2 \times 0.22)(5.61)] = [0.62, 1.08]$$

$$\begin{aligned} C_{lib} &= 2(0.13)(1 - 2 \times 0.28) \begin{bmatrix} 1.65 & 0.00 \\ 0.00 & 3.96 \end{bmatrix} - I, \\ & 2(0.17)(1 - 2 \times 0.22) \begin{bmatrix} 1.65 & 0.00 \\ 0.00 & 3.96 \end{bmatrix} - I \\ &= \begin{bmatrix} -0.82 & 0.00 \\ 0.00 & -0.56 \end{bmatrix}, \quad \begin{bmatrix} -0.68 & 0.00 \\ 0.00 & -0.24 \end{bmatrix} \end{aligned}$$

Again, the eigenvalues are negative and we can confirm that  $\mathbf{z}_0$  is the LNE with probability over 95%.

Since the lower 95% bound on  $\rho_{lib} = 0.22$  while  $s_{Lib} = 0.245$ , this gives a negative vote margin, so the LNE is not a stable attractor.

Comparison of the model with separate  $\beta$ -coefficients,  $(\beta_{Econ}, \beta_{Nat})$  gave a difference in loglikelihoods is +28, suggesting that this model is superior to one with a single  $\beta$ -coefficient. We obtain:

$$c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_{lib})\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta})}{\frac{1}{w}(\beta_1 + \beta_2 \dots + \beta_w)}$$

with  $\frac{1}{2}(\beta_{Econ} + \beta_{Nat}) = \frac{1}{2}(0.388 + 0.131) = 0.255$  and  $\rho_{lib} = 0.25$ , we find

$$\begin{aligned} c(\boldsymbol{\lambda}, \boldsymbol{\beta}) &= \frac{2(0.5)}{0.255} \text{trace} \begin{bmatrix} (0.388)^2 1.646 & 0 \\ 0 & (0.131)^2 3.961 \end{bmatrix} \\ &= (3.92) \text{trace} \begin{bmatrix} 0.24 & 0 \\ 0 & 0.08 \end{bmatrix} = 1.25, \end{aligned}$$

while

$$\begin{aligned} C_{lib} &= 2(1 - 2\rho_1)\boldsymbol{\beta}\nabla_0\boldsymbol{\beta} - \boldsymbol{\beta} \\ &= \begin{bmatrix} 0.24 & 0 \\ 0 & 0.08 \end{bmatrix} - \begin{bmatrix} 0.388 & 0 \\ 0 & 0.131 \end{bmatrix} \\ & \quad \begin{bmatrix} -0.148 & 0 \\ 0 & -0.05 \end{bmatrix}. \end{aligned}$$

Again we find an LNE at the joint mean  $\mathbf{z}_0$ . This was confirmed by simulation. but we also find that the LNE for this model is not a stable attractor.

The other calculations for the regions in 2005 and 2010 can be found in the working paper on these elections (Schofield et al. 2011c).

# Chapter 7

## Elections in Canada, the Netherlands and Belgium

### 7.1 Introduction

This chapter continues with the effort to provide a unified model of the electoral process in order to account for a number of general empirical observations about the effects of political institutions. As [Duverger \(1954\)](#) and [Riker \(1953\)](#) have observed, there appears to be a relationship between the electoral rule in place, and the number of political parties in the polity. A highly majoritarian (or plurality) system tends to result in just two parties, while an electoral system based on proportional representation (PR) tends to give a fragmented political structure.<sup>1</sup> Many authors have also argued that there is a relationship between fragmentation and the durability of government ([Taylor and Hermann 1971](#); [Warwick 1979](#)). Other authors have argued that these differing constitutional rules profoundly affect the nature of the policy process ([Bawn and Rosenbluth 2005](#); [Persson and Tabellini 1999, 2003](#)), and determine whether parties tend to diverge or cluster near the electoral origin.<sup>2</sup>

It is possible that the degree of political fragmentation is a direct consequence of the details of the electoral rule, and the opportunities these provide for strategic voting in the electorate. However, the formal spatial electoral model has not, in our view, been able to offer a plausible account of this relationship. Indeed, as discussed in Chap. 5, the extensive literature on formal “deterministic” or “stochastic” vote models tend to suggest that all parties should adopt vote maximizing positions at the center of the electoral distribution.<sup>3</sup> Such models assume an underlying symmetry in the motivations and dispositions of party leaders, and as a result they are unable to account for the extreme heterogeneity of political configurations observed by [Benoit and Laver \(2006\)](#), for example, in their analysis of party positions in European polities.

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<sup>1</sup>See Chap. 3.

<sup>2</sup>[Dow \(2001, 2011\)](#), [Ezrow \(2010, 2011\)](#).

<sup>3</sup>See [Downs \(1957\)](#), [Riker and Ordeshook \(1973\)](#), [McKelvey and Patty \(2006\)](#).

Here we consider a stochastic model of the 2004 election in Canada, and use the formal results to examine electoral equilibria for the parties. We estimate the vote margins of the low valence parties, the Greens and the New Democrat parties, and show that their vote margins are essentially negative. This implies that the various equilibria cannot be stable attractors. We argue that the leaders of the parties have no incentive to move to the equilibrium positions. We also suggest that the activists for each party provide inducements to the party to remain close to the partisan constituency position. We can then use the difference between the equilibrium positions and the partisan constituency positions as an estimate of the activist influence.

In essence, the empirical convergence coefficient for any model is a convenient measure of the electoral incentive of a small, or low valence, party to move from its estimated position to the LNE of the model. More generally, we can interpret the convergence coefficient as a measure of the centrifugal tendency exerted on parties pulling them away from the electoral mean. The estimated positions of the parties, based on the partisan constituencies of the parties, allows us to draw some inferences about the influence of activist groups in this polity.

We then compare this analysis with some observations about coalition behavior in the Netherlands and Belgium, in order obtain an estimate of the different incentives for activist groups in these three countries..

## 7.2 Elections in Canada

In recent history, Canadians have consistently elected more than three parties to the Federal legislature.<sup>4</sup> In the current parliament, the four major parties are the Liberal Party of Canada (LPC), the Conservative Party of Canada (CP), the New Democratic Party (NDP) and the separatist Bloc Québécois (BQ). The Green Party of Canada (GPC) is a relatively new party whose support has been steadily rising over the last few years. However, since only the first-past-the-post candidate in each riding gets elected to the legislature, the Green candidates have not obtained sufficient support to win a seat in the House of Commons. Other parties, with fewer votes, have also been unable to obtain seats in Parliament.

For the last 25 years, the two major parties have fought each other to form the government. Table 7.1 gives the last four election results in Canada, while Table 7.2 give the results by province for 2004. As the Tables show, neither of these parties have been able to attain a majority in recent elections. Because the issue of Québec is so important in the last two decades of Canadian electoral history, we provide a brief sketch of political history in Canada.

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<sup>4</sup>This section on Canada is written in collaboration with JeeSeon Jeon and Ugur Ozdemir.



**Table 7.1** Canadian elections

Party <sup>a</sup>	2000			2004			2006			2008		
	Vote %	Seat	Seat %	Vote %	Seat	Seat %	Vote %	Seat	Seat %	Vote %	Seat	Seat %
AP	25.5	66	21.9									
PC	12.2	12	4.0									
CP				29.63	99	32.14	36.3	124	40.26	37.65	143	46.42
LPC	40.8	172	57.1	36.73	135	43.83	30.2	103	33.44	26.26	77	25.00
BQ	10.7	38	12.6	12.39	54	17.53	10.5	51	16.56	9.98	49	15.90
NDP	8.5	13	4.3	15.68	19	6.16	17.5	29	9.41	18.18	37	12.01
GPC	0.8			4.29	0	0	4.5	0	0	6.78	0	0.00
Ind				0.48	1	0.32	0.5	1	0.32	0.5	2	0.65
Total <sup>b</sup>	98.5	301	100	99.2	308	100	99.5	308	100	99.35	308	100

<sup>a</sup> AP = Alliance, PC = Progressive Conservative, CP = Conservative, LPC = Liberal, BQ = Bloc Québécois, NDP = New Democratic Party, GPC = Green Party, Ind = independent

<sup>b</sup> Other parties are not reported so total may not add to 100%

### 7.2.1 A Brief Political History

Back in 1983, Brian Mulroney, from Quebec, became the leader of the Progressive Conservative Party, and was able to build a grand coalition that included socially conservative populists from the West, Quebec nationalists, and fiscal conservatives from Ontario and the Maritime provinces (Prince Edward Island, Nova Scotia and New Brunswick).

Pierre Trudeau resigned as Prime Minister in early 1984, and John Turner, elected Liberal leader in the 1984 convention, succeeded Trudeau as Prime Minister and called an election for September 4, 1984.

The 1984 election marked a turning point in Canadian politics. Mulroney's highly successful campaign gave the Progressive Conservative Party their largest majority government (by total number of seats) in Canadian history.<sup>5</sup> This was the last time a ruling party won more than 50% of the popular vote in Canada. The Liberals suffered their worst defeat (at the time) for a Federal governing party,<sup>6</sup> mainly because they lost their century long stronghold on Québec politics.<sup>7</sup> The Progressive Conservatives landslide, winning 211 seats, left the Liberals with 40 seats, the fewest in the party's history. In particular, the Liberals won only 17 seats in Québec, only four of which were outside Montreal. Eleven members of Turner's Cabinet were defeated.

<sup>5</sup>The Progressive Conservatives won 211 seats, three more than their previous record of 208 in 1958. They won a majority of seats in every province and territory, emerging as a truly national party for the first time since 1958.

<sup>6</sup>The Liberals vote share fell from 44% in 1980 to 28% in 1984.

<sup>7</sup>From its inception, Québec had been a stronghold of Liberal support for almost a century. In 1984, Québec supported Mulroney as he promised to get a new deal for Québec.

**Table 7.2** Provincial votes (%) and seats in the 2004 Canadian election

Region	Western provinces									
	BC		AB		SK		MB		ON	
Provinces <sup>a</sup>										
Party <sup>b</sup>	Vote	Seats	Vote	Seats	Vote	Seats	Vote	Seats	Vote	Seats
CP	36.3	22	61.7	26	41.8	13	39.1	7	31.5	24
LPC	28.6	8	22.0	2	27.2	1	33.2	3	44.7	75
BQ										
NDP	26.6	5	9.5		23.4		23.5	4	18.1	7
GPC	6.3		6.1		2.7		2.7		4.4	
Ind	0.3	1			4.6				0.3	
Total <sup>c</sup>	98.1	36	99.3	28	99.7	14	98.5	14	99.0	106
Region	Atlantic provinces									
Provinces <sup>a</sup>	QC		NB		NS		PEI		NL	
Party <sup>b</sup>	Vote	Seats	Vote	Seats	Vote	Seats	Vote	Seats	Vote	Seats
CP	8.8		31.1	2	28.0	3	30.7	0	32.3	2
LPC	33.9	21	44.6	7	39.7	6	52.5	4	48.0	5
BQ	48.9	54								
NDP	4.6		20.6	1	28.4	2	12.5		17.5	
GPC	3.2		3.4		3.3		4.2		1.6	
Ind	0.1		0.2		0.1				0.6	
Total <sup>c</sup>	99.4	75	99.9	10	99.5	11	99.9	4	100	7

<sup>a</sup> BC = British Columbia, AB = Alberta, SK = Saskatchewan, MB = Manitoba, ON = Ontario, QC = Québec, NB = New Brunswick, NS = Nova Scotia, PEI = Prince Edward Island, NL = Newfoundland and Labrador

<sup>b</sup> AP = Alliance, CP = Conservatives, LPC = Liberals, BQ = Bloc Québécois, NDP = New Democratic, GPC = Greens, Ind = independent

<sup>c</sup> Three seats go to the Territories

However, westerners were angry with Mulroney's government mainly because they believed that he favoured Québec, that his government lacked fiscal responsibility, and that he had failed to support institutional reform – specifically their wishes to have an elected Senate. In order to have a voice at the Federal level, Preston Manning joined discontented Western interest groups to create the Reform Party of Canada in May of 1987. Manning was the only leader of the Reform Party during its existence, 1987–2000.

By 1987, the constitutional battles between Ottawa and Québec has subsided. Mulroney's close relationship with US President Reagan helped draft the Canada-US free-trade agreement (FTA) under which all tariffs between the two countries would be eliminated by 1998. On October 4, 1988, Canada and the United States signed the FTA that was to be ratified by both countries.

The Liberals and the NDP opposed the FTA arguing that the agreement would mean the abandonment of Canada's political sovereignty to the United States and that if implemented would effectively make Canada the "51st state" of the United States. The two parties were also concerned about how Canada's social programs

and other trade agreements such as the Auto Pact would be affected by the FTA. The legislation to implement the agreement was delayed in the Senate, which had a Liberal Party majority.

Mulroney called for an election in November 21, 1988, the main issue being the Free trade Agreement. Infighting among the Liberals and vote splitting on the left of the political spectrum between the NDP and Liberals contributed to a second Progressive Conservative government with only 169 seats (and 43% of the popular vote), a loss of 42 seats. The Liberals kept their role as the Official Opposition and more than doubled their representation to 83 seats. These results were however a disappointment for Turner, who had expected a majority Liberal government. In June 1990, he officially resigned as leader of the Liberals. Even though the NDP increased its seat share it finished a distant third with only 43 seats.

During his second term, in 1989, Mulroney proposed the implementation of a national sales tax, the Goods and Services Tax (GST), that was to be introduced in 1991. The GST replaced the Manufacturers' Sales Tax (MST). Polls showed that as many as 80% of Canadians opposed the tax.

The 1990 worldwide recession greatly affected the government's finances. Mulroney's tax increases coupled with the budget problems due to the recession alienated his western conservative base. In addition, Mulroney's policies were introduced as the Bank of Canada increased interest rates to stifle inflation. Both of these policies deepened the Canadian recession. Throughout Mulroney's second term, budget deficits increased to record levels, reaching \$42 billion Canadian in his last year of office. The national debt grew to almost 100% of GDP. As the Canadian dollar weakened so did Canada's international credit rating.

At the 1990 Liberal convention, Jean Chrétien won the Liberal leadership on the first-ballot. During 1991 and 1992, Mulroney negotiated the Charlottetown Accord, which proposed extensive changes to the constitution, including recognition of Québec as a distinct society. The agreement was defeated in a national referendum in October 1992. After the failure of Meech Lake Accord, Québec Tories led by Lucien Bouchard severed their connections with the Progressive Conservative Party and in conjunction with some Québec Liberals formed a new party, the *Bloc Québécois*, a pro-sovereignities party focused on independence for Québec.

By early 1993, it was clear that Mulroney had become one of the most unpopular prime ministers in Canadian history. In addition, it was widely believed that the Liberals under Jean Chrétien would win a landslide if Mulroney remained leader of the Tories. By February, his popularity had fallen so much that he saw no other choice than to resign as party leader, being replaced as Prime Minister by Defence Minister Kim Campbell on June 25, 1993. Prime Minister Campbell had less than 3 months to prepare for the October 25 election.

The uncertainty on the constitutional future of Canada after the failure of the Meech Lake and Charlottetown Accords brought about big changes at the October 25, 1993 election. First, the Liberals gained an overwhelming majority, winning 177 seats. Second, this election marked the beginning of the end of the Progressive Conservatives Party. It not only lost its majority but was almost wiped out, winning only two seats in parliament. Third, two newly formed parties gained

representation: the separatist Bloc Québécois became the Official Opposition (with 54 seats) under the leadership of Lucien Bouchard, and the western-based protest Reform Party (with 52 seats). This marked the beginning of a fractured opposition along regional lines. Fourth, the Liberals lost the support of Québec as Chrétien was one of only four Québec Liberals elected outside Montreal. Québécois never forgave Chrétien for refusing to endorse the Meech Lake Accord. Chrétien's popularity in his home province never recovered after the Liberal leadership debate.

Chrétien used his extensive knowledge of the Canadian parliamentary system, to set up a highly centralized government with a priority of dealing with the debt left by the Trudeau and the Mulroney governments. His finance minister, Paul Martin, made deep cuts at the federal level and cut transfers to the provinces. These cuts allowed the government to eliminate the \$42 billion deficit, to deliver five consecutive budget surpluses, to pay down the \$36 billion in debt, and to deliver \$100 billion in cumulative tax cuts over 5 years. The cuts affected the operations and mandates of most federal departments and forced the provinces to cut service delivery mainly in the health care sector.

The acrimony generated by the debate over Québec's distinct society brought the separatist Parti Québécois back into power in Québec in 1994. During the campaign over the referendum scheduled for October 30, 1995, Chrétien promised to reform the federal system to address Québec's long-standing concerns. A record 94% of registered voters voted in the referendum with the "No" side winning by a very slim margin of 50.56%.

The referendum generated two major controversies. The Sovereignists complained that the Federalists had violated Québec's electoral spending limits. The Federalist accused the Parti Québécois scrutineers of having discarded many 'no' ballots. Later reviews substantiated both allegations, but there were no consequences to those who had taken part.

To recognize Québec's French language, its unique culture and the use of the civil law in the province's legal system, on 8 November 1995, Chrétien tabled a bill in the House of Commons recognizing Québec as a distinct society within Canada. The bill was passed less than a month after the referendum.

The promises made by Chrétien only translated into limited reforms. This included a federal law requiring the approval of certain regions (including Québec) to amend the constitution. Chrétien's efforts concentrated instead on his "Plan B" which consisted on increasing support for federalism in Québec. The idea was to convince separatist Québécois that their sovereignty aspirations would be coupled with both economic and legal consequences.

Chrétien's popularity soared making him the most popular prime minister of the last half-century. To take advantage of his popularity and the continued division of the conservative vote, Chrétien called an early election in the spring of 1997.

However, the Progressive Conservatives had a popular new leader in Jean Charest and the New Democrats' Alexa McDonough led her party to a breakthrough in Atlantic Canada, where the Liberals had won all but one seat in 1993. In 1997, the Liberals lost all but a handful of seats in Atlantic Canada and Western Canada, but

managed to retain a bare majority government due to their continued dominance of Ontario.

For the 2000 election, Chrétien ran on his record. He emphasized that his party (1) had not only ended the era of large fiscal deficits, it was now delivering budget surpluses; (2) had substantially reduced federal spending by among other things reducing the size of the civil service as well as privatizing several crown corporations; (3) had passed new environmental regulations; and (4) had increased spending in social programs in 1998.

Chrétien won a third consecutive majority government. Not since Sir Wilfrid Laurier has a Canadian Prime minister won three consecutive majority government. The Liberals won more seats than in the 1997 election obtaining nearly as many as in the 1993 election mostly due to the Liberals' significant gains in Québec. The Liberals won 172 out of 301 seats with 42% of the vote. The Alliance Party became the Official Opposition winning 22% of the seats with 25% of the vote; electing two members from Ontario and the remaining 64 seats from Western Canada. In spite of their poor showing in Ontario, Alliance—relative to its predecessor the Reform Party – increased its seats from 60 in 1997 to 66. The other three parties, the Bloc Québécois, the New Democratic Party and the Progressive Conservatives all lost seats. Relative to the 1997 election, the Bloc lost six seats and the NDP one. The Bloc dropped from 44 seats in 1997 to 38, despite getting a larger vote share than in 1997.<sup>8</sup> The Bloc managed to win more seats than the Liberals in Québec. The PCs came in third obtaining 12% of the vote, falling from 20 in 1997 to 12 seats, enough to maintain their Official Party Status. Even though PC support came mainly from the Maritime provinces, their leader Joe Clark won one of only three Alberta seats not in the hands of the Alliance Party. The Green Party did not gain representation in the Commons but rose in popularity relative to the 1997 election.

Chrétien's electoral victory brought the Liberals back to their 1993 levels in the Commons. This strengthened Chrétien's political power and he chose to stay on as leader ignoring the rising discontent with his leadership within his party, specially from Finance minister Martin's camp. In the meantime, Martin made greater inroads at taking over the party machinery and became more open in his campaign to replace Chrétien as Liberal leader. This further deteriorated the relationship between Chrétien and Martin.

The election results also showed that the Liberals' attacks on Day greatly affected the fate of the Progressive Conservatives and NDP candidates. The widely held belief was that many PC and NDP supporters fearing Day's extreme policy positions *voted strategically* for the Liberals to prevent an Alliance victory.

In spite of Chrétien's past successes and his electoral popularity, he was replaced by his long time rival, Paul Martin, as party leader, at the Liberal convention on November 14, 2003. Martin was sworn as prime minister on December 12, 2003.

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<sup>8</sup>This was mainly the result of the Liberals winning in several major Québec cities (Montreal, Quebec City and Hull/Gatineau) where forced mergers had taken place leading to electoral rezoning.

This contest within the Liberal Party gave Alliance and Progressive Conservatives hope of winning the next election. After long deliberations, on 15 October 2003, the new PC leader Peter MacKay and Alliance leader Stephen Harper announced their merger agreement. Ratification by the two parties led to the creation of the new *Conservative Party (CP)* on December 7, 2003. Some prominent PC members refused to join the new party. Harper became the new CP leader on March 20, 2004.

On February 10, 2004, the Sponsorship scandal over Québec independence erupted. The Liberals' ratings plummeted, specially in Québec, but were still above those of the new CP. In May 2004, the governing Ontario Liberal party reneged on their campaign promise not to raise taxes. This hurt the Federal Liberals as Ontarians had been their major support base in the 1993, 1997 and 2000 elections. On May 22, Martin was forced to call an election for June 28, 2004, forcing him to face Harper, the new leader of the new Conservative Party.

### 7.2.2 *The Election of 2004*

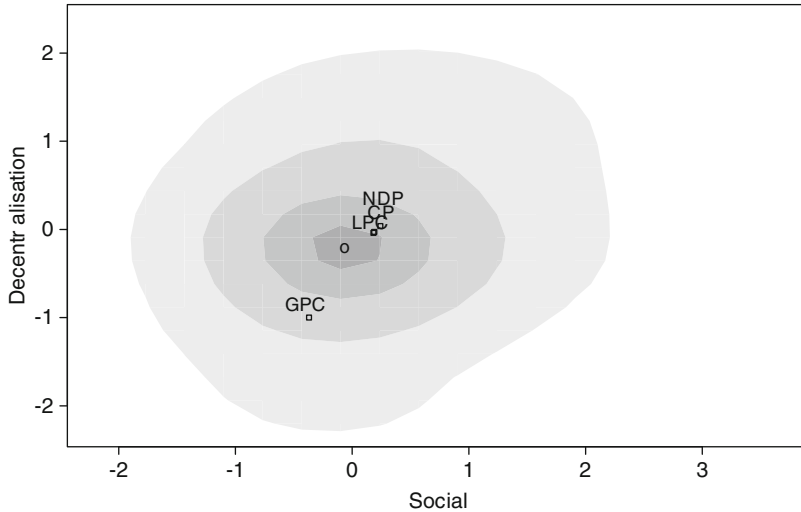
During the 2004 electoral campaign, pre-election polls showed the Liberals and Conservatives neck-in-neck. By mid-campaign the CP was slightly ahead of the Liberals. While some argued that the election was too close to call, others thought that a minority CP government was possible. The Conservatives, however, made two major mistakes. They accused Prime Minister Martin of being soft on child pornography. Ralph Kline, the PC premier of Alberta, announced that his government was considering a two-tier health care system. The Liberals and many Canadians reacted strongly against both issues. The Liberals' campaign portrayed Harper as an extreme right-wing Conservative and encouraged NDP-supporters to vote strategically.

The Liberals (LPC) under Martin won a plurality in the 2004 election with 135 (44%) seats out of 308, down 37 from the 2000 election becoming the first minority government since 1979. Martin's government was informally supported by the NDP. Relative to the 2000 election, the Liberals lost votes in Ontario and Québec. They won 75 out of 106 Ontario seats in 2004 (down from 100 out of 103 in 2000) and won 21 out of 75 Québec seats in 2004 (down from 36 out of 75 in 2000). Even though they held onto the 14 seats they had in the Western provinces since 2000, the distribution changed, with a gain in British Columbia and a loss in Manitoba.<sup>9</sup>

The Conservatives won the second largest number of seats, winning more seats (99) than the combined seats of its two predecessors in 2000 (Alliance 66 and PC 12). Its vote share (29.63%) was, however, lower than that of its predecessors combined (Alliance 25.5% and PC 12.2%). Their support remained concentrated in Western Canada and in spite of making some progress in Ontario, gaining 24 seats,

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<sup>9</sup>See Table 7.2.



**Fig. 7.1** The electoral distribution in Canada without Québec in 2004, with party positions estimated by voter means

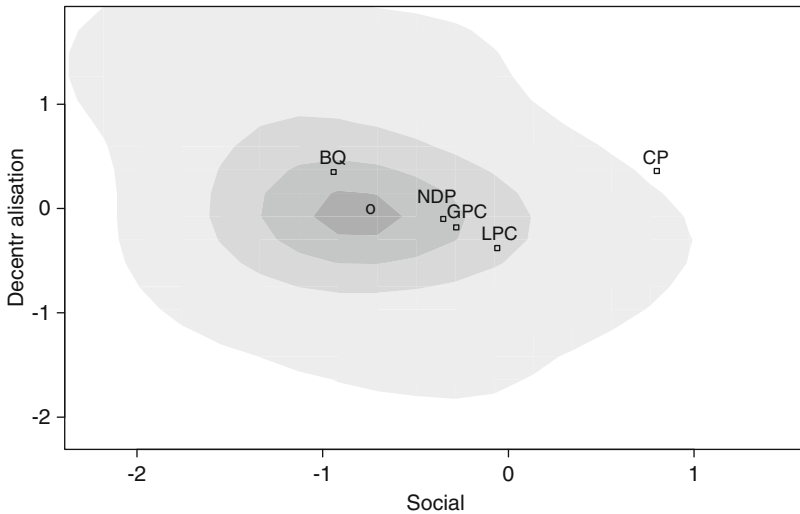
they failed to make in roads in Québec and the Atlantic Provinces. It is clear from Table 7.1 that although Canada has a plurality electoral system, in the sense that the major parties are electorally advantaged, it is not as majoritarian as the United States.

We used a survey obtained by Blais et al. (2006).<sup>10</sup> Because the Bloc Québécois (BQ) only contested the election in Quebec, we divided the sample into those who were in Canada outside Quebec, and those in Quebec. Table 7.5, in Appendix 1 to this chapter, gives the voting data for 2004 in these two regions, while Table 7.6 gives the sample vote shares for the two regions. Tables 7.7, 7.8, in Appendix 1, give details of the two-dimensional factor analysis, giving two policy dimensions, one a socio-economic dimension and one defined by decentralization. We adopted the notion of *partisan constituencies*, as used in Chap. 6, and estimated party positions by taking the average of the positions of those voters who chose each of the five parties in Canada. For the Bloc Québécois we used the average of voter positions in Québec. Figures 7.1 and 7.2 show the electoral distributions in Canada without Québec and in Canada for 2004, together with estimates of the party positions.<sup>11</sup>

The descriptive statistics for the regions and the parties are given in Tables 7.9, 7.10 and 7.11.

<sup>10</sup>The survey data are available at <http://ces-eeec.mcgill.ca/surveys.html>.

<sup>11</sup>The social dimension is represented as the x-axis and the decentralization dimension is represented as the y-axis. The electoral distributions in these figures are smoothed. We use CP for the Conservative Party, LPC for the Liberal Party, NDP for the new Democrat Party, GPC for the Greens, and BQ for the Bloc Québécois.



**Fig. 7.2** The electoral distribution in Québec in 2004, with party positions estimated by voter means

Table 7.12 gives the pure spatial, sociodemographic and joint models outside Quebec, while Table 7.13 gives the three models for Quebec.<sup>12</sup> Tables 7.14 and 7.15 compare the log likelihoods of the various models.

For 2004 the estimated party positions are given by the vector

$$\mathbf{z}^* = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} & \text{BQ} \\ x\text{-axis} & -0.35 & -0.27 & -0.06 & 0.8 & -0.94 \\ y\text{-axis} & -0.10 & -0.18 & -0.38 & 0.36 & 0.34 \end{bmatrix}.$$

Appendix 2 to this chapter gives the details of the computations of equilibria in the two regions, and shows that the convergence coefficient for the model in Canada without Québec was  $c^{C/Q} = 2.55$ , with a 95% bounds of [2.01, 3.07]. The theory then implies that the joint mean cannot be an LNE.

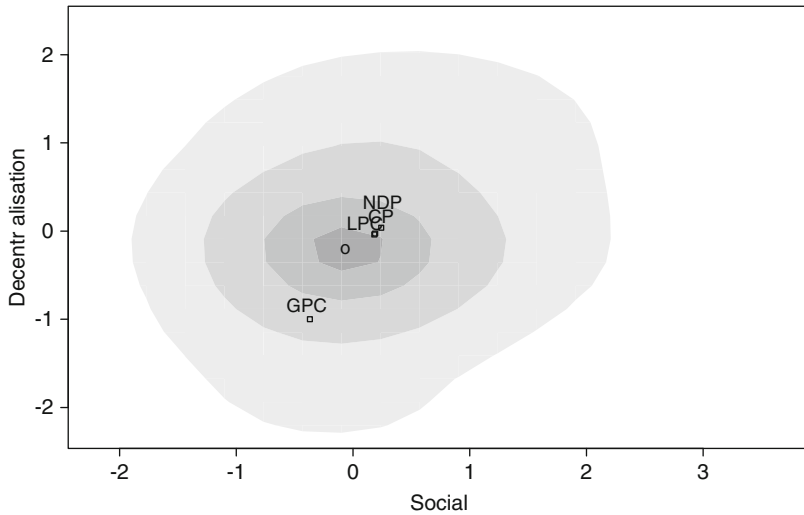
By simulation, the equilibrium of the pure spatial model outside Québec was found to be:

$$\mathbf{z}_s^{C/Q} = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} \\ \text{Social} & 0.50 & -0.36 & 0.24 & 0.23 \\ \text{Decent} & 0.30 & -1.29 & -0.02 & -0.03 \end{bmatrix}.$$

However, since this sample mean outside Québec was  $\mathbf{z}_0^{C/Q} = (0.264, -0.02)$ , after renormalization we obtain

<sup>12</sup>In these tables we include the Akaike (AIC) and Bayesian (BIC) Information Criteria. Lower values indicate better model performance.





**Fig. 7.3** A simulated equilibrium in Canada without Québec, starting from the estimated party positions

$$\mathbf{z}_{os}^{C/Q} = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} \\ \text{Social} & 0.236 & -0.624 & -0.024 & -0.034 \\ \text{Decent} & 0.32 & -1.27 & 0 & 0.01 \end{bmatrix}.$$

These estimated equilibrium positions outside Québec are shown in Fig. 7.3. Note that the estimated equilibrium  $\mathbf{z}_s^{C/Q}$  and the joint electoral mean,  $\mathbf{z}_0^{C/Q}$ , are quite different, as shown by the vector  $\mathbf{z}_{os}^{C/Q}$ .

Notice that the high valence parties, CP and LPC are located close to the electoral mean. Appendix 2 shows that the major eigenvector of the Hessian of the Green party’s vote share function at the joint electoral mean was (1.0, 1.22). Theory suggests that the positions of the low valence parties, the GPC and the NDP, given by  $\mathbf{z}_{os}^{C/Q}$  will be approximately aligned with this eigenvector. This can be seen to be the case.

Since the electoral model is stochastic it involves a degree of risk. As in Chap. 6, we define the *vote margin* of a party to be the difference between the low vote share (at the 95% level) given by the LNE and the sample vote share. If the vote margins of the low valence parties are positive then this is an indication of their incentive to move their policy positions to the equilibrium. Again, we say a LNE is a *stable attractor* if the vote margins of the small parties are positive. We now show that none of the LNE in these models are stable attractors.

The predicted vote shares at the joint mean,  $\mathbf{z}_0^{C/Q}$ , are computed in the Appendix and shown to be:

$$(\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC})^{C/Q} = (0.36, 0.368, 0.23, 0.042).$$

The vote shares of these four parties at the equilibrium  $\mathbf{z}_s^{C/Q}$  were determined by simulation to be

$$(\rho_{CP}^*, \rho_{LPC}^*, \rho_{NDP}^*, \rho_{GPC}^*)^{C/Q} = (0.35, 0.36, 0.23, 0.06).$$

These compare with the sample vote shares outside Québec of

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC})^{C/Q} = (0.372, 0.371, 0.216, 0.041),$$

as shown in Table 7.6. The four way actual vote shares outside Québec were

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC})^{C/Q} = (0.373, 0.382, 0.196, 0.049)$$

as shown in Table 7.5.

The lower 95% bound on  $\rho_{GPC}^{*C/Q}$  was estimated to be 0.043, and the lower vote margin was therefore just 0.02. For the NDP, the low estimate of  $\rho_{NDP}^{*C/Q} = 0.165$  is below that of its sample vote share of 0.216. We thus infer that the GPC has some incentive to locate at the equilibrium position given by  $\mathbf{z}_s^{C/Q}$ , but the NDP has no such incentive. By our definition, this LNE is not a stable attractor.

We also found a second LNE, as shown in Fig. 7.4:

$$\mathbf{z}_{os}^{C/Q} = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} \\ \text{Social} & 0.20 & 1.007 & -0.117 & -0.13 \\ \text{Decent} & -0.13 & 0.84 & -0.04 & -0.05 \end{bmatrix}$$

with similar vote shares to the above.

In Québec, the theoretical analysis showed that the convergence coefficient  $c^Q = 1.00$ , but with 95% bounds on  $c^Q$  of [0.45, 1.60]. Simulation verified that the equilibrium was one with all parties at the electoral mean, namely  $(-0.75, 0.05)$ . Using this model the predicted vote shares at the joint mean are:

$$\rho^Q = (\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC}, \rho_{BQ})^Q = (0.16, 0.25, 0.08, 0.03, 0.48).$$

The sample vote shares in Québec are

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC}, s_{BQ})^Q = (0.094, 0.244, 0.083, 0.028, 0.55)$$

and the actual vote shares are

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC}, v_{BQ})^Q = (0.088, 0.339, 0.046, 0.032, 0.489)$$

The lower 95% bound on  $\rho_{GPC}$  and  $\rho_{NDP}$  were found to be 0.01 and 0.05, respectively, both of which are below the sample shares. Since these vote margins are negative, we again find that, according to the pure spatial model, neither the

GPC nor the NDP in Québec have any incentive to move from there constituency positions in order to increase vote share. By our definition, this equilibrium is not a stable attractor.

Tables 7.12 and 7.13, model (2), give the pure sociodemographic (SD) model for Canada outside Québec and for Québec. The only sociodemographic characteristic that has any significant effect outside Québec is education. In Québec only age for the BQ and the NDP is significant, and only at the 0.05 level. (The coefficients on age are almost the same for all parties).

The results for the joint model in Tables 7.12 and 7.13 (model 3) show that the  $\beta$ -coefficient is similar to that in the pure spatial model. Age has a similar but weak effect to that in the sociodemographic model. The Bloc’s valence is positive in this model and the only one significantly different from zero and thus significantly different from that of the Liberals and the other parties. The log-likelihood tests given in Tables 7.13 and 7.15. show that the joint models improve upon the pure spatial and sociodemographic models both in Canada outside Québec and inside Québec.

Although the *joint* models give better predictions of voter choice, there is almost no impact on the equilibria of the models. To see this, the equilibrium positions outside Québec for the spatial sociodemographic model, as obtained by simulation are:

$$\mathbf{z}_{ss}^{C/Q} = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} \\ \text{Social} & 0.49 & -0.34 & 0.22 & 0.25 \\ \text{Decent} & 0.33 & -1.24 & -0.07 & -0.01 \end{bmatrix}$$

while the predicted vote shares of these four parties at the equilibrium are estimated to be

$$(\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC})_{ss}^{C/Q} = (0.35, 0.37, 0.23, 0.05).$$

Again this LNE cannot be a stable attractor See Figures 7.3 and 7.4 for two estimated LNE.

In Québec the joint equilibrium is only slightly perturbed from the joint mean:

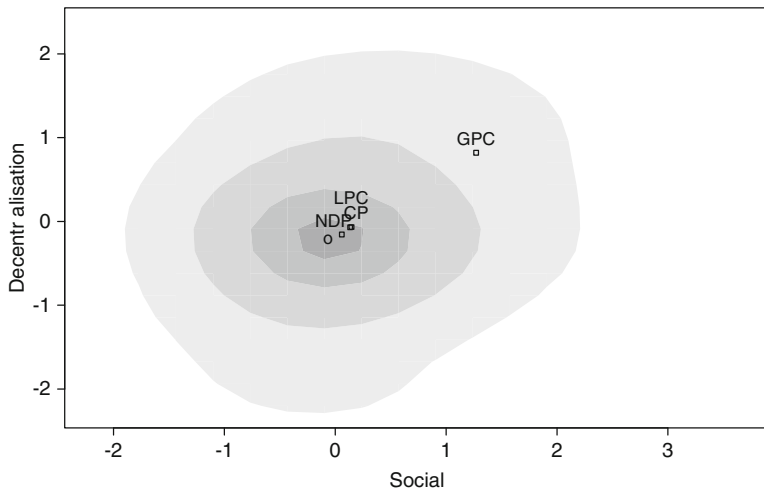
$$\mathbf{z}_{ss}^Q = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} & \text{BQ} \\ \text{Social} & -0.74 & -0.50 & -0.78 & -0.72 & -0.75 \\ \text{Decent} & 0.06 & -0.05 & 0.02 & 0.14 & 0.06 \end{bmatrix}.$$

The estimated vote shares are:

$$(\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC}, \rho_{BQ})_{ss}^Q = (0.17, 0.25, 0.08, 0.03, 0.47).$$

The estimated vote margins again suggest that the leaders of the two low valence parties have no incentive to move to the equilibrium positions.

We can also use the difference between the equilibrium positions and the partisan constituency positions as an estimate of the centrifugal tendency pulling the parties away from the equilibria.



**Fig. 7.4** A second simulated equilibrium in Canada without Québec, starting from the electoral origin

Comparing the estimated positions with the equilibrium positions (taking the equilibrium position for BQ to be the one in Québec) gives the following:

$$\mathbf{z}^* = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{Social} & -0.35 & -0.27 & -0.06 & 0.8 & -0.94 \\ \textit{Decent} & -0.10 & -0.18 & -0.38 & 0.36 & 0.34 \end{bmatrix},$$

$$\mathbf{z}_{ss}^C = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{Social} & 0.49 & -0.34 & 0.22 & 0.25 & -0.75 \\ \textit{Decent} & 0.33 & -1.24 & -0.07 & -0.01 & 0.06 \end{bmatrix},$$

so

$$[\mathbf{z}^* - \mathbf{z}_{ss}^C] \simeq \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{x-axis} & -1.84 & 0.07 & -0.26 & 0.55 & -0.19 \\ \textit{y-axis} & -0.43 & 1.06 & -0.31 & 0.37 & 0.28 \end{bmatrix}.$$

The magnitudes in  $\mathbf{z}^* - \mathbf{z}_{ss}^C$  indicate in which directions parties are pulled away from the equilibrium positions towards those favored by the party supporters. The NDP is pulled towards a position involving an increase in social policies and less decentralization (as is expected of a social democratic party). The BQ and the CP are pulled towards more decentralization. This is to expected of a separatist party, the BQ. Moreover, the main base of support of the CP is Alberta where it gains over 60% of the vote,<sup>13</sup> and the voters want more control over their natural resources.

<sup>13</sup>See Table 7.2.

### 7.2.3 *Elections After 2004*

In 2004, economic growth was strong, with consumer spending growing at 4.8% and exports at 6.3%,<sup>14</sup> so economic differences were not profound. Nonetheless, scandals over corruption and sponsorship forced an election on January 23, 2006. The Conservative Party won a plurality of seats (40.5%) or 124 out of 308, with 36.3% of the votes. Stephen Harper of the Conservative Party became the 22nd Prime Minister of Canada, leading a minority government with the (informal) support of the Bloc Québécois. However, this support proved quite unpopular among the BQ activists in Quebec, and the BQ began to oppose the Conservatives on issues such as the environmental and the military role in Afghanistan.

Stéphane Dion had become leader of the Liberals before the election, after a close fought leadership fight. Unwilling to force the country to a new election, he also provided support to the Conservatives in the House of Commons. However, in the election of October 2008, the Conservatives increased the seats they controlled to 143 (46% of the total) with a slight increase of the vote share to 37.6%, while the Liberals dropped to 77 seats from 103.<sup>15</sup> This led to a minority Conservative government, and shortly after, to the resignation of Dion. On December 10, Michael Ignatieff was formally declared the interim leader in a caucus meeting, and his position was ratified at the party's May 2009 convention.

The government changes between 2004 and 2006 can be illustrated by the legislative hearts in Figs. 7.5 and 7.6 after these two elections. We can see the nature of bargaining over coalition government by joining the median lines between pairs of parties that pivot between majority coalitions after the election. When these medians do not intersect, then they bound a compact, star shaped set known as the "heart."<sup>16</sup> These medians can be associated with various possible winning coalitions, and Schofield (1999) has suggested that coalition outcomes will lie within the heart.

For example, Fig. 7.5 shows the heart after the 2004 election, using the estimates of partisan constituency positions. As the figure indicates, the LPC formally required the Bloc to secure a majority, while the CP together with the NDP and BQ constituted a majority. The LPC and NDP minority government seemed a reasonable compromise because of the proximity of the two parties. In 2006, as Fig. 7.6 indicates, the increase in the number of seats controlled by the CP meant that it could form a government with the support of the Bloc. In 2008, the NDP increased its representation to 37 seats, sufficient to be able to join in a majority coalition with the LPC and BQ.

<sup>14</sup>(<http://www.fin.gc.ca/econbr/ecbr04-07-eng.asp>).

<sup>15</sup>See Blais et al. (2006) for a detailed discussion of the changes in voter perception of Harper.

<sup>16</sup>More precisely, the heart is the set in the policy space which is bounded by all the median lines through pairs of parties. A median line is a line through the positions,  $\{x, y\}$  of two parties such that a majority of the seats are controlled by the coalitions on either side of the line and including the parties at  $x$  and  $y$ . If all median lines intersect then this intersection defines the core.

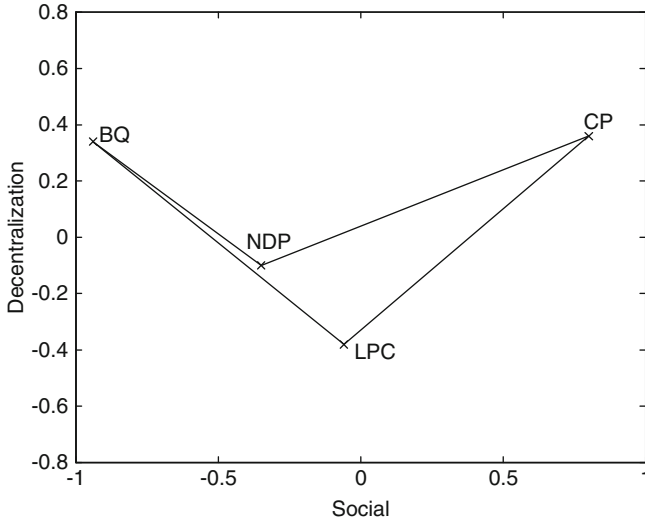


Fig. 7.5 The heart in Canada in 2004

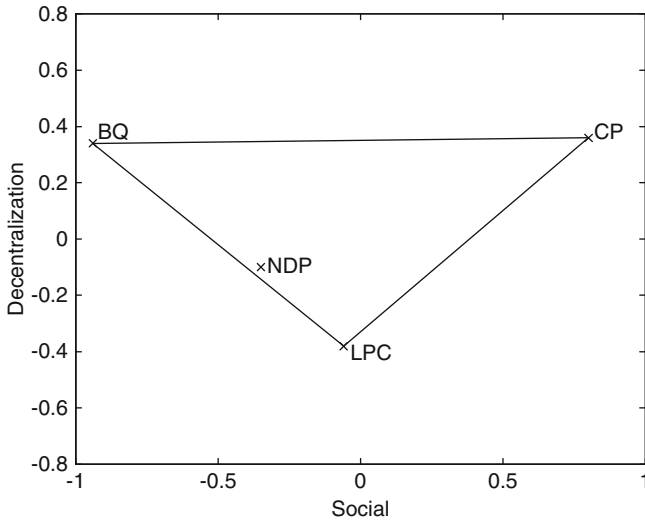


Fig. 7.6 The heart in Canada in 2006

Notice that regional preferences, over issues such as Québec in Canada, allows small parties, such as the Bloc Québécois, to survive. Plurality rule, of the Westminster variety, means that the New Democratic Party, with 250,000 votes (17%) obtained only 9% of the seats, while the Green Party of Canada, with over 660,000 votes (or 4.5%) could gain no seats. This regionalism, or differential valences in different Provinces may be the fundamental reason why no party has

been able to obtain a majority in past elections. In the surprise election of May 2011 however, the CP won 39.6% of the vote and a majority of 167 seats (54%) out of 308. Over time we might expect election results to become more complex, reflecting changes in the political configuration.

In the next two section we examine the hearts in two much more fragmented polities, the Netherlands and Belgium.

### 7.3 Elections in the Netherlands in 2003 and 2006

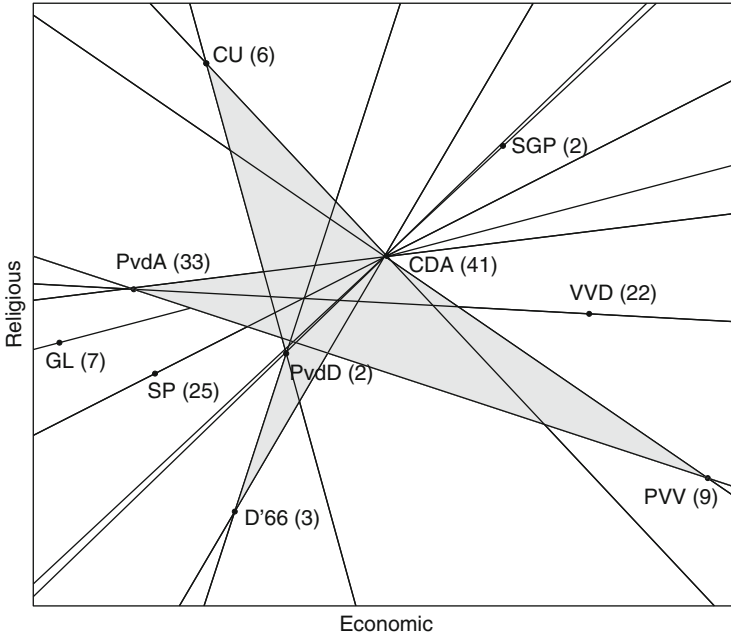
We now consider an election in the Dutch Parliament after the elections of 2003 and 2006. Table 7.3 show the vote shares and party strengths in these elections, while Fig. 7.7 shows the heart, based on the party strengths and positions in 2006, as estimated by [Shikano and Linhart \(2007\)](#). The coalition government of {CDA, VVD, D'66} had broken up on 29 June 2006 over the so-called “Ayaan Hirsi Ali affair” when the D'66 pulled out of the coalition, leading to a minority caretaker government of the right wing parties {CDA,VVD} with only 72 seats, out of 150, installed on 7 July.

After the election in November 2006, a coalition {CDA, PvdA, CU}, with 80 seats, was formed on 7 February 2007, under the leadership of Christian Democrat Jan Peter Balkenende. Although this coalition might seem fairly unusual, being a combination of parties with a religious basis and the Labor party, it is compatible with the notion of the heart.

As [Shikano and Linhart \(2007\)](#) note, with 10 parties there are over 500 possible winning coalitions. While the heart does not give a precise prediction of which coalition will form, it provides clues over the complex bargaining calculations that

**Table 7.3** Votes and seats in the Dutch Parliament 2003 and 2006

Party	2003			2006		
	Vote%	Seats	Seat%	Vote%	Seats	Seat%
Christian Union (CU)	2.1	3	2.0	4.0	6	4.0
Christian Appeal (CDA)	28.6	44	29.3	26.5	41	27.3
Green Party (GL)	5.1	8	8.7	4.6	7	4.7
Labor (PvdA)	27.3	42	28.0	21.2	33	21.3
Labor for Animals (PvdD)				1.8	2	1.3
Left Liberals (D'66)	4.1	6	4.0	2.0	3	2.0
Liberals (VVD)	17.9	28	1	14.7	22	14.7
Lijst Pim Fortuyn	5.7	8	5.3			
Party for Freedom (PVV)				5.9	9	6.0
Protestant Party (SGP)	1.6	2	1.3			
Reformed Party (SGP)				1.6	2	1.3
Socialists (SP)	6.3	9	6.0	16.6	25	17.3
Other	1.0			1.0		
Total	100	150	100	100	150	100



**Fig. 7.7** Party positions in the Netherlands in 2006

policy-motivated party leaders are faced with when attempting to form majority coalitions in polities based on proportional representation (PR). In particular, because of the conflict that the affair generated between the VVD and D'66, the {CDA, PvdA, CU} coalition is one of the few possible viable coalitions. Even so, it took over 6 months of negotiation before the coalition parties could agree. The coalition fell apart on February 20, 2010, after the Labor Party demanded that the government reject NATO's request to extend its military mission in Afghanistan.

We now discuss a possible reason why there are so many parties in a polity such as the Netherlands, with an electoral system based on proportional representation. First note that the configuration of the four parties {PvdA, D'66, CDA, VVD} is similar in 1977 and 2006. Moreover, the positions of these four parties were estimated for 1977 using means of party activists. We hypothesize that each of the ten parties in Fig. 7.7 is located close to the preferred positions of a coalition of party activists. The theoretical question is: why do these activist groups not coalesce into a smaller number of groups, thus reducing the number of parties in the polity. Figure 7.7 suggests why coalescence is irrational. Even a small party like the Christian Union is located on the boundary of the heart. The coalition theory of the heart, proposed by Schofield (1999 2007b), and defined earlier in this chapter, suggests that this party can therefore assign some probability that it may join the governing coalition, and influence policy to its advantage. Thus the activist group supporting the CU may expect some gain from the political game.

Obviously under a strong majoritarian system, such as the United States, the small parties would gain no representation, unless they were geographically



concentrated, and this aspect of the electoral process would force them to coalesce. We now briefly consider the even more fragmented polity of Belgium.

## 7.4 Elections in Belgium

Belgium is confounded by the split between French and Flemish speaking regions, and by the consequent extreme fragmentation of its polity.

The parties in 2003 included the Christian Democratic and Flemish Party (CD&V) with 21 seats and the Reformist Movement (MR) with 24 seats. The liberal party, the Volksunie, split into a nationalist wing (VLD) and a more federalist component, the Flemish Block (VB). The green parties (including Ecolo) only won four seats. The other small parties were the New Flemish Alliance (N-VA) with one seat and the Humanistic Democratic Center (CDH) with 8, and the National Front (FN). The Flemish Socialist Party (SP) formed an alliance with a faction, Spirit (Sp), and together they won 23 seats. Assuming that the Socialist Party (PS) and the alliance, SPSP, were at distinct positions gives the heart for 2003, as shown in Fig. 7.8. This illustrates the complex coalition possibilities as a result of the high degree of fragmentation.

Table 7.4 shows the election results in the election of 10 June 2007. The CD&V, under Yves Leterme, formed an alliance with the N-VA and won 30 seats (out of 150), becoming the largest party in the Parliament. After a month of negotiation, King Albert II asked Yves Leterme, to be *formateur* of a coalition government. Leterme found this impossible, and resigned from the task on 23 August. Belgium was without a government for 6 months. Eventually, Guy Verhofstadt, of the VLD, was able to put together a transitional government. This was approved by Parliament

**Table 7.4** Votes and seats in the Belgium Parliament 2007 and 2010

Party	2007			2010		
	Vote%	Seats	Seat%	Vote%	Seats	Seat%
New Flemish Alliance (N-VA)	18.5	30*	20	17.4	27	18
Christian Democrat (CD&V)				10.8	17	11
Socialist Party (PS)	10.9	20	13	13.7	26	17
Socialist Party (Flemish) (SP)	10.3	14	9	9.2	13	9
Reformist Movement (MR)	12.5	23	15	9.3	18	12
Flemish Liberals and Dem (VLD)	11.8	18	12	8.6	13	9
Flemish Bloc (VB)	12.0	17	11	7.8	12	8
Humanist Center (CDH)	6.1	10	7	5.5	9	6
Ecolo	5.1	8	5	4.8	8	5
Green (G)	4.0	4	3	4.4	5	3
List Dedecker (LD)	4.0	5	3	2.3	1	–
Others	5.0	1	–	6.0	1	–
Total		150	100	100	150	100

\*Coalition of CD&V and N-VA

on 23 December, and lasted until March 20, 2008. Leterme was then sworn in as Prime Minister, leading a coalition of CD&V (with the N-VA), together with the VLD, and the francophone MR, PS and CDH. A financial scandal forced Leterme, along with his government, to resign on 19 December 2008. Herman Van Rompuy of the CD&V was then appointed as Prime Minister. However, in November 2009, Van Rompuy was selected to become the first President of the European Council, and Leterme once again become Prime Minister. In April 2010, the VLD left the coalition because of failure to resolve the constitutional crisis involving Dutch-speaking Flanders and francophone Wallonia. The result of the June 2010 election was somewhat similar to the one in 2007, except that the CD&V and N-VA contested the election as separate parties, with the N-VA, under Bart de Wever, winning in Flanders. As of June 2011, no government has been able to form. The hearts for 2007 and 2010 are similar to that of 2003, and suggest why it is very difficult to form a government coalition.

## 7.5 Concluding Remarks

A standard way of estimating political fragmentation is in terms of the *effective number of party vote strength* ( $env$ ) or *effective number of party seat strength* ( $ens$ ).<sup>17</sup> The fragmentation in votes and seats is captured by the fact that in the Netherlands in 1977 both  $env$  and  $ens$  were equal to 4.2 but had increased to 8.3 in 2006. In Belgium in 2010 the  $env$  and  $ens$  were about 10.0.

For Canada we have computed the convergence coefficient to lie in the range [1.26, 2.04] in 2004. However, the Canadian electoral system benefits the high valence parties, such as the Conservative and Liberal Parties, over smaller parties such as New Democratic Party and Green Party. On the other hand, the pure spatial model indicated that Bloc Québécois had very high valence in Quebec, and this high valence allowed it to obtain a significant share of the seats in that province, gaining a much higher share of the seats than its vote share warranted. Between the elections of 2004 and 2008, the  $env$  for all of Canada increased from 4.0 to 4.1, while the  $ens$  increased from about 3.1 in 2004 to 3.4 in 2006 and 3.5 in 2008. Since the  $ens$  and  $env$  were much lower in Canada than in the Netherlands and Belgium, we conjecture that the proportional electoral systems of the Netherlands and Belgium facilitates interest group fragmentation (see Figures 7.7 and 7.8).

Even though the valence model indicates that the parties should converge towards the electoral mean in Britain, activists appear to pull the parties apart. We conjecture that the tendency towards activist group coalescence in Canada is weaker than in the strongly majoritarian electoral systems of the United States and the United Kingdom, but stronger than in the proportional electoral systems of the Netherlands

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<sup>17</sup>As in Chap. 3, fragmentation can be identified with the *effective number* (Laakso and Taagepera 1979). That is, let  $H_v$  (the Herfindahl index) be the sum of the squares of the relative vote shares and  $env = H_v^{-1}$  be the *effective number of party vote strength*. In the same way we can define  $ens$  as the effective number of party seat strength using shares of seats.

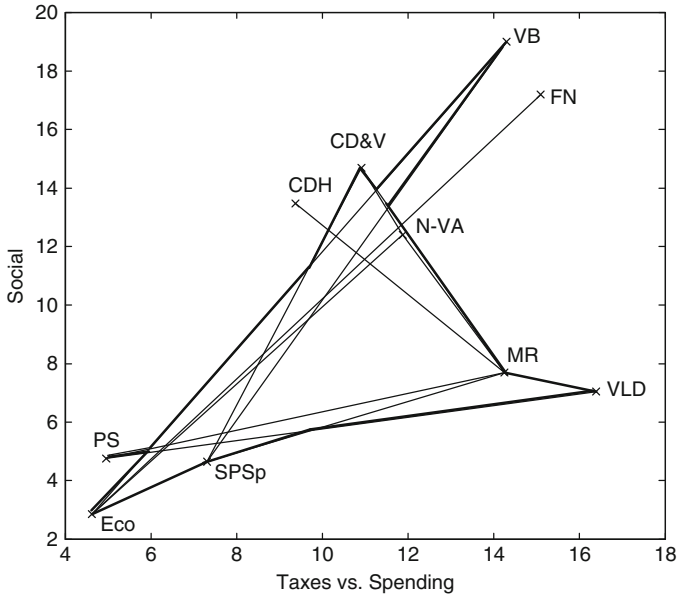


Fig. 7.8 The heart in Belgium in 2003

and Belgium, and much stronger than in the highly fragmented, proportional polities of Poland, Israel and Turkey, which we examine in Chaps. 8 and 10, respectively.

This argument suggests that inferences made by Riker (1980, 1982a, 1986) on the degree of political instability depends on the influence that activist groups can exert in polities with different electoral systems. We discuss this further in the concluding remarks to Chap. 10.

### Appendix 1: Tables for Canada

Table 7.5 Votes and percentages by region in the 2004 Canadian election

Party <sup>1</sup>	Canada		Canada w/o Québec		Québec	
	Vote	% Vote	Vote	% Vote	Vote	% Vote
CP	4,013,491	29.66	3,711,952	36.78	301,539	8.77
LPC	4,967,361	36.71	3,801,716	37.67	1,165,645	33.90
BQ	1,680,109	12.42			1,680,109	48.87
NDP	2,117,794	15.65	1,959,367	19.41	158,427	4.61
GPC	580,845	4.29	472,185	4.68	108,660	3.16
All other parties	171,654	1.27	147,779	1.46	23,875	0.69
Total	13,531,254	100.00	10,092,999	100.00	3,438,255	100.00

<sup>1</sup>CP = Conservatives, LP = Liberals, BQ = Bloc Québécois, NDP = New Democratic, GPC = Green Party

**Table 7.6** 2004 Sample vote shares

Party <sup>1</sup>	Canada		Canada w/o Québec		Québec	
	Votes	%	Votes	%	Votes	%
CP	262	31.26	245	37.23	17	9.44
LPC	288	34.37	244	37.08	44	24.44
BQ	99	11.81			99	55.00
NDP	157	18.74	142	21.58	15	8.33
GPC	32	3.82	27	4.10	5	2.78
Total	838	100.00	658	100.00	180	100.00

<sup>1</sup>CP = Conservative, LP = Liberal, BQ = Bloc Québécois, NDP = New Democratic Party, GPC = Green Party

**Table 7.7** Weighting coefficients for Canada

Components	Social
How much do you think should be done to reduce the gap between the rich and the poor ?(1 = much more, 5 = much less)	0.318
How much do you think should be done for women? (1 = much more, 5 = much less)	0.334
How much do you think should be done for quebec? (1 = much more, 5 = much less)	0.313
Only the police and the military should be allowed to have guns. (1 = strongly agree, 7 = strongly disagree)	0.204
As you may know, Canada decided not to participate in the war against Iraq. Do you think this is a good decision (1 = good decision, 5 = bad decision)	0.244
In politics people sometimes talk of left and right. Where would you place yours. (0 = left, 10 = right)	0.292

**Table 7.8** Weighting coefficients for Canada

Components	Decentralization
The welfare state makes people less willing to look after themselves. (1 = strongly agree, 4 = strongly disagree)	-0.063
The government should: 1 = see to it that everyone has a decent standard of living, 2 = leave people to get ahead on their own	0.149
If people can't find work in the region where they live, they should move to where the jobs are ? (1 = strongly agree, 7 = strongly disagree)	0.389
How much do you think should be done for quebec? (1 = much more, 5 = much less)	0.050
In general, which government looks after your interests better, the federal government or the provincial government? (1 = federal government, 3 = provincial government)	0.882

**Table 7.9** Descriptive statistics by region

Variable	Canada ( <i>n</i> = 838)				
	Mean	Median	SD	Min	Max
Social	0.046	-0.061	1.027	-2.303	3.779
Decentralization	-0.004	-0.09	1.013	-2.359	2.441
Age	50.187	50	15.797	18	89
Female	0.505	1	0.500	0	1
Education	7.154	7	2.101	1	11
	Canada outside Québec ( <i>n</i> = 658)				
Social	0.264	0.167	0.985	-2.303	3.779
Decentralization	-0.020	-0.214	1.036	-2.359	2.441
Age	50.606	50	15.505	19	89
Female	0.505	1	0.500	0	1
Education	7.128	7	2.099	1	11
	Québec ( <i>n</i> = 180)				
Social	-0.750	-0.762	0.745	-2.302	1.521
Decentralization	0.052	0.014	0.927	-2.220	1.845
Age	48.656	48	16.779	18	84
Female	0.506	1	0.501	0	1
Education	7.250	7	2.114	2	11

**Table 7.10** Descriptive statistics by Party

Variable	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max
	Liberal Party (LPC)					Conservative Party (CP)				
	Canada ( <i>n</i> = 288)					Canada ( <i>n</i> = 262)				
Social	-0.056	-0.110	0.781	-2.047	2.372	0.803	0.723	1.034	-1.554	3.779
Decen	-0.379	-0.358	1.036	-2.359	2.15	0.355	0.155	0.912	-2.167	2.441
Age	53.146	53	15.204	18	86	50.401	50	16.016	21	89
Female	0.524	1	0.5	0	1	0.458	0	0.499	0	1
Educ	7.326	8	2.116	2	11	6.863	7	2.078	1	11
	Canada outside Québec ( <i>n</i> = 244)					Canada outside Québec ( <i>n</i> = 245)				
Social	0.007	-0.006	0.772	-2.047	2.372	0.883	0.829	1.000	-1.555	3.779
Decen	-0.344	-0.358	1.067	-2.359	2.150	0.385	0.176	0.925	-2.167	2.441
Age	52.799	53	14.483	19	86	50.612	50	15.856	21	89
Female	0.512	1	0.501	0	1	0.461	0	0.5	0	1
Educ	7.385	8	2.071	3	11	6.804	7	2.079	1	11
	Québec ( <i>n</i> = 44)					Québec ( <i>n</i> = 17)				
Social	-0.404	-0.536	0.747	-1.555	-1.521	-0.347	-0.589	0.839	-1.554	1.456
Decen	-0.574	-0.351	0.822	-2.179	1.075	-0.080	-0.025	0.548	-0.85	0.992
Age	55.068	56	18.788	18	84	47.353	44	18.425	22	78
Female	0.591	1	0.497	0	1	0.412	0	0.507	0	1
Educ	7	7	2.353	2	11	7.706	9	1.961	4	11
	New Democratic Party (NDP)					Greens (GPC)				
	Canada ( <i>n</i> = 157)					Canada ( <i>n</i> = 32)				
Social	-0.345	-0.374	0.756	-2.303	2.396	-0.274	-0.323	0.786	-1.747	1.398
Decen	-0.102	-0.114	1.005	-2.236	2.232	-0.176	-0.276	0.789	-2.220	1.769
Age	47.490	46	15.804	20	88	44.940	43	14.203	20	75
Female	0.561	1	0.498	0	1	0.438	0	0.504	0	1
Educ	7.261	7	2.088	2	11	7.063	7	2.094	4	10
	Canada outside Québec ( <i>n</i> = 142)					Canada outside Québec ( <i>n</i> = 27)				
Social	-0.282	-0.307	0.736	-2.303	2.396	-0.164	-0.293	0.768	-1.641	1.398
Decen	-0.136	-0.214	0.995	-2.236	2.232	-0.158	-0.276	0.652	-2.126	1.629
Age	47.979	47.5	16.308	20	88	44.556	43	13.846	20	75
Female	0.57	1	0.497	0	1	0.481	0	0.509	0	1
Educ	7.268	7	2.127	2	11	7	7	2.094	4	10
	Québec ( <i>n</i> = 15)					Québec ( <i>n</i> = 5)				
Social	-0.940	-0.718	0.706	-2.303	-0.037	-0.865	-0.462	0.664	-1.747	-0.294
Decen	0.229	0.135	1.074	-1.846	1.728	-0.273	-0.365	1.429	-2.220	1.769
Age	42.867	43	8.911	27	57	47	44	17.635	27	74
Female	0.467	0	0.516	0	1	0.200	0	0.447	0	1
Educ	7.2	7	1.74	5	10	7.4	8	2.302	5	10

**Table 7.11** Descriptive statistics for the Bloc Québécois ( $n = 99$ )

	Mean	Median	SD	Min	Max
Social	-0.938	-1.056	0.664	-2.133	1.284
Decentra	0.343	0.094	0.838	-1.777	1.845
Age	46.99	47	15.908	19	82
Female	0.505	1	0.503	0	1
Education	7.283	7	2.095	2	11

**Table 7.12** 2004 Canada outside Québec MNL Models, baseline LPC

Party	Var	Spatial (1) $\mathbb{M}(\lambda, \beta)$	Socio (2) $\mathbb{M}(\theta)$	Spatial + Socio.(3) $\mathbb{M}(\lambda, \theta, \beta)$
		Est. (t-stat)	Est. (t-stat)	Est. (t-stat)
	$\beta$	0.68*** (11.16)		0.69*** (11.02)
CP	$\lambda_{CP}$	-0.04 (0.40)	2.05*** (3.86)	1.52** (2.60)
	Age		-0.02* (2.49)	-0.01 (1.73)
	Gender (F)		-0.24 (1.28)	0.15 (0.71)
	Educ		-0.16*** (3.55)	-0.15** (2.89)
NDP	$\lambda_{NDP}$	-0.51*** (4.82)	0.98 (1.58)	1.21* (1.97)
	Age		-0.02** (3.09)	-0.02** (3.18)
	Gender (F)		0.19 (0.87)	0.09 (0.40)
	Educ		-0.07 (1.26)	-0.08 (1.55)
GPC	$\lambda_{GPC}$	-2.18*** (10.74)	1.14 (1.00)	1.19 (1.06)
	Age		-0.04** (2.92)	-0.04** (2.92)
	Gender (F)		-0.20 (0.49)	-0.25 (0.61)
	Educ		-0.17 (1.58)	-0.17 (1.61)
$n$		658	658	658
$LL$		-697	-772	-684
AIC		1403	1559	1385
BIC		1426	1590	1420

**Table 7.13** 2004 Canada only Québec MNL models, baseline LPC

Party	Var	Spatial (1) $\mathbb{M}(\lambda, \beta)$	Socio. (2) $\mathbb{M}(\theta)$	Spatial+Socio (3) $\mathbb{M}(\lambda, \theta, \beta)$
		Est. (t-stat)	Est. (t-stat)	Est. (t-stat)
	$\beta$	0.38*** (3.90)		0.39*** (3.90)
CP	$\lambda_{CP}$	-0.45 (1.50)	-0.25 (0.17)	-0.04 (0.02)
	Age		-0.03 (1.48)	-0.03 (1.47)
	Gender(f)		-0.76 (1.30)	-0.45 (0.75)
	Educ		0.15 (0.99)	0.16 (1.07)
BQ	$\lambda_{BQ}$	0.63*** (3.31)	2.25* (2.36)	2.25* (2.33)
	Age		-0.03* (2.54)	-0.03* (2.42)
	Gender(f)		-0.37 (0.98)	-0.59 (1.52)
	Educ		0.03 (0.39)	0.02 (0.18)
NDP	$\lambda_{NDP}$	-1.17*** (3.92)	1.45 (0.94)	1.36 (0.89)
	Age		-0.05* (2.36)	-0.04* (2.30)
	Gender(f)		-0.55 (0.89)	-0.62 (1.01)
	Educ		0.00 (0.00)	-0.01 (0.05)
GPC	$\lambda_{GPC}$	-2.25*** (4.77)	-0.50 (0.20)	-0.56 (0.23)
	Age		-0.03 (0.98)	-0.03 (0.95)
	Gender (F)		-1.78 (1.53)	-1.83 (1.57)
	Educ		0.07 (0.31)	0.06 (0.27)
$n$		180	180	180
$LL$		-207	-209	-200
AIC		428	434	419
BIC		447	460	448



**Table 7.14** Comparison of Log Likelihood for Canada outside Québec 2004

M <sub>1</sub>	M <sub>2</sub>		
	Spatial	Socio-Demographic.	Joint <sup>a</sup>
Spatial	na	75	-13
Socio-Dem.	-75	na	-88
Joint <sup>a</sup>	13	88	na

<sup>a</sup>Joint = spatial model with sociodemographics

**Table 7.15** Comparison of Log Likelihood for Québec 2004

M <sub>1</sub>	M <sub>2</sub>		
	Spatial	Socio-Dememographic	Joint <sup>a</sup>
Spatial	na	1	-7
Socio-Dem.	-1	na	-9
Joint <sup>a</sup>	7	9	na

<sup>a</sup>Joint = spatial model with sociodemographics

## Appendix 2: Computations for Canada

### Pure Spatial Models

For 2004 the electoral covariance matrix for Canada is:

$$\nabla_0^C = \begin{bmatrix} 1.05 & 0.133 \\ 0.133 & 1.02 \end{bmatrix}.$$

The “total” variance is  $\sigma^2 \equiv \sigma_1^2 + \sigma_2^2 = 2.07$  with an *electoral standard deviation (esd)* of  $\sigma = 1.44$ . The *principal electoral component* of  $\nabla_0$  is given by the eigenvector (1.0, 0.94) with variance 1.17, while the minor eigenvector is (-0.94, 1.0), with variance 0.90. Because the variances on the two axes were very similar, we did not run the spatial model with separate  $\beta$ -coefficients.

However, the matrices are different in Canada without Québec and in Québec, as in

$$\nabla_0^{C/Q} = \begin{bmatrix} 0.97 & 0.25 \\ 0.25 & 1.07 \end{bmatrix}$$

outside Québec, with  $n = 658$ , and

$$\nabla_0^Q = \begin{bmatrix} 0.56 & -0.26 \\ -0.26 & 0.86 \end{bmatrix}$$

for Québec, with  $n = 180$ .

The “total” variances are  $\sigma_{C/Q}^2 \equiv \sigma_1^2 + \sigma_2^2 = 2.04$  with an esd  $\sigma_C = 1.42$  and  $\sigma_Q^2 = 1.42$  with  $\sigma_Q = 1.19$ .

The principal electoral component of  $\nabla_0^{C/Q}$  is given by the eigenvector (1.0, 1.12), with variance 1.26, while the minor eigenvector is (-1.12, 1.0), with variance 0.78. This is slightly different from  $\nabla_0^C$ .

The different orientations of the electoral distributions can be seen from a comparison of Figs. 7.1 and 7.2.

Since these are very different, we expect the convergence coefficients to be different.

### Outside Québec

Outside Québec the coefficients from the model  $\mathbb{M}^{C/Q}(\lambda, \beta)$  are given in Table 7.6 (model (1) as

$$\lambda_{NDP}^{C/Q} = -0.51, \lambda_{CP}^{C/Q} = -0.04, \lambda_{GPC}^{C/Q} = -2.18, \lambda_{LPC}^{C/Q} \equiv 0.0$$

$$\beta^{C/Q} = 0.68.$$

Notice that the  $\beta$ -coefficient and the Green party and NDP valences are significantly non zero (at the 0.001 level).<sup>18</sup> The probability,  $\rho_{GPC}$ , that a voter chooses the lowest valence party (the Greens), when all parties are at the joint electoral mean, as given by the model  $\mathbb{M}^{C/Q}(\lambda, \beta)$  is:

$$\rho_{GPC}^{C/Q} = \frac{\exp[\lambda_{GPC}^{C/Q}]}{\sum_{k=1}^4 \exp[\lambda_j^{C/Q}]} = \frac{e^{-2.18}}{e^{-2.18} + e^{-0.51} + e^{-0.04} + e^0} \simeq 0.042$$

Thus

$$2\beta^{C/Q}(1 - 2\rho_{GPC}^{C/Q}) = 2 \times 0.68 \times 0.92 = 1.25.$$

The Hessian, or characteristic matrix for the GPC, is given by

$$C_{GPC}^{C/Q} = (1.25) \begin{bmatrix} 0.97 & 0.25 \\ 0.25 & 1.07 \end{bmatrix} - I = \begin{bmatrix} 0.21 & 0.31 \\ 0.31 & 0.34 \end{bmatrix}$$

$$\text{and } c^{C/Q} = 1.25 \times 2.04 = 2.55.$$

The trace is positive (+0.55) and determinant is negative (-0.015), so we have a saddlepoint. The eigenvector with the positive eigenvalue (+0.59) is (1.0, 1.22), while the negative eigenvalue (-0.04) has eigenvector (1.0, -0.82).

<sup>18</sup>Clarke, Kornberg et al. (2009) obtained comparable AIC values for a sociodemographic model of this election.

Since the standard error in  $\lambda_{GPC}^{C/Q}$  is 0.20, the 95% bounds on  $\lambda_{GPC}^{C/Q}$  are  $[-2.57, -1.79]$  and the 95% bounds on  $\rho_{GPC}^{C/Q}$  are  $[0.03, 0.06]$ , approximately  $\pm 28\%$ .

In the same way, the standard error on  $\beta^{C/Q}$  is 0.06, the 95% bounds on  $\beta^{C/Q}$  are  $[0.56, 0.80]$ , and we can estimate very conservative 95% bounds on  $c^{C/Q}$  as given by

$$\begin{aligned} & \{2 \times 0.56 \times (1 - (2 \times 0.060)), 2 \times 0.80 \times (1 - (2 \times 0.03))\} \times 2.04 \\ & = [0.99, 1.50] \times 2.04 = [2.01, 3.07]. \end{aligned}$$

Thus the bounds on  $C_{GPC}^{C/Q}$  are

$$\begin{aligned} & \begin{bmatrix} 0.96 & 0.25 \\ 0.25 & 1.06 \end{bmatrix} - I, \begin{bmatrix} 1.46 & 0.38 \\ 0.38 & 1.61 \end{bmatrix} - I \\ \text{or} & \begin{bmatrix} -0.04 & 0.25 \\ 0.25 & 0.06 \end{bmatrix}, \begin{bmatrix} 0.46 & 0.38 \\ 0.38 & 0.61 \end{bmatrix}. \end{aligned}$$

Both traces are positive, while the first determinant is negative ( $-0.06$ ), and the second is positive ( $+0.14$ ), so the low estimate of  $c$  still gives a saddle, while the high estimate gives a minimum. We can assert, with probability greater than 95%, that the joint electoral mean is not an equilibrium. The predicted vote shares at the joint mean were:

$$\rho^{C/Q} = (\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC})^{C/Q} = (0.36, 0.368, 0.23, 0.042)$$

with a low 95% estimate for  $\rho_{GPC}^{C/Q}$  of 0.03.

The vote shares of these four parties at the equilibrium  $\mathbf{z}_s^{C/Q}$  were determined by simulation to be

$$\rho_s^{*C/Q} = (\rho_{CP}^*, \rho_{LPC}^*, \rho_{NDP}^*, \rho_{GPC}^*)_s^{C/Q} = (0.35, 0.36, 0.23, 0.06)$$

which lies within the 95% error bounds of the predictions. However, because of the stochastic nature of the model, the lower 95% bound on  $\rho_{GPC}^{*C/Q}$  was approximately 0.043.

This compares with the sample vote shares, given in Table 7.6 of

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC})^{C/Q} = (0.372, 0.371, 0.216, 0.041)$$

and with the actual vote shares outside Québec of

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC})^{C/Q} = (0.368, 0.377, 0.194, 0.047).$$

Using the central estimate of  $\rho_{GPC}^{*C/Q} = 0.06$  for GPC we find that the vote margin for the GPC is

$$\rho_{GPC}^{*C/Q} - s_{GPC}^{C/Q} = 0.06 - 0.041 = 0.019,$$

whereas the low estimate of 0.043 gives a smaller vote margin of 0.002. For the NDP, the low estimate of  $\rho_{NDP}^{*C/Q} = 0.165$  is below that of its sample vote share of 0.216. By our definition, this LNE is not a stable attractor. In particular, the NDP has no strong incentive to move to the LNE.

## In Québec

In Québec the coefficients from the model  $\mathbb{M}^Q(\lambda, \beta)$  are

$$\lambda_{BQ}^Q = 0.63, \lambda_{NDP}^Q = -1.17, \lambda_{CP}^Q = -0.45, \lambda_{GPC}^Q = -2.25,$$

$$\lambda_{LPC}^Q \equiv 0, \beta^Q = 0.38.$$

Again, the  $\beta$ -coefficient and the valence estimates for the BQ and NDP are significantly non zero. The probability,  $\rho_{GPC}^Q$ , that a voter chooses the lowest valence party (the Greens, GPC), when all parties are at the joint electoral mean, is given by the model  $\mathbb{M}^Q(\lambda, \beta)$  as

$$\begin{aligned} \rho_{GPC}^Q &= \frac{\exp[\lambda_{GPC}^Q]}{\sum_{k=1}^4 \exp[\lambda_j^Q]} = \frac{e^{-2.25}}{e^{-2.25} + e^{-1.17} + e^{-0.45} + e^{0.63} + e^0} \\ &\simeq 0.03 \end{aligned}$$

$$\text{Thus } 2\beta^Q(1 - 2\rho_{GPC}^Q) = 2 \times 0.63 \times 0.95 = 0.71,$$

$$C_{GPC}^Q = (0.71) \begin{bmatrix} 0.55 & -0.25 \\ -0.25 & 0.86 \end{bmatrix} - I = \begin{bmatrix} -0.60 & -0.18 \\ -0.18 & -0.38 \end{bmatrix},$$

$$\text{so } c^Q = 0.8 \times 1.42 = 1.00.$$

In this case the trace is negative and the determinant is positive (0.20), and we have a local maximum. Both eigenvectors have negative eigenvalues. Using this model we find

$$\rho^Q = (\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC}, \rho_{BQ})^Q = (0.16, 0.25, 0.08, 0.03, 0.48).$$

Simulation of the model for Québec verified that the equilibrium was one with all parties at the electoral mean, namely  $(-0.75, 0.05)$ . The vote shares of these five parties at the equilibrium were predicted to be identical to  $\rho^Q$  and according to the

simulation these were: the sample vote shares in Québec are given in Table 7.5 and were

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC}, s_{BQ})^Q = (0.094, 0.245, 0.083, 0.028, 0.55)$$

and the actual vote shares were

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC}, v_{BQ})^Q = (0.088, 0.339, 0.046, 0.032, 0.489)$$

The standard error of  $\lambda_{GPC}^Q$  is 0.47, so the 95% bounds on  $\lambda_{GPC}^Q$  are given by

$$-2.25 \pm (1.97) \cdot (0.47) = [-3.18, -1.32].$$

Accordingly, the 95% bounds on  $\rho_{GPC}^Q$  are [0.01, 0.06], or  $\pm 66\%$ .

Since the standard error of  $\beta^Q$  is 0.10, the 95% bounds are [0.18, 0.58]. We can estimate very conservative bounds on  $c^Q$  to be given by

$$\begin{aligned} & [2 \times 0.18 \times (1 - 2 \cdot 0.06), 2 \times 0.58 \times (1 - 2 \cdot 0.01)] \times 1.41 \\ & = [0.32, 1.14] \times 1.41 = [0.45, 1.60]. \end{aligned}$$

Thus the bounds on  $C_{GPC}^Q$  are

$$\begin{aligned} & \begin{bmatrix} 0.17 & -0.08 \\ -0.08 & 0.27 \end{bmatrix} - I, \quad \begin{bmatrix} 0.63 & -0.29 \\ -0.29 & 0.98 \end{bmatrix} - I \\ & \text{or} \quad \begin{bmatrix} -0.83 & -0.08 \\ -0.08 & -0.73 \end{bmatrix}, \quad \begin{bmatrix} -0.37 & -0.29 \\ -0.29 & -0.02 \end{bmatrix}. \end{aligned}$$

Both traces are negative ( $-1.56, -0.39$ ), while the first determinant is positive (0.60), and the second is negative ( $-0.08$ ), so the low estimate of  $c$  gives a local maximum, while the high estimate gives a saddle point. In the second case, the eigenvector with the positive eigenvalue (0.14) is  $(1, -1.78)$ , while the negative eigenvalue ( $-0.53$ ) has eigenvector  $(1, 0.56)$ .

Letting  $\rho_{GPC}^{*Q} = 0.01$  be the lower 95% bound, we see that the vote margin for the GPC in Québec is  $\rho_{GPC}^{*Q} - s_{GPC}^Q = 0.01 - 0.028 < 0$ . Similarly the lower 95% bound on  $\rho_{NDP}$  was approximately  $0.05 < s_{NDP}^Q = 0.083$ . Again, by our definition, this LNE is not a stable attractor.

This estimation suggests that neither of the small parties have an incentive to move from their partisan constituency positions to the LNE.

# Chapter 8

## Elections in Poland 1997–2005

### 8.1 Introduction

Poland held regular elections in 1997, 2001, and 2005. For all of these elections Poland used an open-list proportional representation (OLPR) electoral system with a threshold of 5% nationwide for vote for parties and 8% for electoral coalitions. The rules of the 1997 elections were slightly different from the ones used since 2001: the number of districts was larger (52 compared to 41) and in addition to districts there was a 69-seat national list. In 1997 and since 2005 votes are translated into seats by the D'Hondt method rather than the more proportional modified Saint–Leaguë method used in 2001.<sup>1</sup>

The party system in Poland is relatively unstable – in each election new parties emerge and some existing ones die, and the vote shares fluctuate considerably for those parties that manage to survive multiple elections. Tables 8.1 and 8.2 list, by election year, the names of the parties, their seat shares and vote shares. Usually about five or six parties win seats in the Sejm (lower house).

The main political parties during the time period under consideration include the following. The left-wing ex-communist Democratic Left Alliance (SLD) and the agrarian Polish Peoples' Party (PSL), both of which have participated in all three elections considered here and been the most frequent governing parties in the post-communist period. In 1997 Solidarity Election Action (AWS) and the Freedom Union (UW) were also important players. Both parties had grown out of the Solidarity movement. AWS combined various mostly right wing and Christian groups under one label, while UW was formed based on the liberal wing of Solidarity. After the 2001 election, Civic Platform (PO), Law and Justice (PiS), League of Polish Families (LPR), and Self-Defense (SO) emerged as significant new parties. The first three parties were formed on the ruins of AWS and UW. PO combines the liberals from both parties, while PiS represents the conservatives.

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<sup>1</sup>This chapter on Poland is written in collaboration with Margit Tavits.

**Table 8.1** Seats in Polish Sejm elections

Party	1997 (%)	2001 (%)	2005 (%)
Democratic Left Alliance (SLD)	164 (35.6)	200* (43.4*)	55 (12.0)
Polish People's Party (PSL)	27 (5.8)	42 (9.1)	25 (5.4)
Freedom Union (UW)	60 (13.0)	0	
Solidarity Election Action (AWS)	201 (43.6)	0	
Labor Party (UP)	0	16* (3.5*)	
Union of Political Realism (UPR)	0		
Movement for Reconstruction of Poland (ROP)	6 (1.3)		
Self Defense, Samoobrona (SO)		53 (11.5)	56 (12.1)
Law and Justice (PiS)		44 (9.5)	155 (33.7)
Civic Platform (PO)		65 (14.1)	133 (29.0)
League of Polish Families (LPR)		38 (8.2)	34 (7.4)
Democratic Party (DEM)			0
Social Democracy of Poland (SDP)			0
German minority	2	2 (0.4)	2 (0.4)
Total	460	460	460

**Table 8.2** Vote shares (%) in elections for the Polish Sejm

	1997	2001	2005
Democratic Left Alliance (SLD)	27.1	41.0*	11.3
Polish People's Party (PSL)	7.3	9.0	7.0
Freedom Union (UW)	13.4	3.1	
Solidarity Election Action (AWS)	33.8	5.6	
Labor Party (UP)	4.7		
Union of Political Realism (UPR)	2.0		
Movement for Reconstruction of Poland (ROP)	5.6		
Self Defense (SO)		10.2	11.4
Law and Justice (PiS)		9.5	27.0
Civic Platform (PO)		12.7	24.1
League of Polish Families (LPR)		7.9	8.0
Democratic Party (DEM)			2.5
Social Democracy of Poland (SDP)			3.9

\*Coalition of SLD with UP

LPR's ideology combines nationalism with Catholic fundamentalism and the party is sometimes considered a far-right entity. SO is a leader-centered agrarian party that is left-wing on economic policy but very right-wing religious on values. Both LPR and SO did not survive as significant political players and are no longer represented in the Polish Sejm.

## 8.2 The Electoral Model

Existing literature suggests that the two main axis of Polish electoral politics along which both voters and parties align are the economic dimension and social values dimension (Kitschelt et al. 1999; Markowski 2006. See also Powers and Cox 1997;

Tavits and Letki 2009; Tucker 2006; Owen and Tucker 2008). This has remained true for the entire post-communist era. The first dimension encompasses issues related to economic transition and economic performance such as the speed and nature of privatization, reducing unemployment, and increasing social security. The social values' dimension includes attitudes towards communist past, the role of church in politics, moral issues, and nationalism (Grzymala-Busse 2002; Szczerbiak 1998). Over the years, these social issues have gained increasing prominence in political rhetoric and as determinants of vote choice (Markowski and Tucker 2010a,b). The relevance of social issues is further underlined by the significant influence of the Catholic church on Polish party politics (Markowski 2006) and the high salience of the divide between the anti-communists and ex-communists.

We analyzed the three Polish elections based on data from the respective Polish National Election Studies (PNES). These are surveys of the adult population conducted after each national parliamentary election. We were able to use responses from samples of sizes 660, 657 and 1095, respectively for the pure spatial models. The dependent variable in our analysis is the respondent's vote choice. We use the spatial distance between parties and voters, and voters' sociodemographic characteristics to explain this vote choice.

The PNES includes a battery of questions asking respondents' position on various issues. We identified issues pertaining to economic policy and social values and performed factor analysis to confirm the existence of the two-dimensions in the data and obtain factor scores for each dimension. The following items loaded on the two-dimensions (the items used depend on what was available in a given survey).

**Economic dimension** (all years): privatization vs. state ownership of enterprises, fighting unemployment vs. keeping inflation and government expenditure under control, proportional vs. flat income tax, support vs. opposition to state subsidies to agriculture, state vs. individual social responsibility.

**Social values dimension**: separation of church and state vs. influence of church over politics (1997, 2001, 2005), complete decommunization vs. equal rights for former nomenclature (1997, 2001), abortion rights regardless of situation vs. no such rights regardless of situation (1997, 2005)<sup>2</sup>.

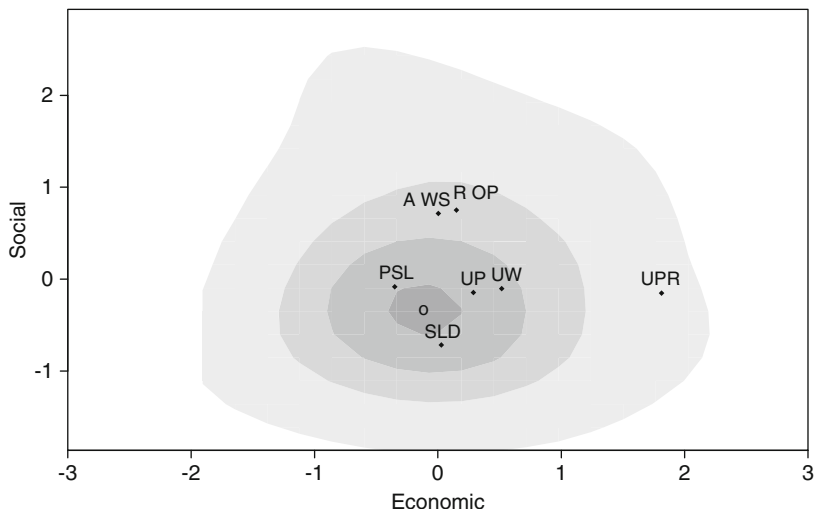
The factor loadings for the two-dimensions are given in Tables 8.3, 8.4, 8.5 in Appendix 2 to this chapter.

We adopted the notion of *partisan constituencies*, as introduced in Chap. 5, and estimated party positions on these dimensions by taking the average of the positions of the voters for each party. In an alternative analysis, we obtained the information on the placement of political parties from Benoit and Laver (2006), which used expert surveys to place parties on a variety of issues. The results of this alternative analysis were substantively similar to the one presented here. However, the Benoit and Laver data were collected after the 2001 elections only. Using these placements to identify party positions in 1997 and 2005 may not be accurate because party positions change.

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<sup>2</sup>Respondent's opinion on each of these issues was recorded on an eleven-point scale with the first option given scored as zero and the second option scored as ten. See the Appendix for the exact question wording.





**Fig. 8.1** Voter distribution and party positions in Poland in 1997

Figures 8.1, 8.2 and 8.3 display the estimate of the density contours of the electoral distribution of voter bliss points for each election year, as well as the estimated party positions.<sup>3</sup> We used the pure spatial model to estimate the equilibrium positions in these years, and these are displayed in Figs. 8.4, 8.5 and 8.6.

These party positions are given below.

$$z_{1997}^* = \begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{UW} & \text{AWS} & \text{UP} & \text{UPR} & \text{ROP} \\ x & 0.03 & -0.35 & 0.52 & 0.005 & 0.29 & 1.81 & 0.15 \\ y & -0.72 & -0.35 & -0.1 & 0.72 & -0.15 & -0.15 & 0.75 \end{bmatrix}$$

In 1997, Solidarity Electoral Action (AWS), with 201 seats and based on the Solidarity trade union, formed a coalition with the Freedom Union (UW), a party on the right, supporting classical liberalism, with 60 seats. Together the coalition controlled 261 seats, out of 460.. The election was a major setback for the Democratic Left Alliance (SLD) and the Polish People’s Party (PSL) which were forced out of government.

$$z_{2001}^* = \begin{bmatrix} \text{Party} & \text{SLD} - \text{UP} & \text{PSL} & \text{UW} & \text{AWS} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & -0.12 & -0.29 & 1.16 & 0.66 & 0.03 & 0.11 & 0.57 & 0.14 \\ y & -0.47 & -0.05 & 0.002 & 0.83 & 0.27 & 0.41 & 0.17 & 0.87 \end{bmatrix}$$

<sup>3</sup>For 2001, the positions of the LPR, PO, PSL, SLD and UW are almost identical to those estimated by Benoit and Laver (2006), thus providing some justification for our method of estimating party positions.

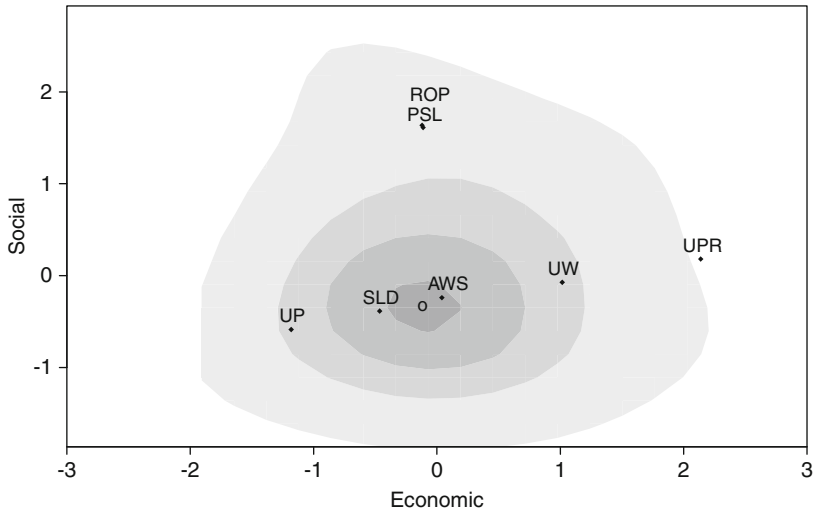


Fig. 8.2 Equilibrium positions under the joint model in 1997

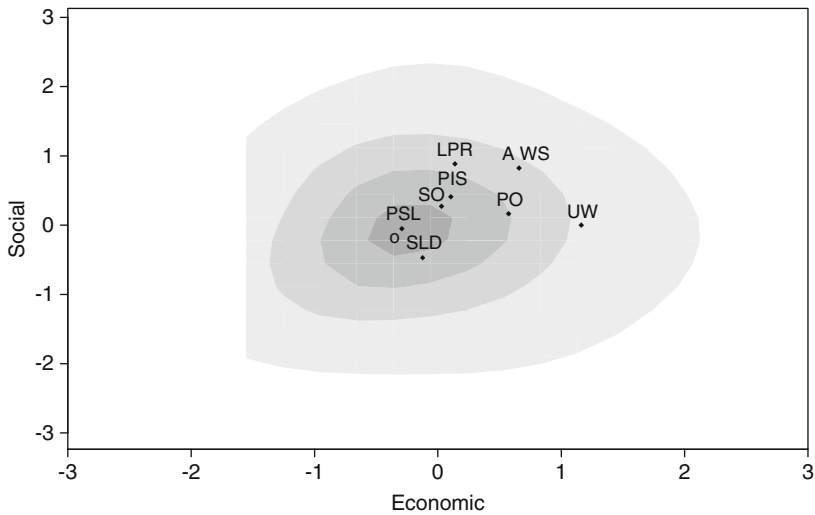


Fig. 8.3 Estimated party positions in 2001

In the 2001 election, the coalition of SLD and UP won 216 of the 460 seats, and was able to form a government with the support of the Polish People’s Party (PSL), with 42 seats, thus controlling 258 seats in all. The former ruling parties, the Solidarity Electoral Action (AWS) and the Freedom Union (UW) only gained about 10% of the vote but no its seats. In its place several new parties emerged, including the center right LPR, SO, and PiS, and the further right PO. Figures 8.1 and 8.2

suggest that the AWS fractured into five factions, a small remnant AWS, and these four new parties.

After 2003 a variety of factors combined to bring about a collapse of support for the government of the SLD-UP-PSL coalition. Discontent with high unemployment, government spending cuts (especially on health, education and welfare), affairs related to privatizations was compounded by a series of corruption scandals, leading to the resignation of the Prime Minister Leszek Miller in May 2004, who was succeeded by Marek Belka.

$$\mathbf{z}_{2005}^* = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{DEM} & \textit{SDP} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & 0.05 & -0.35 & 0.58 & 0.10 & -0.52 & -0.01 & 0.16 & -0.16 \\ y & -0.56 & 0.09 & -0.54 & -0.61 & -0.04 & 0.20 & -0.23 & 0.90 \end{bmatrix}$$

The parties running in the 2005 election were similar to those running in 2001, with the addition of SDP (a left wing splinter group from the SLD), and the right wing Democratic Party (DEM). Figure 8.6 suggests that the DEM was formed from the Freedom Union (UW), the moribund Solidarity Electoral Action (AWS) and some right wing SLD dissidents. Both these new parties failed to win seats, though they took about 6% of the vote.

The two larger center right parties, Law and Justice (PiS) and Civic Platform (PO), did much better in 2005, gaining over 50% of the vote and 288 seats. They had splintered off from the anti-communist Solidarity movement but differed on issues such as the budget and taxation. Law and Justice, with 155 seats, had a policy of tax breaks and state aid for the poor, and pledged to uphold traditional family and Christian values, while being suspicious of economic liberalism. The Civic Platform, with 133 seats, supported free market forces and wanted to introduce a flat 15% rate for income tax, corporation tax and VAT. It promised to move faster on deregulation and privatization, in order to adopt the euro as soon as possible.

Negotiations between PiS and PO about forming the new government collapsed in late October, precipitated by disagreement over who would be speaker of the Sejm. The PiS leader, Jarosław Kaczyński, declined the opportunity to become Prime Minister so as not to prejudice the chances of his twin brother, Lech Kaczyński, in the presidential election.<sup>4</sup> On 1 November 2005, the PiS announced a minority government, with 155 seats, led by Kazimierz Marcinkiewicz as the Prime Minister.

A major stumbling block against the PiS forming a coalition with the PO was the insistence by the PO that it receive the Interior portfolio, if it were to enter a coalition government with the PiS, to prevent one party from controlling all three of the “power” ministries (Security, Justice and Interior), thus the police and security services. The PO also opposed a “tactical alliance” between the PiS and Samoobrona, who shared eurosceptic and populists sentiments, although differing

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<sup>4</sup>Lech Kaczyński became President after that election, but died in a tragic airplane crash on April 11, 2010, on his way to Russia to commemorate the Katyn massacre of Polish officers in 1940.

on economic policy. The election campaign, in which both of these center-right parties had competed mainly against each other rather than parties on the left, accentuated differences and created an antagonistic relationship between the two parties.

The PiS minority government depended on the support of the radical Samoobrona, with 56 seats, and the conservative League of Polish Families (LPR), with 34 seats. On 5 May 2006 PiS formed a coalition government with Samoobrona and LPR, controlling 245 seats. In July 2006, Marcinkiewicz tendered his resignation, because of disagreements with the PiS party leader, Kaczyński. Kaczyński then formed a new minority government and was sworn-in on July 14, finally becoming prime minister. His party was defeated in 2007. Figure 8.3 indicates the policy differences that existed between the PiS and the more left-wing Samoobrona, and the conservative LPR on the one hand, and the more right-wing party, the PO, on the other.

After the death of the President, Lech Kaczyński, in a plane crash in April 2010, his brother, Jarosław Kaczyński, announced he would stand for president. In the second round of the presidential election on July 4, Bronisław Komorowski, the Speaker of the Polish Sejm, and acting President, won with 53% against Jarosław Kaczyński.

### 8.3 Modelling the Elections

As Tables 8.1 and 8.2 illustrate, the electoral system in Poland is highly proportional, though the SLD gained a higher seat share than vote share in 1997 and 2001.

Tables 8.6, 8.7, 8.8 in Appendix 2 give the valences for three pure spatial mixed logit models (one for each election year) based on the estimated positions of the parties.<sup>5</sup> We also estimated pure sociodemographic models and joint models, based on the spatial model and including sociodemographic variables. For the sociodemographic variables we chose age in years, regular monthly income, former communist party membership, and religiosity (believer vs. atheist or agnostic). This choice follows previous literature that identifies these demographics as important determinants of vote choice and party preference (Markowski 2006; Wade et al. 1995). The results of these hybrid models are not reported here, but can be found at Schofield et al. (2010b).

Table 8.9, also in the Appendix, gives the comparison of the log likelihoods for these models for 1997. Clearly the loglikelihoods for the joint models are superior to the pure spatial and sociodemographic models for all years. However, the AIC is superior for the pure spatial model in 2001. For all spatial models the  $\beta$ -coefficient is highly significant (at the 0.01 level). The high valence values are also significant in the pure spatial and joint models. Only a few of the sociodemographic variables are significant.

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<sup>5</sup>As before these tables give the AIC.

Table 8.6 shows that the estimates for the pure spatial model in 1997 were:

$$\begin{aligned}
 &(\lambda_{UPR}, \lambda_{UP}, \lambda_{ROP}, \lambda_{PSL}, \lambda_{UW}, \lambda_{SLD}, \lambda_{AWS}; \beta) \\
 &= (-2.3, -0.56, 0.0, 0.07, 0.73, 1.4, 1.92; 1.74).
 \end{aligned}$$

The covariance matrix is:

$$\nabla_0 = \begin{bmatrix} 1.0 & 0.0 \\ 0.0 & 1.0 \end{bmatrix}.$$

Thus, the probability,  $\rho_{UPR}$ , that a voter chooses the lowest valence party, when all parties are at the joint electoral mean, is given by the model  $M(\lambda, \beta)$  as

$$\begin{aligned}
 \rho_{UPR} &\simeq \frac{1}{1 + e^{1.92+2.3} + e^{1.4+2.3}} \\
 &= \frac{1}{1 + 66 + 40} \simeq 0.01
 \end{aligned}$$

$$\text{Thus } 2\beta(1 - 2\rho_{UPR}) = 2 \times 1.74 \times 0.98 = 3.41.$$

$$\begin{aligned}
 \text{Thus } C_{UPR} &= (3.41) \begin{bmatrix} 1.0 & 0.0 \\ 0.0 & 1.0 \end{bmatrix} - I \\
 &= \begin{bmatrix} 2.41 & 0.0 \\ 0.0 & 2.41 \end{bmatrix},
 \end{aligned}$$

$$\text{so } c = 3.41 \times 2 = 6.82.$$

Similar results for the elections of 2001 and 2005 show divergence for the pure spatial model.

In 2001, we find  $\beta = 1.482$ , so  $c \simeq 5.92$ , and in 2005,  $\beta = 1.548$ , so  $c \simeq 6.192$ .

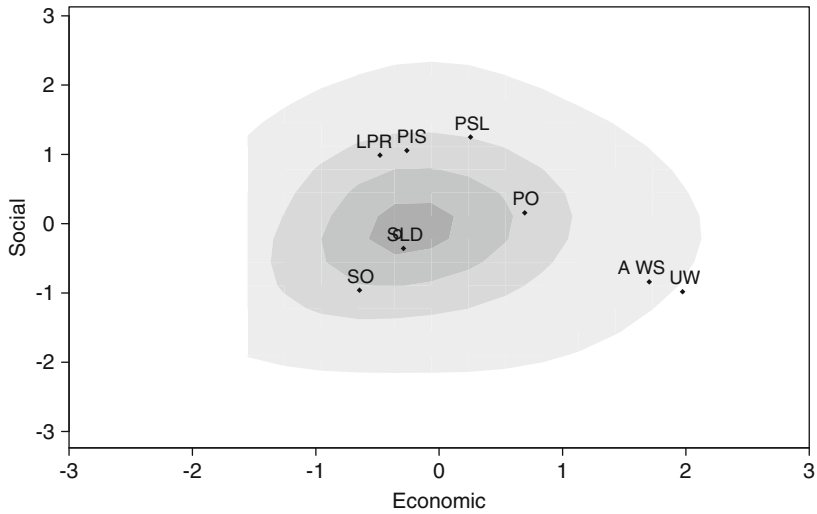
Computation, using the simulation program, showed the vote maximizing local equilibrium for 1997 to be the vector

$$\mathbf{z}_{1997}^{el} = \begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{UW} & \text{AWS} & \text{UP} & \text{UPR} & \text{ROP} \\ x & -0.47 & -0.11 & 1.01 & 0.04 & -1.18 & 2.14 & -0.12 \\ y & -0.39 & 1.61 & -0.07 & -0.24 & -0.59 & 0.18 & 1.64 \end{bmatrix},$$

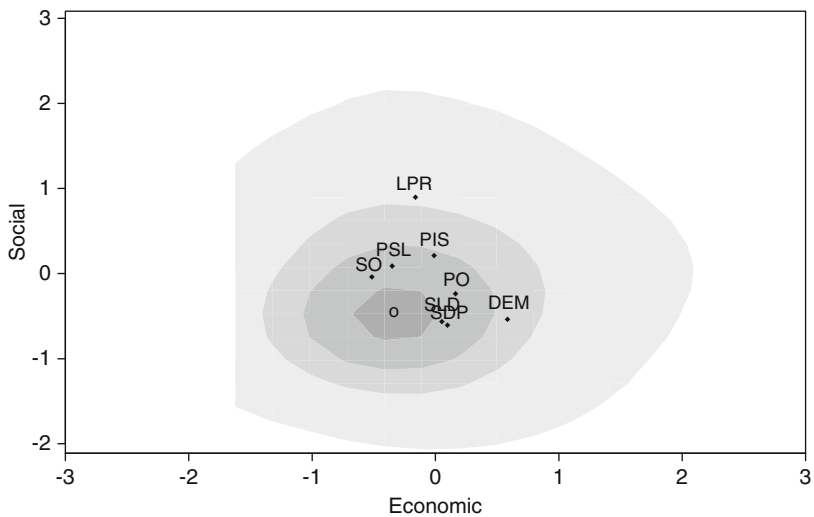
as shown in Fig. 8.4. Figures 8.5 and 8.6 give the equilibria in 2001 and 2005.<sup>6</sup>

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<sup>6</sup>Note that a result of Schofield (2005) asserts that LNE generically exist. Because the Hessians have positive eigenvalues, the party preference correspondences are not convex valued, so no general argument can be used to assert existence of pure strategy Nash equilibria (PNE). If a PNE were to exist it would coincide with one of the LNE.

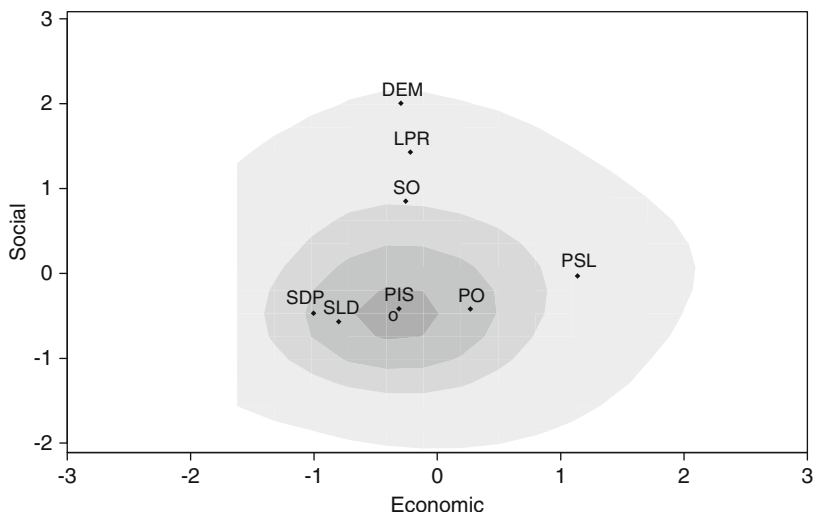


**Fig. 8.4** Equilibrium positions under the joint model in 2001



**Fig. 8.5** Estimated party positions in 2005

Appendix 3 compares the estimated and equilibrium positions for the three elections. As indicated by the results on the convergence coefficients and the Hessians, all parties, in equilibrium, scatter away from the electoral mean. Note that in 1997, the two high valence parties, the AWS and the SLD, have equilibrium positions very close to the electoral mean. Similarly, in 2001 only the highest valence party, the SLD, and in 2005, only the highest valence party, the PIS, have



**Fig. 8.6** Equilibrium positions under the joint model in 2005

equilibrium positions that are located at, or very close to, the electoral mean. The significant drop in the valence of the AWS between 1997 and 2001 should have forced it even further from the mean than the position that it did indeed adopt. A robust inference from these figures is that parties do not locate themselves at positions that maximize the vote shares, as estimated by the joint spatial model. We suggest that parties' positions are effectively decided by small activist groups whose preferred positions are adopted by the parties. For example, when the AWS fragmented in 2001, new parties like the PiS, SO, PO and LPR adopted positions in the upper right quadrant of the policy space. When the UW disappeared in 2005, its place was taken by the DEM, whose position was controlled by an activist faction that had controlled the UW. These observations are consistent with the hypothesis that the activist groups supporting the AWS and the UW fragmented in 2001, and this led to the creation of these new parties (See Fig. 8.3).

## 8.4 Concluding Remarks

As in Chap. 7, where we discussed the Canadian and Dutch polities, we can see the nature of bargaining over coalition governments in these three elections by constructing the “median lines” between pairs of parties that pivot between majority coalitions, as in Figs. 8.7, 8.8 and 8.9. These medians bound a star shaped set known as the “heart”, that we have suggested indicates the set of possible coalition outcomes.

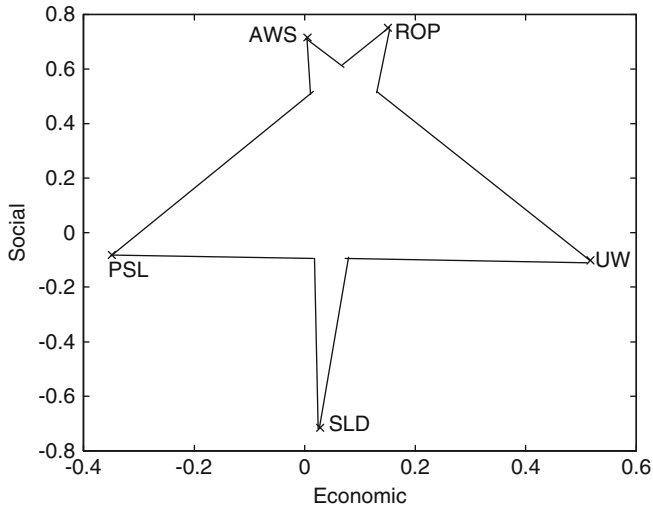


Fig. 8.7 Estimate of the heart in 1997

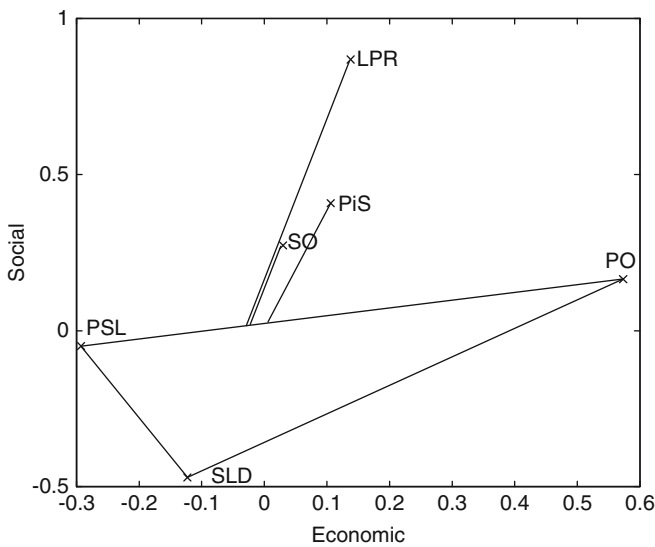
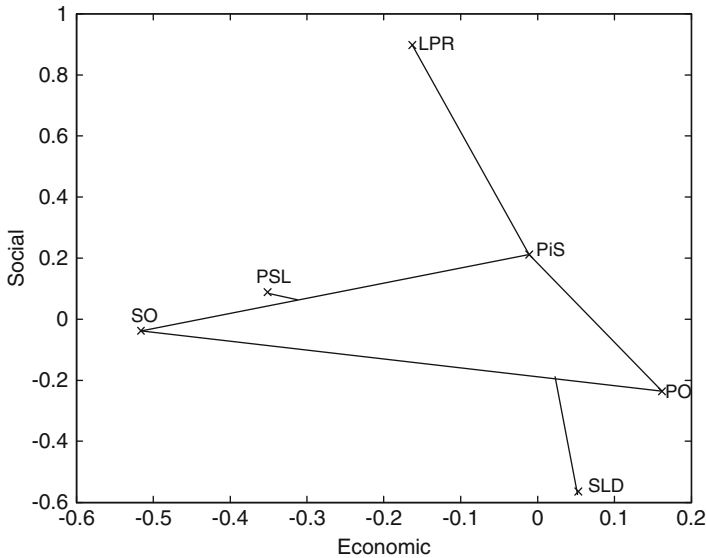


Fig. 8.8 Estimate of the heart in 2001

For example, note that the coalition government of AWS, and the small party, the UW, in 1997 can be represented by the upper right median in Fig. 8.8.

The coalition of the SLD and the small party, the PSL, in 2001, can be represented by the median line on the lower left in Fig. 8.9.





**Fig. 8.9** Estimate of the heart in 2005

Finally, the complex negotiations involving the PiS, the PO, and the small party, the SO, in 2005 all refer to the triangular heart bounded by these party positions in Fig. 8.9. If we are correct in our inference that the break-up of the AWS activist group led to the creation of the smaller SO, PiS and LPR parties, we may infer that the minority PiS government, supported by the SO and LPR provided policy benefits of some kind for the activist groups supporting these parties.<sup>7</sup> It is interesting to note that according to the spatial model, the PiS could have located itself at the electoral mean, in which case it would have been a core party, in the sense of Laver and Schofield (1990). To do so however, it would have had to change its policy position by moving “south” on the policy axis.

These figures suggest that even small parties can hope to belong to government. It follows that activist groups supporting these parties can aspire to influence government policy. We hypothesize that such activist groups have little incentive to coalesce in a highly proportional electoral system. Indeed, some of these activist groups may have every incentive to fragment. The logic of such maneuvering would seem to involve both analysis of the stochastic model, in order to determine electoral response, coupled with coalition bargaining theory to make sense of the formation of government.

<sup>7</sup>We may refer to the logic of these choice as “hunting the heart.”

## Appendices

### *Appendix 1: Question Wording for the Survey and Factor Loadings*

These question wordings are based on the 2001 PNES. We have also indicated any noteworthy differences in question wording for the other years.

#### **Vote choice**

“For which party or coalition candidate did you vote in the Sejm elections?”

The issue positions of voters

“A variety of solutions and policies aimed at solving the above mentioned issues are conceivable. On subsequent CARDS we present opposite solutions to each issue. Please read them carefully and tell me, where would you place your own opinions and stances. In doing so, please use the 11-point scale, where: 0 – means full acceptance of the statement (solution) proposed on the left side of the CARD, 10 – means full acceptance of the statement (solution) – on the right side, 5 – means that you favor solutions lying in between both opposite ones, and the remaining scale points indicate different levels of acceptance of each of those opposite statements.”

#### **Economic dimension**

##### 1. Privatization

00) State owned enterprises should be privatized quickly; the inefficient ones should be liquidated.

10) Enterprises should remain state property and their modernization financed from the state budget.

##### 2. Unemployment

00) Fighting unemployment should be an absolute policy priority of the government, even if it leads to higher spending and inflation.

10) Many other – more important than unemployment – issues should be governmental priority, i.e. balanced budget, fighting inflation, etc.

##### 3. Income tax

00) The higher one’s income, the higher the percentage it should be taxed.

10) Everyone should be taxed the same percentage of his/her income, irrespectively of the income level.

##### 4. Subsidies to agriculture

00) Agriculture should receive subsidies from the budget, otherwise many farms will go bankrupt.

10) Agriculture should not receive subsidies from the budget, because no single social group should live at the expense of society.

##### 5. State vs. individual responsibility for social welfare

00) The state should grant its citizens the widest possible social safety net, i.e. health care, social welfare, free education, etc.

10) Citizens should take care and responsibility of their health, self-help, children’s education, etc on their own.

### **Social values dimension**

#### 6. Church and state

00) The Church should be completely separated from the state and should not interfere with politics.

10) The Church should exert influence over politics and state policies.

#### 7. Decommunization

00) Individuals occupying high positions under communism ('nomenclatura') should now be forbidden to perform responsible state functions.

10) These individuals ('nomenclatura') should have the same rights as all others in competing for public offices and state positions.

#### 8. Abortion

00) Women should have abortion right regardless of situation.

10) Abortion should not be allowed regardless of situation.

We reversed the coding on Privatization and Decommunization so that (00) could be regarded as a more left wing, or pro-communist response.

We used factor analysis to obtain the positions of voters on the economic and social values dimension.

### **Sociodemographics**

For the sociodemographic variables we used the responses to the following questions.

#### 1. Income

"What was your average monthly income last year?"

The measure is recorded in Polish zloty.

#### 2. Age

"Your year of birth. . ."

We subtracted respondent's year of birth from the year of election to obtain respondent's age in years.

#### 3. Communist party membership

"Did you ever happen to be a member of PZRP, ZSL, or SD?"

1. yes

2. no

The 2005 survey asked about membership in PZRP only and not in the other two communist regime satellite parties. The 1997 survey asked about membership in each of the ex-communist parties separately. We only used the information about former PZRP membership because this was the main communist party whereas the others were satellites that cooperated with the regime.

#### 4. Religion

"How would you describe your attitude towards religion? Are you:

1. atheist; 2. agnostic; 3. believer, 4. devout believer."

We collapsed the first two and last two categories to obtain a dichotomous measure of 1 = religious, 0 = not religious.

## *Appendix 2: Tables for Pure Spatial Models*

**Table 8.3** Factor loadings from the Polish National Election Survey, 1997

Question	1. Economic	2. Social
1. Privatization	<b>0.45</b>	0.003
2. Unemployment	<b>0.701</b>	-0.074
3. Income Tax	<b>0.529</b>	-0.04
4. Subsidies	<b>0.650</b>	-0.17
5. Social Welfare	<b>0.763</b>	0.021
6. Church and State	0.069	<b>0.799</b>
7. Decommunization	-0.010	<b>0.523</b>
8. Abortion	0.14	<b>0.802</b>
Eigenvalues	2.00	1.59

**Table 8.4** Factor loadings from the Polish National Election Survey, 2001

Question	1. Economic	2. Social
1. Privatization	<b>0.537</b>	0.266
2. Unemployment	<b>0.656</b>	-0.133
3. Income Tax	<b>0.555</b>	-0.225
4. Subsidies	<b>0.695</b>	-0.166
5. Social Welfare	<b>0.737</b>	-0.176
6. Church and State	0.31	<b>0.538</b>
7. Decommunization	0.186	<b>0.795</b>
Eigenvalues	2.185	1.119

**Table 8.5** Factor loadings from the Polish National Election Survey, 2005

Question	1. Economic	2. Social
1. Privatization	<b>0.528</b>	-0.069
2. Unemployment	<b>0.691</b>	0.032
3. Income Tax	<b>0.584</b>	-0.138
4. Subsidies	<b>0.612</b>	-0.301
5. Social Welfare	<b>0.742</b>	-0.033
6. Church and State	0.281	<b>0.746</b>
8. Abortion	0.117	<b>0.801</b>
Eigenvalues	2.115	1.315

**Table 8.6** Poland 1997 Pure Spatial Model (Base = ROP)

Variable	Party	Coefficient	Std. Error	t-value
$\beta$		1.739***	0.116	15.04
$\lambda$ valence	UP	-0.558	0.262	2.13
	UW	0.731***	0.199	3.66
	AWS	1.921***	0.174	11.046
	SLD	1.419***	0.19	7.47
	PSL	0.073	0.222	0.328
	UPR	-2.348***	0.501	4.685
$n = 660$ LL = -855 AIC = 1725				

**Table 8.7** Poland 2001 Pure Spatial Model (Base = LPR)

Variable	Party	Coefficient	Std. Error	t-value
$\beta$		1.48***	0.118	12.61
$\lambda$ valence	SLD	1.99***	0.174	11.41
	AWS	-0.37	0.248	1.49
	UW	-1.00***	0.308	3.24
	SO	0.41*	0.202	2.04
	PIS	0.43*	0.200	2.16
	PSL	0.09	0.218	0.41
	PO	0.80***	0.192	4.19
$n = 657$ LL = -1004 AIC = 2024				

**Table 8.8** Poland 2005 Pure Spatial Model (Base = LPR)

	Party	Coefficient	Std. Error	t-value
$\beta$		1.55***	0.115	13.41
$\lambda$ valence	SO	0.82***	0.161	5.09
	DEM	-1.04***	0.260	4.01
	SDP	-0.34	0.205	1.66
	PIS	1.95***	0.146	13.40
	SLD	0.47**	0.172	2.72
	PO	1.50***	0.152	9.88
	PSL	-0.17	0.196	0.85
$n = 1095$ LL = -1766 AIC = 3549				

**Table 8.9** Comparisons of LL for Poland in 1997

		$M_2$		
		Joint	Spatial	Socio-Dem.
$M_1$	Joint	na	34	629
	Spatial	-34	na	595
	Socio-Dem.	-595	-629	na

### Appendix 3: Computation of Equilibria for Poland

Using the balance theorem, we can compare  $\mathbf{z}^*$  and  $\mathbf{z}^{el}$  for various years as follows.

$$\mathbf{z}_{1997}^* - \mathbf{z}_{1997}^{el} =$$

$$\begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.03 & -0.35 & 0.52 & 0.005 & 0.29 & 1.81 & 0.15 \\ y & -0.72 & -0.35 & -0.1 & 0.72 & -0.15 & -0.15 & 0.75 \end{bmatrix} -$$

$$\begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & -0.47 & -0.11 & 1.01 & 0.04 & -1.18 & 2.14 & -0.12 \\ y & -0.39 & 1.61 & -0.07 & -0.24 & -0.59 & 0.18 & 1.64 \end{bmatrix} =$$

$$\begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.50 & -0.22 & -0.49 & -0.035 & 1.47 & -0.33 & 0.15 \\ y & -0.33 & -1.96 & -0.03 & 0.48 & 0.44 & -0.33 & -0.89 \end{bmatrix}.$$

Now  $\sigma = 1.41$ , so

$$\frac{1}{2\beta\sigma} \frac{d^-}{dz}(\mathbf{z}) = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.35 & -0.16 & -0.34 & -0.02 & 1.04 & -0.23 & 0.10 \\ y & -0.23 & -1.39 & -0.02 & 0.34 & 0.31 & -0.23 & -0.63 \end{bmatrix}$$

is a dimensionless estimate of activist influence. These estimated influences are significant for the PSL and UP, both small parties. The electoral mean in 1997 is (0.09,0.09) so the closest equilibrium position to this is that of the AWS.

Similarly

$$\mathbf{z}_{2001}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.29 & 0.25 & 1.97 & 1.70 & -0.65 & -0.26 & 0.69 & -0.48 \\ y & -0.36 & 1.25 & -0.98 & -0.84 & -0.96 & 1.055 & 0.15 & 0.99 \end{bmatrix}.$$

In 2001, the electoral mean is (0.08,-0.04) so the SLD equilibrium is close to the mean. We obtain

$$\mathbf{z}_{2001}^* - \mathbf{z}_{2001}^{el} =$$

$$\begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.12 & -0.29 & 1.16 & 0.66 & 0.03 & 0.11 & 0.57 & 0.14 \\ y & -0.47 & -0.05 & 0.002 & 0.83 & 0.27 & 0.41 & 0.17 & 0.87 \end{bmatrix} -$$

$$\begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.29 & 0.25 & 1.97 & 1.70 & -0.65 & -0.26 & 0.69 & -0.48 \\ y & -0.36 & 1.25 & -0.98 & -0.84 & -0.96 & 1.06 & 0.15 & 0.99 \end{bmatrix} =$$

$$\begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & 0.17 & -0.04 & -0.81 & -1.04 & -0.68 & 0.37 & -0.12 & 0.62 \\ y & -0.11 & -1.3 & 0.98 & 1.67 & 1.23 & -0.65 & 0.02 & -0.12 \end{bmatrix}$$

$$\mathbf{z}_{2005}^{el} = \begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{DEM} & \text{SDP} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & -0.80 & 1.13 & -0.30 & -1.00 & -0.26 & -0.31 & 0.27 & -0.22 \\ y & -0.57 & -0.03 & 2.00 & -0.47 & 0.85 & -0.42 & -0.42 & 1.42 \end{bmatrix}.$$

The electoral mean in 2005 is  $(-0.04, -0.02)$  so the equilibrium position of the PiS is very close to the mean. We obtain

$$\begin{aligned} \mathbf{z}_{2005}^* - \mathbf{z}_{2005}^{el} &= \\ &\begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{DEM} & \text{SDP} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & 0.05 & -0.35 & 0.58 & 0.10 & -0.52 & -0.01 & 0.16 & -0.16 \\ y & -0.56 & 0.09 & -0.54 & -0.61 & -0.04 & 0.20 & -0.23 & 0.90 \end{bmatrix} - \\ &\begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{DEM} & \text{SDP} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & -0.80 & 1.13 & -0.30 & -1.00 & -0.26 & -0.31 & 0.27 & -0.22 \\ y & -0.57 & -0.03 & 2.00 & -0.47 & 0.85 & -0.42 & -0.42 & 1.42 \end{bmatrix} = \\ &\begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{DEM} & \text{SDP} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & 0.85 & -1.48 & 0.88 & 1.10 & -0.26 & 0.30 & -0.11 & 0.06 \\ y & 0.01 & 0.12 & -2.54 & -0.14 & -0.89 & -0.62 & 0.19 & -0.52 \end{bmatrix}. \end{aligned}$$

These estimates appear to be particularly significant for the AWS in 2001 and the PSL in 2005, both small, radical right wing parties.

# Chapter 9

## Elections in Russia and the Caucasus

### 9.1 The Election of 2007 in Russia

The results of this section on Russia suggest that the influence of activists was relatively insignificant in this election, with electoral perception of Putin the most important component of the election.<sup>1</sup>

The election results in terms of votes and seats for the December 2007 election are given in Table 9.1. We used a survey conducted by VCIOM (Russian Public Opinion Research Center) in May 2007. Some 1588 adult citizens were interviewed in 46 Russian regions, out of a total of 83. Appendix 1 to this chapter gives the question wordings, while Table 9.2 gives the results of the approval ratings for various political institutions.

About 64% of the respondents indicated that they would vote for some party if the election were held at the time of the survey. Table 9.3 gives the sample vote and actual vote shares for eleven parties competing in the election. The distribution of vote in the sample is similar to the distribution of actual vote in the December election.

We tested a voting model focusing on the vote choice of just four parties. The first party is the pro-Kremlin United Russia party (ER). The party's political platform is vaguely nationalistic; in recent election campaigns, the party mainly took credit for the country's recent economic and political revival. It is commonly believed that the United Russia received unfair advantage due to the lopsided coverage on the state television channels and political pressure. The party also enjoyed an open endorsement by the then President Vladimir Putin, and it is widely believed that some form of election fraud had taken place. The support for the pro-Kremlin United Russia actually declined from 45% in the May sample to 40% in the December election. According to some sources, the decline may have been due to the popular dissatisfaction with the rising food prices in the third and fourth quarters of 2007.

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<sup>1</sup>This section on Russia is written in collaboration with Alexei Zakharov.



**Table 9.1** Party votes and seats

Party	Votes (1000)	Vote %	Seats	Seat %
United Russia (ER)	44,714	64.3	315	70
Communist Party (CPRF)	8,046	11.57	57	12.7
Lib Dem Party Russia (LDPR)	5,660	8.14	40	8.9
Fair Russia (SR)	5,383	7.74	38	8.4
Agrarian Party (ARP)	1,600	2.30	–	–
Russian Dem Party (Yabloko)	1,108	1.59	–	–
Civilian Power	733	1.11	–	–
Others	912	2.2	–	–

**Table 9.2** Approval of Institutions (%)

	President	Govt	Prime Min.	State Duma	Fed. Coun
0 (disapprove)	12.72	42.54	29.88	54.24	39.27
0.5 (don't know)	8.55	21.66	26.48	22.49	34.83
1 (approve)	78.73	35.80	43.64	23.26	25.90

**Table 9.3** Factor averages across the supporters of eleven parties

Party	Sample (%)	Vote (%)	Fact 1	Fact 2
Agrarian Party (AGR)	0.63	1.47	−0.16	−0.92
United Russia (ER)	45.72	40.96	0.05	0.30
Communist Party (CPRF)	7.12	7.37	−0.76	−1.59
Liberal Democrats(LDPR)	4.22	5.13	−0.53	0.69
Patriots of Russia	0.25	0.57	0.22	−0.10
Fair Russia (SR)	6.17	4.93	−0.60	−0.87
Civilian Power (Free Russia)	0.69	0.67	−0.43	0.31
Union of Right Forces (SPS)	0.57	0.61	−0.47	1.14
Yabloko	0.76	1.01	−0.56	0.20
Russian Republican Party	0.25		−0.16	1.36
Democratic Party of Russia	0.19	0.08	−0.25	0.75
“Will not vote”	17.88		0.23	−0.06
“Can't answer”	14.92		0.43	−0.04
Did not vote		36.3		

We tested a voting model focusing on the vote choice of just four parties. The first party is the pro-Kremlin United Russia party (ER). The party's political platform is vaguely nationalistic; in recent election campaigns, the party mainly took credit for the country's recent economic and political revival. It is commonly believed that the United Russia received unfair advantage due to the lopsided coverage on the state television channels and political pressure. The party also enjoyed an open endorsement by the then President Vladimir Putin, and it is widely believed that some form of election fraud had taken place. The support for the pro-Kremlin United Russia actually declined from 45% in the May sample to 40% in the December election. According to some sources, the decline may have been due to the popular dissatisfaction with the rising food prices in the third and fourth quarters of 2007.

Most of the rest of the vote, both in the elections and in the sample, went to the three runner-up parties. Vladimir Zhirinovskiy's Liberal Democratic Party (LDPR) whose rhetoric was aggressive and nationalistic. However, its voting record in the Duma speaks of the party's loyalty toward Russia's presidents (Yeltsin, then Putin).

The key points of the ideology of the Communist Party (CPRF) is Soviet nostalgia and xenophobia. Both the Communist Party and the United Russia sought, and obtained, the support of the Russian Orthodox Church. The Communist Party traditionally targeted elderly (and poor) voters. The Fair Russia (SR) targets the same electorate (and with the same rhetoric) as the CPRF, but is usually seen as more loyal to the Kremlin.

For sociodemographic variables, we chose gender, age, education, income, and size of township. Some 54.7% of the respondents were female, 45.3% male. The age of the respondents varied from 18 to 92 full years, with the mean of 44.7 years. Rural residents composed 26.67% of the sample. The mean self-reported education on 0 to 1 scale was 0.56; for income, the figure was also 0.56.

We assumed that the valence that a voter assigns to a party may depend on the voter's approval of various federal government institutions – the Presidency, State Duma, Federation Council, the Prime Minister, and the Cabinet. Only a small part of the population (12%) disapproved of the presidency, and an even smaller part (8%) was undecided on the issue. For other institutions, the disapproval rates are much higher. The share of the respondents who answered “don't know” is also greater, suggesting that the attitudes are weaker.

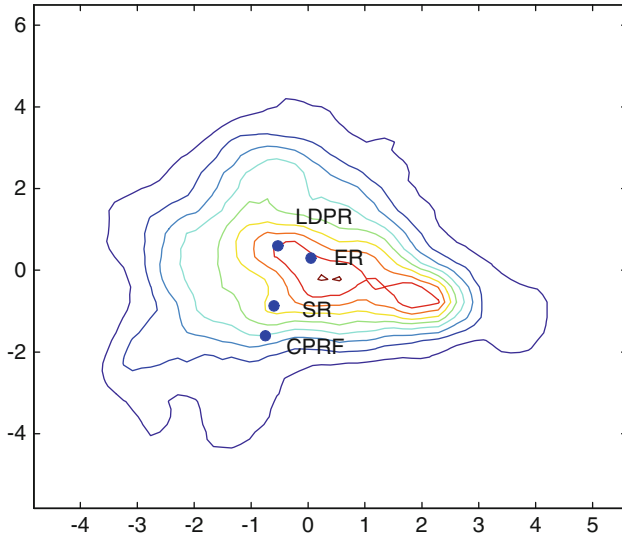
The respondent's ideological preferences were measured by two survey questions. In the first question, the respondent was read a list of 40 words. After each item, (s)he was asked to identify whether (s)he felt positive toward the concept it represented. The second question was identical, except that the negative feelings were recorded (see Table 9.8). For each concept, we constructed a variable that took the value of  $-1$  if the respondent's feeling was negative,  $+1$  if the feeling was positive, and  $0$  otherwise. We constructed a two-dimensional ideological space and the positions of the respondents.<sup>2</sup>

Each factor loading is proportional to the correlation between the values of the ideological factor and the feelings toward the concept. To use the terminology of [Basinger and Hartman \(2006\)](#), the concepts with high absolute factor loadings are “ideologically integrated”. (See Table 9.8 in Appendix 1. Tables 9.9 to 9.12 are also in this Appendix.)

The first ideological factor (or the position along the first dimension) can be interpreted as the degree of a voter's general (dis)satisfaction. High values of the first factor correspond to negative feelings toward ‘justice’ and ‘labor’, and, to a lesser extent, ‘order’, ‘state’, ‘stability’ and ‘equality’. Also, those with high values of the first axis also tend to feel neutral toward ‘order’, ‘elite’, ‘West’, and ‘non-Russians’.

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<sup>2</sup>In a similar study of American Presidential voting, [Ansolabehere et al. \(2006\)](#) have shown that aggregation of a large number of survey items eliminates measurement error and reveals issue preferences.



**Fig. 9.1** Party positions in Russia

Low values of the first factor correspond to positive attitudes to ‘order’, ‘justice’, ‘stability’ and ‘equality’, and negative attitudes toward ‘elite’, ‘West’, and ‘non-Russians’.

The second factor can be called the voter’s degree of economic liberalism. High values correspond to positive feelings to ‘freedom’, ‘business’, ‘capitalism’, ‘well-being’, ‘success’, and ‘progress’, and to negative feelings toward ‘communism’, ‘socialism’, ‘USSR’, and related concepts. Figure 9.1 presents the estimated voter distribution and party positions.

The supporters of different parties tend to have different ideological preferences. We took the mean of the positions of supporters of each party as an estimate of the parties position. As Fig. 9.1 suggests, the supporters of United Russia (ER) have a centrist position along both dimensions – partly due to the fact that they constitute 45% of the sample, and the sample means are zero for each ideological factor. The supporters of the Communist Party (CPRF) and Fair Russia (SR) tend to have similar ideological profiles, with low values on the second factor. The LDPR supporters tend to have low values along the first ideological factor (suggesting dissatisfaction), but positive values along the second factor (suggesting economic liberalism). The estimated positions of the four major parties were

$$z^* = \begin{bmatrix} \text{Party} & ER & CPRF & LRPR & SR \\ x & +0.2 & -0.6 & +0.5 & -1.0 \\ y & +0.2 & -1.6 & -0.5 & -0.5 \end{bmatrix}.$$

### 9.1.1 Equilibrium Under the Logit Model

As in previous chapters, we denote by  $P$  the set of parties, CPRF (Communist Party), ER (United Russia), SR (Fair Russia), and LDPR (Liberal Democrats). The set of respondents is denoted by  $N$ . Each voter  $i$  is characterized by the vector  $\eta_i$  of observable individual-specific nonpolicy factors, and by the observable position  $x_i = (x_{i1}, x_{i2})$  on the two ideological dimensions. Each party  $j$  is characterized by the ideological position  $z_j = (z_{j1}, z_{j2})$ .

Suppose that the utility that voter  $i$  attributes to party  $j$  is given as in the Appendix 4 to Chap. 5, so the estimated probability that  $i$  votes for party  $j$  at the vector  $\mathbf{z}$  of party positions is denoted  $\rho_{ij}(\mathbf{z})$ . Assuming that voter  $i$  chooses party  $d_i$ , then the likelihood of the model is

$$LikeL = \sum_{i \in I} \rho_{id_i}(\mathbf{z}). \tag{9.1}$$

The estimation problem is to find the values of the various coefficients that maximize  $LikeL$ .

Ascertaining the ideological positions of political parties as they are perceived by the voters, is a methodological problem. In this book we have estimated party positions in various ways. Here we adopt the same procedure as in Chap. 6, 7 and 8, and estimate party positions by taking the average positions of respondents. Thus

$$z_{jk} = \sum_{i|d_i=j} x_{ik} \tag{9.2}$$

for  $k = 1, 2$ .

The findings show overwhelming support for the hypotheses that both policy and valence affects voting. Table 9.9 gives the estimation results for the pure spatial model.

Sociodemographic parameters, approval, and efficacy are also jointly significant. These results are presented in Schofield and Zakharov (2010). The joint model, with sociodemographic variables and voter perceptions, performs significantly better than the pure spatial model. The Bayes factor (the difference in loglikelihoods) is very significant, and equal to of  $797 - 694 = +103$ .

To determine the theoretical equilibrium for the pure spatial model, we proceed as follows.

The lowest valence party is SR with  $\lambda_{SR} = -0.4$ . Now  $\lambda_{ER} = 0$ ,  $\lambda_{LDPR} = 0.153$ ,  $\lambda_{CPRF} = 1.971$ . Following the results of the formal model, given in Appendix 4 of Chap. 5, we find

$$\begin{aligned} \rho_{SR} &= [1 + \sum_{k \neq SR} \exp(\lambda_k - \lambda_{SR})]^{-1} \\ &= \frac{1}{1 + e^{0.4} + e^{0.15+0.4} + e^{1.97+0.4}} \\ &\simeq 0.1. \end{aligned}$$

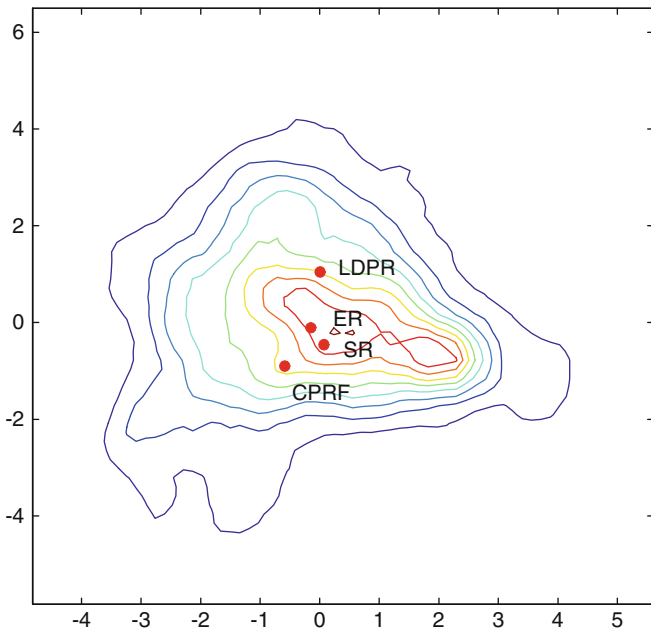


Fig. 9.2 Equilibrium positions in Russia under the joint model

Now the electoral covariance matrix is  $\nabla_0 = \begin{bmatrix} 2.95 & 0.13 \\ 0.13 & 2.95 \end{bmatrix}$ , so, with  $\beta = 0.181$ , we obtain:

$$\begin{aligned} C_{SR} &= 2\beta(1 - 2\rho_1)\nabla_0 - I \\ &= 2 \times 0.181 \times 0.8 \times \begin{bmatrix} 2.95 & 0.13 \\ 0.13 & 2.95 \end{bmatrix} - I \\ &= \begin{bmatrix} 0.85 & 0.03 \\ 0.03 & 0.85 \end{bmatrix} - I. \\ c &= 1.70. \end{aligned}$$

The eigenvalues are both negative, and the joint mean should be a LNE. The coefficient  $c$  is less than the crucial value of 2.0. Simulation of this model found that the joint mean was an LNE for this model.

We also simulated a local Nash equilibrium for the joint spatial voting model, as in Fig. 9.2. This LNE was given by

$$\mathbf{z}^{el} = \begin{bmatrix} \text{Party} & ER & CPRF & LRPR & SR \\ x & +0.0 & -0.6 & +0.0 & +0.0 \\ y & +0.0 & -1.0 & +1.0 & -1.0 \end{bmatrix}.$$

The computed equilibrium vector is different both from the joint mean and from the observed positions. Using the balance results of the formal model theorem, we infer that

$$\begin{aligned}
 \mathbf{z}^* - \mathbf{z}^{el} &= \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.2 & -0.6 & +0.5 & -1.0 \\ y & +0.2 & -1.6 & -0.5 & -0.5 \end{bmatrix} \\
 &\quad - \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.0 & -0.6 & +0.0 & +0.0 \\ y & +0.0 & -1.0 & +1.0 & -1.0 \end{bmatrix} \\
 &= \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.2 & +0.0 & +0.5 & -1.0 \\ y & +0.2 & -0.6 & -1.5 & +0.5 \end{bmatrix} \\
 &= \frac{1}{2\beta} \left[ \frac{d\mu_{ER}}{dz_{ER}}, \frac{d\mu_{CPRF}}{dz_{CPRF}}, \frac{d\mu_{LDPR}}{dz_{LDPR}}, \frac{d\mu_{SR}}{dz_{SR}} \right].
 \end{aligned}$$

This last expression is the estimated gradient of activist forces on these four parties.

The approval of the Prime Minister and Cabinet did not have any significant effect on the vote. Approval of the State Duma had a small, negative and marginally significant effect on the LDPR vote; for other parties, that effect was not significant. The term for the approval of the upper house of the Russia parliament, the Federation Council, was significant only for the Fair Russia party. It was also positive, as the party leader, Segei Mironov, is also the head of that legislative body.

The magnitude of the ‘Putin effect’ on the level of support for the United Russia can be estimated by setting the approval scores equal to zero for all respondents, then re-estimating the probabilities of voting according to the four-party model with the full set of explanatory variables. The expected voteshares for each party by can be obtained by averaging the estimated probabilities for each party across all respondents in the four-party sample. (See Table 9.10).<sup>3</sup>

One can see that the high approval of President Putin affected the support for the United Russia to a very large extent. In the original four-party subsample, 72% of the votes went to that party. If the approval for Putin uniformly decreased to 0.5 (equivalent to a “don’t know” answer to the question whether the respondent approved of Putin), the support for the United Russia would decline to 61%. If everyone completely disapproved of Putin, United Russia would receive only 43% of the vote that went to the four parties, or only 27% of the popular vote, if we assume that the share of the abstaining or undecided voters, as well as the vote share of the small parties, remained constant. The main beneficiaries of the decrease in approval would be the Communist party and LDPR, with more modest gains by SR.

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<sup>3</sup>Conveniently, the expected voteshares for the unaltered subsample are equal to the actual voteshares in that subsample. This is a very nice property of Logit models of multinomial choice.

Thus this work corroborates what has been common knowledge: the popularity of the United Russia was due to the high approval rating of Vladimir Putin, and to the party's perceived connection to the popular president.

The respondents who supported parties other than the United Russia also had lower internal efficacy scores. One can see that an increase in one's efficacy score will increase her probability of supporting United Russia, at the expense of all other parties for the four-party model, where all three efficacy terms are negative and significant. For the seven-party model, the efficacy terms for the three small parties are not significant.

Education was found to have no effect on the political preferences of the voters. For all models, the education terms were individually insignificant, with the exception for SPS, where it was significant at 10% level. Education was the only significant individual nonpolicy factor found to affect the voter's latent utility for SPS. A voter with a higher education is more likely to support SPS, at the expense of all other parties.

The income effect is significant only for the LDPR. A voter with a lower perceived income will be more likely to support LDPR. The effect is quite large in magnitude. An decrease in self-reported income by one level (from "medium" to "high", for example) will have approximately the same effect on the voter's likelihood to support LDPR as a change in approval from maximum to minimum.

Gender was the one of the most important factors that affected party preferences. Out of 67 LDPR supporters in the sample, 55 were males. The United Russia had slightly more female supporters (414 out of 726), while the Communist party and the SR has an equal number of male and female supporters. When controlling for all other factors, male voters are more likely to support the Communist Party and especially LDPR at the expense of the SR and the United Russia. For the extended dataset including the supporters of the three small parties, female voters were more likely to support Yabloko and equally likely to support either SPS or the Agrarian party.

Age was also found to have a significant effect for almost all parties. The effect (relative to the United Russia) was largest for the CPRF. Indeed, the average age of CPRF supporters was 59. This finding suggests that the factors that make CPRF more popular among the older population are not captured by either ideological preferences, the approval of government, or internal efficacy. The high age of CPRF supporters also explains the gender bias: in 2006, the average life expectancy of Russian males was only 60.3 years compared for 73.2 years for females. The age effect for the SR was similar (with the average age of the supporters being 54.9 years). For LDPR, the age effect was negative and significant; at the average age of 36.8 the LDPR electorate was the youngest from among the seven parties in the large sample. The age effect for SPS was positive and marginally significant.<sup>4</sup>

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<sup>4</sup>Mishler and Rose (2007) found that age and generational differences were significant factors that determined an individual's support of the current political regime.

The final sociodemographic factor that we studied was whether the respondent lived in a rural or urban area. There were no rural residents among Yabloko supporters and only one among the SPS. The proportion of rural residents among the CPRF, United Russia, SR supporters, and the general population, was almost equal (30, 28.5, 29.5, and 30%, respectively). As a result, rural coefficients for neither CPRF or SR were significant. This corroborates the claim that the Communist Party lost the support of rural voters (Wergen and Konitzer 2006). The only party to have a significantly smaller proportion of rural voters was the LDPR (23.8%).

Tables 9.11 and 9.12 examine the effects of ideology on the voter's probability of supporting each of the four major parties for the four-party model. The analysis suggests that poorly educated, low-income, young females who approve of the federal government and have centrist ideology, are most likely to support United Russia, with probability 96% according to the model. The most likely supporters of LDPR are young urban men with above average income, who disapprove of the government, have low efficacy scores, profess liberal economic ideology and are dissatisfied. The most likely supporters of CPRF and SR are dissatisfied elderly males with below-average income who disapprove of the government, have low efficacy scores, and have anti-market economic views. A voter belonging to this group is expected to support CPRF with a probability of 48% and SR with a probability of 22%.

### 9.1.2 Discussion

A number of other model specifications were tried. First, we tested the hypothesis that certain factors – such as the willingness to discuss politics, education, or internal efficacy – can affect the importance of ideology in an individual's evaluation of a political party. The importance of ideology was found to be unaffected by any of these variables, in contrast to some previous studies.<sup>5</sup>

Second, we considered the possibility of regional economic conditions affecting the vote.<sup>6</sup> The survey did not contain questions on retrospective self-evaluation of economic conditions, either in the short or long term. As a substitute we used two measures of actual economic conditions: the absolute level of mean disposable income, and the percentage change in that level from 2000 to 2006. We found two statistically significant effects. First, the support for the Communist party was higher in the regions with lower economic growth. Second, the support for Fair Russia is higher in the regions with the higher absolute income. However, the magnitude of either effect is small compared to the effects of either approval or internal efficacy.

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<sup>5</sup>Zakharov and Fantazzini (2008) found that education significantly increased the weight of ideology for UK and Netherlands. See also the work by Fantazzini and Zakharov (2011).

<sup>6</sup>See Owen and Tucker (2008) for economic voting in Poland.



There were several reasons why we used only the first two ideological factors. First, the eigenvalues for the first two factors were much higher than for the subsequent factors. Second, it was not possible to give a transparent interpretation to the subsequent factors. Finally, the inclusion of additional factors did not improve the fit of the model. The log likelihood was 768.5 for zero factors, 760 for 1 factor, 721 for 2 factors, 714 for three factors, and 712 for four factors.

The work does not control for several other factors that affected voter preferences. Most importantly, the parties' access to local mass media outlets, and the degree to which the law is selectively applied in favor of United Russia, vary across regions; such regional factors are not captured.

Certainly, neither media bias (White et al. 2001) nor vote-rigging (Myagkov et al. 2005), can be overlooked as factors that contributed to the success of United Russia at the December 2007 election. However, this consideration does not alter this chapter's key message. The analysis here shows that the principal role was played by the high approval rating of President Putin. Although this work does not examine the origins of Putin's popularity, most accounts, scholarly or otherwise, suggest that the country's economic performance was its primary source.

### *9.1.3 Concluding Remarks on the Russian Election*

This section has attempted to apply a formal model of elections as a contribution to the growing literature on quantitative voter research on newly democratic countries such as Russia.<sup>7</sup> We show here that such empirical models can be interpreted in terms of a formal stochastic model. The analysis shows that any centripetal tendency towards an electoral center is relatively weak. Moreover, perceptions of voters about the quality of institutions and leaders plays a significant role in the electoral outcome. Indeed, the electoral approval of President Putin tended to be the single most important factor affecting the voter's choice in favor of United Russia.<sup>8</sup>

## **9.2 Georgian Politics and the Presidential Election 2008**

The Caucasus is a land of many nationalities, languages and ethnic antagonisms.<sup>9</sup> These deep social divisions shaped the de-facto and de-jure frontiers of the emerging independent states of the region immediately after the dissolution of Soviet Union.

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<sup>7</sup>See Fidrmuk (2000a,b), Hesli and Bashkirova (2001), Mishler and Willerton (2003), Colton and Hale (2008).

<sup>8</sup>Putin's popularity has been sustained for a number of years. See Andrew Harding, "Why is Putin Popular?", BBC News (8 March 2000). <<http://news.bbc.co.uk/1/hi/world/europe/669247.stm>>.

<sup>9</sup>This section on Georgia is written in collaboration with Marina Muskhelishvili and JeeSeon Jeon.

The sharpest and the most violent division was the Nagorno–Karabakh separatist war between Armenia and Azerbaijan, which lasted from 1988 to 1994 and cost many hundreds of thousands of casualties. Other violent military conflicts were triggered in Georgia, where Abkhaz and Ossetia separatism conflicted with the Georgian National Independence Movement.

Nation building and territorial conflicts were only part of the complicated political agenda of the region. Liberation from the Soviet rule induced a deep institutional shock that encompassed all spheres of the political system. Countries of the region had to reform almost all aspects of social activity as the Soviet model of social arrangement collapsed. As the crisis was systemic and the new arrangements could not evolve from the old one, it required the creation of a new paradigm. One was provided by the logic of neoliberal globalization and “democratization”.

Besides the challenges of nation building, and the transformation of the political and economic systems, the societies of the region experienced a culture shock. All aspects of culture, including knowledge and symbols, patterns and norms of social arrangement, values and perceptions started to change dramatically. A majoritarian democracy, with political competition through free multiparty elections, was considered to be the main institution through which all these controversies could be transformed into governance.

Given the political agenda, elections in Georgia were not simply a matter of elite competition as an instrument of governmental policy change. Instead elections were required to legitimate the shift of power and to stabilize mass beliefs.

From the time of Perestroika to the present, Georgia has experienced three major changes of government, each of which was preceded by mass mobilization and unrest.

The first was the shift of power from the Communist party to the Round Table – Free Georgia block (headed by Gamsakhurdia) in 1990.

The second was the shift of power from Gamsakhurdia to Eduard Shevardnadze, through the interim government in 1992.<sup>10</sup> After the first post-Soviet Georgian constitution established a presidential democratic republic, Shevardnadze was elected as a president in November 1995, with 70% of the vote. He won a second term in April 2000.

In 2003 Shevardnadze resigned under the pressure of mass protests, and in the third shift of the November 2003 “Rose Revolution” Mikheil Saakashvili, leader of the United National Movement Party, took 96% of the vote, becoming president on 25 January 2004.

Each of these transfers of power was radical in a sense that it changed not only the ruling elite, but also the dominant trend of political development.

National liberation stances were dominant after the politics of Glasnost and Perestroika allowed for the political involvement of the population. These stances dominated the Supreme Council elections of 1990, where Gamsakhurdia defeated the Communist Party. In 1991, Gamsakhurdia declared independence for Georgia,

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<sup>10</sup>Shevardnadze had been baptized into the Georgian orthodox church in 1991.

but he failed, however, to incorporate the agenda of liberal and democratic transformation and to gain support from the ethnic minorities as well as from the democratic opposition.

As a result, the regime was confronted with a new wave of protests. In January 1992, a coup d'état forced Gamsakhurdia to flee from Georgia, and Shevardnadze was invited back to the country from Moscow, in order to halt the collapse into total civil war. Shevardnadze was appointed acting chairman of the Georgian State Council in March 1992, and was elected as the head of state in the first post-soviet multiparty elections.

By late 1993, struggles over issues of Abkhazian and Ossetian separatism developed into a fully-fledged civil war. In 1993, Georgian troops were defeated in their attempt to restore control over the breakaway regions, "Ethnic cleansing" caused 200,000 Georgians to flee from the Abkhaz and Tskhinvali territories. By 1995 the period of civil war was over.

The constitution of 1995, as well as the basic economic reforms of 1994–1996 (including the introduction of a national currency, privatization, and structural adjustment in line with the Washington consensus) together established the fundamental framework for social, political and economic activities. However, there remained a serious gap between formal arrangements and informal practices.

Despite the declared pro-democratic and pro-western stance of the Shevardnadze regime, this was a hybrid system that existed until the end of his rule in 2003. On the one hand, Shevardnadze did not restrict freedom of society and allowed the emergence of new political and economic relations. On the other hand, he would not accept major changes within the state and government structures. The greater the demand for change, the more conservative he tended to become. As a result, corruption penetrated all spheres of life and distrust deepened against the state institutions.

The almost unanimous discontent with the conservative, weak and corrupt executive power of the regime overshadowed all other possible political divisions, and unified the opposition to Shevardnadze. The agenda of further democratization became dominant, promoted by the oppositional TV Rustavi2, which supported the "reformers" among the ruling elite – Zurab Jvania and Mikheil Saakashvili. The people eventually mobilized against Shevardnadze, and, in the November 2003 bloodless "Rose Revolution," forced him to resign. Saakashvili became the unchallenged leader of the mass protest movement, taking 96% of the vote for president, and becoming president on 25 January 2004.

[Welt \(2010\)](#) comments that

Georgia's Rose Revolution stemmed from Georgians' discontent with an ineffective, criminalized, and corrupt ruling regime. Georgia's ruling party was not only unpopular before the 2003 election, but also weak.

This time the country found new leadership, composed of a young energetic generation of risk-taking activists who opted for a quick political changes. Slow, piecemeal and negotiations-based decision-making, typical for the democratic process, contradicted their perception of themselves as a vanguard of pro-western

development. Rule of law, civil and political rights, together with constitutional checks and balances, were supposed to be the norm, but in fact were subject to manipulation and were sometimes clearly violated.

For the leaders of the revolution, for the National Movement, democracy was important, as much as democracy was the identity marker of becoming part of the West. In this sense, democracy was an external attribute, a self-declared ideology that aligned Georgia with the West, rather than a certain political practice concerning the organization of the political sphere through competitive elections, and other internal attributes of democratic performance. (Cheterian 2008)

In 2004, Saakashvili established an armed presence in the disputed regions of South Ossetia and Abkhazia.

The change of the constitution in 2004, a decrease in the freedom of the media, as well as cases of the redistribution of property and other violations of the law, marked a growing gap between the pro-western stance of governmental policies and the de facto concentration of power in the hands of a small elite who seemed above the law.

The incompatibility of the pro-western orientation and non-democratic practices split society into two poles. The government promoted its agenda of externally oriented policies, including integration into NATO, arguing that this required strong leadership. The opposition insisted on the agenda of democracy and rule of law, demanding greater equality.

The split of public opinion into two poles could be interpreted as a normal political struggle between those who supported a “western integration” agenda against those who opted for “democracy and rule of law,” were it not for the illiberal environment in which the split occurred. Moreover, this split induced a change in attitude towards the US

At one time, pro-American feeling was nearly universal in Georgia. This has begun to somewhat change – as manifested by protests in front of the US Embassy and increasing charges levied by the opposition that the United States has chosen to support Saakashvili rather than democracy. (Mitchell 2008)

Each of these two poles had the support of different media outlets, particularly TV channels. Saakashvili controlled Rustavi2, formerly for the opposition, but by this time pro-government. The opposition depended on Imedi, owned by Patarkatsishvili.

Television is the main source of political information and opinion formation in Georgia, as almost everywhere. Even in a very liberal and apolitical environment, television, by its very nature, is an agenda-setting institution: it sequences, frames and contextualizes information. When this medium is not free, as in Georgia, then this tool may be used in a very goal-oriented way, creating a biased picture of political reality.

The two opposed TV channels, Rustavi2 and Imedi, now had two very different views of politics. By the Fall of 2007, the governing elite and the leaders of the opposition appeared on their own channels, and seem to ignore each other. The resulting split within society became extremely polarized.

**Table 9.4** Georgian Presidential election 2008

Candidate	Party	Voteshare
Saakashvili	United National Movement	53.5
Gachechiladze	Opposition coalition	25.7
Patarkatsishvili	Media tycoon	7.1
Natelashvili	Georgian Labor Party	6.5
Gamkrelidze	New Right	4.0
Maisashvili	Party of the Future	0.7
Sarishvili-Chanturia	Hope party	0.2
Repeated ballots		1.7
Invalid ballots		0.6
Total		100

There are two realities in Georgia today – one seen by Saakashvili supporters and the other by the opposition and more apolitical members of society” (Sumbadze 2009).

This split in society, in which two versions of possible development existed simultaneously but separately, was a novelty for Georgia, and dominated the election of 5 January 2008. A series of anti-government demonstrations had led to clashes between police and demonstrators in the streets of Tbilisi on 7 November 2007, and a declaration of a state of emergency. The oppositional TV channel Imedi was closed and its equipment partly destroyed by the police. These events led to harsh criticism of the Saakashvili government by the Human Rights Watch for using “excessive” force against protesters. The International Crisis Group warned of growing authoritarianism.

Nonetheless, the presidential election on 5 January 2008 gave Saakashvili 53.5% of the vote, as shown in Table 9.4.

Muskhelishvili et al. (2009) commented that the election result

created suspicion, since cases of stuffing ballots ... were registered in many precincts... Being unable to either change the regime or improve its quality through elections the opposition movement gradually lost momentum. The main opposition parties refused to consider these results legitimate. Because...a large share of society welcomed this refusal by participating in mass post-electoral protest demonstrations, the political crisis of 2007 was not resolved by the [Presidential and Parliamentary] elections of 2008.

In August 2008, a series of clashes between Georgian and South Ossetian forces resulted in Saakashvili ordering an attack on the town of Tskhinvali. In response, the Russian army invaded South Ossetia, followed later by the invasion of other parts of Georgia. Eventually there was a cease fire agreement, and on 26 August the Russian president, Dmitry Medvedev, signed a decree recognizing Abkhazia and South Ossetia as independent states. On August 29, 2008, in response to Russia’s recognition of Abkhazia and South Ossetia, Georgia broke off diplomatic relations with Russia.

Opposition against Saakashvili intensified in 2009, when there were mass demonstrations against him. The next presidential election is planned for 2013. In preparation, on October 15, 2010, the Parliament approved, by 112 to 5, a

**Table 9.5** Sample vote shares among the four candidates in Georgia

Candidate	Vote	%
Saakashvili	252	63.2
Gachechiladze	85	21.3
Patarkatsishvili	39	9.8
Natelashvili	23	5.8
Total	399	100

constitutional amendment that increased the power of the prime minister over that of the president. It was thought that this was a device to allow Saakashvili to take on the role of prime minister in 2013, just as Putin had done in Russia.<sup>11</sup>

We now use the formal election model in an attempt to understand the nature of politics in Georgia.

The survey questions are given in the Appendices, in Table 9.14.<sup>12</sup> Table 9.15 gives the factor loadings. The first factor dimension is strongly related with the respondents’ attitude toward the US, EU and NATO. Those who have favorable opinion toward the United States, European Union and NATO have smaller values in this dimension. Thus, a larger value in the *West* dimension means stronger anti-western attitude. The other dimension is related with respondents’ judgment about current democratic environment in Georgia. Larger values in the *democracy* dimension are associated with negative judgment about the current state of democratic institutions in Georgia, and a demand for a greater democracy.

The covariance matrix is:

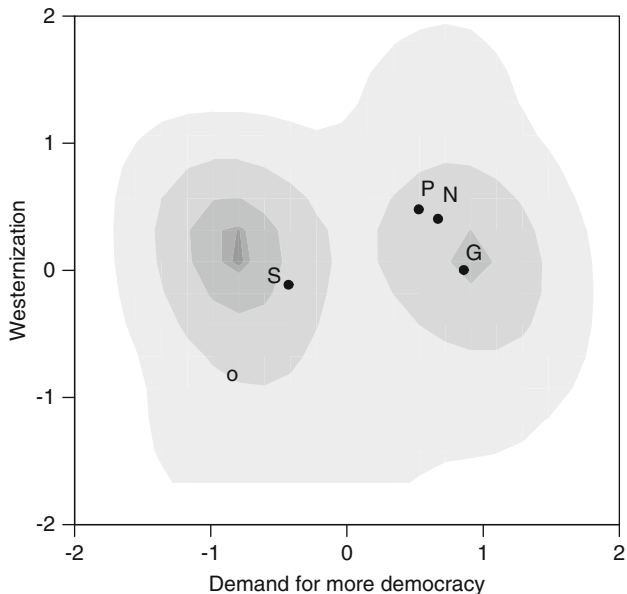
$$\nabla_0 = \begin{bmatrix} & Democracy & West \\ Democracy & 0.83 & 0.05 \\ West & 0.05 & 0.87 \end{bmatrix}$$

The voter distribution is displayed in Fig. 9.3. The points (S,G,P,N) represents estimated candidate positions, corresponding to Saakashvili (S), Gachechiladze (G), Patarkatsishvili (P), Natelashvili (N). Since there was no other information that can be used to estimate party position we used the mean value of the factor scores of those voters who voted for each candidate. The estimated party positions were:

$$\mathbf{z}^* = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.43 & 0.86 & 0.53 & 0.67 \\ West & -0.11 & 0.00 & 0.48 & 0.41 \end{bmatrix}$$

<sup>11</sup>See [Bunce and Wolchik \(2010\)](#) for a general discussion of the wave of democratic change that has occurred in the last 20 years in post-Soviet countries, sometimes leading from autocracy to democracy and then back again.

<sup>12</sup>We thank Merab Pachulia, Director of GORBI, Tbilisi, Georgia for making the data for the 2008 election in Georgia available to us.



**Fig. 9.3** Voter distribution and candidate positions in Georgia in 2008

Since the three opposition candidates are supported by voters who have similar negative judgments about democracy in Georgia, Fig. 9.3 takes the democracy axis as the x-axis and attitudes to the west as the y-axis. The pure spatial model gives

$$\lambda_S = 2.48, \lambda_G = 1.34, \lambda_P = 0.51, \lambda_N \equiv 0.0$$

$$\beta = 0.78.$$

Given these coefficients, the probability that a typical voter chooses Natelashvili when all parties locate at the mean is:

$$\rho_N = \frac{\exp[\lambda_N]}{\sum_{k=1}^4 \exp[\lambda_j]} = \frac{e^0}{e^0 + e^{0.51} + e^{1.34} + e^{2.48}} \simeq 0.05,$$

and  $(\rho_S, \rho_G, \rho_P, \rho_N) = (0.65, 0.21, 0.09, 0.05)$

Thus, since  $2\beta(1 - 2\rho_n) = 2 \times 0.78 \times 0.9 = 1.4$ , we use the formula to obtain the characteristic matrix of Natelashvili,

$$C_N = (1.4) \begin{bmatrix} 0.83 & 0.05 \\ 0.05 & 0.87 \end{bmatrix} - I = \begin{bmatrix} 1.17 & 0.07 \\ 0.07 & 1.22 \end{bmatrix} - I$$

$$= \begin{bmatrix} 0.17 & 0.07 \\ 0.07 & 0.22 \end{bmatrix}.$$

**Table 9.6** Pure spatial model for Georgia (Natelashvili as baseline)

	Coef.	Std. Error	t  stat
$\beta$	0.78***	0.07	11.15
$\lambda_S$	2.48***	0.24	10.41
$\lambda_G$	1.34***	0.24	5.59
$\lambda_P$	0.51	0.26	1.94
$n$	388		
Log-likelihood	-305		

\*\*\* *prob* < 0.001

Both eigenvalues are positive and

$$c \equiv c(\lambda, \beta) = 1.4 \times 1.7 = 2.39.$$

Thus the joint mean gives a minimum for Natelashvili.

Table 9.15 in the Appendix gives the results of the spatial sociodemographic model. Only gender has a statistically significant effect, with women in favor of Saakashvili. Age, education, and financial situation are not significant.

To estimate local Nash equilibrium, we simulated the model by estimating each candidates best response to the given positions in Fig. 9.3, obtaining

$$\begin{bmatrix} & S & G & P & N \\ Democracy & 0.26 & 0.44 & 0.42 & 0.40 \\ West & 0.08 & 0.01 & 0.65 & 1.06 \end{bmatrix}.$$

Reiterating this procedure, starting with Saakashvili, and taking the best response in turn of each candidate until no party can increase vote share further, we end up with the local Nash equilibrium

$$\mathbf{z}^{el} = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.01 & 0.08 & -0.52 & 0.38 \\ West & -0.03 & -0.15 & -0.23 & 1.00 \end{bmatrix}.$$

Figure 9.4 gives the estimated equilibrium positions. As expected, the high valence candidate, Saakashvili, has an equilibrium position very near the mean, followed by Gachechiladze, followed by Patarkatsishevili, with Natelashvili furthest away. The difference between these two estimates is:

$$\mathbf{z}^* - \mathbf{z}^{el} = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.43 & 0.86 & 0.53 & 0.67 \\ West & -0.11 & 0.00 & 0.48 & 0.41 \end{bmatrix} - \begin{bmatrix} & S & G & P & N \\ Democracy & -0.01 & 0.08 & -0.52 & 0.38 \\ West & -0.03 & -0.15 & -0.23 & 1.00 \end{bmatrix}$$



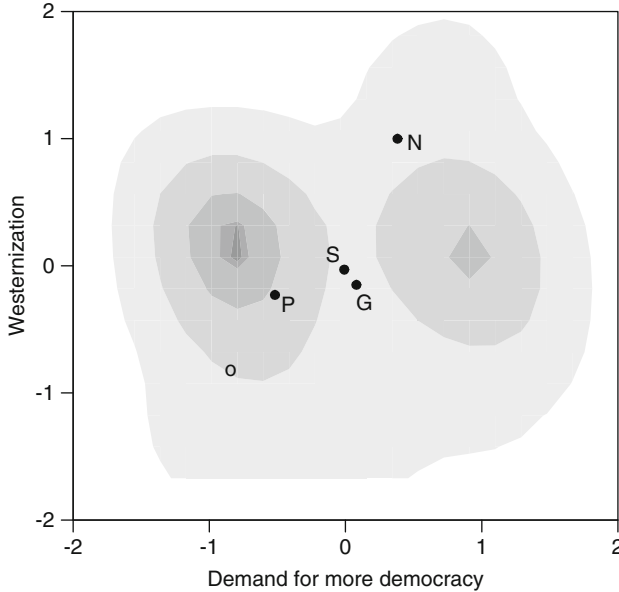


Fig. 9.4 Estimated local equilibrium positions

$$= \begin{bmatrix} & S & G & P & N \\ Democracy & -0.42 & 0.78 & 1.05 & 0.29 \\ West & -0.8 & -0.05 & 0.71 & -0.59 \end{bmatrix}.$$

We infer that activists pull Saakashvili to the lower left while the other candidates respond to their activists in demanding more democracy.

### 9.3 The Election in Azerbaijan in 2010

In the 2010 election in Azerbaijan, 2,500 candidates filed application to run in the election, but only 690 were given permission by the electoral commission.<sup>13</sup>

The parties that competed in the election were the Yeni Azerbaijan Party (governing party), Civic Solidarity Party, Motherland Party, and Musavat.

Many national and foreign experts expect no major improvement in the conduct of these elections. No elections after 1992 has been fully in accordance with national and international democratic standards. So far Azerbaijan has been convicted twice

<sup>13</sup>This section on Azerbaijan is written in collaboration with JeeSeon Jeon.

of election fraud during the 2005 parliamentary elections by the European Court of Human Rights in Strasbourg. More cases are expected to be decided soon. The pre-election atmosphere was tense with the media complaining of pressure and hidden financial transactions by state officials.

The opposition alleged irregularities, and Musavat declared that the election was illegitimate. It also accused the West of not criticizing the regime because of Azerbaijan's geostrategic location. President Aliyev, however, rejected the criticisms claiming the election "conformed to European standards."

President Ilham Aliyev's ruling Yeni Azerbaijan Party got a majority of 72 out of 125 seats. Nominally independent candidates, who were aligned with the government, received 38 seats, and 10 small opposition or quasi-opposition parties got the remaining 13 seats. Civic Solidarity retained its 3 seats, and Ana Vaten kept the 2 seats they had in the previous legislature; the Democratic Reforms party, Great Creation, the Movement for National Rebirth, Umid, Civic Unity, Civic Welfare, Adalet (Justice), and the Popular Front of United Azerbaijan, most of which were represented in the previous parliament, won one seat a piece. For the first time, not a single candidate from the main right-wing opposition Azerbaijan Popular Front (AHCP) or Musavat was elected.

The Central Election Commission said turnout was 50.1%, out of a total 4.9 million people eligible to vote. Opposition leaders suggested the low turnout was due to candidate disqualifications by the CEC, and consequent discouragements to vote after their choice of candidate was excluded.

Table 9.7 gives the election results and Table 9.17 in the Appendix gives the survey questions.<sup>14</sup>

Our analysis relies on the pre-election surveys conducted by the International Center for Social Research (ICSR), Baku, Azerbaijan. The survey data include questionnaires about respondents' evaluation on the democratic situation, political institutions, and economic situation in Azerbaijan, as well as voting intention. The number of respondents in the original data set is 1,002. The final number of observation used in this analysis was 149 for three reasons. First, a large number of respondents (636) are abstainers (those who answered that they would not vote). Thus there is no available information on their party preference. Second, among the remainder are 138 are independent voters (those who answered that they would vote for independent candidates) and 53 who reported that they intend to vote for the parties other than YAP, VHP, AVP, AXCP and MP. Among the remaining 173 cases, only 160 had completed the factor analysis questions. The number of each party's voters are (YAP, VHP, AVP, AXCP-MP) = (113, 7, 4, 36).<sup>15</sup> In the cases of VHP and AVP, the estimation of party positions was too sensitive to inclusion or exclusion of

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<sup>14</sup>We thank Rauf Garagozov, Leading Research Fellow, International Center for Social Research (ICSR), Institute of Strategic Studies of the Caucasus, Baku, Azerbaijan. He and his colleagues, Tair Faradov and Rajab Sattarov of ICSR carried out the survey in Azerbaijan.

<sup>15</sup>Because of the survey design, AXCP and MP were not differentiated and are regarded as one party block. See question wording in the Appendix for vote choice.

**Table 9.7** Summary of the 7 November 2010 National Assembly of Azerbaijan election results

Party	Votes	Seats
Yeni Azerbaijan Party (YAP)	1,104,528 (45.8%)	72
Civic Solidarity Party (VHP)	37,994(1.6%)	3
Motherland Party (AVP)	32,935 (1.4%)	2
Equality Party (MP)	42,551 (1.8%)	–
Azerbaijani Popular Front Party (AXCP)	31,068 (1.3%)	–
Independents	1,160,053 (48.2%)	48
Of which supported government		(38)
Opposition*		(10)
Total turnout (50.1%)	2,409,129	125

\* Opposition Parties and seats:

1-Democratic Reforms party

1-Great Creation

1-The Movement for National Rebirth

1-Umid

1-Civic Welfare

1-Adalet (Justice)

1-The Popular Front of United Azerbaijan

The names of the other parties are:

Yeni Azerbaijan Party (Yeni Azərbaycan Partiyası)

Civic Solidarity Party (Vətəndaş Həmrəyliyi Partiyası)

Motherland Party (Ana Vətən Partiyası)

Equality Party (Müsavat Partiyası)

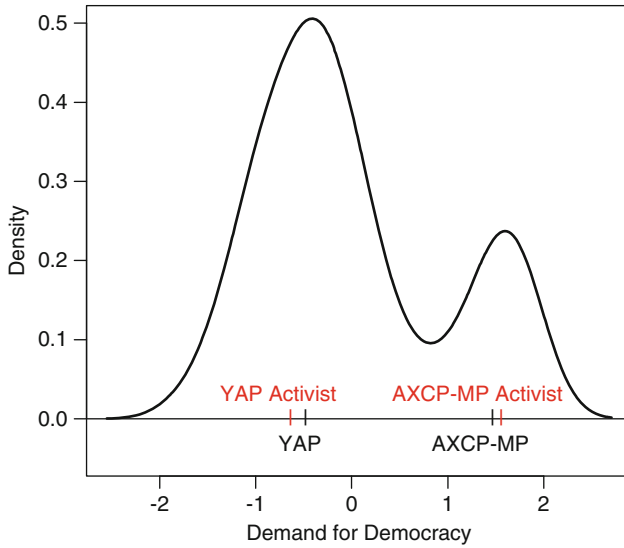
Azerbaijani Popular Front Party (Azərbaycan Xalq Cəbhəsi Partiyası)

one respondent. We used only a small subset of voters (149) who completed the factor analysis questions and intended to vote for YAP or AXCP-MP.

Table 9.18 gives the one-dimensional factor model. Larger values of the resultant factor score was associated with negative evaluation of the current democratic state in Azerbaijan. Specifically, the respondents with larger values tended to be dissatisfied with the current Azerbaijan democracy, did not think that free opinion is allowed, had a low degree of trust in key national political institutions, and expected that the 2010 parliamentary election would be undemocratic. This dimension is called “Demand for democracy.” Figure 9.5 displays the distribution of respondents along the dimension (left panel). The electoral variance is 0.93. Figure 9.5 also shows the estimated party positions (where party positions were estimated by the mean of the party voters’ score). The party positions were estimated to be

$$(YAP, AXCP-MP) = (-0.47, 1.48).$$

We considered voters who evaluated themselves as a supporter of a party as activists. The activist means for the two parties are located at  $(-0.63, 1.57)$ . The number of activists for YAP and AXCP-MP is 48 and 19, respectively. The activist positions are also shown in Fig. 9.5.



**Fig. 9.5** Voter distribution and activist positions in Azerbaijan in 2010

Table 9.12(i) presents the pure spatial binomial logit model while Table 9.12(ii) gives the spatial sociodemographic model. In the first model,  $\beta = 1.34$  and  $(\lambda_{YAP}, \lambda_{AXCP-MP}) = (1.30, 0)$ . None of the sociodemographic variables are statistically significant.<sup>16</sup>

We can then calculate that  $(\rho_{yap}, \rho_{axcp-mp}) = (0.79, 0.21)$ <sup>17</sup> and,

$$\begin{aligned} c &= 2\beta(1 - 2\rho_{axcp-mp}) \cdot \text{variance} - 1 \\ &= 2 \cdot (1.34) \cdot (1 - 2 \cdot 0.21) \cdot 0.93 - 1 \\ &= 0.44. \end{aligned}$$

Since the single eigenvalue is positive, we expect divergence away from the mean by all parties for the pure spatial model. As before, we infer that the activists pull the two parties further away from the mean. This model is only one-dimensional, so the result is not quite compatible with the analysis of Georgia. However, if the model were two-dimensional, and symmetric in the sense that voter variance were

<sup>16</sup>The variable ‘city’ is a binary variable indicating whether the respondent resides in city area or not. The category 1,2 and 3 in the question ‘type of location’ are coded as city, and 4 and 5 are coded as non-city residents.

<sup>17</sup>Among the two parties, the sample voteshare is (0.76, 0.21).

0.93 on each axis, then the convergence coefficient would be  $c = 2.89$ , very similar to the result for Georgia.

We comment on the results in this chapter, in comparison with other polities, in Sect. 10.3 in Chap. 10.

## Appendices

### *Appendix 1. Tables for Russia*

Question Wording for the Russian Election

**Age.** What is your age in full years?

**Education.** “What is your education? 1 – Primary education or below, 2 – Incomplete secondary education, 3 – Secondary education, 4 – Vocational school, 5 – Less than 4 years of higher education, 6 – 4 or more years of higher education.” Those who responded “Don’t know” were assigned the value of 3.5.

The variable `education` was obtained as follows:  $(\text{response}-1) \times 0.2$

**Income.** “To which income group does your family belong? 1 – Cannot afford to buy food, 2 – Can afford food but cannot afford clothing, 3 – Can afford clothing but not durable goods, 4 – Can afford all durable goods but cannot afford real estate, 5 – Can afford real estate.” For the variable `income`, those who responded “Don’t know” were assigned the value of 3.

The variable `income` was obtained as follows:  $(\text{response}-1) \times 0.25$

**Approval.** “Do you approve of A. President, B. Prime Minister, C. Government, D. State Duma, E. Federation council.” Each question was coded as follows: “1 – Yes, 2 – No, 1.5 – Can’t answer.”

Each of the approval variables was obtained as follows: 2 – response.

**Size of township.** “Where do you live? 1 – Moscow or St. Petersburg, 2 – City over 1 mln., 3 – 500 thousand to 1 mln., 5 – 100 thousand to 500 thousand, 6 – 50 thousand to 100 thousand, 7 – urban-type settlement, 8 – village.”

The variable `rural` was generated by assigning the value of 1 for “8 – village” and 0 otherwise.

**Ideological attitude.** There were two questions: “Please say if you feel positively (negatively) to each of the following concepts.” For each question, a list of 40 words was given (see Table 8.3).

**Internal efficacy.** “Do you think that the ordinary voters like you have a say in who will be in power in the future, and on the country’s future policies? 1 – Yes, a lot depends on the regular voters, 2 – A few things depend on the voters, 3 – Nothing depends on the voters, all main decisions will be made without their consent”. The “can’t answer” response was coded as 2. The variable `efficacy` was generated as  $1.5 - 0.5 \times \text{response}$ .

### *Appendix 2. Tables for Georgia*

**Table 9.8** The frequency of positive and negative responses and factor loadings in Russia

	Concept	Percent pos.	Percent neg.	Factor 1	Factor 2
01	Nation	0.21	0.08	0.11	-0.08
02	Order	0.57	0.01	-0.18	0.01
03	Freedom	0.37	0.03	-0.13	0.20
04	Market	0.10	0.15	0.26	0.08
05	Russians	0.34	0.02	-0.15	0.03
06	West	0.02	0.23	0.21	0.10
07	Socialism	0.11	0.11	-0.13	-0.28
08	Communism	0.07	0.19	0.05	-0.32
09	Democracy	0.15	0.09	0.11	0.07
10	Tradition	0.29	0.01	-0.06	-0.04
11	Patriotims	0.34	0.01	-0.14	-0.15
12	State	0.26	0.03	-0.17	-0.03
13	Competitiveness	0.05	0.07	0.07	0.12
14	Sovereignty	0.07	0.05	-0.08	0.01
15	Elite	0.02	0.41	0.30	0.04
16	Party	0.02	0.16	0.04	-0.14
17	Power	0.09	0.18	0.26	-0.09
18	Justice	0.49	0.02	-0.30	0.02
19	Opposition	0.01	0.17	0.12	-0.06
20	Business	0.07	0.13	0.17	0.27
21	USSR	0.12	0.08	-0.01	-0.34
22	Church	0.21	0.02	-0.13	-0.01
23	Revolution	0.01	0.22	0.13	-0.26
24	Property	0.14	0.04	0.13	0.14
25	Success	0.31	0.00	-0.16	0.21
26	Liberalism	0.01	0.14	0.15	-0.01
27	Reform	0.06	0.14	0.23	-0.02
28	Stability	0.38	0.00	-0.16	0.00
29	Labor	0.31	0.00	-0.26	-0.08
30	Individualism	0.02	0.12	0.05	0.10
31	Non-Russians	0.02	0.29	0.25	-0.12
32	Equality	0.18	0.02	-0.18	-0.06
33	Collectivism	0.06	0.09	0.02	-0.22
34	Morality	0.22	0.03	-0.05	-0.07
35	Human rights	0.32	0.02	-0.15	0.12
36	Wealth	0.12	0.01	0.15	0.25
37	Russia	0.28	0.00	-0.03	0.07
38	Well-being	0.37	0.01	-0.11	0.25
39	Progress	0.21	0.01	-0.03	0.27
40	Capitalism	0.15	0.02	-0.09	0.22

**Table 9.9** The four party pure spatial model with base ER

	Coef.	Coef.	Std. Err.	t	prob >  t
	$\beta$	0.181***	0.015	12.08	0.000
CPRF	valence $\lambda$	1.971***	0.110	17.79	0.000
LDPR	valence $\lambda$	0.153	0.141	1.09	0.277
SR	valence $\lambda$	-0.404*	0.161	2.50	0.012
<i>n</i>		1004			
	log likelihood	-797			

\* prob < 0.05; \*\* prob < 0.01; \*\*\* prob < 0.001.

**Table 9.10** Predicted voteshares in the four party model, with the altered zero-approval sample

	ER	CPRF	LDPR	SR
Original sample	0.723	0.112	0.066	0.097
Neutral Putin approval	0.609	0.163	0.112	0.116
Zero Putin approval	0.430	0.253	0.194	0.121

**Table 9.11** Predicted probabilities of voting for the parties with variables gender (female), income, education rural, age, efficacy, approve set at mean values

Factor 1	Factor 1	ER	CPRF	LDPR	SR
0	0	0.861	0.042	0.019	0.076
+3.4	0	0.924	0.020	0.011	0.043
-3.4	0	0.758	0.082	0.030	0.128
0	+3.4	0.936	0.006	0.031	0.025
0	-3.4	0.609	0.202	0.009	0.178

**Table 9.12** Predicted probabilities of voting for the parties with variables gender (male), income, education rural, age, efficacy, approve set at mean values

Fact1	Fact2	ER	CPRF	LDPR	SR
0	0	0.725	0.074	0.107	0.092
+3.4	0	0.835	0.038	0.069	0.056
-3.4	0	0.577	0.131	0.151	0.139
0	+3.4	0.784	0.011	0.173	0.030
0	-3.4	0.452	0.314	0.044	0.189

**Table 9.13** Data and survey items for the Georgia election

**Data:** Post-election surveys conducted by GORBI-GALLUP International from March 19 through April 3, 2008.<sup>18</sup> In the original data set  $n = 1,000$ . Among the respondents, 745 answered that they cast a vote on the election day. In the case of listwise deletion of missing data, the number of observation is  $n = 399$ . Those 399 voters (1) cast a vote; (2) to one of the four candidates who got more than 5% of the vote; and (3) answered all the questions used in the factor analysis.

Question Wording for the Georgian Election

**Survey Items**

**[Vote choice]**

Please tell me which candidate did you vote for during the presidential elections on the 5th of January 2008? 1 Saakashvili, 2 Gachechiladze, 3 Patarkatsishevili, 4 Natelashvili, NA:NA

**[Questions used in factor analysis]**

1. In your opinion, are things in Georgia generally going in the right direction or the wrong direction?

1 Right direction; 2 Wrong direction; 9 DK/NA

(continued)

**Table 9.13** (continued)

2. In general would you say that currently democracy works in Georgia very well, rather well, rather poorly, very poorly? 1 very well, 2 rather well, 3 DK, 4 rather poorly, 5 very poorly, NA.
3. Tell me your overall opinion of USA. 1 very favorable; 2 somewhat favorable; 3 somewhat unfavorable; 4 very unfavorable; 99 NA
4. Tell me your overall opinion of EU.
5. Tell me your overall opinion of NATO.
6. How much confidence do you have that upcoming parliamentary elections will be transparent and fair? 1 great deal of confidence; 2 fair amount of confidence; 3 no much confidence; 4 no confidence at all; 9 NA

**[Sociodemographic variables]**

(SD1) Gender: male = 1, female = 2

(SD2) Age: 1 18–24; 2 25–30; 3 31–39; 4 40–50; 5 51–60; 6 60+

(SD3) Education: 1 pre-primary; 2 primary; 3 incomplete general secondary, vocational; 4 complete specialized secondary; 5 complete general secondary; 6 incomplete higher; 7 PHD, post graduate courses

(SD4) Household income (need to opened again): 1 -20; NA 8888 DK 9999

(SD4) Financial situation: 1 no money for food, 2 not for clothing, 3 not for expensive things, 4 expensive things, 5 whatever we want, 9 NA

(SD5) region: 1 Tbilisi; 2 Kakheti; 3 Shida Kartli; 4 Kvemo Kartli; 5 Samtskhe-Javakheti; 6 Adjara; 7 Guria; 8 Samegrelo; 9 Imereti/Racha/Svaneti; 10 Mtskheta-Tianeti

**Table 9.14** Factor loadings for Georgia

<i>(n = 399)</i>	<i>West</i>	<i>Dem</i>
General direction	0.12	0.77
Democracy	0.15	0.85
Next election fair	0.20	0.66
Opinion USA	0.63	0.26
Opinion EU	0.78	
Opinion NATO	0.91	0.15
Variance	0.32	0.30
Cumulative variance	0.32	0.62

**Appendix 3. Tables for Azerbaijan**



**Table 9.15** Spatial Sociodemographic Model for Georgia (Natelashvili as baseline)

		Coef	Std. Error	t  value
	$\beta$	0.82***	0.07	11.16
Saakashvili	$\lambda_S$	1.75	1.35	1.29
	Gender (female)	0.99*	0.49	2.01
	Age	0.16	0.16	0.95
	Education	-0.21	0.17	1.25
	Financial situation	0.40	0.34	1.17
Gachechiladze	$\lambda_G$	0.27	1.39	0.19
	Gender (female)	0.72	0.50	1.45
	Age	0.06	0.17	0.35
	Education	-0.15	0.17	0.87
	Financial situation	0.66	0.35	1.89
Patarkatsishevili	$\lambda_P$	0.94	1.49	0.63
	Gender (female)	1.04	0.55	1.88
	Age	-0.09	0.18	0.49
	Education	-0.25	0.19	1.30
	Financial situation	0.36	0.38	0.94
	$n$	399		
	log likelihood	-299		

\*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ .

**Table 9.16** Survey items and political blocks for the election in Azerbaijan**Survey Items:****[Vote Choice]**

[Are you going to vote for the candidate from political party/block or for the independent candidate?

1. Candidate from political party/block; 2. Independent candidate; 77, 88, 99. NA

Here is the list of political parties and blocks, which will run for coming parliamentary elections on 7 November 2010. Please tell me, which of them you would vote for?

1. Yes, for sure; 2. Very likely; 3. Likely; 4. Indifferent; 5. Not likely; 6. No, for sure; 77. NA; 88. Don't know/hard to say; 99. Refusal

**A. Blocks**

1. AXCP-MUSAVAT; 2. KARABAKH (UMID, ADP, AYDINLAR); 3. INSAN NAMINA (VIP, ALP); 4. ISLAHAT (BQP, BAXCP, ADALAT); 5. DEMOKRATIYA (VHP, ADIP)

**B. Political Parties**

1. KXCP; 2. YAP; 3. ALDP; 4. SOCIAL DEMOKRAT; 5. DADP; 6. ANA VATAN; 7. MILLI DEMOKRAT; 8. MMP; 9. AMIP

**[Activist]**

Some people think of themselves as usually being a supporter of one political party rather than another. Do you usually think of yourself as being a supporter of one particular party or not?

1. Yes (name); 2. No; 3. It is difficult to answer; 4. Refusal

(continued)

**Table 9.16** (continued)**Survey items used for Factor Analysis – Demand for democracy**

(1). Are you satisfied with the current state of democracy in Azerbaijan?

1. Fully satisfied; 2. Partially satisfied; 3. Neither satisfied nor dissatisfied; 4. Partially dissatisfied; 5. Completely dissatisfied; 88. Don't know/hard to say; 99. Refusal

(2) Would you agree with the following two statements?

[A]. Azerbaijan is more democratic now than it was 10 years ago.

[B]. People in Azerbaijan are free to express their opinions and concerns.

1. Strongly agree; 2. Agree; 3. Disagree; 4. Strongly disagree; 88. Don't know/hard to say; 99. Refusal

(3) What is the degree of your confidence towards the following institutions?

(1) Parliament (Milli Mejlis)

(2) Government (Cabinet of Ministers)

(3) President of the country

(4) Elections on different levels: 1. High; 2. Average; 3. Low; 88. Don't know/hard to say; 99. Refusal

(4) As is known, many people in our country are not politically active. To what extent do you agree or disagree with the following statements about the reason for this?

(1) Lack of freedom and Democracy: 1. Fully disagree; 2. To some extent disagree; 3. Neither agree, neither disagree; 4. To some extent agree; 5. Fully agree; 88. Don't know/hard to say; 99. Refusal

(5) Do you believe that forthcoming parliamentary elections in Azerbaijan will be really democratic (free, open, transparent and fair)? 1. Yes; 2. No; 88. Don't know/hard to say; 99. Refusal

**Sociodemographics**

Type of location: 1. Capital city; 2. Large city; 3. Small city; 4. Village; 5. Camp for IDPs

Gender: 1. male; 2. female

Age group: 1. 18–24; 2. 25–34; 3. 35–44; 4. 45–54; 5. 55–64; 6. 65+

Education: 1. Without any education; 2. Primary school; 3. Incomplete secondary; 4. Complete secondary; 5. Secondary technical; 6. Incomplete higher; 7. Higher

Household economic situation: Pick the phrase which best describes the economic situation in your family.

1. There is not enough money even for food, we have to go into debt or get help from relatives or friends.

2. There is enough money for food, but we have difficulty buying clothes.

3. There is enough money for food and clothes, but expensive durable goods such as TV or refrigerator are a problem for us.

4. We can buy durable goods from time to time, but the purchase really expensive things, such as an automobile, home, or a trip abroad, are beyond our means.

5. Nowadays we can afford many things – an automobile, home, foreign travel – in a word, we do not deny ourselves anything.

88. Don't know/hard to say.

99. Refuse.

**Table 9.17** Factor loadings for Azerbaijan

	Demand for Democracy
Q2 Democratic satisfaction	0.844
Q3A Democratic improvement	0.771
Q3B Free opinion	0.761
Q6.1 Trust Parliament	0.717
Q6.2 Trust Government	0.656
Q6.3 Trust President	0.883
Q6.5 Trust elections	0.742
Q10.1 Political inactiveness	0.709
Q29 Free election	0.774
Variance	0.584
<i>n</i>	149

**Table 9.18** Pure Spatial and Sociodemographic models for Azerbaijan

	Coef.  t-value	Coef.  t-value
Distance	1.34 *** (4.62)	1.65 *** (3.38)
$\lambda_{YAP}$	1.30 * (2.14)	-4.57 (0.99)
City		1.40 (0.94)
Gender (F)		-0.65 (0.4)
Age		-0.14 (0.15)
Education		0.65 (1.01)
Financial situation		0.90 (1.08)
<i>n</i>	149	149
log likelihood	-11	-10
McFadden $R^2$	0.86	0.88

\**prob* < 0.05, \*\*\**prob* < 0.001

# Chapter 10

## Elections in Israel and Turkey

### 10.1 Elections in Israel

#### 10.1.1 Legislative Bargaining

To model coalition behavior after an election, we assume that each party chooses a preferred position (or *ideal point*) in a *policy space*  $X$ . As before, the parties are  $P = \{1, \dots, j, \dots, p\}$ , and the vector of party ideal points is  $\mathbf{z} = (z_1, \dots, z_p)$ . After the election we denote the number of seats controlled by party,  $j$ , by  $s_j$  and let  $\mathbf{s} = (s_1, \dots, s_p)$  be the vector of parliamentary seats. We shall suppose that any coalition with more than half the seats is winning, and denote the set of winning coalitions by  $\mathbb{D}$ . This assumption can be modified without any theoretical difficulty. For each winning coalition  $M$  in  $\mathbb{D}$  there is a set of points in  $X$  such that, for any point outside the set there is some point inside the set that is preferred to the former by all members of the coalition. Furthermore, no point in the set is unanimously preferred by all coalition members to any other point in the set. This set is the Pareto set,  $\mathbb{P}(M)$ , of the coalition. If the conventional assumption is made that the preferences of the actors can be represented in terms of Euclidean distances, then this Pareto set for a coalition is simply the convex hull of the preferred positions of the member parties. (In two-dimensions, we can draw this as the area bounded by straight lines joining the ideal points of the parties and including all coalition members.) Since preferences are described by the vector,  $\mathbf{z}$ , we can denote this as  $\text{Pareto}(M, \mathbf{z})$ . Now consider the intersection of these compromise sets for all winning coalitions. If this intersection is non-empty, then it is a set called the *core* of  $\mathbb{D}$  at  $\mathbf{z}$ , written  $\mathbb{C}(\mathbb{D}, \mathbf{z})$ . At a point in  $\mathbb{C}(\mathbb{D}, \mathbf{z})$  no coalition can propose an alternative policy point that is unanimously preferred by every member of some winning coalition.

In general,  $\mathbb{C}(\mathbb{D}, \mathbf{z})$  will be at the preferred point of one party. The analysis of McKelvey and Schofield (1987) obtained pivotal symmetry conditions that are necessary at a core point. Clearly a necessary and sufficient condition for point  $x$  to be in  $\mathbb{C}(\mathbb{D}, \mathbf{z})$  is that  $x$  is in the Pareto set of every minimal winning

**Table 10.1** Seats in the Knesset

Party	1988	1992	1996	1999	2003	2006	2009
Left (ADL, Arab, Hadash)	14	5	9	10	9	10	11
Meretz		12	9	10	6	5	3
Labor (LAB)	39	44	34	28	21	19	13
Center (Olim, Geshet, Shinui)	2	8	11	18	15	7	–
Center (Kadima)						29	28
Likud	40	32	30	19	40	12	27
SHAS, Yahadut	15	10	14	22	16	12 + 6	11 + 5
NRP, Mafdal	5	6	9	5	6	9	4 + 3
Moledet (MO), Techiya (TY), etc	5	3	2	8	7	11	15
Total	120	120	120	120	120	120	120

coalition. The symmetry conditions depend on certain subgroups called pivot groups. Alternatively, we can determine all median lines given by the pair  $(\mathbb{D}, \mathbf{z})$ .

As discussed in Chaps. 7 and 8, for a spatial voting game in a legislature, if the median lines do not intersect then the core is empty. However, in this case, the set bounded by these median lines is called the “heart”, and denoted  $\mathbb{H}(\mathbb{D}, \mathbf{z})$ . By definition, even though the core may be empty, the heart is always non empty. Moreover, when the core is non-empty, then the core and the heart coincide.

To illustrate these conditions, consider the configuration of party strengths after the election of 1992 in Israel. (The election results in Israel for the period 1988–2009 are given in Table 10.1). The estimates of party positions in Fig. 10.1 were obtained from a survey of the electorate carried out by [Arian and Shamir \(1995\)](#), complemented by an analysis of the party manifestos (details can be found in [Schofield et al. 1998](#); [Schofield and Sened 2006](#)). First we define a median line in the figure to be a line that goes through the positions of two parties, such that the two parties pivot. That is, the group of parties on either side of the line has a majority when complemented by the two parties.

As Fig. 10.1 indicates, all median lines go through the Labor party position (LAB), so given the configuration of seats and positions, we can say Labor is the *core party* in 1992. Another way to see that the Labor position,  $LAB = z_{lab}$ , is at the core is to note that the set of parties above the median line through the Labor-Tsomet positions (but excluding Labor) only control 59 seats out of 120. When the party positions are such that the core does indeed exist, then any government coalition must contain the core party. When the core party is actually at a core position then it is able to influence coalition bargaining in order to control the policy position of the government. Indeed, if we assume that parties are only concerned to control policy, then the party at the core position would be indifferent to the particular coalition that formed. The ability of the core party to control policy implies a tendency for core parties to form minority governments, since they need no other parties in order to fulfill their policy objectives. In fact, in 1992, Rabin first created a coalition government with Shas, and then formed a minority government without Shas.

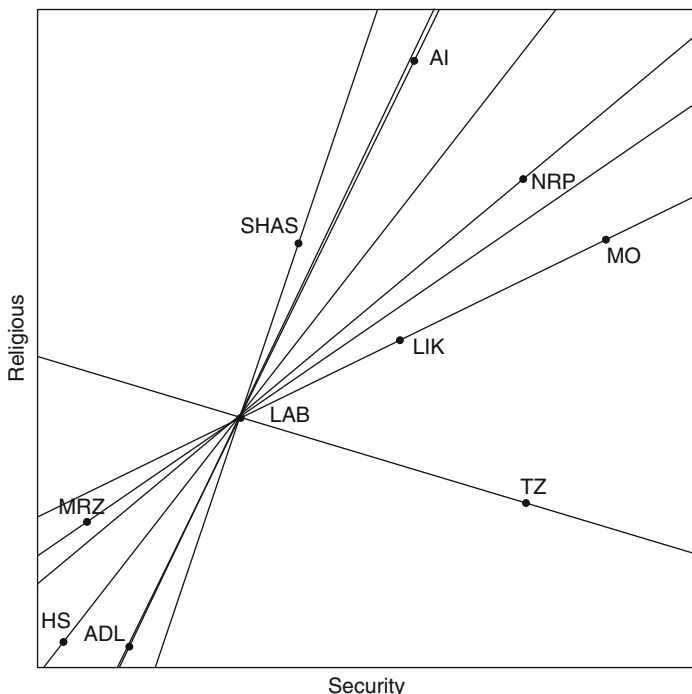


Fig. 10.1 The core at the Labor position in the Knesset in 1992

We emphasize that in two-dimensions the core can be empty. To see the consequences of this, consider the configuration of party positions in Israel after the election of 1988, as presented in Fig. 10.2, again using the seat allocations from Table 10.1. In this case there is a median line through the Tzomet (TZ), Likud (LIK) positions, so the coalition of parties above this line is winning. It is evident that the Labor does not belong to the Pareto set of the coalition including Likud, Tzomet and the religious parties. Indeed, it can be shown that the symmetry conditions necessary for the existence of a core are nowhere satisfied. In this case, there are cycles of different coalitions. No matter what policy is proposed, it can always be defeated by another proposal, preferred by a majority of the legislature, thus sustaining the legislative cycle. The heart in Fig. 10.2, given the seat strengths and party positions, is the non-convex, star-shaped figure, bounded by the five median lines, with vertices SHAS, LIK, TY, and CRM.

It is reasonable to conclude, in the absence of a core party, that coalition government will be based on a small number of minimal winning coalitions. The heart is offered as a graphical way of presenting the possible policy choices of such coalition government. When there is a core, then we can regard the core and the heart as identical, and infer that the core party will, with certainty, belong to the government. The core party may even form a non winning government, as did Labor under Rabin in 1992.

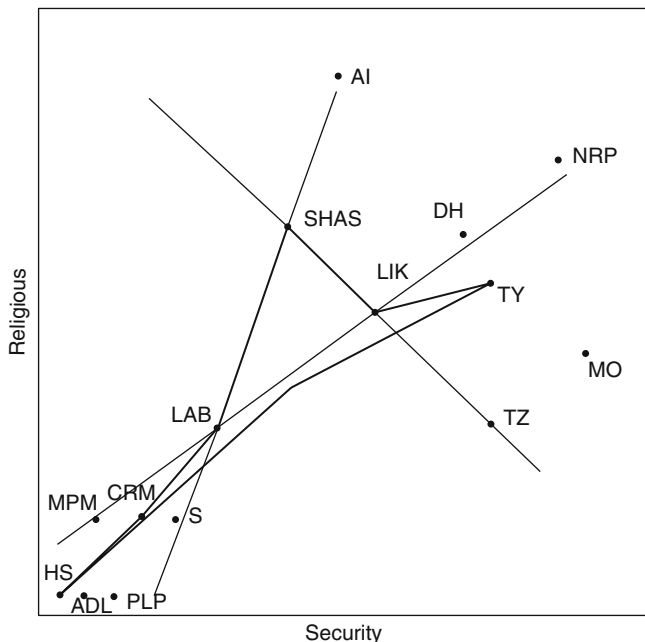


Fig. 10.2 The heart in the Knesset in 1988

### 10.1.2 The Election of 1996

Figure 10.3 shows the positions of the parties after the election of 1996, together with an estimate of the electoral distribution, based on the survey data obtained by Arian and Shamir (1990). Table 10.2 gives the result of the pure spatial model for 1996.

Using the formal analysis presented in Chap. 5, we can readily show that the convergence coefficient of the pure spatial model,  $\mathbb{M}(\lambda, \beta)$  for 1996 greatly exceeds two (the dimension of the policy space). Indeed, one of the eigenvalues of the Hessian of the one of the low valence parties, Shas, can be shown to be positive. The principal electoral axis (or principal component of the electoral distribution) can be seen to be aligned at approximately  $45^\circ$  to the security axis. As we now show, this axis is the eigenspace of the positive eigenvalue. It follows from the computation of eigenvalues that low valence parties should position themselves close to this principal axis.

The MNL estimation given in Table 10.2 presents the relative valences in the pure spatial model with respect to Meretz. The table shows that in 1996 Shas had a relative valence of  $\lambda_{shas} = -2.02$ , while Labor had the highest relative valence of 0.99, with Likud having a valence of 0.78. The spatial coefficient was  $\beta = 1.21$ , so to use the convergence theorem, we note that the valence difference between Shas

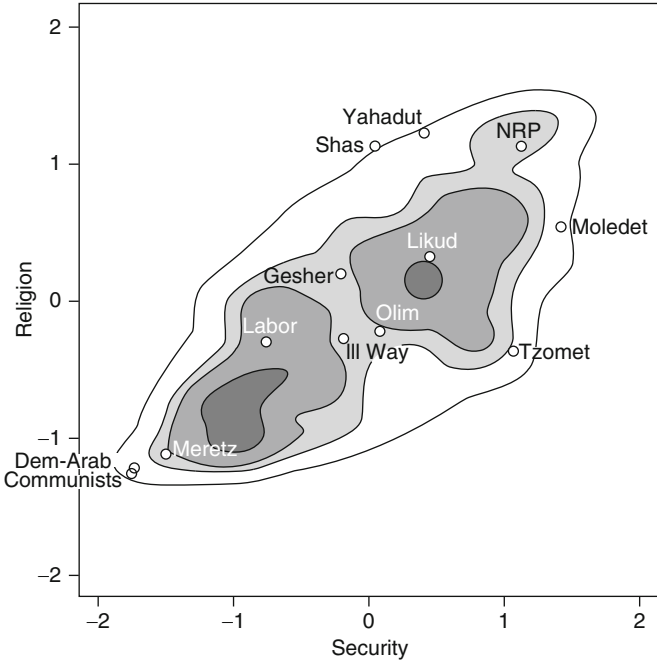


Fig. 10.3 Party positions in Israel In 1996, with the estimated voter distribution

Table 10.2 Pure Spatial model of the Israel election 1996, baseline Meretz

Variable	Party	Estimate <sup>b</sup>	Lower 95% bound	Upper 95% bound
$\beta$ spatial		1.207***	1.076	1.338
$\lambda$ valence	Likud	0.777***	0.400	1.154
	Labor	0.990***	0.663	1.316
	NRP	-0.626***	-1.121	-0.132
	Moledet	-1.259***	-1.858	-0.660
	Third way	-2.291***	-2.841	-1.741
	Shas	-2.023***	-2.655	-1.392
Convergence <sup>c</sup>		3.98	3.70	4.26
LML <sup>a</sup> = -777.0    n = 922				

<sup>a</sup>LML = Log marginal likelihood

<sup>b</sup>\*\*\* *prob* < 0.001.

and Labor was  $0.99 - (-2.02) = 3.01$ , while the difference between Shas and Likud was  $0.78 - (-2.02) = 2.8$ . The electoral covariance matrix is

$$\nabla_0 = \begin{bmatrix} 1.0 & 0.591 \\ 0.591 & 0.732 \end{bmatrix}$$



with trace  $\sigma^2 = 1.732$ . The principal component of this electoral distribution is given by the vector  $(1.0, 0.80)$  with variance 1.47, while the minor component is given by  $(1.0, -1.25)$  with variance 0.26. We can compute the characteristic matrix of Shas at the mean and the convergence coefficient as follows:

$$\begin{aligned} \rho_{Shas} &\simeq \frac{1}{1 + e^3 + e^{2.8} + e^{1.4} + e^{0.8}} \\ &\simeq 0.023. \\ 2\beta(1 - 2\rho_{Shas}) &= 2 \times 1.21 \times 0.95 = 2.30 \end{aligned}$$

$$\begin{aligned} \text{so } C_{Shas} &= (2.3)\nabla_0 - I \\ &= \begin{bmatrix} 1.3 & 1.36 \\ 1.36 & 0.69 \end{bmatrix}. \end{aligned}$$

$$\text{and } c = 2.3 \times 1.732 = 3.98.$$

From the estimate of  $C_{Shas}$  it follows that the two eigenvalues are 2.39 and  $-0.39$ , giving a *saddlepoint*, and a value of 3.98 for the convergence coefficient. This exceeds the necessary upper bound of 2. The estimate for the standard error on  $\rho_{Shas}$  is 0.008, so the 95% confidence interval is  $[0.007, 0.02]$ . Note that this interval includes the actual sample vote share of 2% for Shas. The standard error on  $\beta$  is 0.065 so the standard error on  $c$  is of order 0.14, and we can infer that, with high probability, the convergence coefficient exceeds the critical value of 2.0.

Using the above estimate for the major eigenvalue, we find that the major eigenvector for Shas is  $(1.0, 0.79)$ , and along this axis the Shas vote-share function increases as the party moves away from the mean. The minor, perpendicular axis associated with the negative eigenvalue is given by the vector  $(1, -1.26)$ . Any LNE for the model  $\mathbb{M}(\lambda, \beta)$  will be one where all parties are located on the major eigenvector.

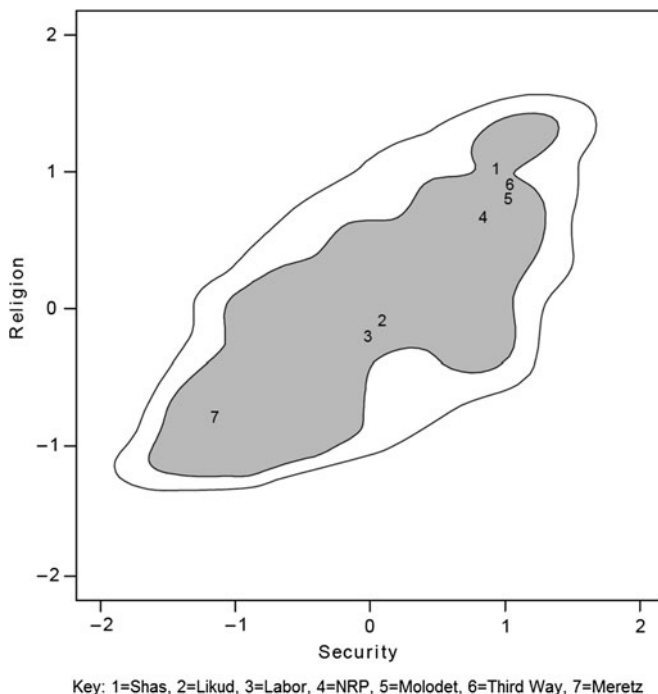
We also constructed a joint MNL model,  $\mathbb{M}(\lambda, \theta, \beta)$ , and a pure sociodemographic model of the election,  $\mathbb{M}(\lambda, \theta)$ , details of which can be found in [Schofield and Sened \(2006\)](#). Table 10.3 reports the differences in the log marginal likelihoods of the various models.

Figure 10.4 gives one of the local Nash equilibrium, obtained by simulation of the model. Since this model does not involve activist terms, we can infer that this

**Table 10.3** Comparison of LML for Israel models for 1996

		$\mathbb{M}_2$		
		Joint	Spatial	Socio-Dem.
$\mathbb{M}_1$	Joint	na	82	249
	Spatial	-82	na	167
	Socio-.Dem	-249	-167	na

<sup>a</sup> Joint = spatial model with sociodemographics



**Fig. 10.4** Estimated local equilibrium positions in the Knesset in 1996

equilibrium gives an estimate of the weighted electoral means,  $\mathbf{z}^{el}$ , for the parties. This vector,  $\mathbf{z}^{el}$ , is given by:

$$\begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -1.1 & 1.0 & 1.0 & 0.0 & 0.2 & 0.9 & 1.0 \\ y & -0.8 & 0.8 & 0.8 & -0.2 & 0.0 & 0.6 & 1.0 \end{bmatrix}$$

All these equilibrium positions lie very close to an eigenvector (1.0, 0.85). It thus appears that the only effect of the inclusion of the sociodemographic variables is to slightly rotate the principal eigenvector in an anticlockwise direction. In all, five different LNE were located. However, in every equilibrium, the two high valence parties, Labor and Likud, were located close to the simulated equilibrium positions shown in Fig. 10.4. The only difference between the various equilibria were slight differences in the positions of Shas, NRP and Moledet.

It is evident that if the high valence party occupies the electoral mean, then each party with lower valence can compute that its vote-share will increase by moving up or down the principal electoral axis. In seeking local maxima of the vote shares all parties other than the highest valence party should vacate the electoral center. Then, however, the first-order condition for the high valence party to occupy the

electoral center would not be satisfied. Even though this party's vote-share will be little affected by the other parties, it too should move from the center. The simulation for 1996 is compatible with the formal analysis: low valence parties, such as the NRP and Shas, in order to maximize vote-shares must move far from the electoral center. As with the pure spatial model, their optimal positions will lie either in the "north-east" quadrant or the "south-west" quadrant. The vote-maximizing model, without any additional information, cannot determine which way the low valence parties should move.

The equilibrium position of Shas, by the joint model, will give greater weight to those voters who are observant. As Fig. 10.4 makes clear, Shas, Moledet and NRP are located in the upper quadrant of the policy space. On the other hand, since the valence difference between Labor and Likud was relatively low, their local equilibrium positions will be close to, but not identical to, the electoral mean. Intuitively it is clear that once the low valence parties vacate the mean, then high valence parties, like Likud and Labor, should position themselves almost symmetrically about the mean, and close to the principal axis.

We now compare the LNE obtained from the joint model with the vector,  $\mathbf{z}^*$ , of estimated positions given in Fig. 10.4:

$$\begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -1.5 & 1.4 & -0.2 & -0.8 & 0.6 & 1.0 & 0.0 \\ y & -1.0 & 0.5 & -0.4 & -0.2 & 0.2 & 1.1 & 1.1 \end{bmatrix}.$$

We hypothesize that  $\mathbf{z}^*$  is a local equilibrium of the full activist model: The difference,  $\mathbf{z}^* - \mathbf{z}^{el}$ , between the vector of positions and the equilibrium of Fig. 10.4 is of order

$$\begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -0.4 & 0.4 & -1.2 & -0.8 & 0.4 & 0.1 & -1.0 \\ y & -0.2 & -0.3 & -1.2 & 0.0 & 0.2 & 0.5 & 0.1 \end{bmatrix}.$$

From the balance theorem, an estimate of the influence of activist groups on the parties is given by:

$$\mathbf{z}^* - \mathbf{z}^{el} = \frac{1}{2\beta} \left[ \frac{d\mu_1}{dz_1}, \dots, \frac{d\mu_p}{dz_p} \right].$$

Schofield and Sened estimate  $\beta = 1.117$  for the joint model, so we obtain

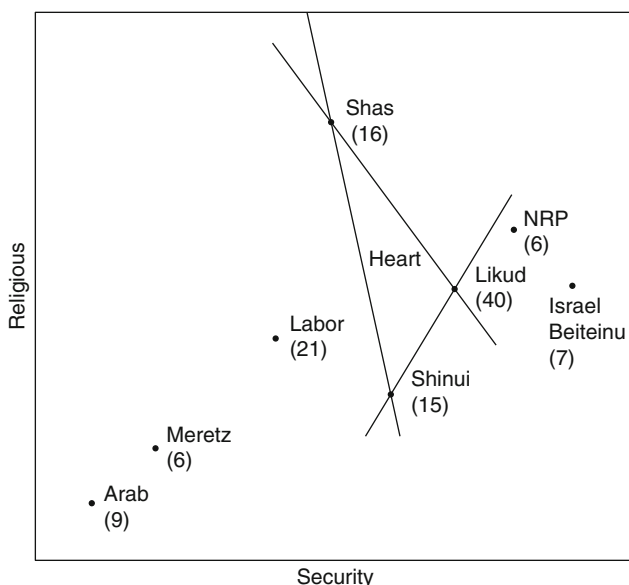
$$\begin{aligned} \left[ \frac{d\mu_1}{dz_1}, \dots, \frac{d\mu_p}{dz_p} \right] &= 2\beta(\mathbf{z}^* - \mathbf{z}^{el}) \\ &= \begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -0.9 & 0.9 & -2.7 & -1.78 & 0.9 & 0.22 & -2.2 \\ y & -0.45 & -0.67 & -2.68 & 0.0 & 0.45 & 1.12 & 0.22 \end{bmatrix} \end{aligned}$$

Although we have not performed the empirical analysis for the elections of 2003 and 2006, we can expect a similar result to hold. The analysis given in [Schofield and Sened \(2006\)](#) for the elections of 1992 and 1988 shows that in 1988 the two eigenvalues for Shas were  $+2.0$  and  $-0.83$ , while in 1992 the eigenvalues for this party were  $+2.12$  and  $-0.52$ . Just as in 1996, the theoretical model of vote maximization implies that all parties should be located on a principal electoral axis. The positioning of Shas off the principal electoral axis enables it to pivot between the two major parties, in the sense that it tended to be crucial for the formation of winning coalitions.

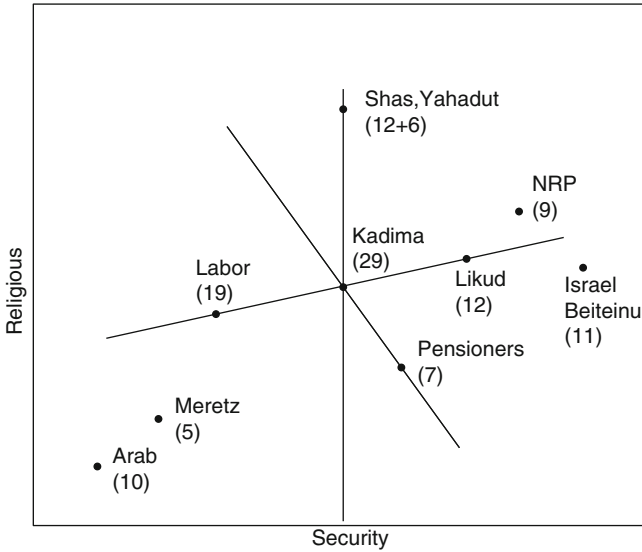
### 10.1.3 Elections in 2003, 2006 and 2009

As Table 10.1 shows, after the elections of 1996, 1999 and 2003 any winning coalition based on either Labor or Likud needed additional support of Shas. In 1996, Netanyahu of Likud formed a government with Shas, but after Likud lost seats in 1999, it was the turn of Barak of Labor to form a government, again with Shas, followed in 2001 by Likud, led by Sharon, with Shas. In consequence, even though Shas controlled few seats in this period, it had significant bargaining power. Figure 10.5 illustrates this for 2003.

This pattern of coalition government was transformed, to some degree, when Amir Peretz stood against Shimon Peres and won the election for leadership of Labor in November 2005.



**Fig. 10.5** The configuration of the Knesset after the election of 2003



**Fig. 10.6** The configuration of the Knesset after the election of March 2006

Sharon then left the Likud Party and allied with Peres and other senior Labor Party members, to form the new party, *Kadima* (“Forward”). We can infer that the coalition of Sharon and Peres positioned Kadima at the center of the policy space. Because of Sharon’s stroke in January 2006, Ehud Olmert took over as leader of Kadima, and in the election of March 2006, the new party was able to take 29 seats, while Likud only took 19 seats. One surprise of the election was the appearance of a Pensioners’ party with seven seats. A possible coalition of Likud and the religious parties, opposed to Kadima, did not have the required 61 seats for a majority (even with the Pensioners’ Party). Schofield (2007b) discussed this election and argued that Kadima was at the core position, since no majority coalition could agree to overturn the Kadima position. However, this “core property” was unstable, in the sense that it could be destroyed by small changes in positions or strengths of the parties. See Fig. 10.6.

As a result, Olmert needed the support of Labor to be able to deal with the complex issue of fixing a permanent border for Israel. The debacle in Lebanon severely weakened Olmert’s popularity, and the 61 members of the Kadima-Labor coalition voted to bring Israel Beiteinu into the coalition. The report, in April 2007, on the failure of the government during the war with Lebanon in Summer 2006 seemed to threaten the Kadima-Labor-Israel Beiteinu coalition by bringing about a change in the Labor party leadership. Barak then won the election for the Labor Party leadership on 12 June 2007, and became Minister of Defense in the government on 18 June, while Shimon Peres became President. In November 2007, Olmert proposed a land-for-peace proposal, possibly involving the separation of Jerusalem, and on January 15, 2008, Avigdor Lieberman, chairman

of Israel Beiteinu announced that the party would quit the government because of disagreement over issues such as Jerusalem and negotiations with Hamas.

On February 3, 2008, Barak agreed to remain in the coalition, thus helping to sustain Kadima in power. However, in August 2008, Olmert faced charges of corruption, and formally resigned as leader of Kadima on September 21. He immediately gave an interview (Olmert 2008) in which he asserted that Israel would have to lose sovereignty over Jerusalem, and would have to come to an agreement with Syria by giving up the Golan Heights in return for Syrian forswearing their connections with Iran, Hezbollah and Hamas.

The new leader of Kadima, and Prime Minister designate, Tzipi Livni, then had to face a revolt by Shas, over these security issues. On October 26, 2008, she announced, that she had failed to form a viable coalition, and an election would occur in February 2009. Even though the Kadima government was weakened, it responded to rocket attacks by Hamas from Gaza, and launched a 3 week attack on Gaza at the end of December 2008.

In the election of 2009, as Table 10.1 shows, the Pensioners' Party disappeared, and both Likud and Israel Beiteinu gained seats. Labor lost significantly, presumably because of the loss of valence by its leader, Ehud Barak. Figure 10.7 shows an estimate of the heart, based on the party positions after this election. The figure suggests that the core was destroyed. It was unclear therefore what government would form. Both Livni and Benjamin Netanyahu, of Likud, claimed the electoral mandate. However, on February 20, Avigdor Lieberman took the role of *formateur*

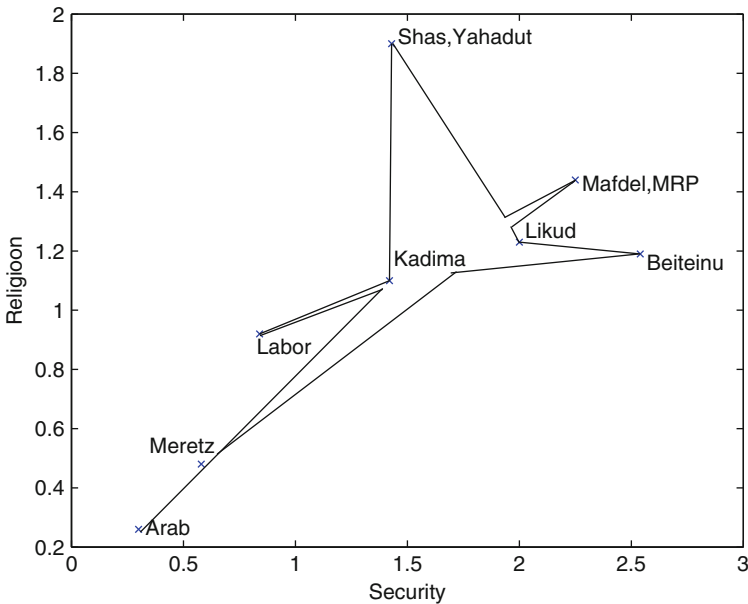


Fig. 10.7 The heart in Israel in 2009

of the coalition game, and offered his support to Netanyahu. On March 24, a majority of the Labor Party central committee voted to support Netanyahu, in return for four cabinet positions, and the retention of the defense portfolio by Barak. Tzipi Livni refused the offer to join this unity coalition government of Likud, Labor, Shas and Israel Beiteinu, and remained in opposition. As prime minister designate, Netanyahu declared on March 26 that he would negotiate with the Palestinian Authority for peace. Five days later he was sworn in as Prime Minister, after a vote of 69 to 45, with the abstention of five Labor members (one Arab member of the Knesset was absent). Avigdor Lieberman became foreign minister. Although Netanyahu has tended to avoid mention of a sovereign Palestinian state, he declared in December 2009 that in order to proceed with this policy, he was willing to consider inviting Livni to join in a grand coalition.

In March 2010, during Vice President Biden's visit to Israel it was announced that Israel would add 1,600 housing units in eastern Jerusalem. Although the Obama administration was angered by the timing of the announcement, Netanyahu insisted that Israel would go ahead with the construction. However, President Shimon Peres said: "We cannot afford to unravel the delicate fabric of friendship with the United States. Today we are also at a decisive moment and we must decide without the determination of external parties."

In September 2010, negotiations started in Washington, involving Netanyahu, Mahmoud Abbas (the President of the Palestinian Authority), King Abdullah II of Jordan and President Hosni Mubarak of Egypt. As we discuss in Chapter 11, the unrest in N.Africa and the Middle East has changed the geopolitical situation in the region.

### ***10.1.4 Concluding Remarks About the Israel Elections***

We can see the nature of bargaining over the coalition government of 2009 by considering the heart as presented in Fig. 10.7. The complex nature of this set suggests that there are many possible majority coalitions. In particular, small parties such as Shas, Yahadut and Israel Beiteinu may join in government and may thus influence the outcome of coalition government. We have argued that the positions adopted by the parties are the result of activist choices to support particular parties. Thus activist groups for these small parties may reason that the party they support has a good chance of taking part in government, thus bringing about policy changes that favor the activists. Consequently, there is little motivation for such activist groups to coalesce. As long as the logic of vote maximization maintains this policy divergence between the parties, then so will activist groups continue to provide support for these small parties. Thus political fragmentation is preserved. Indeed, the disintegration of the Labor Party on January 17, 2011, when Barak and four other labor members of the Knesset formed a splinter party, Independence, showed this process of fragmentation in action.

These remarks about recent events in the Knesset are presented to illustrate the great difficulty of maintaining a stable government coalition, even when there is a

large, centrally located party, such as Kadima. Such a party should, in principle, be able to dominate bargaining. However, it is only when the center party's leader has high valence is the party able to avoid threats to the government. Without such valence predominance, small parties, and their activist supporters have an incentive to act to maintain political fragmentation.

## 10.2 Elections in Turkey 1999–2007

In this section we apply the valence model by considering in some detail a sequence of elections in Turkey from 1999 to 2007. The election results are given in Tables 10.4, 10.5 and 10.6, which also provide the acronyms for the various parties.

As in other work in this book, the empirical models were based on factor analysis of voter surveys.<sup>1</sup> Figures 10.8 and 10.9 show the electoral distributions (based on sample surveys of sizes 635 and 483 respectively) and estimates of party positions for 1999 and 2002.<sup>2</sup>

The two-dimensions in both years were a “left–right” religion axis and a “north–south” Nationalism axis, with secularism or “Kemalism” on the left and Turkish nationalism to the north. (See also [Carkoğlu and Hinich \(2006\)](#) for a spatial model of the 1999 election).

Minor differences between these two figures include the disappearance of the Virtue Party (FP) which was banned by the Constitutional Court in 2001, and the change of the name of the pro-Kurdish party from HADEP to DEHAP.<sup>3</sup> The most important change is the appearance of the new Justice and Development Party (AKP) in 2002, essentially substituting for the outlawed Virtue Party.

In 1999, a DSP minority government formed, supported by ANAP and DYP. This only lasted about 4 months, and was replaced by a DSP-ANAP-MHP coalition, indicating the difficulty of negotiating a coalition compromise across the disparate policy positions of the coalition members. Figure 10.10 shows the heart in 1999.

During the period 1999–2002, Turkey experienced two severe economic crises. As Tables 10.4 and 10.5 show, the vote shares of the parties in the governing coalition went from about 53% in 1999 to less than 15% in 2002. In 2002, a 10% cut-off rule was instituted. As Table 10.6 makes clear, seven parties obtained less than 10% of the vote in 2002, and won no seats. The AKP won 34% of the vote, but because of the cut-off rule, it obtained a majority of the seats (363 out of 550). In 2007, the AKP did even better, taking about 46% of the vote, against 21% for the CHP. The Kurdish Freedom and Solidarity Party avoided the 10% cut-off rule, by

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<sup>1</sup>The estimations presented below are based on factor analysis of sample surveys conducted by Veri Arastirma for TUSES.

<sup>2</sup>The party positions were estimated using expert analysis, in the same way as the work by [Benoit and Laver \(2006\)](#).

<sup>3</sup>For simplicity, the pro-Kurdish party is denoted HADEP in the various figures and tables. Notice that the HADEP position in Figs. 10.1 and 10.2 is interpreted as secular and non-nationalistic.



**Table 10.4** Turkish election results 1999

Party Name		% Vote	Seats	% Seats
Democratic Left Party	DSP	22.19	136	25
Nationalist Action Party	MHP	17.98	129	23
Virtue Party	FP	15.41	111	20
Motherland Party	ANAP	13.22	86	16
True Path Party	DYP	12.01	85	15
Republican People's Party	CHP	8.71		
People's Democracy Party	HADEP	4.75		
Others		4.86		
Independents		0.87	3	1
Total			550	

**Table 10.5** Turkish election results 2002

Party Name		% Vote	Seats	% Seats
Justice and Development Party	AKP	34.28	363	66
Republican People's Party	CHP	19.39	178	32
True Path Party	DYP	9.54		
Nationalist Action Party	MHP	8.36		
Young Party	GP	7.25		
People's Democracy Party	HADEP	6.22		
Motherland Party	ANAP	5.13		
Felicity Party	SP	2.49		
Democratic Left Party	DSP	1.22		
Others and Independents	–	6.12	9	2
Total			550	

**Table 10.6** Turkish election results 2007

Party Name		% Vote	Seats	% Seats
Justice and Development Party	AKP	46.6	340	61.8
Republican People's Party	CHP	20.9	112	20.3
Nationalist Movement Party	MHP	14.3	71	12.9
Democrat Party <sup>b</sup>	DP	5.4		
Young Party	GP	3.0		
Felicity Party	SP	2.3		
Independents		5.2	27 <sup>a</sup>	4.9
Others		2.3		
Total		100	550	100

<sup>a</sup>Twenty-four of these "independents" were in fact members of the DTP – the Kurdish Freedom and Solidarity Party

<sup>b</sup>The DP is also known as the BDP, for Baris ve Demokrasi Partisi or Peace and Democracy Party.

contesting the elections as independent non-party candidates, winning 24 seats with less than 5% of the vote.

The point of this example is that a comparison of Figs. 10.8 and 10.9 suggest that there was very little change in policy positions of the parties between 1999 and

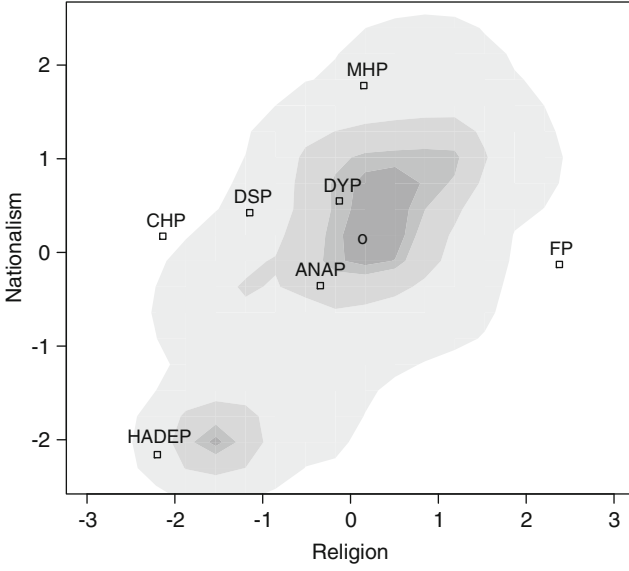


Fig. 10.8 Party positions and voter distribution in Turkey in 1999

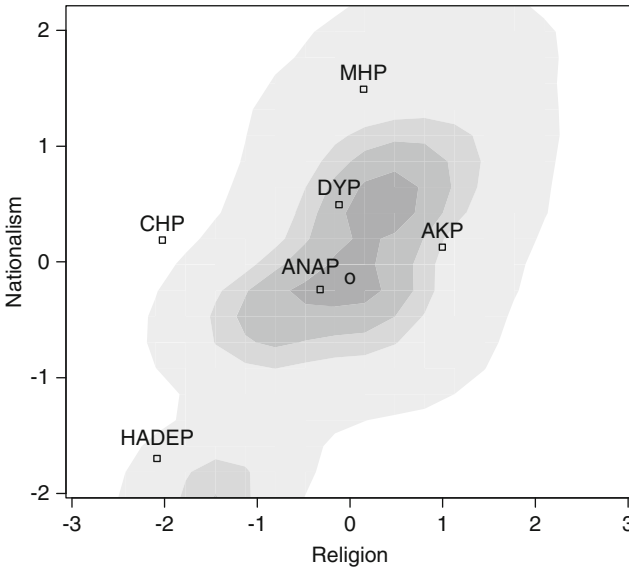
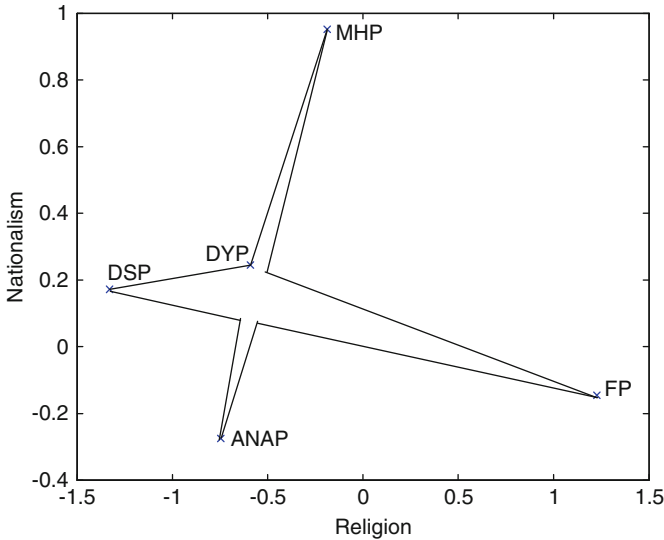


Fig. 10.9 Party positions and voter distribution in Turkey in 2002



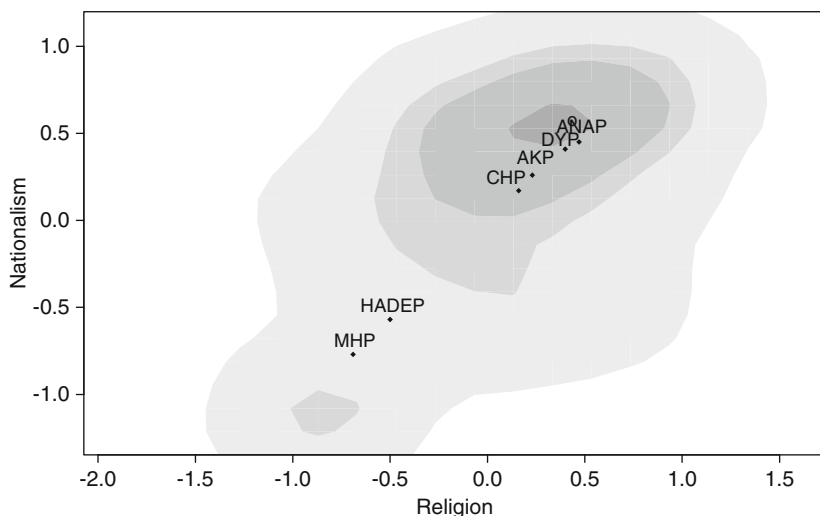
**Fig. 10.10** The Heart in 1999 in Turkey

2002. The basis of support for the AKP may be regarded as a similar to that of the banned FP, which suggests that the leader of this party changed the party’s policy position on the religion axis, adopting a much less radical position.

In sum, the standard spatial model is unable to explain the change in the electoral outcome, taken together with the relative unchanged positioning of the parties between 1999 and 2002.

The next section of this chapter considers the details of the multinomial logit (MNL) model for Turkey for 1999 and 2002. In particular, this section shows that the pure spatial model with exogenous valence predicts that the parties diverge away from the mean. To illustrate, Table 10.5 shows that the lowest valence party in 2002 was the Motherland Party (ANAP) while the Republican People’s Party (CHP) had the highest valence. The convergence coefficient was computed to be 5.94, far greater than the upper bound of 2. Figure 10.11 presents an estimate of one of the LNE obtained from simulation of vote maximizing behavior of the parties, under the assumption of the pure spatial model with exogenous valence. As expected from the theoretical result, the LNE is non centrist. Note however, the LNE positions for the pure spatial model given in Fig. 10.11 are quite different from the estimated positions in Fig. 10.9.

To improve the prediction of the model, we incorporated the sociodemographic variables. Estimating the LNE for this sociodemographic model gave a better prediction. To explain the difference between the estimated positions of the parties, and the LNE from the sociodemographic model, we then added the influence of party activists to the model. Since sociodemographic variables can be interpreted as specific valences associated with different subgroups of the electorate, we can



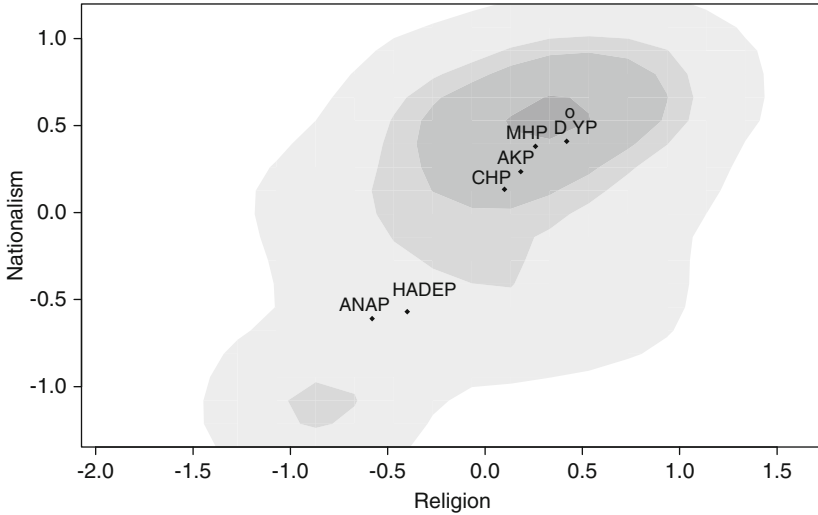
**Fig. 10.11** A local Nash equilibrium for the pure spatial model in 2002

use these sociodemographic valences to estimate the influence of group-specific activists on party positions.

The theorem presented in Chap. 5 gives the first order *balance* condition for local equilibrium in the stochastic electoral model involving sociodemographic valences and activists. The condition requires the balancing of a *centrifugal marginal activist pull (or gradient)* against a *marginal electoral pull*. In general, if the exogenous valence of a party leader falls, then the marginal electoral pull also falls, so balance requires that the leader adopt a position closer to the preferred position of the party activists.

The pure spatial model, with exogenous valences, and a joint model, with sociodemographic valences, but without activists, are compared using simulation to determine the LNE in these models. This allows us to determine which model better explains the party positions. For example, Fig. 10.12 shows the LNE based on a joint sociodemographic model for 2002. In this figure, the LNE position for the Kurdish party, HADEP, is a consequence of the high electoral pull by Kurdish voters located in the lower left of the figure. Similarly, the position of the CHP on the left of the figure is estimated to be due to the electoral pull by Alevi voters who are Shia, rather than Sunni and can be regarded as supporters of the secular state. Although Fig. 10.12 gives a superior prediction of the party positions than Fig. 10.11, there is still a discrepancy between the estimated positions of Fig. 10.9 and the LNE in Fig. 10.12. As in earlier chapters, we argue that the difference between these two vectors of party positions, as presented in Figs. 10.9 and 10.12, can be used to provide an estimation of the marginal activist pulls influencing the parties.

More generally, we suggest that the combined model, with sociodemographic variables and activists, can be used as a tool with which to study the political



**Fig. 10.12** A local Nash equilibrium for the joint model in 2002

configuration of such a complex society. In the conclusion we suggest that the full model involving activists may be applicable to the study of what Epstein et al. (2006) call “partial democracies”, where a political leader must maintain popular support, not just by winning elections, but by maintaining the allegiance of powerful activist groups in the society.

### 10.2.1 The Spatial Model for Turkey 1999–2002

We use the formal model, denoted  $M(\lambda, \theta, \beta)$  which utilizes socio-demographic variables, denoted  $\theta$ .

Tables 10.8 and 10.9, in the Appendix to this chapter, give the details of the pure spatial MNL models for the elections of 1999 and 2002 in Turkey, while Tables 10.10 and 10.11, give the details of the joint MNL models. The differences in log marginal likelihoods for the three different models then gives the log Bayes’ factor for the pairwise comparisons.<sup>4</sup> The log Bayes’ factors show that the joint and pure spatial MNL models were clearly superior to the SD models. In addition the joint models were superior to the pure spatial models.<sup>5</sup> We can infer that,

<sup>4</sup>Since the Bayes’ factor (Kass and Raftery 1995) for a comparison of two models is simply the ratio of marginal likelihoods, the log Bayes’ factor is the difference in log likelihoods.

<sup>5</sup>The log Bayes factors for the joint models over the sociodemographic models were highly significant at +31 in 1999 and +58 in 2002. The Bayes’ factors for the joint over the spatial models were also significant, and estimated to be +6 and +5 in 1999 and 2002, respectively.

though the sociodemographic variables are useful, by themselves they do not give an accurate model of voter choice.<sup>6</sup> It is necessary to combine the pure spatial model, including the valence terms, with the sociodemographic valences to obtain a superior estimation of voter choice.

Comparing Tables 10.8 and 10.9, it is clear that the relative valences of the ANAP and MHP, under the pure spatial model, dropped between 1999 and 2002. In 1999, the estimated  $\lambda_{ANAP}$  was +0.336, while the confidence interval on  $\lambda_{ANAP}$  for 1999 in Table 10.8 shows that the hypothesis that  $\lambda_{ANAP} = 0$  should be rejected. In contrast the estimated value of  $\lambda_{ANAP}$  for 2002 was  $-0.31$ , and the confidence interval on  $\lambda_{ANAP}$  does not allow us to reject the hypothesis that  $\lambda_{ANAP} = 0$ .<sup>7</sup> Similarly  $\lambda_{MHP}$  fell from a significant value of +0.666 in 1999 to  $-0.12$  in 2002. The estimated relative valence,  $\lambda_{AKP}$ , of the new Justice and Development Party (AKP) in 2002 was +0.78, in comparison to the valence of the FP of  $-0.159$  in 1999. Since the AKP can be regarded as a transformed FP, under the leadership of Recep Tayyip Erdogan, we can infer from the confidence intervals on these two relative valences that this was a significant change due to Erdogan's leadership.<sup>8</sup>

It should be noted that the  $\beta$  coefficients for the pure spatial models were 0.375 in 1999, and 1.52 in 2002. Both of these are estimated to be non-zero at the 0.001 level. Indeed, they are significantly different from each other,<sup>9</sup> suggesting that electoral preferences over policy had become more intense.

We first use the results of the formal pure spatial model to compute estimates of the convergence coefficients. These computations suggest that convergence to an electoral center is not to be expected in these elections. We then use simulation to determine the LNE of the empirical joint models, again showing non-convergence. This allows us to obtain information about activist support for the parties.

### 10.2.1.1 The 2002 Election

Figure 10.9 gave the smoothed estimate of the voter ideal points in 2002. This distribution gives the 2 by 2 voter covariance matrix, with an electoral variance on the first axis (religion) estimated to be 1.18 while the electoral variance on the second axis (nationalism) was 1.15. The total electoral variance was  $\sigma^2 = 2.33$ , with an electoral standard deviation of  $\sigma = 1.52$ . The covariance between the two axes was equal to 0.74.

<sup>6</sup>Sociodemographic models are standard in the empirical voting literature.

<sup>7</sup>These tables show the standard errors of the coefficients, as well as the *t-values*, the ratios of the estimated coefficient to the standard error.

<sup>8</sup>Although Erdogan was the party leader, Abdullah Gul became Prime Minister after the November 2002 election because Erdogan was banned from holding office. Erdogan took over as Prime Minister after winning a by-election in March 2003.

<sup>9</sup>The 95% confidence interval for  $\beta_{1999}$  is [0.2,0.55] and for  $\beta_{2002}$  it is [1.28,1.76].

Thus the voter covariance matrix is

$$\nabla_0 = \begin{bmatrix} 1.18 & 0.74 \\ 0.74 & 1.15 \end{bmatrix}$$

with  $\text{trace}(\nabla_0) = 2.33$ .

The eigenvalues of this matrix are 1.9, with major eigenvector  $(+1.0, +0.97)$  and 0.43, with minor eigenvector  $(-0.97, +1.0)$ . The major eigenvector corresponds to the *principal electoral axis*, aligned at approximately 45 degrees to the religion axis. For the pure spatial model  $\mathbb{M}(\lambda, \beta)$ , the  $\beta$  coefficient was 1.52. The valence terms are estimated in contrast with the valence of the DYP, and the party with the lowest relative valence is ANAP with  $\lambda_{ANAP} = -0.31$ . By definition,  $\lambda_{DYP} = 0$ . The vector of relative valences is then

$$\begin{aligned} & (\lambda_{ANAP}, \lambda_{MHP}, \lambda_{DYP}, \lambda_{HADEP}, \lambda_{AKP}, \lambda_{CHP}) \\ & = (-0.31, -0.12, 0.0, 0.43, 0.78, 1.33). \end{aligned}$$

When all parties are at the mean, the probability,  $\rho_{ANAP}$ , that a voter chooses ANAP, in the model  $\mathbb{M}(\lambda, \beta)$ , is independent of the voter. This is given by the expression

$$\begin{aligned} & \frac{\exp(-0.31)}{\exp(-0.31) + \exp(-0.12) + \exp(0.0) + \exp(0.43) + \exp(0.78) + \exp(1.33)} \\ & = [1 + \exp(0.19) + \exp(0.31) + \exp(0.74) + \exp(1.09) + \exp(1.164)]^{-1} \\ & = [1 + 1.2 + 1.36 + 2.09 + 2.97 + 3.2]^{-1} \\ & = 0.08. \end{aligned}$$

Below, we show that the 95% confidence interval on  $\rho_{ANAP}$  is  $[0, 05, 0.11]$ , which includes the actual vote share (5.13%) in 2002.

The Hessian of the vote share function of ANAP, when all parties are at the mean, is given by the characteristic matrix of ANAP:

$$\begin{aligned} C_{ANAP} & = 2\beta(1 - 2\rho_{ANAP})\nabla_0 - I \\ & = 2 \times (1.52) \times [(1 - (2 \times 0.08)]\nabla_0 - I \\ & = (2.55) \begin{bmatrix} 1.18 & 0.74 \\ 0.74 & 1.15 \end{bmatrix} - I \\ & = \begin{bmatrix} 2.01 & 1.88 \\ 1.88 & 1.93 \end{bmatrix}. \end{aligned}$$

Moreover, the convergence coefficient,

$$c = 2\beta(1 - 2\rho_{ANAP})\text{trace}(\nabla_0) = 2.55 \times 2.33 = 5.94.$$

This greatly exceeds the upper bound of +2.0 for convergence to the electoral mean. The major eigenvalue for the ANAP characteristic matrix is +3.85, with eigenvector (+1.0, +0.98), while the minor eigenvalue is +0.09, with orthogonal, minor eigenvector (−0.98, +1.0). The eigenvectors of this Hessian are almost perfectly aligned with the principal and minor components, or axes, of the electoral distribution.

Although the electoral mean satisfies the first order condition for local equilibrium, it follows from a standard result that the electoral mean is a *minimum* of the vote share function of ANAP, when the other parties are at the same position. On both principal and minor axes, the vote share of ANAP increases as it moves away from the electoral mean, but because the major eigenvalue is much larger than the minor one, we can expect that the AKP (as well the other parties) in equilibrium to adopt positions along a single eigenvector. We obtained two similar LNE from simulation of the pure spatial model:

$$\mathbf{z}_1 = \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & 0.16 & -0.69 & 0.40 & -0.50 & 0.47 & 0.23 \\ y : \text{nat} & 0.17 & -0.77 & 0.41 & -0.57 & 0.45 & 0.26 \end{bmatrix}.$$

$$\mathbf{z}_2 = \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & 0.17 & 0.43 & -0.65 & -0.51 & 0.47 & 0.22 \\ y : \text{nat} & 0.18 & 0.43 & -0.72 & -0.56 & 0.45 & 0.25 \end{bmatrix}.$$

Note that all the positions in these two LNE lie close to the principal axis given by the eigenvector (1.0, 1.0). The higher valence parties, the AKP and CHP lie closer to the mean, while the lower valence parties tend to be further from the mean.

In contrast, the estimated positions of the parties for 2002 in Fig. 10.9 are:

$$\mathbf{z}^* = \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & -2.0 & 0.0 & 0.0 & -2.0 & -0.2 & 1.0 \\ y : \text{nat} & +0.1 & 1.5 & 0.5 & -1.5 & -0.1 & 0.1 \end{bmatrix}.$$

The equilibrium positions of the CHP and MHP, particularly, are very far from their estimated positions.

### 10.2.1.2 Errors in the Models

The standard error on  $\lambda_{ANAP}$  is  $h = 0.19$ , so

$$\begin{aligned} \rho_{ANAP}(\lambda_{ANAP} + h) &= \rho_{ANAP}(\lambda_{ANAP}) + h \frac{d\rho_{Anap}}{d\lambda} \\ &= \rho_{ANAP}(\lambda_{ANAP}) + h\rho_{ANAP}(1 - \rho_{ANAP}). \end{aligned}$$



This gives a standard error of 0.014 and a 95% confidence interval on  $\rho_{ANAP}$  of [0.05, 0.11]. Since the standard error on  $\beta$  is 0.12, giving a confidence interval on  $\beta$  of approximately [1.28, 1.76], the standard error on  $c$  is 0.27. Using the lower bound on  $\beta$  and upper bound on  $\rho_{ANAP}$  gives an estimate for the 95% confidence interval on  $c$  of [4.65, 7.38], so we can assert that, with very high probability, the convergence coefficient exceeds 4.0. Another way of interpreting this observation is that even if we use the upper estimate of the relative valence for ANAP, and the lower bound on  $\beta$ , then the joint electoral mean will still give a minimum of the vote share function for ANAP.

We now repeat the analysis for the election of 1999.

### 10.2.1.3 The 1999 Election

The empirical model presented in Table 10.8 estimated the electoral variance on the first axis (religion) to be 1.20 while on the second axis (nationalism) the electoral variance,  $\sigma^2$ , was 1.14, giving a total electoral variance,  $\sigma^2$ , of 2.34, with the covariance between the two axes equal to +0.78.

The electoral covariance matrix is the 2 by 2 matrix

$$\nabla_0 = \begin{bmatrix} 1.20 & 0.78 \\ 0.78 & 1.14 \end{bmatrix}.$$

For the model, the  $\beta$  coefficient was 0.375, while the party with the lowest valence was FP with  $\lambda_{FP} = -0.16$ . The vector of valences is:

$$\begin{aligned} & (\lambda_{FP}, \lambda_{MHP}, \lambda_{DYP}, \lambda_{HADEP}, \lambda_{ANAP}, \lambda_{CHP}, \lambda_{DSP}) \\ & = (-0.16, +0.66, 0.0, -0.071, +0.34, +0.73, +0.72). \end{aligned}$$

When all parties are located at the mean, the probability,  $\rho_{FP}$ , that a voter chooses FP under  $\mathbb{M}(\lambda, \beta)$  is equal to

$$\begin{aligned} & \frac{1}{[1 + \exp(0.82) + \exp(0.16) + \exp(0.09) + \exp(0.5) + \exp(0.89) + \exp(0.88)]} \\ & = [11.27]^{-1} = 0.08. \end{aligned}$$

The standard error on  $\lambda_{FP}$  is 0.175, so the 95% confidence interval can be estimated to be [[0.01, 0.15]. The FP vote share in 1999 was 15.41%, suggesting that the pure spatial model should be extended to include sociodemographic valences.

Now  $2\beta(1 - 2\rho_{FP}) = 2\beta \times (1 - 2 \times (0.08)) = 2 \times 0.38 \times 0.84 = 0.64$ , so the characteristic matrix of the FP is

$$C_{FP} = (0.64) \begin{bmatrix} 1.20 & 0.78 \\ 0.78 & 1.14 \end{bmatrix} - I$$

$$= \begin{bmatrix} -0.24 & 0.448 \\ 0.448 & -0.27 \end{bmatrix}.$$

and  $c = 0.64 \times 2.34 = 1.49$ .

Although  $c < 2.0$ , we can compute the eigenvalues of  $C_{FP}$  to be  $-0.74$  with minor eigenvector  $(+1, -1.116)$  and  $+0.23$ , with major eigenvector  $(+1, +0.896)$ , giving a saddlepoint for the FP Hessian at the joint mean. As with the 2002 election, on the basis of the pure spatial model, we again expect all parties to align along the major eigenvector, at approximately 45 degrees to the religion axis. Note, however, that the standard error on  $c$  is of order 0.22, so unlike the result for the election of 2002, we cannot assert that there is a high probability that the convergence coefficient exceeds 2. However, there is a probability exceeding 0.95 that one of the eigenvalues is positive.

In comparing the pure spatial models of the elections of 1999 and 2002, we note there is very little difference between the model predictions.

### 10.2.2 Extension of the Model for Turkey

We now use the empirical joint model,  $\mathbb{M}(\lambda, \theta, \beta)$ , in order to better model party positioning. We use this model in order to estimate the influence of party activists in a more general activist model, denoted  $\mathbb{M}(\lambda, \mu, \beta)$ . As before, the activist functions  $\mu = \{\mu_j : j \in P\}$  are presumed to be functions of party position, rather than exogenous constants. We assume that the activist contribution to party  $j$  is a differentiable function of the party’s position, and positively affects the parties valence.

Chapter 5 shows that the first order condition for a local equilibrium,  $\mathbf{z}^* = (z_1^*, \dots, z_p^*)$ , in the activist model is given by the set of *gradient balance conditions*:

$$\frac{d\mathcal{E}_j^*}{dz_j}(z_j^*) + \frac{1}{2\beta} \frac{d\mu_j}{dz_j}(z_j^*) = 0. \tag{10.1}$$

Each term,  $\frac{d\mu_j}{dz_j}(z_j)$  is the *marginal activist pull (or gradient) at  $z_j$* , giving the marginal activist effects on party  $j$ , while the gradient term  $\frac{d\mathcal{E}_j^*}{dz_j}(z_j) = [z_j^{el} - z_j]$  is the *gradient electoral pull on the party*, at  $z_j$ , pointing towards its weighted electoral mean,  $z_j^{el}$ , as defined for party  $j$  by:

$$z_j^{el} \equiv \sum_{i=1}^n \varpi_{ij} x_i, \text{ where } [\varpi_{ij}] = \left[ \frac{[\rho_{ij} - \rho_{ij}^2]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]} \right]. \tag{10.2}$$

The weighted electoral mean essentially weights voter policy preferences by the degree to which the sociodemographic valences influence the choice of the voter.

Note in particular that (2) gives the first order condition for any of the various models considered here. In particular, if the sociodemographic and activist terms are zero, then (2) reduces to  $[\alpha_{ij}] = \frac{1}{n}$ , and, by the obvious coordinate transformation, we obtain  $z_j = 0$ , for all  $j$ , as the first order condition.

The joint model,  $\mathbb{M}(\lambda, \theta, \beta)$ , allows us to draw some inferences about equilibrium positions. First we note that in the joint model, the sociodemographic valences are substitutes for the relative valences. Table 10.11 shows that the only valence that is significantly non zero in 2002 is  $\lambda_{AKP}$ . A number of the sociodemographic valences are, however, very significant.<sup>10</sup>

Figure 10.12 gives an LNE,  $\mathbf{z}_3$ , obtained by simulation of the joint model,  $\mathbb{M}(\lambda, \theta, \beta)$ :

$$\mathbf{z}_3 = \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ x : \textit{rel} & 0.12 & 0.26 & 0.40 & -0.50 & -0.58 & 0.19 \\ y : \textit{nat} & 0.16 & 0.38 & 0.41 & -0.51 & -0.61 & 0.24 \end{bmatrix}.$$

Again the estimated positions are:

$$\mathbf{z}^* = \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ x : \textit{rel} & -2.0 & 0.0 & 0.0 & -2.0 & -0.2 & 1.0 \\ y : \textit{nat} & +0.1 & 1.5 & 0.5 & -1.5 & -0.1 & 0.1 \end{bmatrix}.$$

Comparing the joint model with the pure spatial model, we see that the equilibrium positions are slightly better predictors for HADEP, MHP and ANAP.

For this joint model, Tables 10.10 and 10.11 show that the sociodemographic valences for HADEP (or DEHAP) by Kurdish voters were very high:

$$\begin{aligned} (\theta_{HADEP} \cdot \eta_{Kurd}) &= 5.9 \text{ in } 1999 \\ (\theta_{HADEP} \cdot \eta_{Kurd}) &= 6.0 \text{ in } 2002. \end{aligned}$$

Keeping the other variables at their means in 2002, then changing  $\eta_{Kurd}$  from non-Kurd to Kurd increases the probability of voting for HADEP from 0.013 to 0.45. The high significance level of the sociodemographic variables indicates that the joint electoral model would predict that HADEP would move close to Kurdish voters who tend to be located on the left of the religion axis, and are also anti-nationalistic. The position marked HADEP in Fig. 10.12 is consistent with this inference.

The joint model also shows that Alevi voters have very high sociodemographic valences for the CHP, with

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<sup>10</sup>The Bayes factors, or differences between the log marginal likelihoods of the joint models over the pure spatial models were +5 in both years.

$$\begin{aligned}
 (\theta_{CHP} \cdot \eta_{Alevi}) &= 3.1 \text{ in 1999} \\
 (\theta_{CHP} \cdot \eta_{Alevi}) &= 2.6 \text{ in 2002.}
 \end{aligned}$$

The Alevis are a non-Sunni religious community, who are adherents of Shia Islam rather than Sunni, and may be viewed as supporters of “Kemalism” or the secular state. Again, with other variables at their means, changing  $\eta_{Alevi}$  from non-Alevi to Alevi increases the probability of voting for CHP in 2002 from 0.16 to 0.63. Thus the joint model indicates that the CHP will move to a vote maximizing position, on the left of the religious axis, again as indicated in Fig. 10.9.

Conversely, for Alevi voters  $\theta_{AKP} \cdot \eta_{Alevi} = -0.25$  in 2002, and we can infer that the AKP may have moved to the right to attract Sunni voters.

From the balance theorem we infer that

$$\begin{aligned}
 \mathbf{z}^* - \mathbf{z}_3 &= \frac{1}{2\beta} \left[ \frac{d\mu_1}{dz_1}, \dots, \frac{d\mu_p}{dz_p} \right] \\
 &= \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & -2.0 & 0.0 & 0.0 & -2.0 & -0.2 & 1.0 \\ y : \text{nat} & +0.1 & 1.5 & 0.5 & -1.5 & -0.1 & 0.1 \end{bmatrix} \\
 &\quad - \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & 0.12 & 0.26 & 0.40 & -0.50 & -0.58 & 0.19 \\ y : \text{nat} & 0.16 & 0.38 & 0.41 & -0.51 & -0.61 & 0.24 \end{bmatrix} \\
 &= \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & -3.2 & -0.26 & -0.40 & -1.50 & +0.38 & 0.81 \\ y : \text{nat} & -0.15 & +1.12 & 0.09 & -0.99 & +0.51 & -0.14 \end{bmatrix}.
 \end{aligned}$$

The estimated activist pull on HADEP is very high, pulling the party to the left on the religion axis, and in an anti-nationalist direction on the  $y$  axis. Similarly, the estimated activist pull on the CHP is even higher on the religious axis, pulling the party in a secular direction, and we can infer that this is due to the influence of Alevi voters.

As a consequence, this asymmetry will cause Alevi activists to provide further differential support for the CHP. It is thus plausible that secular voters (on the left of the religious axis in Figs. 10.8 and 10.9) would offer further support to the CHP, located close to them. This would affect the party’s marginal activist pull, and induce the CHP leader to move even further left, towards its inferred equilibrium position in the full activist model.

We suggest that activist support for the AKP would move it slightly to the right on the religion axis, as well as in an anti-nationalism direction. This would result in its estimated position as in Fig. 10.9.

In contrast, we might conjecture that the military provides activist support for the MHP on the nationalism axis, and this will move the party to the left in a secular direction, and north on the nationalism axis, resulting in its position in Fig. 10.9.

Overall, we note that we can expect activist valence to strongly influence party positioning, and we can proxy this support to some degree using the sociodemographic variables. Notice that the sociodemographic variables are estimated at the vector  $\mathbf{z}^*$ , so the estimated sociodemographic valences have been influenced by activist support. The LNE obtained from the joint model is a hypothetical solution to the vote maximizing game involving the parties, based on some empirical assumptions about the underlying nature of the important sociodemographic groups in the polity.

### 10.2.3 *General Remarks on Turkish Elections*

Although we have not performed a MNL analysis of the 2007 election, it seems obvious that some of the changes in the nature of party strategies were due to changes in the electoral laws. The election results of 1999 were based on an electoral system that was quite proportional, whereas in 2002 and 2007, the electoral system was highly majoritarian. In 2002, for example, the AKP gained 66% of the seats with only 34% of the vote, while in 2007 it took 46.6% of the vote and 340 seats (or 61.8%), reflecting the continuing high valence of Erdogan. Similarly, the CHP went from about 9% of the vote in 1999 (and no seats) to 19% of the vote in 2002, and 32% of the seats. This is mirrored by the increase in the valence estimates of the joint model from  $\lambda_{CHP} = -0.673$  in 1999 to  $\lambda_{CHP} = 1.103$ , in 2002. In contrast the MHP went from 18% of the vote in 1999 to 8% in 2002, while  $\lambda_{MHP}$  for the joint model fell from 2.5 to 1.7. The turn around in the vote share of the MHP between 2002 and 2007 could be a result of increasing support for this party from nationalist activist groups in an attempt to offset the high valence and electoral support for the AKP in 2002. Indeed, the increased concentration of the vote share between 1999 and 2007 may be a consequence of the greater significance of activist influence as the electoral system became more majoritarian due to the nature of the electoral cut-off rule.<sup>11</sup>

In such a non-proportional electoral system there are incentives for members of different sociodemographic groups to engage in strategic voting. There is some indication from the formal model that the intensity of the political contest between secularist, nationalistic and religious activist groups had increased prior to 2007, and recent events suggest that this is continuing.

After the 2007 election, Abdullah Gul, Erdogan's ally in the AKP was elected as the country's 11th president, despite strong opposition from the army and many secular interests. In late February 2008, the Turkish military invaded the Kurdish controlled territory in north west Iraq in an attempt to destroy the bases of the P.K.K. (the Kurdistan Workers' Party). The secular Constitutional Court has also

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<sup>11</sup>The Herfindahl concentration measure of the vote shares went from 0.11 in 1999 to 0.16 in 2002 to 0.27 in 2007.

considered banning many members of the AKP. In September 2008, Turkey formed a Caucasus Stability and Cooperation Platform with five neighboring countries, in response to Russian aggression in Georgia, and President Gul visited Armenia, one of the countries in the Platform. On January 30, 2009, Erdogan returned home from the World Economic Forum in Davos after walking out of a televised debate with Shimon Peres, the Israeli president, over Israel's war on the Gaza Strip. The moderator had refused to allow Erdogan to rebut Peres's justification of the war. Erdogan was welcomed back in Turkey as a hero.

However, more secular voters have begun to worry that Erdogan had become more autocratic, and in the municipal elections in March 2009, the vote for the AKP dropped from 47 to 39%. It appears that the Turkish electorate had divided geographically into four different political regions: a liberal, secular litoral, a conservative interior, with a nationalistic center, and a Kurdish nationalistic southeast.<sup>12</sup> The conflicts between the secular military and the non-secular government have come to a head over the Ergenekon affair, which has involved the prosecution of more than 200 people, allegedly involved in plotting against the state. In February 2010, the government arrested a further 40 people, including three high ranking ex military officers, and in March the government proposed constitutional changes that would limit the power of the Constitutional Court, making it more difficult for the Court to ban parties, as it has in the past. The changes would also make it more difficult to restrict membership of the forces to those who had no allegiance to religious groups, and would also permit trials in civilian rather than military courts for officers who were accused of plotting against the government. Both opposition parties, the Nationalist Movement Party (MHP) and Republican's Peoples Party (CHP) oppose these changes in the constitution. The changes require a supra majority of 367 Parliamentary votes, while the AKP only had 340. In the election of June 12, 2011, the AKP vote share increased slightly to 49% while it won 326 seats in total in the Parliament, the Majlis. The CHP gained slightly, taking 135 seats while the MHP lost somewhat, taking 53 seats. There were also 36 independents elected, all pro-Kurdish members of the DTP. One of these, Sebahat Tuncel, recently wrote that the government has refused to meet the demands of the Kurdish people, threatening a confrontation.

In his visit to Turkey in April 2009, Barack Obama made it clear that in his view, Turkey should become a member of the European Union. At the same time, he urged Turkey to undertake more democratic reforms. Although Turkey has many of the characteristics of a full democracy, there does appear to be severe conflict between the government and secular activist groups such as the military and judiciary.

#### ***10.2.4 Concluding Remarks on Turkish Elections***

Although many business interests favor membership of the European Union, the opposition to this by President Sarkozy of France and Chancellor Merkel of

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<sup>12</sup>Asli Aydintasbas in the *New York Times*, April 7, 2009.

Germany may cause Turkey to turn east. In October 2009, Erdogan visited Tehran and met with President Ahmadinejad of Iran, while Turkey and Russia are also discussing the possibility of having Russian gas supplies transit through Turkey.

On May 31, there was an attack by Israeli commandos against a boat traveling in international waters and carrying humanitarian supplies for Gaza. Nine people in the convey were killed. The convoy was partly organized by a Turkish organization, *Insani Yardim Vakfi*. The repercussions for Turkish–Israel relations are likely to be extreme. On June 8, 2010, Erdogan met with President Ahmadinejad and Prime Minister Vladimir Putin of Russia at a regional security summit in Istanbul. Turkey may be shifting from its pro-western stance and seeking to be an independent power in the region. The “revolutions” currently sweeping the Middle East will obviously affect Turkey and Israel in many unforeseen ways.

As of late June 2011 Erdogan has to deal with the wave of refugees fleeing the brutality of the regime in Syria.

The analysis of Israel and Turkey in this chapter indicates that both religion and nationalism define the political space.<sup>13</sup> The military in Turkey can be represented by a pro-nationalist, pro-secular position, far from the AKP, and it is this phenomenon which means that Turkish politics cannot be understood in terms of a median voter. Modelling democracies like Israel and Turkey would seem to require a very explicit analysis of the power of activist groups.

### 10.3 Convergence and Fragmentation

We now conclude this chapter with some brief comments based on the empirical chapters so far in this volume.

Chapter 5 has shown that the convergence coefficients for various presidential elections in the United States lay in the range [0.45, 1.0].

On the other hand, this chapter, together with Chap. 8, has shown that the convergence coefficients were 6.82 for the 1997 election in Poland, in comparison to 5.94 for the 2002 election in Turkey and 3.98 for the 1996 election in Israel. These three polities all have highly fragmented party systems, with coefficients that are order 4.0 and above. According to the formal model, parties should diverge from the electoral mean in these polities. Simulation of the models, including the sociodemographic valences, gives a reasonable estimate of party position at these elections.

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<sup>13</sup>Notice that the electoral model for Israel, presented in Sect. 10.1 is very similar to that of Turkey, with two electoral axes, religion and security. In Chap. 9 we found “nationalism” to be one of the principal axes in Russia. However, the second axis for the Russian model was defined by attitudes to capitalism/communism. Perhaps this axis for Russia is analogous to the axes involving religion in Israel and Turkey.

As we have seen in Chap. 7 for the case of the Netherlands, small parties can be located on the boundary of the heart. This means that such parties can aspire to belong to majority coalitions. Their supporting activist groups can therefore attach some probability to achieving their policy objectives. Although the centripetal force on parties is significant, multiple activist groups will pull even large parties away from the center. We may interpret Duverger (1954) and Riker (1953) by noting that under proportional electoral methods, there is very little motivation for interest groups to coalesce, and it is this phenomenon that maintains the fragmentation of the party system.

As stated in Chap. 3, a standard way of estimating political fragmentation is in terms of the *effective number of party vote strength* (*env*) or *effective number of party seat strength* (*ens*).<sup>14</sup> As we saw in Chap. 7, the fragmentation in votes and seats in the Netherlands in 1981 is captured by the fact that both *env* and *ens* were equal to 5.0.

For Canada in Chap. 7, we have computed the convergence coefficient to lie in the range [1.00, 2.55] in 2004. However, the Canadian electoral system benefits the high valence parties, such as the Conservative and Liberal Parties, over smaller parties such as New Democratic Party and Green Party. On the other hand, the pure spatial model indicated that Bloc Québécois had very high valence in Quebec, and this high valence allowed it to obtain a significant share of the seats in that province, gaining a much higher share of the seats than its vote share warranted. Between the elections of 2004 and 2008, the *env* for all of Canada increased from 4.0 to 4.1, while the *ens* increased from about 3.1 in 2004 to 3.4 in 2006 and 3.5 in 2008. In the 2011 election both effective vote and seat numbers fell to 3.4 and 2.4 respectively. In the Netherlands, the *env* increased significantly from 4.2 in 1977 to 8.3 in 2006. Since the *ens* and *env* were much lower in Canada, we conjecture that the proportional electoral system of the Netherlands facilitates interest group fragmentation.

We have found the convergence coefficient in the United Kingdom increased from 0.84 in 2005 to 0.98 in 2010, lower than the value for Canada of 2.55. Moreover, the *env* for the 2005 election was 2.7, while the *ens* was about 2.5. The hung Parliament after the election of 2010 meant that the *env* increased to 3.8 while the *ens* also increased to 3.3. These figures indicate that the electoral system in the United Kingdom is more majoritarian than in Canada.<sup>15</sup> Even though there are regional parties in the United Kingdom (the Scottish National Party and Plaid Cymru in Wales, as well as a number of very small parties in Northern Ireland), electoral competition still generates less of a centrifugal tendency than in Canada.

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<sup>14</sup>As in Chap. 3, fragmentation can be identified with the *effective number* (Laakso and Taagepera 1979). That is, let  $H_v$  (the Herfindahl index) be the sum of the squares of the relative vote shares and  $env = H_v^{-1}$  be the *effective number of party vote strength*. In the same way we can define *ens* as the effective number of party seat strength using shares of seats.

<sup>15</sup>Schofield and Sened (2006) modeled the elections in the United Kingdom for 1992 and 1997 and found convergence coefficients in the range [1.0, 2.0]. The *env* for these elections increased slightly from 3.1 in 1992 to 3.2 in 1997, while the *ens* decreased slightly from 2.3 to 2.2, reflecting the size of the Labor victory in 1997.



For the very fragmented polities with high convergence coefficients the *env* and *ens* were also very high. For example, in Poland the *env* increased from about 5.5 in 1997 to 7.7 in 2005, while the *ens* increased from 3.1 to 5.0. In Israel in 1996 the *env* and *ens* were both about 6.5 but increased to about 10.0 in 2009. In Turkey in 1999 and 2002, the *env* was about 7.7, while the *ens* fell from 5.0 to 2.3 in 2007 as the result of a high cut-off for Parliamentary representation.

There is a very large literature on the category of “partial democracies” or “anocracies”<sup>16</sup> on which we comment in Chap. 11. These polities exhibit mixed characteristics of both democratic and autocratic regimes. For example, as we saw in Chapter 9, the Russian polity in 2007 had a single dominant party, United Russia, with 64% of the vote and 70% of the seats, and two smaller parties with representation in the Duma. There were also a number of parties with very small vote share and no seats. The degree of majoritarianism can be inferred from the *env* of 2.3 and *ens* of 2.0. The convergence coefficient for that election was estimated to be 1.7 in Chap. 9.

The empirical analysis of the 2008 election in Georgia that we have presented in Chap. 9 found a convergence coefficient of about 2.4. Georgia is similar to Russia in the sense that the party supporting the president is dominant, with 53.5% of the vote, while the opposition parties are fragmented, giving an *env* of 2.94.

Azerbaijan is an even more extreme case. The electoral system is very majoritarian, and the dominant party controls almost all resources, taking about 46% of the vote and 58% of the seats, or 88% when its support coalition is included. It is difficult to give meaningful estimates of the *env* and *ens* for Azerbaijan, because of the support given to the dominant party, but Table 10.7 presents values of 2.27 for the *env* and 1.3 for the *ens*. The analogue of the convergence coefficient we have taken to be about 2.8.

In these “anocratic” Presidential systems, such as Russia, Georgia and Azerbaijan, that we have considered here, small opposition parties can exist but their supporting activist groups will find it difficult to coalesce because they cannot obtain support through the media. In contrast, if the president has control over much of the media and can offer political bribes to his supporters, then activist groups will coalesce in support, and his valence will remain high. The value of the convergence coefficient can then be computed from the spatial coefficient and the electoral variance. We have seen in this essay how even when democratic elections are in place, political leaders can gain overwhelming power by the control of the media, and through the resources provided by pro-regime activists. Oppositional groups as a result have little opportunity to gain sufficient valence, or electoral esteem to offer attractive alternatives to political leaders.

Table 10.7 presents the results on the convergence coefficients and effective numbers for the three plurality polities of the US, Britain and Canada, compared to the three anocratic presidential systems and the three proportional polities of

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<sup>16</sup>See Gandhi and Vreeland (2004), Epstein et al. (2006), Vreeland (2008), Fjelde (2010) and Regan and Bell (2010).

Poland, Turkey and Israel. The plurality polities have convergence coefficients of order  $\simeq 2.0$ , while the proportional polities all with convergence coefficients of order  $\simeq 4.0$ .

The three presidential anocracies of Russia, Georgia and Azerbaijan have coefficients that lie in the middle range. Table 10.7 suggests that the convergence coefficient in various polities does indeed provide a method of classifying the nature of political competition.

We hypothesize that the difference between these polities can be summed up as follows:

Under *democratic proportional electoral methods*, the convergence coefficient will tend to be large ( $> 3.0$ ). Bargaining to create winning coalitions occurs *after* the election, and there need be no strong tendency forcing activist groups to coalesce, in order to concentrate their influence. Indeed, there can exist incentives for activist groups to fragment. If activist groups respond to this impulse, then activist fragmentation will result in party fragmentation. Parties can be scattered throughout the policy space. Activist groups, linked to small parties, may aspire to affect policy outcomes, by gaining access to the governing coalition. This is indicated by the observation that the bargaining domain in the legislature (the heart) will depend on the location of small parties. Party strengths will fluctuate in response to exogenous shocks, and the structure of the heart will be affected by these changes.

**Table 10.7** Convergence coefficients and Fragmentation

Variable	Country		
	US	Britain	Canada
Conv. Coef.	[0.40,1.1] (2000–2008)	[0.84,0.98] (2005–2010)	2.55 (2004)
Political system	Pres. <sup>a</sup> PL. <sup>b</sup>	Parl. <sup>a</sup> PL. <sup>b</sup>	Parl. <sup>a</sup> PL. <sup>b</sup>
env	2.0	2.7 (2005)	4.0 (2004)
env		3.8 (2010)	4.1 (2008)
ens	1.0	2.5 (2005)	3.1 (2004)
ens		3.3 (2010)	3.5 (2008)
	Russia	Georgia	Azerbaijan
Conv. Coef.	1.7 (2007)	2.4 (2008)	2.89 <sup>c</sup> (2010)
Political system	Anoc Pres. <sup>d</sup> PL. <sup>b</sup>	Anoc Pres. <sup>d</sup> PL. <sup>b</sup>	Anoc Pres. <sup>d</sup> PL. <sup>b</sup>
env	2.3	2.9 (2008)	2.27
ens	2.0	1.0 (2008)	1.3
	Israel	Turkey	Poland
Conv. Coef.	3.98 (1996)	5.94 (2002)	6.82 (1997)
Political system	Frag. <sup>e</sup> PR <sup>b</sup>	Frag. <sup>e</sup> ,PR <sup>b</sup> , cut off	Frag. <sup>e</sup> PR <sup>b</sup>
env	6.5 (1996)	7.7 (1999)	5.5 (1997)
env	10.0 (2009)	4.0 (2007)	7.7 (2005)
ens	6.5 (1996)	5.0 (1999)	3.1 (1997)
ens	10.0 (2009)	2.3 (2007)	5.0 (2005)

<sup>a</sup>Parl = parliamentary; Pres. = presidential

<sup>b</sup>PL = plurality; PR = proportional representation

<sup>c</sup>Convergence coefficient modified for two dim

<sup>d</sup>Anoc. Pres = Anocratic presidential

<sup>e</sup>Frag. = fragmented

We conjecture that activist groups will attempt to maneuver the party, partly with a view to gaining votes, but more importantly, to be positioned in the heart.

Under the strong version of plurality rule, as in the United States, the convergence coefficient will be low (in the range 0.4 to 1.0). If interest groups do not form a coalition *before* the election, then they will have little impact on political outcomes. Consequently, small, third parties cannot obtain representation. Unlike the situation in a polity based on proportional rule, an activist group linked to a small party in a plurality polity has little expectation of influencing government policy. Thus activist groups face “increasing returns to size.” In the United States, presidential candidates must balance the centripetal electoral effect against the centrifugal activist effect, and plurality rule induces what is essentially a two party system, through this effect on activist groups. Although the two party configuration may be in equilibrium at any time, the tension within the activist coalitions can induce a slow transformation of party positions, and thus political realignment, as suggested by Miller and Schofield (2003).

In Parliamentary systems based on plurality rule, such as the United Kingdom and Canada the convergence coefficient will tend to take intermediate values (between 0.8 and 2.5). Large and small parties can co-exist, since small parties can depend on regional support. The influence of activist groups will depend on the degree of regional orientation of the parties.

In “anocratic” or partial democratic Presidential systems, such as Russia, Georgia and Azerbaijan, small opposition parties can exist but their supporting activist groups will find it difficult to coalesce because they cannot obtain support through the media. In contrast, since the president has control over much of the media and can offer political bribes to his supporters, the pro-regime activist groups will coalesce in support, and the presidents valence will remain high. In such anocracies the low valence opposition parties will adopt divergent positions, but will have little opportunity to gain sufficient valence, or electoral esteem to in order to offer attractive alternatives to the political leader.

## Appendix: Tables for Turkey

**Table 10.8** Pure Spatial model of the Turkish election 1999

Party name		$\lambda_k$	Std. error	t-value
Democratic Left Party	DSP	0.724***	0.153	4.73
Nationalist Action Party	MHP	0.666***	0.147	4.53
Virtue Party	FP	-0.159	0.175	0.9
Motherland Party	ANAP	0.336	0.153	2.19
True Path Party	DYP	-	-	-
Republican People's Party	CHP	0.734***	0.178	4.12
People's Democracy Party (Normalized with respect to DYP)	HADEP	-0.071	0.232	0.3
Spatial coefficient $\beta$	0.375***		0.088	4.26
Convergence coefficient $c$	1.49***		0.22	6.77
$n = 635$				
Log likelihood (LL) = -1183				

\*\*\* = Significant with probability < 0.001

**Table 10.9** Pure Spatial model of the Turkish election 2002

Partname		$\lambda_k$	Std. error	t - stat
Justice and Development Party	AKP	0.78***	0.15	5.2
Republican People's Party	CHP	1.33***	0.18	7.4
True Path Party	DYP	-	-	-
Nationalist Action Party	MHP	-0.12	0.18	0.66
Young Party	GP	-	-	-
People's Democracy Party	HADEP	0.43	0.21	2.0
Motherland Party (Normalized with respect to DYP)	ANAP	-0.31	0.19	1.63
Spatial coefficient $\beta$	1.52***		0.12	12.66
Convergence coefficient $c$	5.94***		0.27	22.0
$n = 483$				
Log marginal likelihood (LML) = -737				

\*\*\* = Significant with probability < 0.001

**Table 10.10** Joint model of the 1999 election in Turkey (normalized with respect to DYP)

Variable	Party	Est	Std Err	95% Confidence interval	
				Lower bound	Upper bound
Spatial Coeff. $\beta$		0.456***	0.104	0.243	0.648
Relative Valence $\lambda_k$	ANAP	-0.114	0.727	-1.513	1.227
	CHP	-0.673	0.770	-2.166	0.786
	DSP	0.463	0.720	-0.930	1.825
	FP	1.015	0.878	-0.709	2.755
	HADEP	-0.610	1.230	-3.004	1.803
	MHP	2.447***	0.669	1.167	3.664
Age	ANAP	0.001	0.012	-0.021	0.023
	CHP	-0.009	0.013	-0.033	0.016
	DSP	-0.008	0.012	-0.031	0.014
	FP	-0.023	0.014	-0.050	0.003
	HADEP	-0.053***	0.023	-0.103	-0.014
	MHP	-0.044***	0.012	-0.067	-0.022
Education	ANAP	0.006	0.065	-0.115	0.130
	CHP	0.106	0.063	-0.012	0.232
	DSP	0.077	0.058	-0.024	0.197
	FP	-0.129	0.081	-0.285	0.018
	HADEP	0.144	0.097	-0.038	0.335
	MHP	-0.060	0.061	-0.175	0.070
Urban	ANAP	0.531	0.367	-0.156	1.279
	CHP	0.354	0.395	-0.374	1.078
	DSP	0.582	0.359	-0.147	1.271
	FP	0.417	0.416	-0.418	1.183
	HADEP	0.264	0.634	-0.918	1.497
	MHP	-0.201	0.378	-0.922	0.593
Kurd	ANAP	1.132	0.924	-0.410	3.138
	CHP	1.715***	0.911	0.194	3.637
	DSP	-0.102	1.083	-2.650	2.098
	FP	1.116	0.972	-0.733	3.024
	HADEP	5.898*	0.926	4.290	7.904
	MHP	0.063	0.933	-1.751	2.148
Soc. Econ. Status	ANAP	0.080	0.165	-0.302	0.394
	CHP	0.163	0.176	-0.195	0.499
	DSP	-0.010	0.158	-0.322	0.333
	FP	0.120	0.179	-0.230	0.458
	HADEP	-0.119	0.264	-0.598	0.384
	MHP	0.168	0.159	-0.147	0.469
Alevi	ANAP	-0.697	0.972	-2.687	1.168
	CHP	3.089	0.693	1.965	4.715
	DSP	0.934	0.729	-0.383	2.423
	FP	0.346	0.939	-1.374	2.007
	HADEP	1.355	0.972	-0.332	3.605
	MHP	-0.873	0.925	-3.225	0.676

 $n = 635$ 

Log marginal likelihood = -1178

**Table 10.11** Joint model of the 2002 election in Turkey (normalized with respect to DYP)

Variable	Party	Est	Std Dev	95% Confidence interval	
				Lower bound	Upper bound
Spatial Coeff $\beta$		1.445***	0.143	1.180	1.723
Valence $\lambda_k$	AKP	1.968***	0.667	0.708	3.432
	CHP	1.103	0.797	-0.579	2.615
	HADEP	2.596	1.246	-0.254	5.049
	MHP	1.714	0.889	-0.021	3.426
	ANAP	-0.567	0.880	-2.487	1.133
Age	AKP	-0.031	0.011	-0.052	-0.010
	CHP	-0.019	0.013	-0.045	0.005
	HADEP	-0.060	0.024	-0.110	-0.014
	MHP	-0.067	0.017	-0.103	-0.034
	ANAP	-0.004	0.014	-0.031	0.022
Education	AKP	-0.070	0.062	-0.185	0.045
	CHP	-0.007	0.068	-0.136	0.115
	HADEP	-0.142	0.108	-0.365	0.079
	MHP	-0.048	0.079	-0.202	0.106
	ANAP	-0.078	0.076	-0.237	0.064
Urban	DYP	0.050	0.406	-0.770	0.844
	CHP	0.121	0.443	-0.744	1.001
	HADEP	-1.138	0.688	-2.426	0.236
	MHP	-0.570	0.536	-1.649	0.504
	ANAP	0.661	0.479	-0.228	1.628
Kurd	AKP	2.086	1.105	0.203	4.596
	CHP	1.251	1.171	-0.891	3.839
	HADEP	5.996***	1.208	3.960	8.945
	MHP	1.595	1.312	-0.960	4.258
	ANAP	1.603	1.199	-0.535	4.358
Soc. Econ. Status	AKP	0.142	0.160	-0.160	0.457
	CHP	0.198	0.191	-0.196	0.560
	DEHAP	-0.217	0.281	-0.755	0.301
	MHP	0.317	0.204	-0.083	0.703
	ANAP	0.214	0.209	-0.182	0.613
Alevi	AKP	-0.249	0.983	-2.125	1.743
	CHP	2.567***	0.817	1.111	4.489
	DEHAP	0.377	1.045	-1.519	2.540
	MHP	-0.529	1.410	-3.565	2.292
	ANAP	1.392	0.931	-0.323	3.560

$n = 483$

Log marginal likelihood = -732

\*\*\* in Tables 10.10 and 10.11 = Significant with probability < 0.001

# Chapter 11

## Institutions and Development

### 11.1 Institutions and Democratization

Much discussion in recent years has focused on why North America was able to follow Britain in a path of economic development, but Latin America and the Caribbean islands, though generally far richer initially, fell behind in the nineteenth century. In their discussion of Latin American economic development, [Sokoloff and Engerman \(2000\)](#) have emphasized the different factor endowments of North and South America.<sup>1</sup> In addition they have suggested that slavery in the New World resulted in institutions that were not conducive to economic growth.<sup>2</sup>

In contrast, [Przeworski and Curvale \(2006\)](#) argue that while economic inequality tended to persist and has been related to the degree of political inequality, many aspects of the developmental path appear highly contingent. Indeed, whether Latin American economies grew, and the extent to which they protected the factors of capital, land and labor, seems to be dependent on shifting balances of power between differing activist groups. [Acemoglu \(2008\)](#), for example, provides a model that contrasts oligarchic polities like the plantation economies of the eighteenth century Caribbean with more democratic polities such as the United States. The oligarchic polity may be richer initially, but the ability of their elite to protect their own agrarian interests by oppressing labor leads to growing inefficiency. This will be exacerbated if there are conflicts between elements of the elite over who is to rule. In a democratic polity, with more equal economic power initially, if the franchise is extended and the power of the landed or capital elite curtailed, then the economy will become increasingly open, resulting eventually in greater entrepreneurial and technological advances. These inferences match the earlier discussion in Chap. 1, of

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<sup>1</sup>[Easterly \(2007\)](#) sets up a formal model to analyze productivity and factor models. See also [Comin et al. \(2010\)](#) which examines the “wealth of nations” over the last 3000 years.

<sup>2</sup>See also [Nunn \(2008\)](#) who explores the causal relationship between those parts of Africa from where slaves were taken, and the subsequent degree of economic development.

industrial development in Britain in the eighteenth and early nineteenth centuries, and in the US in the late nineteenth and early twentieth centuries.

Works by [Przeworski et al. \(2000\)](#), [Boix \(2003\)](#), [Acemoglu and Robinson \(2006a\)](#), [North et al. \(2009\)](#) and [Schofield \(2009a\)](#) have explored the transition between autocratic or oligarchic regimes and democracy. There has also been much debate over the “modernization hypothesis” that the level of economic development drives the “level and consolidation of democracy.”<sup>3</sup> An alternative hypothesis is that of “critical junctures,” as for example illustrated by the contingency of the Glorious Revolution in 1688, the repeal of the Corn Laws in 1846, or the Reform Act of 1867 in Britain. The historical analysis of [Acemoglu et al. \(2000, 2001, 2005, 2008, 2009, 2011\)](#) lend support to the critical junctures hypothesis. [Acemoglu and Robinson \(2006b\)](#) also argue that agrarian elites hold back the process of industrial development because they fear the loss of rents from their control of land. As we have discussed in Chap. 1, the agrarian elite in Great Britain was co-opted in the sense that they were protected until the repeal of the Corn Laws.<sup>4</sup> In the Austrian–Hungarian and Russian empires, and even in Germany until the late nineteenth century, the agrarian elites maintained a veto against industrialization.

[Acemoglu and Robinson \(2001, 2008\)](#), [Acemoglu et al. \(2004\)](#) and [Hall and Jones \(1999\)](#) examine the role of institutions in facilitating economic development, while [Acemoglu et al. \(2010a\)](#) focus on the role of the military. There is also a growing literature on how autocrats can retain power ([Bunce 2000](#); [Gandhi and Przeworski 2007](#); [Magaloni 2008](#)) or can lose it through coup d’état ([Collier and Hoeffler 2005](#); [Collier 2009](#)).

One recent attempt to understand the process of democratization is given by [Epstein et al. \(2006\)](#) which emphasizes the category of “partial democracies” or “anocracies”. These exhibit mixed characteristics of both democratic and autocratic regimes. In Latin America and many of the polities of the old Soviet Union, for example, there have been moves towards partial democracy and then reversion to military or autocratic rule. As we noted in Chap. 9, the popular move in the Caucasus to democracy was followed by civil war and then democratic consolidation, but there now appears to be a move to greater autocracy.<sup>5</sup>

[Levitsky and Way \(2002\)](#) have noted that the post-Cold War world has been marked by the proliferation of hybrid [or partial] political regimes:

In different ways, and to varying degrees, polities across much of Africa (Ghana, Kenya, Mozambique, Zambia, Zimbabwe), post-communist Eurasia (Albania, Croatia, Russia, Serbia, Ukraine), Asia (Malaysia, Taiwan), and Latin America (Haiti, Mexico, Paraguay, Peru) have combined democratic rules with authoritarian governance during the 1990s. Scholars often treated these regimes as incomplete or transitional forms of democracy. Yet in many cases these expectations (or hopes) proved overly optimistic.

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<sup>3</sup>[Acemoglu et al. \(2009\)](#).

<sup>4</sup>Maybe we should see the Civil War as a conflict to overcome the Southern agrarian veto against industrialization. See [Egnal \(2009\)](#).

<sup>5</sup>See [Broers \(2005\)](#), [Cheterian \(2008\)](#), [Muskhelishvili et al. \(2009\)](#), and [Carothers \(2002\)](#) on such partial transitions to democracy.



The general idea of much of this work just cited follows on from the seminal arguments of North<sup>6</sup> that “good” institutions facilitate economic growth, where by “good” is meant the combination of secure property rights and open access. Many of the impediments to growth discussed in this literature focus on the ability of oligarchic elites to maintain institutions that give them de facto power.<sup>7</sup> The case of Great Britain illustrates a very long and slow process of “democratization,”<sup>8</sup> followed by the wresting of power from the monarch in 1688,<sup>9</sup> and the move over the next 200 years to open access. But the critical junctures hypothesis suggests there is nothing automatic about these transitions. Moreover, it is possible that the political and economic institutions that eventually arise are incompatible with each other. As discussed in Chap. 3, markets may be efficient in some domains, but may need regulating in situations of risk. It seems that we need a theory of institutions that builds on, or incorporates, the general equilibrium model of economics.

However, the political economic models that are available tend to consider a single economic axis, and to utilize the notion of a median citizen as the unique pivotal player. While these models have been illuminating, they do not easily provide the formal tools to express the power by political or economic elites. One way to do this is to utilize a higher dimensional policy space, where one set of axes refers to the economic factor space, and the second set of axes refer to the political realm.

One other aspect of the economic models that have been used is that they often do not deal with trade, with the way a country is embedded in the global economy.

Finally, since the political realm will involve voting, we should utilize a stochastic model so as to emphasize the intrinsic aspect of uncertainty that is associated with any electoral or political process. Obviously, we are far from being able to set out such an integrated model. However, this chapter offers variations on the stochastic electoral model, presented in the earlier chapters of this volume. Our intention is to model de facto power of elite groups, characterized by their control of different economic factors, and to elucidate the conflicts that exist between these activist groups.

In the next section, we first use the model in an attempt to understand the relationship between an autocrat and his supporters, followed by discussion of recent events in a number of partial democracies and autocracies. In Sect. 11.3 we apply the model to consider bargaining between the leader of a small open economy, such as Argentina, and the various activist groups in the polity. We cite work by [Galiani et al. \(2010\)](#) who argue that Latin American economies, like Argentina, are *diversified natural resource-rich economies*. These tend to have an important domestic industry that competes with imports. In such a political

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<sup>6</sup>North (1981, 1990, 1993, 1994, 2005) and North et al. (2009).

<sup>7</sup>For example, [Acemoglu \(2006\)](#) presents a model where the elite pursue inefficient policies in order to extract rent.

<sup>8</sup>See [Maddicott \(2010\)](#) for the beginnings of Parliament in the Anglo–Saxon period in England.

<sup>9</sup>See also [Pincus \(2009\)](#), for example, on the Glorious Revolution.

economy, the activist groups favor opposed policies, but trade policy is likely to be more protectionist and unstable. In essence different elite groups compete with each other, in order to gain rents, and induce economic inefficiencies. As a result, uncertainty in policy has been one cause of the slower development of these economies. Section 11.4 discusses the particular example of Argentina and an exchange rate policy intended initially to defeat hyperinflation, but which advantaged important interest groups at great cost to labor.

## 11.2 Oligarchies and Autocracies

To construct a general theoretical model, we first start with the political economic assumption that power derives from the control of the factors of capital, land and labor. The distribution of these factors can be described by a point in a high dimensional *economic factor space*. Perpendicular to the economic space is the *political space*.

The empirical work to date suggests that the definition of the political space depends on the specific country and time. For example, the work presented in Chap. 5 presents evidence that this political axis in the United States can be identified with civil and social rights.<sup>10</sup> For Britain, Chap. 6 suggests that the axis is defined by nationalism, and in particular by attitudes to the European Union. The analysis of Israel and Turkey in Chap. 10 indicated that both religion and nationalism (or security) define the political space.

For purposes of exposition, Fig. 11.1 gives an extreme simplification of this idea, representing a single dimensional economic factor space, involving an opposition between Land or Labor and Capital, and a single dimensional political space, to be interpreted in terms of the degree of political equality in the society – namely the opposition between pure democracy, to the north in Fig. 11.1, and autocracy to the south in the figure. Indeed, for countries like Turkey and Israel, it would be necessary to utilize a number of dimensions to represent the conflicting economic and political interests.

Below we comment on recent transitions in Tunisia, Egypt and Iran. In such countries in addition to a predominant economic dimension involving inequality, we would need to add a religious dimension.

Figure 11.1 is based on the same idea of activist groups as Fig. 1.9. It is meant to suggest that democratic and partially democratic or oligarchic polities can, in principle, be modelled in similar ways.

Schofield (2006a, 2009a) suggests the following formal model, which was developed further in Chap. 5.

Firstly, the capital elite has an ellipsoidal utility function, centered at R, as illustrated in Fig. 11.1, indicating their primary concern with that factor. Similarly

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<sup>10</sup>See also Schofield et al. (2003), Miller and Schofield (2003, 2008) and Schofield and Miller (2007).

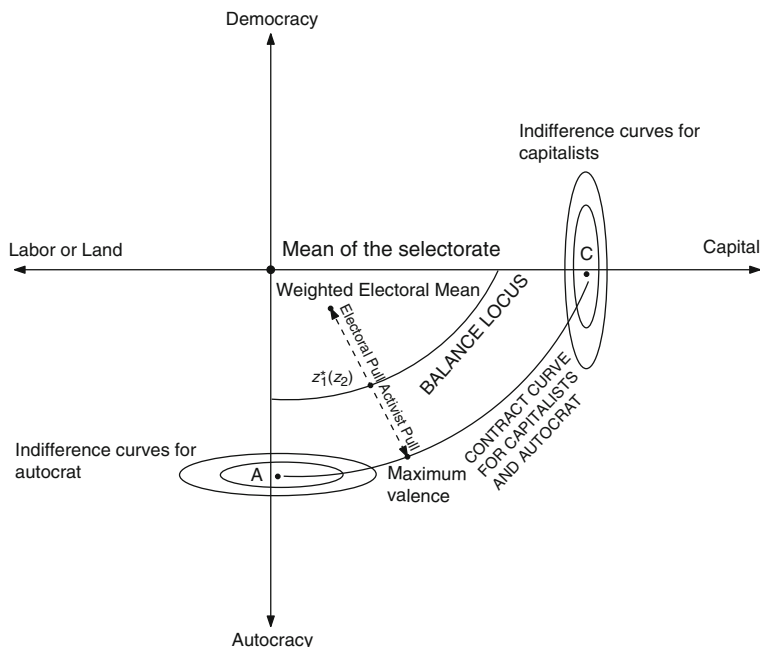


Fig. 11.1 The autocrat balance locus

the political elite, whether autocrat or prime minister or president, is less interested in the particular disposition of economic factors, but rather in their utilization in order to maintain political power. This assumption on elite utilities provides the context in which the economic and political elite arrange the bargain that keeps them in power. Figure 11.1 presents a *contract curve (or set)* between the economic elite (whether land or capital) and the autocrat’s immediate supporters. In many parts of the world, the key autocrat supporters would be the military. It is implicit here that the preferred policy point, on the social or political axis, of different elements of the economic elite need not coincide with those preferred by the autocrat or the military. This contract curve represents the set of bargains that are possible, and thus specifies the nature of the resources, military and capitalistic, that can be made available to the political leader. Again, it is not crucial that the bargain be only between capital and the political or military elite. It is quite possible in some regimes that the landed elite control the critical factor.<sup>11</sup> The resources made available by this contract can then be used to maintain political power, either by offering bribes in order to maintain support, or by threatening punishment against opposition members.<sup>12</sup>

<sup>11</sup>As Diamond (2008) has noted, oil is the crucial factor in many authoritarian petro-regimes, including such states as Azerbaijan, Gabon, Iran, Kazakhstan, Nigeria, Russia, Sudan, Uzbekistan and Venezuela.

<sup>12</sup>Acemoglu et al. (2010a) offer a more economic model of a game between elite, citizenry and the military. A model of targeting the citizens through “clientism” is offered in the Appendix to Chap. 5.

The “valence” of a political leader can be affected by the resources contributed by the various activists who support the leader. We call this “activist valence.” With just two activist groups, the “activist valence” of the autocrat, named 1, can then be expressed as a combination

$$\mu_1(z_1) = \mu_A(R_A(U_A(z_1))) + \mu_C(R_C(U_C(z_1))).$$

As defined more precisely in Chap. 5,  $R_A(U_A(z_1))$  are the resources contributed by the immediate autocrat supporters, expressed in terms of the supporters’ utility function,  $U_A(z_1)$ , and dependent on the autocrat position,  $z_1$ , while  $R_C(U_C(z_1))$  are the resources contributed by the capitalist elite. In the same way we may assume that an anti-regime leader, named 2, will gain resources from democratic and labor activists, as described by a contract curve located in the opposed quadrant in Fig. 11.1. Each member or citizen,  $i$ , in the society has a utility function, based partly on some preferred position in the factor space, but also on what we have called the *valences* of the various political leaders. This model distinguishes between the perceived valences by the citizens of the various political leaders and the valence that results from the resources made available to the political leader by the economic or political elites. The *balance locus* gives the equilibrium locus of each of the political leader,  $j$ , obtained by the maximization of an appropriate support function,  $V_j$ . In Fig. 11.1, the point marked  $z_1^*(z_2)$  satisfies the *balance condition for leader 1*, because the electoral and activist “pulls” are directly opposed.<sup>13</sup> This point denotes the position that maximizes the regime’s support function, in response to an opposition position, denoted  $z_2$ . The simple model of support maximization can be readily extended using the notion of a family of support operators, defined via a system of beliefs, over the probabilities associated with various outcomes.

In a democratic regime, the best position (what we have called a *local Nash equilibrium*, or LNE) of a political leader will depend on the intrinsic valences of political opponents and the activist contribution functions. In a “partial democracy” or oligarchy, the weighted electoral mean of the leader will be a weighted sum of the preferred positions of those with some power in the polity (called the *selectorate* by Bueno de Mesquita et al. 2003).

In Fig. 11.1 we distinguish the *contract set* of the elite support group of the leader from the *weighted electoral mean* of the regime’s leader as well as the *mean of the selectorate*. The point denoted “the mean of the selectorate” is the center of the distribution of preferred positions of all who have a say in politics. The weighted electoral mean of the leader weighs the different members of the selectorate depending on sociodemographic parameters such as ethnicity, or location, or wealth, etc. Opposition leaders will also be characterized by possibly a quite different support group and thus by different weighted electoral means. Indeed, the model proposed in the Appendix to Chap. 5 suggests that the weighting used by the

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<sup>13</sup>The formal definition of the balance condition is given in Chap. 5. It is the condition that specifies how the leader will maximize support, based both on electoral and activist support.

various political leaders may depend on the degree to which the members of the selectorate are “bribeable.” The point of this model is that it allows, in principle, for the formation of different support groups for a political leader and a potential opposition. These opposed support groups may indeed be members of the society’s oligarchy but defined by their control of different factors, or by different ethnicity etc. The model can also be adapted to the case of coup d’état, when some members of the autocrat’s support group switch allegiance to an opposition leader.

In both democratic and autocratic regimes, the leader with greater intrinsic valence will be less dependent on the resource support of activists or the factor elite. Moreover, the greater the intrinsic valence of an opponent, whether a revolutionary or a leader of a democratically chosen opposition, the further will the position of the regime’s leader be from the center. The expression for the activist valence, given above, is for the simple case of two activist groups supporting the autocrat. The model can be readily generalized to the case of many groups. The essence of the model, however, is that there will be conflict both within activist groups and between the groups.

Some partial democratic systems have evolved so that the political equilibrium is relatively stable, as illustrated by *Russia* under President (now Prime Minister) Putin. The model presented in Chap. 9 shows that Putin had extremely high valence in the election of 2007. This appears to be the consequence of the price of oil and the status of Russia as an oil exporter.

The conflict with Georgia over South Ossetia and Abkhazia in August 2008 and the problem over Russian gas prices and supplies in Eastern Europe and the Ukraine in January 2009 show that Putin is ready and able to extend Russian power in its sphere of interest, especially in a situation where the United States has its military resources over-committed in Iraq and Afghanistan.<sup>14</sup> Putin was able to force through legislation in the Duma in January 2008 that potentially allows him to regain the office of President in the future. More recently, the higher price of oil has confirmed Putin’s popularity.

Russia also had a hand in the overthrow of Kyrgyzstan’s President, Kurmanbek Bakiyev, in April 2010, leading to a new government under Roza Otunbayeva. Bakiyev himself had deposed the first president, Askar Akayev, in the so-called Tulip Revolution in 2005.

Russia has further extended its influence in its “near abroad”, by persuading Ukraine’s president Victor Yanukovich, to extend the lease on Russia’s naval base in Sebastopol until 2017, in return for a bargain price on Russian gas. Yulia Tymoshenko, the hero of Ukraine’s Orange Revolution of 2004, had become Prime Minister but lost the Presidential election in 2009 to Victor Yanukovich. In return for Russian support, Yanukovich has cracked down on the pro-west opposition and has been accused of autocracy.

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<sup>14</sup>See [Lucas \(2009\)](#).

As we also saw in Chap. 9, Saakashvili came to power in the Rose Revolution in Georgia and, while pro-west, has become increasingly autocratic, as has President Ilham Aliyev in Azerbaijan.

Collier (2009) has discussed the ability of autocrats, particularly in Africa, to remain in power for years. For example, Mugabe has been in power in *Zimbabwe* since 1980, and the country currently suffers from inflation of over a million percent. A month after Zimbabwe's election on March 29, 2008, the electoral body declared that Morgan Tsvangirai, the leader of the opposition party, had won more votes than President Robert Mugabe, but only 48%, not a majority, and that a runoff on June 27 would be necessary. Mugabe and his supporters initiated a process of murder and intimidation forcing Tsvangirai to withdraw, leaving Mugabe in power. On July 11, 2008, Russia and China vetoed a US led attempt in the U.N. Security Council to impose sanctions on Zimbabwe, and on July 26, the Bush administration announced new sanctions against Zimbabwe. Although the talks over power-sharing broke down on July 29, because of Mugabe's insistence that he remain president, the opposition candidate for Speaker of the Legislature, Lovemore Moyo, won the position by a vote of 110 to 98. On September 15, 2008, a power-sharing agreement set up a finely-balanced coalition government. The combined opposition will have a one-person majority in the cabinet, but it will be chaired by President Robert Mugabe. Morgan Tsvangirai will be Prime Minister and deputy chair of the cabinet, and will also chair a Council of Ministers, which will "oversee the formulation of government policies by the cabinet" and "ensure that the policies so formulated are implemented by the entirety of government." Mugabe's party, the Zanu-PF and the two opposition groups in the Movement for Democratic Change (MDC) agreed to "accept the irreversibility of Mugabe's seizure and redistribution of land." Nonetheless, there still appeared to be a deadlock in October 2008, over Mugabe's insistence that he retain control of the police and security forces, as well as most of the crucial ministries. In November, Mugabe's decided to forbid a humanitarian visit by Mr. Jimmy Carter, Kofi Annan, the former United Nations Secretary General, and Graça Machel, Nelson Mandela's wife. However, the deadlock appeared to have broken on January 30, 2009, when Tsvangirai agreed to join the government in return for shared control over the police. Finally, Tsvangirai was sworn in as Prime Minister on February 11. Mugabe made an extraordinary show of his power by inviting the Iranian president, Mahmoud Ahmadinejad to Harare for an international trade show in April 2010.

Not all autocrats are able to hold on to power as tenaciously as Mugabe. In *Pakistan*, the assassination of Benazir Bhutto, on 27 December 2007, and the military's increasing fear of the power of the Taliban, led the way to the defeat of President Pervez Musharraf's party in the election on February 18, 2008, and the creation of a coalition government consisting of the Pakistan Peoples Party (with 120 seats), chaired by Asif Ali Zardari (Bhutto's widower) and the Pakistan Muslim League-N (with 90 seats), led by Nawaz Sharif. The Pakistan Muslim League-Q, led by Chaudhry Shujaat Hussain, with only 51 seats in the 342 seat National Assembly, still supported Musharraf. (See Rashid 2008, for the maneuvering between the United States and Musharraf in the period up to the election.)

On Monday, August 18, 2008, Musharraf was forced to resign from the Presidency, in order to avoid impeachment. The coalition broke up on August 25, and Yousaf Raza Gilani became Prime Minister. Zardari was elected President on September 6, 2008, apparently with Sharif's support. The army remained neutral in these various political contests, but on September 10, the day after Zardari's inauguration as President, the military chief, General Ashfaq Parvez Kayani, strongly criticized the United States for its incursions into the tribal areas of Pakistan to seek out the Taliban and Al Qaeda. Although Zardari is considered pro-American, he echoed Kayani's sentiments at his speech to Parliament on September 20. While the nature of the implicit compact between the military and the government is unclear, the army still owns or controls enormous wealth, land and much of the manufacturing capacity of the country, as well as its nuclear arsenal. After the terrorist attack by Lashkar-e-Taiba (part of the Islamic Front, and linked to el Qaeda) on Mumbai, India, in late November 2008, fears have been expressed that this attack was supported by elements of the Pakistan security forces, and designed to further destabilize Indian Pakistan relations. Since then, relations between Zardari and Sharif have soured. The Supreme Court, at Zardari's behest, disqualified Sharif from elective office. The Punjab, Sharif's stronghold, has been put under the rule of a governor and its provincial assembly dismissed. On the other hand, Zardari reinstated Chief Justice Iftikhar Chaudhry on March 16, and this move can be seen as an important step towards the rule of law.

In April, the Taliban struck a peace deal with Zardari, allowing them to control the Swat Valley and then the town of Bruner, only 65 miles from Islamabad. By May, this peace deal had broken down, and fighting between the Taliban and the military forces had caused refugees, estimated at 1.3 million, to leave the Swat Valley. [Rashid \(2009\)](#) suggests that

Pakistan is close to the brink, perhaps not to a meltdown of the government, but to a permanent state of anarchy, as the Islamist revolutionaries led by the Taliban and their many allies take more territory, and state power shrinks.

Osama bin Laden was killed by US marines in Pakistan on May 2nd, 2011. His bunker was near a Pakistan military camp, which led many to infer that the military had provided him with some protection. In *Afghanistan*, in the first round of the presidential election, on August 20, 2009, the incumbent President, Hamid Karzai, won about 50% of the vote, but this result appeared to be the result of massive fraud. The challenger, Abdullah Abdullah, who won about 31%, withdrew from the second round. Under US pressure, Karzai has promised to deal with corruption. To show his independence, however, Karzai invited Ahmadinejad to Kabul in late March 2010. The election for the Parliament, the *Wolesi Jirga*, took place on 18 September 2010. Many of the elections for the 249 parliamentarians were declared fraudulent or invalid, but by November the Independent Election Commission had declared the final result valid. Karzai avoided the inauguration of the Parliament for over 2 months, ruling by decree, but on January 26 he swore in the country's new Parliament. Perhaps Parliament would be able to start work despite ongoing investigations into electoral fraud. Transparency International had previously rated the regime as the second most corrupt in the world after Somalia's.



In *Iraq* after the election in March 2010, there was still uncertainty after 10 months about the form of the government.<sup>15</sup> In the election, Ayad al-Allawi's Iraqiya list was first with 91 seats; Prime Minister Maliki's State of Law coalition took 89 seats; the Shi'a Iraqi National Alliance was third with 70 seats (40 seats of which were held by the Sadrist group led by Moktada al-Sadr); the Kurdistan Alliance was fourth with 43 seats. Other factions won 32 seats. Allawi first attempted to construct a coalition with a majority of 163 seats out of 325. On May 4, State of Law joined forces with the Iraqi National Alliance, and called itself the National Alliance, but only controlled 159 seats. On May 15 the Sadrist group within the National Alliance withdrew its veto over Maliki becoming prime minister again. Maliki and Allawi then held their first meeting on June 12. But on August 16, Iraqiya broke off all talks with State of Law saying that Maliki had described Iraqiya as a Sunni grouping. Iraqiya followed this on September 25 by announcing it would not participate in a government led by Maliki. The National Alliance then chose Maliki as its candidate for prime minister on October 1. In some desperation, on October 30, Saudi Arabia invited Iraq's political leaders to Riyadh in an attempt to find a compromise, and on November 1, Maliki was able to obtain support from the Shiite Fadila faction. On November 11, Parliament held its second session since the election and chooses Osama al-Nujaifi, a Sunni and member of Iraqiya, as its speaker, and re-elected Jalal Talabani, a Kurd, as president. Finally, on November 25, Talabani officially re-appointed Maliki as prime minister and ordered him to form a cabinet, which he did on December 21, 2010. However, three key security ministries – the Ministry of Defense, the Ministry of Interior, and the Ministry of State for National Security remained unfilled and were taken by Maliki for himself “until suitable persons can be found, Allawi accused Maliki of failing to keep to his promises and withdrew his support.”

On June 12, 2009, elections were held in *Iran*, and the reformist candidate, Mir Hussein Moussavi, was declared to have been beaten by Mahmoud Ahmadinejad in a Presidential election that was probably fixed. The establishment reacted violently to street demonstrations in support of Moussavi. On June 20, an innocent girl, Neda Agha-Soltan, was murdered in Tehran, allegedly by a militia man, although Ahmadinejad called the death “suspicious.” On July 4, the former presidents, Mohammad Khatami and Ali Akbar Rafsanjani, together with an influential group of clerics, the Association of Researchers and Teachers of the holy city of Qum, came out against the establishment and Supreme Leader, Ayatollah Ali Khamenei. Eventually, on August 3, Khamenei approved Ahmadinejad as president, although the two former presidents still dissented. Major opposition demonstrations were still occurring even in December 2009. Some 4,000 people were arrested in connection with protests following the presidential election. At least three of the demonstrators died in prison, and a number of prison guards were indicted for murder. Ahmadinejad continued his strategy of annoying the West, and on September 23, 2010, even went

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<sup>15</sup>Members of Parliament still received their monthly checks of \$10,000 and appeared in no hurry to form a government.



so far as to declare to the United Nations General Assembly in Washington that the US had orchestrated the terrorist attacks on September 11, 2001.

One inference from this model is that the “equilibrium” position of an autocrat may be so far from the center that the citizens will attempt to remove the dictator, even in the face of bribes or punishment strategies. For example, on January 14, 2011, *Tunisia’s* president, Zine el-Abidine Ben Ali, was forced to flee the country after 23 years of autocratic rule, because of huge popular demonstrations. The Muslim political movement, *Ennahdha*, or Renaissance, began regrouping, and were fears that there would be conflict between Tunisia’s secular military forces and religious groups.

On 25 January 2011, thousands of protesters in *Egypt*, mobilized largely through the Internet and the social networking sites and energized by the revolution that ousted Tunisia’s dictator, occupied Cairo’s Tahrir Square for hours, beating back attempts to dislodge them by police officers wielding tear gas and water cannons. Egypt is the most populous country in the Arab world and there is fear that the popular uprising might spread to other Middle Eastern countries. People flooded into public squares in Cairo, Alexandria and other major cities. In spite of the government imposed curfew, Egyptians were still on the streets on Sunday 30 January 2011. Tens of thousands of protesters are calling for Hosni Mubarak to step down, and demanding a move towards a more democratic country. This is the most serious challenge to Mubarak’s regime as the uprising has brought to the surface decades of smoldering grievances against Mubarak who has been in office for 30 years. Within days of the start of the protests, Mubarak called in the army. On 28 January, he ordered his entire cabinet to resign while stating that he would stay in office. The change in the cabinet did not calm protesters who were asking for Mubarak resignation. Mubarak relied on the military for support by naming the head of military intelligence, Omar Suleiman, as his new vice president. State media said the country’s new prime minister would be the air force chief, Ahmed Shafik. On January 31, the military declared that it would not use force to stop the protests, and the next day Mubarak, under pressure from Obama, declared he would not run for re-election. The pressure from the military intensified, and Mubarak resigned from the Presidency on February 11, much to the delight of the protesters. The military council then took over and disbanded Parliament, forced the resignation of the unpopular Prime Minister, Ahmed Shafiq, suspended the constitution and announced it would remain in power for 6 months, until an election could be arranged. The military council faced a quandary over how to deal with the protesters and announced that “it is aware of the demands of the people, but wants to underline the need for the return of normal life in Egypt.” The new Prime Minister, Essam Sharaf told the crowds in Tahir Square on March 4 that they were the ones “to whom legitimacy belongs.”

Even a fairly popular monarch can have severe difficulties from popular unrest. King Abdullah II of *Jordan* dismissed his government on February 1, 2011, after street protests, inspired by events in Tunisia and Egypt, demanded the resignation of Prime Minister Samir Rifai, who is blamed for a rise in fuel and food prices. The King asked Marouf al-Bakhit to be Prime Minister and to form a new cabinet.

The King's motorcade was attacked by youths on June 13, after he had given a speech promising reforms leading to a Parliamentary system of government. He did say that sudden change could lead to "chaos and unrest." On July 1, Moroccans voted overwhelmingly to approve a new constitution proposed by the popular King Mohammad VI roughly two weeks earlier. This new constitution represents the culmination of a process crafted largely by the king in an attempt to quell the protests. There were protests later that the reforms had not gone far enough.

In February in Manama, *Bahrain*, protesters in Pearl Square demanded that King Hamad bin Isa al-Khalifa, a Sunni, agree to a constitutional democracy, which would probably give power to the main Shi'ite opposition group, *Al Wefaq*. The crown prince, Sheikh Salman bin Hamad al-Khalifa, ordered the police to leave the square on February 19. *Al Wefaq* pulled out of parliament and demanded the dismissal of the Prime Minister, Sheik Khalifa bin Salman al-Khalifa, the King's uncle, as well as the formation of a new unity government.

In the *Yemen*, Ali Abdullah Saleh, President for 32 years, offered concessions to protesters, announcing that he would not run again. The Presidential Palace was attacked and Saleh was flown to Saudi Arabia on June 4 for urgent medical treatment of wounds. In the *Sudan*, there were protests against Omar Hassan al-Bashir, who took power in a military coup in 1989. More than 70,000 people fled the violence in Sudan's South Kordofan state, where the government says it is disarming rebels. The region borders South Sudan, a largely Christian and animist region, which gained independence from the mostly Arabic-speaking, Muslim north on 9 July, 2011.

There were also violent clashes between the police and demonstrators and hundreds of deaths in Benghazi, the capital of *Libya*, where Col. Muammar el-Qaddafi has been in power for 41 years. By February 20, the uprising had spread to the capital, Tripoli, and the autocrat's son, Saif al-Islam el-Qaddafi, spoke on television about an "apocalyptic civil war." In the next few days the closing of oil wells in Libya forced the price of oil to over \$100/barrel and the US stock market, as measured by the Dow, fell 2%. By February 28, it looked as though Libya had indeed fallen into civil war. A prize in this contest is Libya's sovereign wealth fund, valued at \$70 billion and seemingly controlled by Saif al-Islam el-Qaddafi. Qaddafi sent in mercenaries and members of the military that were still loyal against the opposition. The makeshift rebel army portrayed itself to the West and to Libyans as an alternative to Qaddafi's autocratic rule. The rebels faced the possibility of being outgunned and outnumbered in what increasingly looks like a civil war. As Qaddafi's troops advanced to within 100 miles of Benghazi, the rebel stronghold in the west, the United Nations Security Council voted to authorize military action, aimed at averting a bloody rout of the rebels by loyalist forces. On March 19, American and European forces began a broad campaign of strikes against Qaddafi and his government, unleashing warplanes and missiles in a military intervention on a scale not seen since the Iraq war. Qaddafi was defiant in the face of allied strikes and warned of a "long war." Without the Arab League's endorsement, the United Nations Security Council likely would not have passed Resolution 1973 on March 17, which approved "all necessary measures" to protect the Libyan people.

The demonstrations in Tunisia, Egypt, Bahrain, the Yemen and Jordan triggered further demonstrations in Iran on February 14, which the government attempted to put down as before. Protests also erupted in Tahrir Square in Baghdad, Iraq, on February 25, and many demonstrators were killed by the security police. Unlike other demonstrations in North Africa the people did not demand a change in the political situation but in the provision of public goods and jobs.

Finally, in Syria in late March, Bashar al-Assad, who took control after his father's death in 2000, has set the military against the protesters, leading to many deaths, and a refugee exodus to Turkey. There were now fears of a civil war of Sunni against Shia throughout the Middle East. These protests appear to have changed the position of Israel's Prime Minister, Benjamin Netanyahu and by July it appeared that Israel and Turkey had agreed to resolve some of their disagreements.

These examples all show how elites can be fragmented in autocratic states, but must yet compete with each other for some degree of popular support. The possibly chaotic response of the mass of citizens seems to follow what have been called *belief cascades*. The idea underlying this notion is that of a cascade as a society goes through a sequence of tipping points as groups in the society turn against the autocratic regime. [Karklins and Petersen \(1993\)](#) and [Lohmann \(1994\)](#) used this idea in an attempt to understand the "third wave of democratization"<sup>16</sup> that occurred 20 years ago in Eastern Europe and Russia. The current events in the Middle East and North Africa suggest that the people in these regions have had enough of autocracy and stagnation. Contrary to Huntington's argument ([Huntington 1998](#)) about the "Clash of Civilizations," there seems to be a universal desire for autonomy.

Nonetheless, the uncertainty surrounding the revolutionary zeal at present in these countries suggests the profound importance of the social choice notion of "chaos." Theory suggests that in the absence of a dictator or autocrat, then political choice may be completely indeterminate.<sup>17</sup> Recent events in Tunisia, Egypt, and Libya, and potentially in Syria and Iran as well as the earlier civil wars in Serbia, Croatia, Kosova, and in the Caucasus after the collapse of the Soviet Union, provide evidence of this possibility.

Indeed the result of the removal of Saddam Hussein in Iraq provides even stronger evidence. As we have seen in Iraq, it can take many years to build democratic institutions that may be capable of generating required public goods. As [Schofield \(2006a\)](#) points out, Keynes was well aware of this social quandary when he wrote his great work in 1936.

Applying the formal model presented in this chapter, it may be possible to pinpoint the logic of autocratic durability, by analyzing the complex relationships between leaders, the military, the people and, in countries like Afghanistan, warlords and religious activists. [Schofield and Levinson \(2008\)](#) used a simplified version of this model to examine three types of authoritarian regimes that have predominated

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<sup>16</sup>[Huntington \(1991\)](#).

<sup>17</sup>See Chap. 1.

in the twentieth century: bureaucratic military dictatorship, fascist dictatorship, and the communist party dictatorship.

They argued that the theoretical prerequisites for regime change to democracy were sequentially harder to meet. These prerequisites included:

1. Enough economic and or political inequality to induce an oppositional underclass to demand that some power redistribution be formally institutionalized.
2. Not so much inequality in economic or political power that the authoritarian elite is willing to incur almost any cost to keep power.
3. The ability of the regime's opponents to overcome the collective action problem inherent in organizing a revolution.
4. for democracy to be achieved, reformers within the authoritarian bloc must align themselves with moderate opposition leaders to force authoritarian hardliners into accepting transition.

While these conclusions were drawn from an historical analysis of Franco's Spain, Argentina under the military Junta during 1976–1983 and the Soviet Union, they may also be valid for the anocracies discussed above.

Extending this model to deal with complex polities, like Iran, Iraq, Pakistan and Russia would potentially involve three economic factor dimensions, as well as various political dimensions such as equality, nationalism, and religion. It is possible that the military will be strongly opposed to religious activists, as Chap. 10 shows is the case in Turkey. On the other hand, in Pakistan it would seem that the military is divided between those who support and those who fear religious fundamentalism. In Afghanistan and Iraq the situation is even more complex. The former country is, in a sense, partly governed by factious warlords, whose wealth depends on their control of trade in opium<sup>18</sup> and weapons, and who rightly fear that the Taliban threaten their power. In Iraq, the election in 2010 showed that the electorate is sharply and regionally divided between Sunni, Shia and Kurd, with a policy space characterized by religion and nationalism, just as in Turkey.

In October 2009, Erdogan visited Tehran and met with President Ahmadinejad of Iran. Turkey and Russia are also discussing the possibility of having Russian gas supplies transit through Turkey. The result of these moves by Turkey will affect the whole Middle East. [Rashid \(2001\)](#) suggests that the situation in the Middle East can be called the “New Great Game” after the struggle for empire in the eighteenth century contest between Russia and Great Britain ([Hopkirk 1994](#); [Meyer and Brysac 1999](#)). One aspect of the current great game is that the United States deploys an imperial toolkit that includes “democratization” and “liberalization of markets.” [Chua \(2003\)](#) notes that these can induce “backlash.”

As noted above, [Levitsky and Way \(2002\)](#) comment that the initial optimism about democratization has been followed by the realization that many regimes in Africa, Eurasia and Latin America, are only partially democratic, and do indeed

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<sup>18</sup>[Rashid \(2008\)](#) notes that in 2006 Afghanistan produced 93% of the world's heroin. There are also untapped reserves of oil, gas and many minerals.

involve authoritarian governance. [Khalizad \(2010\)](#) and [Worden \(2010\)](#) suggest that democratization in Iraq and Afghanistan, in particular, will be hindered by widespread corruption.

The recent events in the Middle East show however that popular support for democracy can overwhelm even powerful autocrats. Since many of these autocrats were secular and opposed religious activist groups, their overthrow may well pose a quandary for the United States.

In the next section we present an application of the model to the case of Argentina, based on [Schofield and Cataife \(2007\)](#) and [Galiani et al. \(2010\)](#). Argentina is currently democratic, but has exhibited swings to military autocracy in the past. We suggest that activist influence can induce fairly rapid switches in political policy, particularly when the economy is so heavily dependent on trade and thus on its exchange rate policy and the degree to which it protects some factors of production or provides support for some export sectors.

### 11.3 Trade and Development

In this section we present an application of the model to the case of Argentina, based on [Schofield and Cataife \(2007\)](#) and [Galiani et al. \(2010\)](#). Argentina is currently democratic, but has exhibited swings to military autocracy in the past. We suggest that activist influence can induce fairly rapid switches in political policy, particularly when the economy is so heavily dependent on trade and thus on its exchange rate policy and the degree to which it protects some factors of production or provides support for some export sectors.

Many developing countries adopted trade protectionist measures during the second part of the twentieth century. Most of these countries, if not all of them, did not have a comparative advantage in the manufacturing sector and they did not industrialize in a sustainable way as a result. Instead, they had a comparative advantage within the primary sector.<sup>19</sup> In contrast, countries with comparative advantage in the manufacturing sector tended to remain much more open to trade. Additionally, the countries that adopted import substitution policies tended to show substantial volatility over time in their trade policies. Consider, just as an example, the case of Argentina. This country is relatively well endowed with highly productive land, and its comparative advantage has always been in the production of primary goods.<sup>20</sup> Up to the 1930s, Argentina was well integrated to the world economy. Some protectionism naturally developed during the world recession of the 1930s, and then again after World War II, when for the first time workers massively voted in a presidential election.<sup>21</sup> The country closed itself off in large degree from world markets becoming almost autarkic until the mid-1970s. Since then, even though Argentina has tended to reintegrate with the world economy,

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<sup>19</sup>See [Syrquin \(1988\)](#).

<sup>20</sup>See [Brambilla et al. \(2009\)](#).

<sup>21</sup>See [Cantón \(1968\)](#).

there was a 10 year period, from 1981 to 1990, when GDP per capita decreased substantially. [Hopenhayn and Nuemeyer \(2005\)](#) argue that this was, to some extent, due to the degree of uncertainty about trade policy which significantly hampered capital accumulation.

These remarks suggest that there is a close and complex connections between political choice and economic structure. As discussed in Chap. 5, many models of political choice emphasize political convergence to an electoral mean or median. Such models appear to be of limited use in explaining the oscillations that can occur as a result of divergent political choices by parties. As we have argued in Chap. 5, political parties will not converge if there is sufficient difference in the *valences* of political leaders.

[Galiani et al. \(2010\)](#) have extended the stochastic model of electoral competition, as presented in Chap. 5, to study the economic and political determinants of trade policy. They model a small open economy with two tradable goods, each of which is produced using a sector specific factor (e.g., land and capital) and a third factor (e.g., labor) which is mobile between these tradable sectors. There is also one non-tradable good, which is produced using a specific factor (e.g., skilled labor). The political model has an elected government with the mandate to fix an ad valorem import tax rate. The tax revenue is used to provide two local public goods. One public good is targeted at the specific factors of production while the other is targeted at the mobile factor of production. We use this general equilibrium model to explicitly derive the preferences of the different socioeconomic groups in society (landlords, industrialists, workers and service workers). We then use those derived preferences for political policies to model the individual probabilistic voting behavior of the members of each of these socioeconomic groups. The combined model is thus based on micro-political economy foundations of citizens preferences. The model by [Galiani et al. \(2010\)](#) offers an explanation why differences in the factor endowments of countries explain trade policy divergence between countries as well as trade policy instability within countries. Trade policy instability requires that political parties diverge in equilibrium over the political economic platforms that they present to the electorate, and commit to implement if elected.

Just as in [Grossman and Helpman \(1994, 1996\)](#) there are two interconnected sources of political influence: electoral competition and interest groups. In their study of the political economy of protection Grossman and Helpman proposed a model of protection in which economic interests organize along sectoral lines, so that interest groups form to represent industries. Their model predicts a cross-sectional structure of protection, depending on political and economic characteristics, and provides an excellent model of within country cross-section variability of trade policy. In contrast, the focus of this chapter is on the variability of trade policy both across countries and within a country over time, rather than across sectors.

[Roemer \(2001, 2011\)](#) also presents several models of political competition in which the central economic dimension is the distributive conflict among different socioeconomic groups. [Acemoglu and Robinson \(2006a\)](#) also offer a theory of political transition that uses the distributive conflict between the rich and the poor as the main driving force behind political change, and they also stress structural

differences between rural elites (landlords) and urban elites (industrialists) in highlighting important equilibrium institutional differences across countries. We emphasize redistributive conflict as the main determinant of trade policy. Thus our work is related to the analysis of Rogowski (1987, 1989) and Baldwin (1989), which use the Stolper and Samuelson (1941) Theorem to model the effects of international trade on political cleavages and alignments, as well as changes in those cleavages over time as a consequence of exogenous shocks in the risk and cost of foreign trade.

Albornoz et al. (2008) introduce foreign direct investment in infrastructure such as railways in the standard two sector model of a small open economy and study how the redistributive effect of the railway (triggered by Stolper–Samuelson effects) differentiates the interests of landlords and workers with respect to policies such as expropriation. Dal Bo and Dal Bo (2011) introduce appropriation activities in the two sector model of a small open economy, and employ the Stolper–Samuelson theorem to study how economic and policy shocks affect the intensity of appropriation activities. The beauty of the Stolper–Samuelson Theorem is that it identifies winners and losers under free trade in simple economies.

However, the Stolper–Samuelson Theorem does not explain why trade policy changes occur. Chapter 1 has discussed a number of significant policy changes, including the repeal of the Corn Laws in Great Britain in 1846, followed by the Reform bill in 1867. Chapter 1 also commented on other policy switches in the United States. After the Civil War, the Republicans had become closely associated with pro-capital protectionism. It took the election of the Democrat, Woodrow Wilson, in 1912 to weaken the dominance of the protectionist Republican regime and begin the transformation of the US economy to one where manufacturing began to dominate over agriculture. Indeed, it was not until the North American Free Trade Agreement was signed in 1993, during the presidency of William Clinton, that the protectionist inclinations of domestic interest groups were sufficiently weakened to allow for such a free trade regime. Such an agreement was clearly against the interests of working people, who had tended to support the Democrat Party. In 1999, China and the US had negotiated the entry of China into the World Trade Organization. The AFL-CIO opposed China's entry and the meeting of the WTO in Seattle sparked angry riots. As Karabell (2009) argues, this agreement formed the basis for "Chimerica," the synergy between the USA and China that has resulted in the very rapid growth of China, and the equally rapid growth of the USA debt in the decade 2000–2010.

A more recent realignment that has been noted in 2010 is the switch by many "evangelicals," who typically vote Republican, but have realigned with the Hispanic community, and as a result are in favor of Obama's attempts to push through immigration reform.

We have followed the classification by Rogowski (1987) of economies according to their factor endowments of capital, land and labor. His classification suggests that there are two main types of political cleavages: a class cleavage and a urban-rural cleavage. The underlying model presented by Galiani, Schofield and Torrens (2010) can include non-tradable goods and thus can allow for a richer characterization of political alignments. In particular, in natural resource (land) abundant economies,



without the inclusion of non-tradable goods, landlords favor free trade, and industrialists and workers are protectionist, inducing a urban-rural cleavage. However, once non-tradable goods are introduced in the model, distributive conflict among urban groups will also be present. Industrialists and unskilled workers may favor protectionist policies while skilled workers favor free trade policies (see [Galiani et al. 2009](#)). Furthermore, [Galiani, Schofield and Torrens \(2010\)](#) show that the presence of a distributive conflict between urban groups can have political effects in the determination of trade policy.

Their paper constructs a taxonomy to classify different economies given their economic structures:

1. *Natural resource-rich economies.* This set comprises countries that are highly abundant in the factor specific to the less labor-intensive tradable industry (land). They specialize in the production of primary goods.
2. *Diversified natural resource-rich economies.* They comprise countries that are moderately abundant in the factor specific to the less labor intensive tradable industry (land), but they display an important activity in the production of the two tradable goods.
3. *Industrial economies.* They comprise countries that are either abundant in the factor specific to the more labor-intensive tradeable industry (capital) or are highly endowed with the mobile factor of production (labor).

[Galiani, Schofield and Torrens](#) show that in a natural resource abundant economy with very little capital, or in an economy with comparative advantage in the manufacturing sector (i.e., industrial economies), political parties tend to converge to the same policy platform. Trade policy is likely to be stable and relatively close to free trade. In contrast, in a natural resource abundant economy with an important domestic industry which competes with imports, parties tend to diverge. Trade policy is likely to be more protectionist and unstable. This is consistent with the empirical evidence in [O'Rourke and Taylor \(2006\)](#) who show that, in the late nineteenth century, democratization led to more liberal trade policies in countries where workers stood to gain from free trade. Using more recent evidence, [Mayda and Rodrik \(2005\)](#) show that individuals in sectors with a revealed comparative disadvantage tend to be more protectionist than individuals in sectors with a revealed comparative advantage. They also show that individuals in non-tradable sectors tend to be the most pro-trade of all workers.

[Galiani, Schofield and Torrens](#) also show that when policy platforms diverge, then the economic structure influences the pattern of divergence. In particular, in specialized natural resource-rich and industrial economies, parties tend to propose very similar trade policies, but they differ in their budget allocation proposal. Thus, distributional conflict mainly occurs in the budget allocation, which does not affect the efficiency of the economy. On the other hand, in diversified natural resource-rich economies parties tend to differ in both dimensions. Thus, party rotation induces significant changes in the efficiency of the economy since each party implements a very different trade policy.



A possible application of the model is to the ‘Marriage of Iron and Rye’ in the context of trade policy in Germany in the late nineteenth century. As [Schonhardt-Bailey \(1998, 2001\)](#) notes, the marriage was a coalition of the agrarian Junker elite and heavy industry which was successful in 1879 in promoting a protectionist tariff policy for both manufactures and agriculture. After the creation of the German Empire in 1871, the iron, steel and cotton industries of Alsace–Lorraine had been absorbed into the Zollverein, leading to overproduction. Agricultural tariffs were raised again in the 1880s, but in the 1890s reductions in agricultural tariffs were exchanged for reductions in tariffs on German exports. The agrarians then retaliated by enlarging their coalition, forming the *Bund der Landwirte*, and bringing in small farmers in support of further import restrictions. According to Pugh (1986) by 1907, about a third of the members of the Reichstag supported the *Bund*. It would seem that Bismark’s social reforms in the 1880s had brought the political axis into prominence in Germany. The success of the *Bund* was due to a political maneuver, bringing the element of populist nationalism into this axis.

## 11.4 Activist Coalitions and Policy Switches in Latin America

For a more elaborate example, we now apply aspects of the model to Argentina in the period 1989–1995.<sup>22</sup> In this illustration, the main policy instrument was the exchange rate. Different parties had very different constituencies with very different preferred policies, and the resulting swings in policy in Argentina had demonstration effects on other countries in Latin America.

As discussed in Chap. 1, the work by [Acemoglu and Robinson \(2006a\)](#) offers a theory of political transition that uses the distributive conflict between the rich and the poor as the main driving force behind political change. They also stress structural or factor differences between rural elites (landlords) and urban elites (industrialists) in highlighting important equilibrium institutional differences across countries (see also [Acemoglu et al. 2008](#)). Such a model immediately implies that there are at least two-dimensions to economic and political choice. One economic dimension is defined essentially by tax policies, and the nature of public goods produced in the polity. The other dimension is defined by external relations, the exchange rate regime, or the effect of import taxes or subsidies.

Policy change is often abrupt and affects several countries of a region concurrently. Such is the case of Latin America, whose polities seem to swing in a random fashion between pro-market and anti-market democracies ([Dominguez 1998](#)).

Chapter 5 has presented a formal model of voting based on the concept of valence. As mentioned earlier, valence relates to voters’ judgments about positively or negatively evaluated conditions which they associate with particular parties or candidates. These judgments could refer to party leaders’ competence, integrity, moral stance or “charisma” over issues such as the ability to deal with the economy,

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<sup>22</sup>This section is based on [Schofield and Cataife \(2007\)](#).

foreign threat, etc. The important point to note is that these individual judgments are independent of the positions of the voter and party.

Stokes (2001) suggests that policy switches are the result of politicians attempting to implement policies that they know are unpopular, but which they think are best for the general good. In this section, we offer an alternative explanation. The model presented here generates these policy shifts as the result of electoral forces. It is important to note, however, that in this model the cause of policy shifts is not directly due to a change in electoral preferences, but to a change in the valence of some leaders, triggered by the support of foreign interest groups.

Rather than discussing these questions abstractly, we consider the case of the Argentinean elections of 1989, 1995 and 1999. The study of a particular polity allows us to provide a better motivation for the analysis as well as an evaluation of the empirical implications of our model. We study Argentina rather than one of the other polities in the region because the sequence of events in Argentina shows that the causal connection is from political strategies to voter preferences rather than from preferences to strategies, as is usual in formal models. Implicit in our argument is the premise that foreign interests lobby for the implementation of a particular policy on all, or at least several, countries of a given region. The underlying idea is that foreign groups of interests favor those domestic leaders willing to implement their preferred policy. By contributing resources, the foreign interest groups alter the relative valence of the domestic leaders, which in turn increases the likelihood of electoral victory of their favorites as well as policy shifts across countries of the same region. The contributions of foreign interest groups often takes the form of financial support and bilateral commercial opportunities. However, recent evidence suggests that these contributions may actually take the most direct form, namely money for political campaigning, as it has been persistently alleged in the case of the 2007 Argentine election.<sup>23</sup>

The activist valence model presupposes that policy activists (either domestic or foreign) donate resources to their party. Such resources allow a party to present itself more effectively to the electorate, thus increasing its valence. Since activists tend to be more radical than the average voter, parties are faced with a dilemma. By accommodating the political demands of activists, a party leader gains resources to enhance the leaders valence, but by adopting the radical policies demanded by activists, the party may appear too extreme and lose electoral support. The party must therefore *balance* the electoral effect against the activist valence effect. As shown in Chap. 5, the result gives this as a first order balance condition between electoral and activist support. Since valence in this model is affected by activist support, it may exhibit “decreasing returns to scale” and this may induce concavity in the vote share functions of the parties. Consequently, when the concavity of activists’ valence is sufficiently pronounced then a pure strategy Nash equilibrium

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<sup>23</sup>US prosecutors in a Miami courthouse asserted that the government of Venezuela sent US\$790,550 in cash to help Cristina F. Kirchner’s electoral campaign. The Argentine government denies this allegation.

(PNE) of the vote maximizing game will exist. The result indicates that there is no reason for this equilibrium to be one where all parties adopt centrist positions. Since the balance condition depends on all leader valences and policy positions, *as well as* on the willingness of domestic and foreign groups of interests to support the policies of leaders, it is quite possible for the chosen policy to swing back and forward. Unlike domestic interest groups, contributions made by wealthy and powerful foreign interest groups affect several countries within a region, changing the relative valence of those leaders willing to support their preferred policies. This in turn increases the likelihood of victory of those leaders, even when the preferences of the electorate remain unchanged, offering a quite possible explanation for the phenomenon of “regional swings”. In our case study, first the US and the IMF, and then the government of Venezuela, constitute the interest groups that may have had such an impact in shaping the relative valences of domestic leaders.

### ***11.4.1 Argentina 1989–1999: From Populist Promises to Neoliberalism***

In 1989, Carlos Menem, the candidate of the PJ (Partido Justicialista), was elected President of Argentina with almost 50% of the votes. Menem’s populist platform, which included a universal rise in salaries (*salariazó*) and a big push to the productive sector (*revolución productiva*), was supported by the working class, and was the key to Menem’s electoral victory. In contrast, the middle and upper class generally supported the historical rival of the PJ, namely the UCR (Union Cívica Radical).

The Argentinean upper middle class probably regarded Menem as a demagogue from the countryside. From their perspective, Menem lacked both the values and the skills to lead a country that had suffered under a harsh military dictatorship (1976–1983) followed by a democratic government (1983–1989) that failed in fighting hyperinflation. It was believed that Menem’s electoral promises, if implemented, would lead to a highly redistributive policy, with a strengthening of the labor unions and a weakening of private property.

Surprisingly, once in office Menem implemented policies that were opposite to his electoral promises. The new policies included the liberalization of trade and the labor market, and the privatization of several state companies. More importantly, in 1991, Menem established a currency board that pegged the Argentinean peso to the dollar, by legally forcing the Central Bank to hold dollar reserves to cover its Argentinean peso liabilities in a 1-to-1 ratio. Although this policy (soon known as the “Convertibility Plan”) succeeded in controlling inflation, it led to three major problems. First, the financial system became very fragile, since the Central Bank lost its role of lender of last resort for the economy. Second, the government sacrificed its control over the real exchange rate. Third, the resulting monetary policy was not accompanied by fiscal discipline. This was because the discretionary allocation of fiscal resources by the federal government in Argentina was crucial for the manipulation of political and electoral support at the local level. These problems made the economy especially vulnerable to exogenous shocks, particularly those resulting from “contagion” from the international economy.

### ***11.4.2 The Two Periods of the Convertibility Plan***

As long as the value of the dollar did not appreciate with respect to Argentina's major commercial partners, and the government was able to finance itself either through foreign debt or counter cyclical funds, the economic plan succeed in providing the stability required for economic growth. Indeed, the absence of exogenous shocks in the period 1991–1995 provided Argentina with high rates of economic growth (over 8% on average between 1991 and 1994) and a widespread optimism both at home and among foreign investors.

As soon as the international conditions changed, Argentina's vulnerability to external shocks proved to be very high. The principal shocks were the Tequila crisis in 1995, the East Asian crisis in 1997, the devaluation of the Brazilian real in 1998 and the appreciation of the dollar relative to the European currencies after 1995. An analysis of the consequences of each particular crisis on Argentina is beyond the scope of this illustration. Although the Convertibility Plan survived all these shocks, the cumulative effect was to make Argentina's economic scheme unsustainable.

The Argentinean peso appreciated by 25% in real terms between 1990 and 1998 (the appreciation reached 32% by 2000), making Argentina an expensive country even by European and US standards. Given that the Convertibility Plan outlawed the printing of money without dollar backing, the fiscal imbalances in Argentinean currency had to be financed through foreign debt. In addition, the appreciation of the currency magnified the levels of debt when denominated in dollars. Consequently, between 1991 and 2001, the public debt increased from US \$87 billion to US \$145 billion. Thus, the Convertibility Plan succeeded in controlling hyperinflation, but when the external conditions became unfavorable, it forced the government to replace monetary laxity with foreign debt. Of course, this strategy paid-off from an electoral point of view, at least as long as the government managed to refinance the short-term debt.

Argentina's economic performance over the 1990s could be said to have two different periods. The period 1991–1995 was characterized by sustainable fiscal deficits, high economic growth and a reasonable (although perhaps not competitive) real exchange rate. In contrast, the period 1995–2001 was characterized by a much lower economic growth (indeed with economic contractions in 1995, 1999, 2000 and 2001), high unemployment rates, large fiscal imbalances and an increasing foreign debt. All of these were the product of the inflexibility of Argentina's economy. In retrospect, it seems clear that, sooner or later, a severe enough external shock would occur, forcing a political decision to abandon the Convertibility Plan and to allow the market to re-establish some sort of equilibrium. The longer the exchange rate correction was postponed, the greater the private and public sector dollar-denominated loans. In sum, postponing a devaluation only increased the probability of default and bankruptcy. It is hard to see, then, how the merits of the Convertibility Plan in 1991–1994 could be dissociated from its costs in 1995–2001. The seeds of the crisis of 2001 were already present in the early apparent success of the Plan.

### ***11.4.3 Losers and Winners***

We can easily determine who were the domestic winners and losers over the 10 year cycle of the Plan.

Carlos Menem and his entourage were in office for these 10 years. In this period, Menem managed to control a plurality in both chambers of Congress. By increasing the Supreme Court of Justice from five to nine, and by maneuvering these appointments, he also obtained an “automatic majority” in the Court. This maneuver could guarantee immunity from later accusations of corruption over the US \$20 billion federal fund collected from privatizations.

In order to increase the real value of assets and profits, it was in the interest of the foreign companies hoping to acquire publicly owned companies that Argentina maintain an appreciated currency. Because the interests of the politicians in office were aligned with those of the foreign companies, they also wanted Argentina to stick to the Convertibility Plan.

The Argentinean upper-middle class also benefited from the economic scheme. After years of complete absence of credit (a consequence of a high-inflation and closed economy), the Convertibility Plan brought about a consumption boom of imported goods and the possibility of travel abroad. The political elite in office was perceived by the upper-middle class citizens to be corrupt and to condone corruption at all levels of government. Although this corruption violated the ethical standards that might have been dominant earlier, the benefits associated with the new consumption habits proved to be irresistible. In 1995, Menem was re-elected with a percentage of the votes similar to 1989. Although he lost 10% of the left votes to a new party, FREPASO (Frente Pais Solidario), he gained 10% of the center-right votes.

Despite their initial aversion, the upper-middle class felt more than satisfied with Menem’s government. Indeed, Menem’s policies created an excellent business environment, starting with economic stability and a regressive tax structure. Indeed, members of this class also became business partners in Argentina’s modernization and infrastructure projects.

For the working class, the real wage remained practically unchanged from 1990 to 2000. On average, the unions had organized one general strike (across the different industrial sectors) every 6 months during the presidency of Raul Alfonsín of the UCR. Menem, Alfonsín’s successor, avoided this problem by giving the union leaders control over the resources of the health plans of their respective industrial sectors. As a result, Menem only faced one general strike on average every 15 months.

As a consequence of the Convertibility Plan, the per-capita public debt increased by US\$1750 in 1991–2001. This money would eventually have to be paid through taxes by the citizens. Any devaluation would make the burden of the foreign debt even heavier. Eventually Argentina defaulted on part of its debt (although not its debt with the international financial organizations). Two points need to be considered. First, the default was the product of the circumstances, not a plan devised ahead of

time. Second, the country did have to pay the costs of the devaluation and default, and the ensuing crisis may well be considered the most profound that the country has had to face in recent history.

At least theoretically, the upper middle class was able to insure against the damages of an eventual devaluation, by saving in dollars and sending their money out of the country. Of course, although this strategy was in principle available to everyone, the working class was unable to use it. They received meager benefit from the consumption boom, and had to face the full consequences of the per-capita increase in the public external debt.

#### ***11.4.4 The Role of the IMF and the US Government***

Domingo Cavallo, Argentina's Economy Minister in 1991–1996, and architect of the Convertibility Plan, has stated that although some of the policies implemented by Menem and himself were aligned with the so-called Washington Consensus (namely privatization, trade liberalization and deregulation), other recommendations of the Consensus (fiscal discipline, a competitive exchange rate, and tax reforms) were not.<sup>24</sup> Cavallo mentions that, in the beginning, the technical staff of the IMF did not support Menem's package of policies, because they were not fully aligned with the Consensus. Nonetheless, adds Cavallo, the intermediation of Clinton's administration in favor of the Argentinean government induced the endorsement of the IMF. In other words, the initial support of the IMF for the Convertibility Plan was not due to the technical recommendation of the staff, but to pressure from the US government. Later on in the 1990s, the IMF repeatedly supported Argentina's economic reforms and, in particular, asserted that Argentina's currency board was an example of a credible and viable regime. In the words of the Independent Evaluation Office of the IMF, "the IMF had been almost continually engaged through programs [with Argentina] since 1991" and "IMF resources were provided in support of Argentina's fixed exchange rate regime, which had long been stated by the IMF as both essential to price stability and fundamentally viable."<sup>25</sup>

Throughout the crises induced by external contagion, the IMF backed Argentina in two ways. First, it provided the financial aid that would prevent a run on Argentinean financial resources. Second, it helped the Argentinean government cope with both short-term public debt and the pressure to devalue. Although from 1994 onwards, Argentina failed to accomplish the fiscal targets agreed with the IMF, this failure was systematically ignored so that the country could receive extra financial aid. In the 1992–2001 period, the IMF granted loans of \$22 billion. Indeed, in 2000, the IMF further approved what in Argentina became popularly known as *blindaje financiero* (financial shielding), namely a loan for \$40 billion, which was composed of loans from the IMF (US \$14 billion), the World Bank and the IADB

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<sup>24</sup>Cavallo, 2004.

<sup>25</sup>IMF (2004).

(\$5 billion), the government of Spain (\$1 billion) and a further \$20 billion that came from the private sector. Needless to say, the crisis of 2001 was triggered despite the efforts of the IMF.

It seems natural to ask the following: Why would the US government support a package of reforms that did not fully comport with the technical recommendation of the IMF? The two recommendations (fiscal discipline and a competitive exchange rate) of the Washington Consensus that were neglected by Cavallo's plan seem to have had a key role in the collapse of the Argentinean economy. We can examine the consequences of these missing components.

The US government followed an official policy of a "strong dollar" at least from 1995. Clinton's Treasury Secretary, Robert Rubin, was perhaps the main advocate of this US policy. The benefits for the US from a strong dollar are threefold. First, it helps finance the large current account deficit by means of capital inflows. Second, it nurtures the US stock market. Third, it reduces inflationary pressure. These benefits had been sought since the administration of Ronald Reagan, even though there was, on occasion, some concern about the undesired result of a strong dollar, namely the trade consequences of a less competitive exchange rate.

A convenient strategy for the US government at the time Argentina implemented its currency board would have been to attempt to appreciate the dollar without affecting the rate of exchange relative to key US commercial partners, like Western Europe, China and Japan.

We suggest that at the beginning of the 1990s there was an alignment of interests between the Argentinean upper middle class, the politicians of that country and the US government. Several years of the Convertibility Plan were the product of this alignment. The evolution and effect of this alignment and its collapse can be presented briefly.

By 1989 the Argentinean state was bankrupted and forced to finance itself via a monetary laxity that produced hyperinflation. In order to enrich themselves, members of the political elite would first have to enrich the state, and the best way to achieve this was to privatize the publicly-owned companies. However, to make the bankrupted state companies attractive enough to foreign investors, the whole economy would require some modifications, beginning with macroeconomic stability and a strong currency.

This package of policies was beneficial to the Argentinean upper middle class. Nonetheless, given Menem's party affiliation and personal background, he had no chance of being elected in 1989 by targeting this class. Instead, he targeted the working class with promises that, we suggest, he had little intention of implementing. Once in office, Menem needed the endorsement of the IMF. In this respect, the sole challenge was to get the support of the IMF for two mainstays of his plan, namely a loose fiscal discipline (helpful for political and electoral purposes) and a non competitive exchange rate (required to make privatization an attractive proposition for foreign firms). The remaining policies fitted with the Washington Consensus, and would therefore induce no opposition.



The currency board proposed by Cavallo happened to be in line with the interests of the US Treasury. (The opinion of Nicholas F. Brady, US Treasury Secretary at that time supports this view.) In turn, the support of the US government would facilitate the endorsement of the IMF. Thus the Convertibility Plan could be implemented.

As we have noted, Carlos Menem (of the PJ) won the 1989 presidential election with the 47.5% of the vote, based on a populist platform. The working class, which tended to identify with the PJ, supported Menem and gave him the victory. In contrast, the middle and upper classes mainly supported the candidate of the UCR (Union Civica Radical), Eduardo Angeloz, who proposed a “red pen” to reduce the size of the state apparatus in an attempt at fiscal austerity to stop inflation and generate macroeconomic stability. Angeloz only gained 37% of the vote.

After the 1989 election, Menem implemented a package of policies, including the Convertibility Plan (discussed above), which was completely incongruent with his electoral promises. Five years after the implementation of the Plan, Menem had the opportunity to try for the re-election. This time, Menem’s platform was supported by a new electoral coalition that included the upper middle class and this support gave him the electoral victory.

Figure 11.2 shows the balance locus and *weighted electoral mean* for Menem in 1995. As we have defined it in Chap. 5, the *weighted electoral mean* for a party leader is the equilibrium position the leader would adopt in the absence of activist support. This figure also shows a simplified contract curve for Menem (between the economic left at L and the hard currency supporters at H). This contract curve will involve conflicts between these groups over the nature of their demands and their

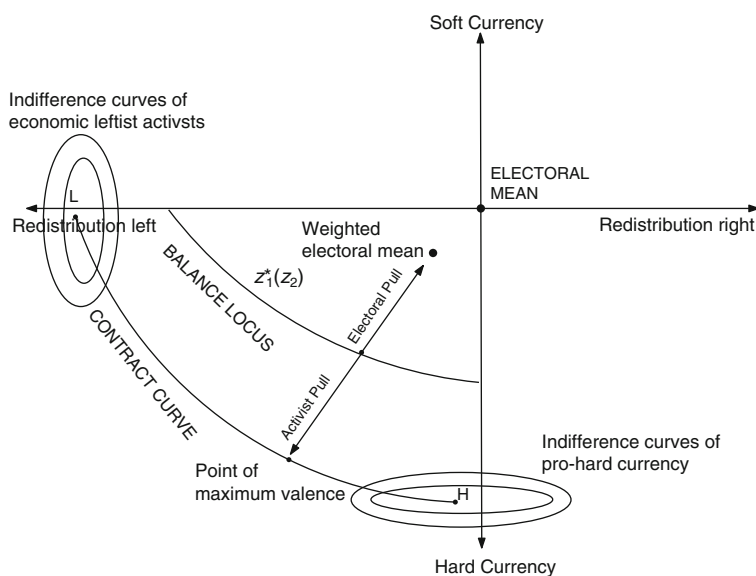


Fig. 11.2 The balance locus and *weighted electoral mean* for Menem in 1995



willingness to support the party leader. The overall equilibrium position for Menem will depend on the difference between the valences of the candidates.

Menem's move to the right on the economic axis in 1995 (as illustrated in Fig. 11.2) may have lost him some votes. However, we suggest he gained votes from the increased resources made available from the new activist group at the hard currency position. Note that Fig. 11.2 is simply a heuristic sketch of possibilities.<sup>26</sup> Domestic activists for Menem in 1995 included many labor groups as well as elements of the business community. Some business interests were hurt by the convertibility plan, as the over-valued exchange rate destroyed manufacturing exports.

### ***11.4.5 The Swing to the Left***

After a failed attempt by Menem for re-election, a new President, Fernando De La Rúa, was elected in 1999. Although De La Rúa belonged to the opposition (UCR), in his electoral platform he committed himself to maintain the economic scheme implemented by Menem. De La Rúa kept this promise once in office. However, the negative consequences of the Convertibility Plan were so severe that they became impossible to ignore. The public debt was already extremely high, and the economy showed serious symptoms of high unemployment, fiscal imbalance and stagnation. Cavallo was appointed as Minister of the Economy in March 2001. Despite Cavallo's efforts, the Argentine economy fell into crisis in December 2001. After the resignation of De La Rúa and a chaotic sequence of interim presidents, Nestor Kirchner, candidate of the PJ with leftist leanings, was elected in May 2003.

By 2006 it became evident that left-wing politicians had won popularity not only in Argentina, but in several countries of the region. This phenomenon encouraged scholars to talk of "Latin America's (new) leftward swing." (Vargas Llosa 2005; Castaneda 2006). These countries included Argentina, Bolivia, Brazil, Chile, Ecuador, Uruguay, Peru, and Venezuela. Of course, there is significant variation in terms of the policy stances of the leftist leaders in each of these countries. There were also marked similarities among some of them. The most anti-free market position has been taken by Hugo Chavez (Venezuela). Following Chavez were Evo Morales (Bolivia), Ollanta Humala (Peru), Rafael Correa (Ecuador) and, to a lesser extent, the Kirchners of Argentina.<sup>27</sup> Ideas supported by these leaders included the repudiation of national debts, suspension of review of their national economies by the IMF, re-nationalization (or even expropriation) of certain industries, etc. Chavez has either openly or allegedly campaigned for these leaders. For instance, in the case

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<sup>26</sup>Figure 11.2 is clearly just a variant of Fig. 11.1.

<sup>27</sup>Not all these leaders took office. Ollanta Humala was defeated in Peru's run off election by Alan García. Nestor Kirchner not only won the 2003 Presidential election in Argentina, but he was followed by his wife, Christina in 2007.

of Ollanta Humala, Chavez campaign support for him was persistent and open. In the case of Cristina Kirchner, US prosecutors have alleged in a Miami courthouse that Chavez provided a bag full of money to contribute to the campaign that gave her the presidency of Argentina in 2007. Chavez further facilitated these leaders' resources to pursue policies in line with his recommendations. For instance, the Argentine government, lacking any access to international financial markets, has eased its financial needs by borrowing from Venezuela. Also, several accords have been signed between Chavez and Morales to boost Bolivia's recently nationalized energy industry.

Venezuela's central role in the region is only possible thanks to its wealth from natural oil reserves. These resources allow Chavez to intervene directly or indirectly in the political processes of other countries in the region. It is quite possible that his control over Venezuela's state wealth and his public support may have had a significant impact on the relative valence of domestic politicians. In the same fashion that the US and IMF had affected the valences of the leaders in the 1990s, contributing to the temporary success of rightist policies and hard currency regimes, Chavez now pushes toward the implementation of anti-free market policies. Since anti-free market policies are by their very nature incompatible with the possibility of having access to financial markets to borrow money, the economic dimension is linked to the external dimension. As the Argentine case shows, once an anti-free market stance has been taken, it is no longer possible for a government to borrow money at sustainable rates. This has two effects on the external dimension. First, non-traditional lenders become the only alternative. In the case of Argentina, Venezuela took that role, reinforcing the view of Argentina as Venezuela's ally. Second, a hard currency is no longer a viable option. This leads to conflict over whether the government supports the agricultural sector through export subsidies, or taxes it to raise revenue. In the case of Argentina, the resulting political crisis led to public confrontation between the President Cristina Kirchner and Vice President Julio Cobos. Cobos had favored the agricultural activist group that opposed an increase of export taxes on soybean and sunflower. High inflation is an increasing problem, currently estimated at about 30%. Of course, inflation has been an almost persistent problem of the Argentine economy, and became even more significant after the 2002 devaluation, especially when it began to outstrip wage increases in 2010. Nonetheless, President Kirchner insists inflation is not a problem. In terms of our formal model, these political events can be understood as a positioning of the Kirchners on the north west quadrant of the policy space. According to the model, in equilibrium, any party that will opposes the Christina Kirchner in 2011 must locate in the south east quadrant of the policy space.

#### ***11.4.6 Inferences from the Discussion of Trade Policy***

In the above discussion, we suggest that in the Latin American polities, an electoral dimension is defined in terms of the "external" issues of the exchange rate, debt, and the relationship with the United States and other developed polities. The oscillation

in one polity follows naturally from the two-dimensionality of the policy space, as activist groups are brought into prominence as a result of the links between choices made in the internal and external dimensions. As the Argentine case illustrates, the form of the support provided by both internal activists (large companies, syndical leaders, etc.) and external activists (multilateral organizations, US or European business interests or policy makers) may vary, but the ultimate goal is to contribute to the success of candidates supporting policies favourable to the activist groups. External conditions are crucial, because they influence the responses of the various activist groups, and thus the strategic responses of the political candidates.

As it is sometimes suggested, political choices in one polity, like Argentina, may trigger a demonstration effect, or belief cascade, in other polities of the region. We thus have a reason for the possibility of “contagion” from one polity to another. However, our model provides another, more direct, form of contagion, rooted in the democratic process. This form of contagion stems from external activist groups. Supporting similar policies across polities induces a high correlation between the electoral swings of the countries in the region. In other words, when a hegemonic power makes a policy choice on issues such as the exchange rate, savings level, openness of the market, etc., then it has an incentive to try to influence the policy of other countries, through support for any candidate who is willing to implement the preferred policy. However, the support of activists for the hegemon can induce a counter-response by other activists (usually leftist). These changes in the electoral equilibria make it appear *as if* the domestic electoral preferences change temporally or geographically in a chaotic fashion across the region.

Our analysis suggests that this is a misinterpretation. What drives the electoral swings is not a change in preferences, but a change in the distribution of perceptions that the electorate has of the quality of candidates of left and right. Because these perceptions result from the actions of activists who respond to outside influences, we see that the electoral outcomes in Latin American polities will tend to display intrinsic uncertainty. A similar conclusion will hold for other countries whose economies are dependent both on natural resources and manufacturing.

As [Edwards \(2011\)](#) has recently observed in his analysis of Latin American political economy, the problems are fiscal irresponsibility and persistent corruption. The model we have proposed here suggests why these problems are so persistent.

## Chapter 12

# Chaotic Leadership Transitions

Prior to this chapter, we have examined how activists – whose interests may not be perfectly aligned – influence the policy positions of leaders or parties in democratic and semi-democratic regimes when both activists and leaders’ anticipate voters’ electoral response to the leaders’ positions. Elections in several countries were studied. A general conclusion from modelling elections in these countries is that the influence activists have on parties’ positions depends on whether elections take place under majoritarian or proportional representation systems. This influence also depends on the voters’ valences over candidates. By design, these empirical models examine the effects of activists within the context of a single election.

In this chapter we use dynamic models to examine changes in leadership and concentrate on studying leadership transitions in non-democratic countries. Non-democratic transitions happen mostly in countries with weak or young democracies or in countries having no democratic history. When one dictator deposes another, the coup installs a new dictator in office.

The majority of leadership transitions are non-democratic. As stated by [Magaloni \(2008\)](#) autocratic leaders may govern in military, monarchic, or in countries single-party or multi-party legislatures. In her study of leaders governing between 1950 and 2000, 62% of the world’s regime-years were autocratic. Moreover, [Golder \(2005\)](#) shows that between 1946 and 2000 dictatorships were more common than democracies with the number of democracies surpassing the number of dictatorships only after 1992.

We start from the premise that to stay in office dictators must maintain the support of certain groups in society. Dictatorial succession is controlled mostly by members of the country’s élite (see, e.g., [Acemoglu and Robinson 2001, 2006a](#); [Bueno de Mesquita et al. 2003](#); [Gallego and Pitchik 2004](#); [Gallego 1996, 1998](#); [Luttwak 1979](#); [Olson 2000](#); [Tullock 1987](#); [Wintrobe 1998](#)). This implies that only a *small* group of citizens is involved in staging a coup. [Luttwak \(1979\)](#) writes that “Mass participation before and during a coup d’état has been the exception rather than the rule”. In this chapter we examine the circumstances under which dictators maintain the support of the élite to stay in office and the circumstances under which the élite stage a coup d’état.

In Sect. 12.1 we use the leadership transition model of Gallego and Pitchik (2004) to examine the circumstances under which the elite stage coups when a leader needs to make an investment targeted exclusively to the kingmakers, the leader's support group. The novelty of this model in the political economy literature is that kingmakers stage coups in order to have a chance at becoming the new dictator as well as to punish the dictator for making less effort than demanded by kingmakers. In Sect. 12.2, we review the literature on non-democratic leadership models. In Sect. 12.3 we use the empirical model of Gallego (1996, 1998) to test some of the predictions outlined in the theoretical models presented in Sects. 12.1 and 12.2 and then show evidence supporting the hypothesis that it is the elites who trigger leadership transitions in non-democratic regimes. In Sect. 12.4, we review the literature describing different types of autocratic regimes: military, monarchic, and anocracies with single-party or multi-party legislatures. Concluding remarks are given in Sect. 12.5.

## 12.1 An Economic Theory of Leadership Turnover

Gallego and Pitchik (2004) develop an infinite-horizon model where the actions of a dictator are disciplined by the threat that a finite group of kingmakers may remove the leader from office by staging a coup. In each period, the incumbent dictator makes an investment that benefits the kingmakers either in the form of an excludable public good or a cash transfer targeted exclusively to the kingmakers. Kingmakers are productive economic agents who sell their output in the international market.<sup>1</sup> The export profits of the kingmakers increase in the investment made by the dictator. The efficacy of the dictator's investment in any given period depends on the realization of a commonly-observed random export price.

The kingmakers' profits increase as the export price rises. The model applies broadly. In general terms what we require is that the kingmakers' payoff functions be affected by a random shock every period. For exposition purposes however, we refer to the exogenous random shock as the internationally determined price of the export good.

In the Gallego and Pitchik model, kingmakers are able to perfectly monitor the dictator's activities. This allows them to concentrate on the point they wish to make in a simpler setting. Even if kingmakers could only imperfectly monitor the dictator, the prediction of the model remains: there are circumstances under which kingmakers stage coups. Kingmakers use coups as a means to seize power as well as a way punish the dictator for not meeting their demands.

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<sup>1</sup>Using countries studies, O'Kane (1987) finds that coups tend to occur in countries highly dependent on a single good for their export revenue. She documents that export revenue is affected by shocks and by the government response to fluctuations in these shocks. Governments must work hard to maintain support and avoid coups when export revenue is volatile.

### 12.1.1 The Model

The timing of events is as follows. At the beginning of every period, the players observe the random shock, namely the price of the export good  $\mathbf{p}$ . Each period, the price  $\mathbf{p}$  is independently and identically drawn from a distribution  $F$  with support  $[0, \infty)$ . After observing  $\mathbf{p}$ , the dictator collects the rent  $W(\mathbf{p})$  from the citizens (who have no other role in the model),<sup>2</sup> where  $W$  is continuous and  $W(\mathbf{p}) \in [\underline{W}, \overline{W}]$  for all  $\mathbf{p}$ .

After receiving the rent, the dictator makes an investment  $x \in [0, 1]$  that affects the kingmakers.<sup>3</sup> While being costly to the dictator, the investment increases the kingmaker's payoff, their export profits.

Once the dictator chooses the investment level  $x$ , a kingmaker is randomly selected to decide whether the kingmakers should stage a coup. If a coup is staged, the dictator is ousted. When there is a coup, with probability  $q \in (0, 1)$ , the new dictator is a randomly-selected kingmaker, who is replaced by a *potential* kingmaker.<sup>4</sup> With probability  $(1 - q)$ , the new dictator is a *potential* kingmaker.<sup>5</sup> In this case, with probability  $(1 - s)$ , a kingmaker remains a kingmaker and with probability  $s$  is expelled from the kingmakers' club and thus ceases to be a kingmaker.<sup>6</sup> The expelled kingmaker no longer benefits from the dictator's investment or from the benefits of a coup. As a consequence, whenever a coup occurs, a kingmaker permanently loses access to power with probability  $(1 - q)s$ . Coups are then risky for kingmakers. There is no collective action or free rider problem among the kingmakers (because it is a weakly dominant strategy to take part in a coup whenever the benefit exceeds the opportunity cost).

Dictators differ in their investment costs. Dictator  $i$  incurs a cost  $C_i(x)$  when investing  $x$  where  $C_i : [0, 1] \rightarrow R^+$  is an increasing, convex, continuous function with  $C_i(0) = 0$  and  $C_i(x) < C_{i+1}(x)$  for all  $x \in (0, 1]$  and  $i \in I$  indicates the dictator's type. So that lower types face *lower* costs. Moreover, only the dictator knows his type and only when taking office. The period payoff to dictator  $i$  who invests  $x$  is

$$W(\mathbf{p}) - C_i(x).$$

<sup>2</sup>Dictators may also invest in public goods that affect the citizens' well-being which in turn, affect the dictator's rents (see, e.g., [Bueno de Mesquita et al. 2003](#)). If the rents are mainly tax revenues, then they may also depend on the random shock ( $W(\mathbf{p})$ ) as the shock may also affect the tax paying citizens. In [Olson \(1993, 2000\)](#) and [McGuire and Olson \(1996\)](#) the dictator sets the tax rate imposed on citizens to maximize tax revenue.

<sup>3</sup>[Bueno de Mesquita et al. \(2001, 2003\)](#) examine the relationship between a leader's investment decisions and the existing political institutions. Like [Gallego and Pitchik \(2004\)](#), they assume that the winning coalition, the leader's support group, is small relative to the members of the selectorate, those that may have a say in determining the leader's fate.

<sup>4</sup>Potential kingmakers correspond to the selectorate in [Bueno de Mesquita et al. \(2003\)](#).

<sup>5</sup>The new dictator may not be one of those staging the coup.

<sup>6</sup>The new dictator may replace some kingmakers as the new leader may not have the same affinity as the deposed dictator for the kingmakers. In [Bueno de Mesquita et al. \(2003\)](#) a leader does not have the same affinity for all the members of the winning coalition.

When there is no coup, the dictator remains in power. If a coup is staged, the ousted dictator's collects the rents this period, exits the game and so receives no rents thereafter. The lifetime payoff of a dictator is the discounted sum of the period payoffs, with discount factor  $\delta \in (0, 1)$ .

In any period in which there is no coup, each kingmaker receives an equal share of export profits

$$\frac{\mathbf{p}Y(x)}{n}$$

where  $\mathbf{p}Y(x)$  is the export profit when the dictator invests  $x$ , and  $Y : [0, 1] \rightarrow R^+$ , is an increasing, concave, continuous function with  $Y(0) = 0$  and  $n$  is the number of kingmakers. The kingmaker's period payoff increases in both the price (the random shock) and the dictator's investment. In any period in which a coup is staged, each kingmaker's payoff is 0. The lifetime payoff of a kingmaker is the  $\delta$ -discounted sum of the period payoff that the kingmaker receives while remaining a kingmaker plus the expected payoff that the kingmaker receives if chosen to be dictator after a coup. The period payoff of a *potential* kingmaker is zero.

### 12.1.2 Equilibrium

As in other infinite horizon stochastic models, the model has multiple Nash equilibria.<sup>7</sup> Gallego and Pitchik focus on sequential equilibria and examine only equilibria supported by "credible threats". In the model, all kingmakers are identical and all dictators of a given type ( $i \in I$ ) are identical at the beginning of their first term in office.

Note that the period payoffs of the kingmakers and the dictator are determined only by current values of observable variables. Consequently, in any period the behavior of kingmakers and the dictator depend only on the current state as so are Markov processes (as defined in details in the next two paragraphs). Gallego and Pitchik then restrict their attention to symmetric Markov sequential equilibria (MSE).<sup>8</sup> They look for a Markov strategy profile in which the current state, the players' decision sets, the period payoff functions, and law of motion between states are as follows.

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<sup>7</sup>There is a Nash equilibrium where kingmakers threaten to stage a coup unless the dictator makes the maximum possible investment. This threat supports an outcome in which the dictator makes a high investment each period and kingmakers never stage a coup. In one Markov equilibrium the dictator invests zero and kingmakers stage a coup every period. In this equilibrium kingmakers oust the dictator regardless of price, investment and beliefs on dictator's type. This equilibrium is not sequentially rational.

<sup>8</sup>Fudenberg and Tirole (1992, Chap. 13) show that any MSE remains an equilibrium in the game in which players are not restricted to Markov strategies. Acemoglu and Robinson (2001, 2006a) and Acemoglu, Ticchi and Vindigni (2010a) also use MSE to model regime transition between democracy and non-democracy.

When the dictator chooses an investment level ( $x \in [0, 1]$ ), the dictator knows the current state, i.e., knows the current price  $\mathbf{p}$ , the current beliefs  $\pi$  of kingmakers regarding the dictator's type, and the fact that the dictator is currently in office. A Markov strategy for a dictator of type  $i \in I$  transforms prices and beliefs into investment levels. The period payoff function,  $W(\mathbf{p}) - C_i(x)$  for  $i \in I$ , is bounded as is the discount factor  $\delta \in (0, 1)$ . The law of motion of the system is a conditional probability determined by the Markov strategy of the kingmaker (which determines the circumstances under which a coup is staged) and so is Markov. Since this dynamic programming problem satisfies all the conditions stated in Harris (1987, pp. 20–28), the solution is determined by the dictator's Bellman equation (see details in Sect. 12.1.4).

When kingmakers decide whether to stage a coup, they know that the current state is given by the current price, the dictator's current investment level, and know their belief regarding the current dictator's type. If a coup was staged in the previous period, then kingmakers' know that the type of the current dictator is given by the exogenous vector of dictator types  $\pi_0$ . If no coup was staged, then kingmakers' update their beliefs following Bayes' rule whenever possible. The kingmaker's decision set is the compact set  $\{1, 0\}$ , where 1 represents the decision to stage a coup. A Markov strategy turns the kingmaker's current information set – the current price, investment and belief – into a decision to stage a coup. The period payoff function,  $\mathbf{p}Y(x)/n$ , is non-negative and the discount factor  $\delta$  is bounded. The law of motion of the system is a conditional probability determined by the Markov strategy of the dictator (which determines the dictator's investment level for each price) and so is Markov. Since this dynamic programming problem satisfies the conditions stipulated in Stokey and Lucas (1989, pp. 241–251), the solution is determined by the kingmaker's Bellman equation (see details in Sect. 12.1.3).

### 12.1.3 The Kingmaker's Best Response Function

When making the coup decision, the representative kingmaker knows the current state variables: the price, the dictator's investment, and the belief held by kingmakers regarding the dictator's type. After a coup, the kingmakers' beliefs on the type of the new dictator is given by the exogenous distribution of dictator types, the vector  $\pi_0$ . When there is no coup, kingmakers update their beliefs following Bayes' rule whenever possible.

When there is a coup, kingmaker's period payoff is zero. The *benefit of a coup* is the present value of either becoming the new dictator or continuing on as kingmaker with a new dictator. The benefit of a coup is therefore *independent* of the current price and updated beliefs about the previous dictator and depends only on *future* prices and on the exogenous distribution of dictator types. That is, the benefit of a coup is *fixed* over time and given by

$$\sigma \delta \mathbf{E}K + \frac{q}{n} \delta \mathbf{E}D_a$$



where  $\sigma = 1 - [q/n] - (1 - q)s$  represents the probability of remaining as kingmaker when there is a coup;  $\mathbf{EK}$  is the lifetime payoff of a kingmaker;  $q/n$  is the probability of becoming dictator when there is a coup; and  $\mathbf{ED}_a$  is the average lifetime payoff of a newly appointed dictator. Since the kingmaker's expected lifetime payoff in any MSE equals the benefit of a coup then

$$\mathbf{EK} = \sigma\delta\mathbf{EK} + \frac{q}{n}\delta\mathbf{ED}_a.$$

After solving for  $\mathbf{EK}$ , the *benefit of a coup* for any MSE equals

$$\mathbf{EK} = \frac{q}{(1 - \sigma\delta)n}\delta\mathbf{ED}_a. \quad (12.1)$$

When there is no coup, a kingmaker receives a period payoff and continues to the next period with the same dictator. The *opportunity cost* of a coup is the sum of the current period payoff and the present value of being a kingmaker in the next period while retaining the current dictator which depends on the *updated beliefs*  $\pi$  over dictator types. Therefore, the opportunity cost depends on the current price  $\mathbf{p}$  (the current value of the shock), the current investment of the dictator  $x$ , and the current updated beliefs over types  $\pi$ . In any MSE, the lifetime payoff from not staging a coup this period, also called the *opportunity cost of a coup*, equals

$$\frac{\mathbf{p}Y(x)}{n} + \delta\mathbf{EK},$$

which depends only on price, the dictator's investment and exogenous parameters. After substituting for  $\mathbf{EK}$  in (12.1) the opportunity cost of a coup equals

$$\frac{\mathbf{p}Y(x)}{n} + \frac{q}{(1 - \sigma\delta)n}\delta^2\mathbf{ED}_a. \quad (12.2)$$

In any feasible MSE strategy of the representative kingmaker, a coup is staged when the *variable* opportunity cost of a coup given by (12.2) is less than the *fixed* benefit given by (12.1), i.e., when

$$\frac{\mathbf{p}Y(x)}{n} + \frac{q}{(1 - \sigma\delta)n}\delta^2\mathbf{ED}_a = \frac{q}{(1 - \sigma\delta)n}\delta\mathbf{ED}_a$$

that is when

$$\frac{\mathbf{p}Y(x)}{n} = \left[ \frac{q(1 - \delta)}{(1 - \sigma\delta)n} \right] \delta\mathbf{ED}_a$$

so that the equilibrium investment demanded by kingmakers to avert a coup is

$$x^K \equiv Y^{-1} \left( \frac{q(1 - \delta)}{(1 - \sigma\delta)} \times \frac{\delta\mathbf{ED}_a}{\mathbf{p}} \right) \quad (12.3)$$

which depends only on the current price and exogenous parameters. Note that as the export price falls kingmakers demand a higher investment from the dictator in order not to stage a coup.

### 12.1.4 Dictator $i$ 's Best Response Function

When choosing how much to invest, dictator  $i$  knows the current state variables: the price  $\mathbf{p}$ , (the current value of the shock), the beliefs  $\pi$  of kingmakers regarding the dictator's type and the fact of being in office. The dictator can prevent a coup by delivering the investment demanded by kingmakers, i.e., by investing  $x^K$  given by (12.3). If the dictator delivers  $x^K$ , then the dictator incurs a cost and continues on as dictator. Dictator  $i$ 's lifetime payoff from preventing a coup is

$$W(\mathbf{p}) - C_i(x^K) + \delta \mathbf{E}D_i,$$

where  $\mathbf{E}D_i$  represents the expected payoff of dictator  $i$ . The dictator's expected payoff from *continuing in power* depends only on future prices and exogenous parameters, and thus is *independent* of the current price and updated beliefs.

If the dictator chooses not to deliver  $x^K$  which triggers a coup, the dictator invests zero, keeps the rents and exits the game. The dictator's lifetime payoff when there is a coup is  $W(\mathbf{p})$ .

Dictator  $i$  delivers  $x^K$  only when profitable to do so. In equilibrium, dictator  $i$  delivers  $x^K$  only if  $i$ 's lifetime payoff from meeting the kingmaker's demands is greater than the payoff from triggering a coup, i.e., only if

$$W(\mathbf{p}) \leq W(\mathbf{p}) - C_i(x^K) + \delta \mathbf{E}D_i.$$

After substituting  $x^K$  from (12.3) this implies that

$$C_i \circ Y^{-1} \left( \frac{q(1-\delta)}{(1-\sigma\delta)} \times \frac{\delta \mathbf{E}D_a}{\mathbf{p}} \right) \leq \delta \mathbf{E}D_i, \quad (12.4)$$

so that dictator  $i$  meets the kingmakers' demand only when  $i$ 's investment costs are less than the expected payoff of continuing on as dictator.

From (12.3), it is clear that to avert a coup kingmakers demand a higher investment  $x^K$  from the dictator as the price falls. However, meeting the kingmakers' higher investment demand raises the dictator's costs. Therefore, for each type of dictator there exists a sufficiently low price  $\mathbf{p}$  such that the dictator's best response is not to meet the kingmakers' demand, i.e., to invest zero and trigger a coup. Only for high enough values of  $\mathbf{p}$ , it is profitable for the dictator to deliver  $x^K$  and prevent a coup.

Thus, for each type of dictator there is an equilibrium *trigger price*, below which, the price is so low that the dictator prefers to invest zero and trigger a coup. From (12.4) the *equilibrium trigger price* is given by

$$\mathbf{p}_i(\mathbf{ED}) = \frac{q(1 - \delta)}{(1 - \sigma\delta)} \times \frac{\delta \mathbf{ED}_a}{Y \circ C_i^{-1}(\delta \mathbf{ED}_i)}, \quad (12.5)$$

where  $\mathbf{ED}$  represents the vector of payoffs to each type of dictator. At  $\mathbf{p}_i(\mathbf{ED})$ , the dictator is indifferent between meeting the kingmakers' demands to prevent a coup or triggering a coup by investing zero and strictly prefers either to any other investment level.

The following theorem is proven in [Gallego and Pitchik \(2004\)](#).

**Theorem 1.** *There is a unique MSE (up to a set of measure zero).*

In equilibrium, for low enough prices even the *lowest* cost dictator may find it too costly to prevent a coup. Coups occur even when dictators are identical. It is low prices and not dictators abilities that cause coups in the model.

### 12.1.5 The Equilibrium Probability of a Coup

When dictator  $i$  is in power, a coup occurs only when the price is below the dictator's trigger price  $\mathbf{p}_i(\mathbf{ED})$ . Thus, *conditional* on the dictator's type, the equilibrium probability of a coup is the probability that the price falls below the dictator's trigger price, so that the probability of a coup is given by  $F(\mathbf{p}_i(\mathbf{ED}^*))$ .

**Theorem 2.** *The equilibrium probability of a coup for dictator  $i \in I$  is independent of  $i$ 's duration in office and is higher for dictators with higher costs. Therefore, the equilibrium probability of a coup increases in  $i$ .*

In any period, kingmakers know *only* a distribution of the dictator's type and thus, know only the average probability of a coup which is the *weighted* average of the probabilities of a coup for each type where the weights are the current updated beliefs on dictator types.

In order to relate the results of the [Gallego and Pitchik](#) model to other leadership transition models, in the theoretical and empirical literature, it is necessary to take into account that the kingmakers' beliefs – the weights used in the average probability of a coup – depend on the information set used to update these beliefs. The beliefs can be conditioned only on the dictator's duration in office. [Gallego and Pitchik](#) argue, however, that to update beliefs the stream of prices (shocks) observed during the dictator's tenure should also be taken into account. To understand that the stream of prices contains relevant information that should be used in updating beliefs, each of these average hazard rates is now examined.

When the updated distribution is conditioned *only* on the dictator's length of time in office and *not* on the observed price stream, the average probability of a coup is called the hazard rate. Since dictator triggers a coup results whenever the price falls below dictator  $i$ 's trigger price  $\mathbf{p}_i(\mathbf{ED}^*)$  given in (12.5), the probability that dictator  $i$  survives for  $\rho$  periods is  $(1 - F_i^*)^\rho$ , where the probability of a coup is given by

$F_i^* = F(\mathbf{p}_{ii}(ED^*))$ . Thus, conditioning *only* on having survived  $\rho$  periods and using Bayes' rule the probability that the current dictator is of type  $i \in I$  is given by

$$\frac{\pi_0(1 - F_i^*)^\rho}{\sum_{j \in I} \pi_0(1 - F_j^*)^\rho}.$$

Consequently, the longer dictator  $i$  has been in office, the more likely it is that the price has fallen below the trigger price of dictators with higher costs. Since higher types are ousted at these lower prices, the conditional vector of probabilities will be more biased towards types who face *lower* costs. Thus, by Theorem 2, the longer the dictator survives, the lower the probability of a coup next period when conditioning *only* on duration in office.

**Theorem 3.** *Suppose that there are at least two types of dictator. The hazard rate of a coup decreases as the dictator's duration in office increases.*

However, when beliefs depends on the stream of prices (shocks) observed since the dictator took office as well as on the dictator's length of time in office, the average probability of a coup is referred to as the *conditional* hazard rate. Kingmakers know that the trigger price increases in dictator's type (Theorem 2) and that higher types cannot prevent coups at lower prices. Thus, to update their beliefs kingmakers use the *lowest* price for which there has been *no* coup during a dictator's tenure in office. The lower is this lowest price, the lower is the highest feasible type of dictator. Taking into account the lowest price since the dictator took office when updating their beliefs allows kingmakers to redistribute weight away from higher types and towards types with lower costs who can prevent a coup at this lower price. Therefore, the conditional hazard rate of a coup depends directly on the lowest price in the observed stream of prices/shocks and not specifically on the length of a dictator's term in office.

**Theorem 4.** *The conditional hazard rate of a coup is independent of a dictator's duration in office.*

Theorem 4 is one of the major contributions of Gallego and Pitchik, as it proves that once the worst shock in a dictator's tenure in office is taken into account the conditional hazard rate of a coup is independent of how long the dictator has been in office.

The Gallego and Pitchik model (referred to as the coup model from now on) also makes a contribution to the principal-agent literature of both political competition and dictatorship.<sup>9</sup> The novelty is that a kingmaker/principal can become a dictator/agent. Coups occur even when dictators are identical (so that kingmakers are indifferent between any two leaders). Kingmakers stage coups – or in this perfect monitoring model, dictators trigger coups – when the price falls below the dictator's

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<sup>9</sup>The coup model draws on the work of Green and Porter (1984), Ferejohn (1986), Olson (1993, 2000) and McGuire and Olson (1996).

trigger price. Thus coups are not caused by variable leader ability. Moreover, a coup may be staged under perfect or imperfect monitoring since kingmakers use coups as a means of becoming dictators as well as punishing the dictator for not meeting their demands.

Variable leader ability was studied in [Banks and Sundaram \(1993\)](#) electoral competition model where voters choose election rules to deal with moral hazard and adverse selection. They find that the re-election probability increases with duration in office as the electorate gets rid of leaders with low ability. By contrast, in the coup model, kingmakers stage a coup when profitable and do so regardless of which type is in office. A bad enough shock may make it too costly for even low cost dictators to prevent a coup. Since dictators with lower costs survive more negative shocks, the worst shock observed since a dictator took office is informative about the dictator's type and about the probability of a coup. Thus, if in empirical models the lowest shock experienced by a dictator is not taken into account, the results may falsely conclude that there is a positive correlation between duration and survival probability.

### 12.1.6 Comparative Statics

The probability of a coup depends on the price in the current period and on the parameters of the model. Kingmaker's period profits depend on the number of kingmakers  $n$ , on their profits function  $Y$  and on the dictator's investment level, either  $x^K$  given in (12.3) or 0. The dictator's period payoff depends on the investment level and on the dictator's cost function  $C_i$ . The riskiness of coups to kingmakers depends on the probability that after a coup the new dictator comes from the set of *potential* kingmakers  $(1 - q)$ , in which case each kingmaker ceases to be a kingmaker with probability  $(1 - s)$ .

The following comparative statics are proven in [Gallego and Pitchik \(2004\)](#)

- Corollary 1.** (i) *As the number  $n$  of kingmakers increases, the equilibrium probability of a coup rises.*
- (ii) *Suppose  $Y \circ C_i^{-1}(x) = \alpha g_i(x)$  for  $i \in I$ ,  $\alpha > 0$ , then the equilibrium probability of a coup falls and all equilibrium payoffs rise as  $\alpha$  increases.*
- (iii) *An increase in the kingmakers' exit probability after a coup, i.e., an increase  $(1 - q)s$ , lowers the equilibrium probability of a coup.*

The intuition for these comparative static results is simple. (i) The probability of a coup rises when the size of the dictator's support group increases, i.e., an increase in  $n$  creates greater competition among kingmakers for the dictator's position. (ii) Note that  $Y \circ C_i^{-1}(x)$  represents the production of the export good expressed in terms of the dictator's investment.<sup>10</sup> If kingmakers' profit extraction technology

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<sup>10</sup>The function  $Y \circ C_i^{-1}$  represents the production of goods in terms of the dictator's investment. The cost of producing  $\mu$  units of private good using  $Y^{-1}(\mu)$  units of public investment provided by the dictator is  $C \circ Y^{-1}(\mu)$  so that its inverse  $Y \circ C^{-1}$  is the production function.

becomes more profitable, due to an upward shift in  $Y$  or a downward shift in  $C_i$ , the opportunity cost of a coup increases relative to the benefit for kingmakers and the probability of a coup falls. (iii) An increase in the probability that kingmakers lose access to power after a coup – an increase in  $(1 - q)s$  due to a decrease in the probability that a kingmaker remains kingmaker, a fall in  $q$ , or to an increase in the probability a kingmaker is expelled from the kingmaker's club, an increase in  $s$  – lowers the probability of a coup.

## 12.2 Leaders, Élites and Citizens

In the previous section we examined Gallego and Pitchik's (2004) coup model where the kingmakers determined the dictator's fate. In this section, we summarize models where citizens may also determine the fate of dictators.

Olson (1993, 2000) and McGuire and Olson (1996) develop models in which the dictator invests in a pure public good for the citizens in order to increase the rents the autocrat can extract from the citizens. Olson argues that roving bandits become stationary – replacing anarchy with government – to reap the benefits of the large increase in output that accompanies the provision of peaceful order and public goods. Forward looking autocrats become stationary bandits to collect greater rents from the citizens in the future. Moreover, citizens prefer stationary over roving bandits as they keep a greater portion of their own income for themselves. To maximize income the stationary bandit must induce citizens to make greater investments. The return on long-term investments materializes long after the investments are made. The autocrat with a long view has then an incentive to create property rights in order to convince citizens that they are permanently protected from theft by others and from expropriation by the autocrat. There is no leadership transition in their model.

In Bueno de Mesquita et al.'s (2003) selectorate theory support for the leader comes from the winning coalition  $W$  and the selectorate  $S$ . The selectorate are those citizens who *may* have a say in choosing the leader. Members of the coalition, a subset of the selectorate, control the resources essential for the incumbent's political survival. The leader provides private goods<sup>11</sup> to the coalition and public goods<sup>12</sup> to the selectorate. The size of  $W$  relative to  $S$  determines whether the leader operates under dictatorship or democracy. The supply of private and public goods depends on the institutional environment under which the leader operates. In autocracies, societies with small  $W$  and large  $S$ , the leader and challenger compete in the

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<sup>11</sup>Private goods include the booty or rent distributed only among supporters of the regime. These include favourable tax policies, subsidies to special interests, favorable trade or tariff policies.

<sup>12</sup>Public goods include foreign policy (e.g., national security) and domestic policy (e.g., rule of law, transparency and accountability, policy services, education, antipollution legislation, communication and transportation infrastructure).

provision of private goods. In democracies with large  $W$  relative  $S$ , they compete in the provision of public goods. Consequently, a leader's survival depends on the institutions in which she/he operates and on the leader being able to provide sufficient resources to sustain the political support of her/his backers. In their basic model there is complete information and no shocks and thus no leadership transitions. In the presence of incomplete information and random shocks, they conjecture that leadership transitions take place within a regime.

[Acemoglu and Robinson](#)<sup>13</sup> (2001, 2006a) examine transitions between democratic and non-democratic regimes with no leadership transition occurring within a regime. In their basic model there are two classes, the rich *élite* and the poor citizens with the poor being more numerous than the *élite*. While the poor prefer the policies implemented under democracy and thus prefer democracy over dictatorship, the opposite holds true for the *élite*. For example, the *élite* oppose redistributive taxation that the poor favor. Since different policy choices are made under democracy and non-democracy, the *élite* and the poor have conflicting preferences over the two political institutions. Institutions give those in office *de jure* political power. Unanticipated shocks gives those not in office *de facto* political power all-be-it only temporarily. Those not in office use this transitory power to obtain policy concessions from those in office. Once the temporary power disappears those in office may reverse these concessions.

The *élite* stage coups to transform democracies into dictatorships, and the poor stage revolutions<sup>14</sup> to transform dictatorships into democracies. Both coups and revolutions destroy a fraction of the income during the period in which it takes place. In an extension of their model, they show that coups are more likely in more unequal societies since the *élites* have more to gain than when inequality is low. A consolidated democracy is one where an effective coup has never been staged and citizens set policies without worrying about coups. In a semi-consolidated democracy, citizens prevent coups by accommodating the demands for more pro-*élite* policies. In an unconsolidated democracy coups cannot be prevented and frequently occur. They predict that a transition from non-democracy to democracy is more likely to emerge when a country is facing a serious crisis or experiencing negative macroeconomic shocks.

The models of [Bueno de Mesquita et al. \(2003\)](#), [Gallego and Pitchik \(2004\)](#) and [Acemoglu and Robinson \(2006a\)](#) complement each other. Gallego and Pitchik study the determinants of the probability of a coup. [Bueno de Mesquita et al.](#) examine how leaders use the provision of private and public goods to stay in office under different

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<sup>13</sup> [Acemoglu and Robinson](#) developed many versions of their basic theory all summarized in their 2006 book so we refer only to their book.

<sup>14</sup> [Acemoglu and Robinson](#) (2006) argue that revolutions are staged only if the poor overcome their collective action problem. Deeper crises make it easier for the poor overcome their collective action problems. They give numerous examples where democratic transitions occur in the presence of significant social unrest.

institutions. [Acemoglu and Robinson \(2006a\)](#) examine the transitions between non-democratic and democratic regimes.

The electoral competition literature on leadership transitions includes the models of Banks (1990), Banks and Sundaram (1993) and [Ferejohn \(1986\)](#). These models assume that public goods are necessary to all citizens and that their provision requires the leader to undertake costly actions. In these models, the base of power (the median voter) uses its ability to reappoint the incumbent to provide the leader with incentives to exert costly effort on their behalf. The period payoff of the median voter depends positively on the leader's choice and a random component. The optimum decision of the median voter is to set a minimum level of well-being and to remove the incumbent if this threshold is not met. Under some circumstances, there is a change in leadership. Democratic leadership transitions are stochastic and depend on the properties of the random variable affecting the period payoff of the median voter.

The theories of electoral competition, coups and regime transitions use performance based rules. In these dynamic models, leadership transition occurs when the well-being of the leader's support group does not reach a minimum level of well-being. Using the prediction of these models let us now examine the evidence on leadership transitions.

## 12.3 Empirical Studies of Leadership Transitions

The service provided by the dictator targeted exclusively to kingmakers in the coup model, to the winning coalition in the selectorate theory and to the élite in the regime transition theory include, but are not limited to, preferential access to high quality goods, lucrative contracts, education subsidies, limited foreign exchange in countries with high black market premiums, favourable labor and trade policies and maintenance of public order.<sup>15</sup> Moreover, the élites in [Acemoglu and Robinson \(2001, 2006a\)](#) and [Acemoglu et al. \(2010a, 2011\)](#), the winning coalition in [Bueno de Mesquita et al. \(2003\)](#), and the kingmakers in [Gallego and Pitchik \(2004\)](#) are the economic élites in less developed countries (LDCs).

[Gallego and Pitchik \(2004\)](#) predict that coups occur only when the export price, the dictator's investment, and the kingmakers' profits are low (because, in equilibrium, the opportunity cost of a coup increases in these variables). In addition, the coup model also predicts that the probability of a coup falls the higher the shock  $\mathbf{p}$  affecting kingmaker profits, the greater the service  $x$  provided by the dictator for the kingmakers, the greater the well-being of kingmakers  $\mathbf{p}Y(x)$ , and the greater the profit extraction ability of kingmakers,  $Y \circ C_i^{-1}$ . Since these variables can be proxied by *EXPORTS* and *GDP* or *INV*, there is evidence supporting the predictions of the coup model as now explained.

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<sup>15</sup>For extensive discussions on the services provided by dictators to its support group see [Bueno de Mesquita et al. \(2003\)](#), [Olson \(2000\)](#), and [Wintrobe \(1998\)](#). The services provided for the citizens are fixed in the coup model.



O’Kane (1987) finds that a decline in the export profits of élites leads to coups. Export firms are mainly owned by the élites in LDCs. The price of exports is in general determined in the international market and thus exogenously determined for any country. Moreover, exports depend on the dictator’s trade policy. The value of a country’s *EXPORTS* measures then the well-being of kingmakers. Using a multi-country analysis, O’Kane finds evidence that countries highly dependent on a single good for their export revenue are prone to coups. She finds that export revenue is affected by shocks and by the leader’s response to fluctuations in these shocks, and argues that leaders must work hard to maintain support and avoid coups when export revenue is volatile. Her finding that a decline in the export profits of élites leads to coups supports the prediction of the coup model.

There is evidence that a high coup propensity is associated with a decrease in *GDP*. To see this note that income is highly concentrated among the élites in LDCs (World Development Report, 1994, Table 30, p. 220) and that the services provided by public infrastructure mostly benefit the élite (World Development Report, 1994, Table 1.4, p. 32). Since the income of the élite fluctuates with the level of service provided by the dictator, then *GDP* also serves as proxy for kingmaker payoffs. The evidence on *GDP* and the probability of a coup is as follows. Per capita lagged *GDP* is used by Londregan and Poole (1990), in a worldwide sample, and by Londregan et al. (1995), for African countries. Current per capita *GDP* is used by Galetovic and Sanhueza (2000), using a sample of developing countries with autocratic regimes. Alesina et al. (1996) use the current growth rate in a worldwide sample. The empirical findings that the probability of a coup decreases in *GDP* also support the predictions of the coup model.

The endogenous growth literature shows that growth can be decomposed into components associated with changes in capital, labor, or increases in productivity. From Corollary 12.1, Sect. 12.1.6, we know that an increase in the profitability of the kingmakers’ profits in terms of the dictator’s investment, i.e., a shift in  $Y \circ C_i^{-1}$ , decreases the probability of a coup and that this increase in profitability can be associated with an upward shift in  $Y$  or a downward shift in  $C_i$ . Moreover, note that any change in labor, capital, or technology causes a shift in  $Y \circ C_i^{-1}$ . Thus, an upward shift in  $Y \circ C_i^{-1}$  can be associated with higher levels of *GDP* and *GDP* growth since each can be affected by, say, an increase in education.<sup>16</sup> Corollary 12.1 then predicts that the probability of a coup may fall when there is an increase in *GDP* (due to, say, an increase in education).

### 12.3.1 Estimating Leadership Transition Probabilities

Using a worldwide sample, Gallego (1996, 1998) estimates leadership transition models that take into account the leaders’ exit mode. Gallego uses a subset of Bienen and van de Walle’s (BvdW 1991) non-communist worldwide sample (that

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<sup>16</sup>Spending on higher education mainly benefits the élite in LDCs (see Alesina 1998).

**Table 12.1** Leadership data by duration and exit mode

Duration	Entered	Right-censored <sup>a</sup>	Total exits	Const. exit <sup>b</sup>	Unconst. exit <sup>c</sup>
0	705	14	124	77	47
1	567	15	84	62	22
2	468	17	61	39	22
3	390	12	55	36	19
4	323	18	70	58	12
5	245	12	49	37	12
6	184	13	22	15	7
7	149	9	11	9	2
8	129	3	18	11	7
9–20	108	33	49	25	24
21–38	26	15	11	8	3
Total	705	151	554	377	177

<sup>a</sup>Leaders still in office in 1987 or who died while in office

<sup>b</sup>Leaders removed from office by constitutional means

<sup>c</sup>Leaders overthrown by unconstitutional means

includes China and Yugoslavia) for leaders governing between 1950 and 1987. Leaders' entry and exit modes are coded as happening through constitutional or unconstitutional means. A change is considered constitutional when it takes place through regular constitutional channels.<sup>17</sup> Unconstitutional exits include leaders exiting via revolutions and coups d'état.

To study leadership transitions, Gallego (1998) matches BvdW political data with Summers and Heston's (1991) economic data. The economic data is given in annual per capita real 1985 dollars. Leader's duration is measured in years as BvdW's data only has the leader's entry and exit year. Moreover, not all countries are included in the data for the same number of years and some are not in it for a consecutive number of years.<sup>18</sup>

Table 12.1 shows that the dataset consists of 593 leaders facing 705 leadership spells, who ruled in 118 countries between 1950 and 1987.<sup>19</sup> Of the 554 leaders who were removed from office, 377 did so constitutionally with the remaining 177 ousted by unconstitutional means. The remaining 151 leadership spells include leaders with right-censored spells who may be repeaters. Leaders' duration varies from just a

<sup>17</sup>BvdW code transitions between military leaders in Argentina (e.g., Viola succeed Videla in 1980) as constitutional as these transitions were done following the constitution drafted by the junta and in spite of the lack of democratic support for these leaders.

<sup>18</sup>For example, African countries before independence have no executive leaders. In some countries, there are periods with no head of government or with interim leaders – interim leaders are not in the sample. Periods of shared rule (Uruguay 1951–1958 and Yugoslavia 1978–1987) are excluded. Also some leaders' characteristics may be missing. For a list of countries and time periods see Gallego (1998).

<sup>19</sup>Of the 112 repeaters, 79 were in office twice, 14 three times, 4 four times, 3 five times, and 14 are censored as they had not left office in 1987.

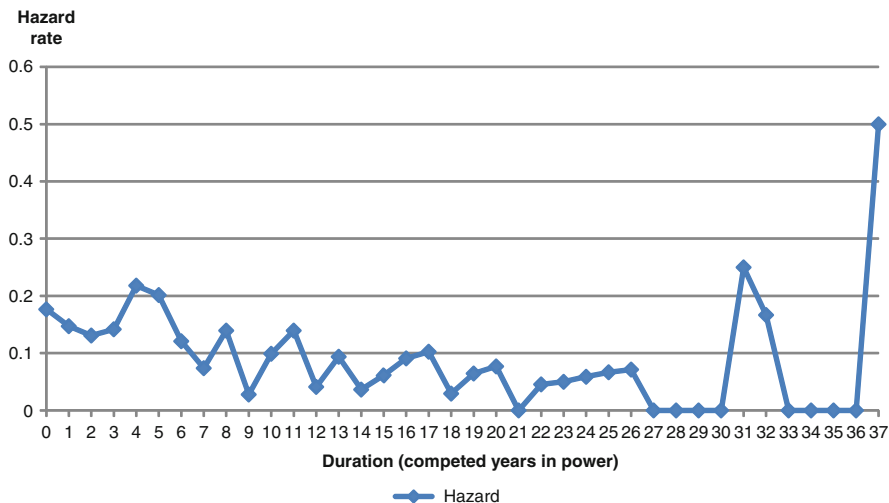


Fig. 12.1 Hazard rate – Kaplan–Meier estimates

few months (zero duration) to 38 years.<sup>20</sup> The sample is highly skewed as many are removed before their first anniversary (124), mostly by constitutional means (77). Fifty eight (58) of the 70 leaders ousted at duration 4 exit by constitutional means. More than half (55%) are removed before their fifth anniversary.

Figure 12.1 shows the Kaplan–Meier estimate of hazard rate at each duration (Table 12.10 in the Appendix gives the values at each duration). The Kaplan–Meier hazard rate is a raw hazard as it is estimated before controlling for any systematic effect different covariates might have on the hazard. It gives the probability that a leader is ousted during period  $t$  given that the leader survived to time  $t$ . For period  $t$ , the Kaplan–Meier hazard rate is calculated as

$$\frac{d_t}{n_t - c_t/2} \tag{12.6}$$

where  $d_t$  is the number of leaders who are removed from office in period  $t$ ,  $n_t$  is the number of leaders who are exposed to being overthrown in period  $t$  and  $c_t$  is the number of leaders who face right-censored spells in period  $t$ . Recall that leaders with censored spells are those who were in office at the end of the sample period and for whom the date they would leave office is not known. Thus, when calculating the hazard rate, Kaplan and Meier assumed that only half of the censored leaders would have been exposed to the risk of being ousted from office in period  $t$  and so only half of them are included in denominator.

The figure graphs the Kaplan–Meier hazard rate estimates and shows that the hazard rate varies as duration increases, i.e., that leaders face different risks of

<sup>20</sup>The Spanish Franco died while still in office in 1975 after having ruled for 38 years. Franco is included in the data as a right-censored spell.

**Table 12.2** Leaders by regions

Region	All leaders	Right-censored <sup>a</sup>	Const. Spells <sup>b</sup>	% Const. exits <sup>c</sup>	Unconst. spells <sup>d</sup>
Middle East	59 (8.4%)	20	19 (5.0%)	48.7	20 (11.3%)
Africa	121 (17.2%)	41	16 (4.2%)	20.0	64 (36.2%)
Asia	92 (13.0%)	20	49 (13.0%)	68.1	23 (13.0%)
Latin America	206 (29.2%)	35	105 (27.9%)	61.4	66 (37.3%)
NAEA	227 (32.2%)	35	188 (49.9%)	97.9	4 (2.2%)
Total	705 (100%)	151	377 (100%)	67.7	177 (100%)

<sup>a</sup> Leaders still in office in 1987 or who died while in office.

<sup>b</sup> Leaders removed from office by constitutional means.

<sup>c</sup> Percentage of total leaders exiting by constitutional means.

<sup>d</sup> Leaders overthrown by unconstitutional means.

being removed from office at different durations. The figure shows that the hazard is highest at duration four for durations of less than 31 years. Table 12.10 shows that the hazard of overthrow at duration four is 21.8%. So that conditional on having survived to their third anniversary, the leader has approximately a 20% probability of being removed from office during her/his fourth year in office.

Table 12.2 shows that while most African leaders are removed by unconstitutional means, those in North America, Europe and Australasia (NAEA) lost office almost exclusively by constitutional means.<sup>21</sup>

Transition probabilities are estimated controlling for leader-specific covariates that include dummy and continuous variables. *MANNER* tests whether a leader who comes to office by unconstitutional means (*manner* = 1) is more likely to face an unconstitutional exit (Londregan and Poole 1990). *MILITARY* captures whether the military (*military* = 1) had any influence on the leader attaining office.<sup>22</sup> This dummy tests Luttwak's (1979), Acemoglu and Robinson's (2006a) and Acemoglu et al.'s (2010a,b) theory and O'Kane's (1987) finding that having the support of the army is important during coups d'état and tests for BvdW's finding that leaders enjoying military support face lower risks of being removed from office. *ENTRY* is a categorical variable indicating the number of times a leader has been in office. It controls for repeaters and tests whether their risks of losing office differ from those in office only once.

Countries are classified as having a parliamentary, a presidential or some other political system.<sup>23</sup> Some countries experience *regime transitions* that is transitions to and from democracy and non-democracy. When transitioning for the first time

<sup>21</sup>BvdW code four leaders as exiting by unconstitutional means in NAEA countries: the American Kennedy (1963), the Greek Paraskevopoulos (1966), the Portuguese Caetano (1973), and the Swedish Palme (1982).

<sup>22</sup>BvdW code military as 1 when either the leader spends a significant part of his career in the military or when the armed forces were crucial to the leader attaining office.

<sup>23</sup>Counties are classified using [Derbshire and Derbshire \(1989\)](#) political system classification. Some democracies, like France, are a hybrid between a parliamentary and a presidential system.

to democracy a country must choose whether to operate under a parliamentary, a presidential or some other political system. The country's political system classification is maintained for the entire period the country is in the sample even when they transition to non-democracy as they are assumed to be not only conditioned by existing socioeconomic structures and political institutions but because it is too costly to create new political institutions or to change, ban or dismantle pre-existing ones (see [Przeworski 1986](#); [Karl 1990](#); [Bratton and van de Walle 1994](#); and [Acemoglu and Robinson 2006a](#); [Gandhi and Przeworski 2007](#)). Thus, countries are classified according to whether they adopted a parliamentary ( $PARL = 1$ ), presidential ( $PRES = 1$ ) or an *OTHER* ( $PARL = 0$ ,  $PRES = 0$ ) political system sometime in their history. Country fixed effects are then captured by the political system dummy as the variable is held constant for the entire period the country is in the sample.

Other variables that may systematically affect the leader's exit probability include continuous variables. The *DATE* the leader took office tests whether political risks decrease over time. This variable partially accounts for time fixed effects. Time-varying country-specific economic data allow for intra-spell events to affect the transitions and are expressed in per capita annual real (1985 dollars) terms. Gallego focuses only on the impact *domestic* economic conditions have on leadership turnover.<sup>24</sup> To measure the well-being of domestic agents, she creates a variable labeled domestic absorption (*DA*), the sum of consumption (*CON*), investment (private and public gross domestic capital formation, *INV*), and government consumption spending (*GOV*). While *DA* is a first approximation to measuring the economic well-being of domestic agents, others in the literature use either *GNP* or *GDP* which includes exports and imports. Only lagged values of the economic variables are used in the analysis.

Table 12.3 shows the descriptive statistics of these variables. For leaders exiting by constitutional means the economic variables have a greater mean, median and standard deviation than those unconstitutionally removed from office. Not surprising, as close to 50% of constitutional transfers take place in *NAEA* countries (Table 12.2). This suggests that economic variables have a differential impact on the two transition probabilities.

Leaders exiting by constitutional parliamentary means face lower durations (mean, median and standard deviation) than their presidential counterparts. This highlights the fact that among those exiting by constitutional means, prime ministers face higher risks of being constitutionally removed from office than presidents. Prime ministers need to maintain the support of parliament to stay in office, when in minority situations they often form coalitions with other parties that frequently collapse, and they may lose non-confidence votes.

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The residual or "other" category includes countries with hybrid systems, unlimited presidential terms, military and communist regimes.

<sup>24</sup>Foreign groups may affect leadership transitions but they are not part of her study. For a theoretical analysis of how foreign governments and interests affect regime transitions see [Acemoglu and Robinson \(2006a\)](#).

**Table 12.3** Descriptive statistics

Variable	Constitutional <sup>a</sup>			Unconstitutional <sup>b</sup>		
	Median	Mean	SD	Median	Mean	SD
Leaders in all Countries						
DURATION	3	3.769	4.586	2	4.230	5.645
DA <sup>c</sup>	4,415	5,053	3,428	1,355	1,768	1,521
CON <sup>c</sup>	2,690	3,142	2,072	893	1,224	1,007
INV <sup>c</sup>	886	1,201	977	193	288	329
GOV <sup>c</sup>	602	787	615	230	316	376
Manner	0	0.11	0.32	0.5	0.50	0.50
Military	0	0.15	0.36	0	0.43	0.49
Entry	1	1.22	0.53	1	1.16	0.55
Date	1968	1967.53	9.74	1966.5	1967.36	8.60
Age	57	58.47	9.71	52.0	52.37	10.95
Leaders in Counties with Parliamentary Executive Regimes						
DURATION	2	3.300	3.622	3.5	4.375	3.998
CON	3,994	4,041	1,883	1,453	1,955	1,859
INV	1,716	1,723	899	426	620	705
GOV	913	1,019	619	320	583	922
Leaders in Counties with Presidential Executive Regimes						
DURATION	4	3.708	4.075	2	3.731	5.093
CON	1,736	2,194	1,752	1,166	1,447	1,075
INV	401	539	517	251	363	328
GOV	362	539	477	227	321	392

<sup>a</sup>Number of leaders: 375. Only leaders exiting by constitutional means are included. These values are for the year they exited

<sup>b</sup>Number of leaders: 178. Only leaders removed by unconstitutional means are included. These are values for the years they exited

<sup>c</sup>All economic variables are measured in real (1985 dollars) and per capita terms

Leaders ousted by unconstitutional means in countries with a presidential tradition face lower durations (mean and median) with higher standard deviation than those in countries with a parliamentary tradition. This accords with [Acemoglu and Robinson \(2006\)](#) statement that the elected presidents of developing countries are more prone to coups than their parliamentary or presidential counterparts in developed countries.

### 12.3.2 *The Hazard of Overthrow*

In order to obtain results comparable to those in the literature, the hazard of overthrow is first estimated without taking into account the leader's constitutional or unconstitutional exit mode. Each leader is then "in or out" (*IO*) of office. The leader's hazard of overthrow is the conditional probability that the leader is removed from office in period  $t$  of his/her term in office. Leaders are assumed to face at most

one transition, implying that once a leader is ousted office s/he remains in that state forever.<sup>25</sup>

The theoretical underpinnings of the empirical models follow the leadership transition models of Banks (1990), Banks and Sundaram (1991), Ferejohn (1986), and Gallego and Pitchik (2004), and the regime transition models Acemoglu and Robinson (2006a) and Acemoglu et al. (2010a, 2011). The leader's survival depends on maintaining the support of certain groups in society. Leader  $i$  is ousted when the well-being of her/his support groups does not reach a minimum level  $u_i^*$ . As in the theory models, it is assumed that the groups' well-being is affected by periodic random shock and given by

$$u_i^*(t) = u_i(t_{oi} + t) + \epsilon_i \quad (12.7)$$

where  $\epsilon_i$  is the stochastic term and  $u_i(t_{oi} + t)$  is defined below. Even though this trigger point is not observable, the leader's "in or out of office" status is known. Consequently, the state the incumbent is in is just a realization of a binomial process. When the stochastic term  $\epsilon_i$  has a logistic cumulative distribution, the probability the leader is removed from office, or hazard of overthrow, at duration  $t$  has a logit specification (King 1989; Lancaster 1990). In more formal terms, for leader  $i$ , whose tenure in office begins at time  $t_{oi}$ , the hazard of overthrow at duration  $t$  of a leader's term in office is then

$$\lambda_i(t|u_i) = \frac{\exp\{u_i(t_{oi} + t)\}}{1 + \exp\{u_i(t_{oi} + t)\}} \quad (12.8)$$

where

$$u_i(t_{oi} + t) = \alpha + h(t) + \beta' \mathbf{X}_i(t_{oi} + t) \quad (12.9)$$

and

$$h(t) = \sum_{k=0}^K \gamma_k D_k. \quad (12.10)$$

In (12.9),  $\alpha$  is a constant;  $t$  represents the leader's duration in office;  $h(t)$  embodies the duration dependence effect or baseline hazard function (more on this below);  $\beta$  is a vector of parameters; and  $\mathbf{X}_i(t_{oi} + t)$  represents the vector of covariates (at time  $t_{oi} + t$ ). The covariates include *leader-* and *country-*specific characteristics which may change over time with different frequencies.

The empirical models include different time varying covariates, the *AGE* of the leader, the *DATE* the leader comes to office and the duration dependence polynomial. It is therefore inappropriate to include time fixed effect dummies as these dummies would be highly correlated with these covariates or a linear combination of them.

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<sup>25</sup>Nearly 16% of the leaders in the Gallego (1998) sample were in office for at least two separate time periods. These repeaters are incorporated into the log-likelihood function as if they are different leaders. The assumption is that when a leader attains office for a second (or third, ...) time, the political and economic environment and the stochastic events confronting her/him are different than the ones encountered during her/his previous term(s).

Duration dependence captures the effect of duration on the leader's hazard. Positive (negative) duration dependence exists when the longer a leader has been in office, the more (less) likely it is that s/he will be removed from office in the next interval of time. Figure 12.1 shows however that the Kaplan–Meier hazard varies as duration increases. Han and Hausman (1990) argue that under this circumstance, the baseline hazard should be modeled by a series of dummy variables, one for each duration year given by (12.10), as this makes no prior assumption about the parametric form of the baseline hazard function. To interpret this term, suppose a leader exits at duration  $t < 8$ . Then the duration dependence dummies are:  $D_k = 1$  for all  $k \leq t$  and  $k \in [1, 8]$  with all other dummies set to zero. (For example, for a leader exiting in his second year in office,  $D_1 = 1$  and  $D_2 = 1$  with all other duration dummies being zero.) For leaders who were in office for less than a year,  $D_0 = 1$  with all other duration dummies set to zero. Since only 20% of leaders were still in office after 9 years (see Table 12.1), with few or no leaders exiting at each duration, the baseline hazard at durations beyond 9 years may not be precisely estimated. To overcome this problem, for  $k \in [9, 20]$ , the dummy variables are:  $D_{912}$ ,  $D_{1316}$ , and  $D_{1720}$  where  $D_{ik} = 1$  for  $t$  in  $[i, k]$ . The default dummy includes those who survived beyond their 21st anniversary and constitute only 4% of the sample.

An crucial point made by Gallego and Pitchik (2004), and discussed earlier in this chapter, is the importance of distinguishing between duration dependence and unobserved heterogeneity. Suppose, as in Banks and Sundaram (1993) and Gallego and Pitchik (2004) that leaders have different public good production abilities. Leaders with higher abilities (lower costs) face on average longer durations. Therefore, at later durations the sample is populated by leaders with high abilities who face low hazard rates. Meyer (1986) argues however that by modelling duration dependence as a series of dummy variables, the results are less sensitive to the specification chosen to represent the distribution of unobserved heterogeneity.

Model 1 in Table 12.10 gives the coefficients of the hazard rate as a function of leader specific characteristics and  $DA$ . The results indicate that as  $DA$  increases, so does the hazard. This contrasts with Bienen and van de Walle (1991) finding of a significantly negative impact of the 1973 *GNP* on the hazard.

Gallego gives three plausible explanations for this counter-intuitive result. First,  $DA$  may be capturing the effect of differences in the risk of being removed by constitutional and unconstitutional means. Second,  $DA$  may not accurately measure the well-being of the leader's support group under constitutional and unconstitutional transfers. Suppose a leader is ousted even though  $DA$  is rising but that the well-being of the leader's support group is falling so that some theories predict a change in leadership.  $DA$  may then be too broadly defined to capture changes in the well-being of the leader's support group. Finally, the sample includes countries that adopted different political systems. Since leadership transition rules in parliamentary and presidential systems differ, the transition probabilities should also depend on the political system, as Table 12.2 suggests. Thus,  $DA$  may also be absorbing the systematic leadership transition differences due to heterogeneity across political systems. Each of these explanations is examined in sequence below.



### 12.3.3 Constitutional and Unconstitutional Transitions

To take the leader's exit mode into account, it is assumed that *all* incumbents can be removed by constitutional and unconstitutional (CU) means. A leader faces then two independent transition probabilities and her/his hazard of overthrow is the sum of these transition probabilities. Each leader is then in one of *three* states: in office ( $j = 0$ ); removed by constitutional ( $j = 1$ ) or by unconstitutional ( $j = 2$ ) means. The two exit modes are mutually exclusive, and exhaust the leader's possible destination states. Since the stochastic disturbances are independent of each other and have a logistic cumulative distribution, the transition probabilities have a multinomial-logit specification. For leader  $i$ , the transition probability to the  $j$ th state for  $j = 1, 2$  in period  $t$  of her/his term in office is

$$\lambda_i^j(t|u_{ij}) = \frac{\exp\{u_{ij}(t_{oi} + t)\}}{1 + \sum_k \exp\{u_{ik}(t_{oi} + t)\}} \quad (12.11)$$

where

$$u_{ij}(t_{oi} + t) = \alpha_j + h_j(t) + \beta_j' \mathbf{X}_i(t_{oi} + t) \quad (12.12)$$

and

$$h_j(t) = \sum_{k=0}^K \gamma_{kj} D_k. \quad (12.13)$$

In (12.12),  $\alpha_j$  is the transition-specific constant;  $h_j(t)$  represents the transition-specific duration dependence effect;  $\beta_j$  is the vector of transition-specific parameters; other terms are as in (12.9). The terms in (12.13) are as in (12.10) except that the coefficients are now transition-specific.

Figure 12.2 shows the Kaplan–eier estimates of the constitutional and unconstitutional transition probabilities (see values in Table 12.10 in the Appendix). The Kaplan–eier transition probability at each duration, the probability of exiting at each duration conditional on surviving until that period, is estimated using (12.6). The constitutional transition probability lies above the unconstitutional one for durations of less than 8 years. Since many countries have a 4-year constitutional inter-election period, the constitutional transition probability is highest at duration 4 for durations less than 32 years. In addition, for countries with no fixed election date, there is usually a maximum constitutional inter-election period (e.g., in Canada the maximum is 5 years). As a consequence, the constitutional transition probability at duration 5 is the second highest for durations of less than 32 years. From Table 12.2 we know that the mean duration for leaders exiting by constitutional means is *less* than 4 years and that of those unconstitutionally overthrown it is *more* than 4 years. The reverse holds for median durations. Figure 12.2 and Table 12.2 suggest that the constitutional and unconstitutional transition probabilities should exhibit different dynamics as duration increases.

To test this hypothesis, Model 2 in Table 12.11 in the Appendix uses the same covariates as Model 1 taking into account the leader's constitutional or unconstitutional exit mode. As expected, some covariates exert a differential and significant

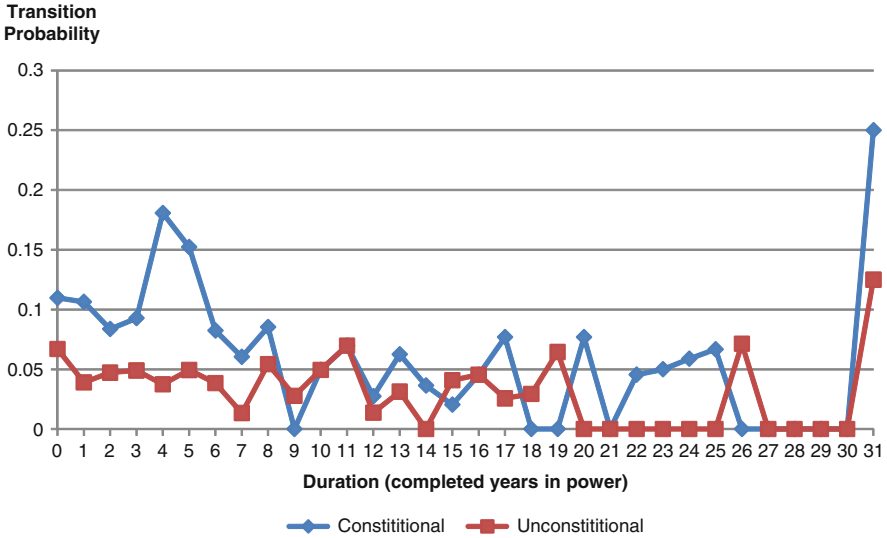


Fig. 12.2 Constitutional and Unconstitutional – Kaplan–Meier estimates

effect on each transition probability. The functional forms of each of these transition probabilities given in (12.11) make the multinomial logit coefficients difficult to interpret. A more informative but equivalent way of presenting these results is to calculate how changes in one covariate affect the median leader’s transition probabilities while holding all other variables constant at their median values. A median leader is defined as the leader having the median characteristics of the leaders in the sample for the median country, while being removed from office at the median duration. Median rather than mean values are used because the sample not only includes leaders with censored spells but is also highly skewed. The change in the transition probability for a dummy is estimated by increasing it by one discrete unit, and for a continuous variable by increasing its median value by one percentage point.

Table 12.4 shows that a median leader at the median duration faces almost twice the risk of exiting by constitutional (0.0902) rather than by unconstitutional means (0.0415). Furthermore, the effect that each variable has on leadership turnover depends on the leader’s exist mode. The significantly positive effect of *MANNER* on the unconstitutional transition gives support to Londregan and Poole’s (1990) finding that s/he who lives by the coup is more likely to die by the coup. The significantly negative impact of *MILITARY* on the leader’s hazard found in Model 1 (Table 12.11) and in BvdW affects *only* leaders exiting by unconstitutional means. Leaders who reached office at a later *DATE* face lower political risks, meaning that both transition probabilities have shifted down over time (Model 1, Model 2 and BvdW). As the median leader *AGES* her/his probability of leaving by constitutional means rises but the probability of exiting by unconstitutional means falls. The effect of *DA* on the unconstitutional transition is as expected. However, the probability of

**Table 12.4** Change in transition probabilities for Model 2

Original medians Variable	Constitutional			Unconstitutional		
	0.0902			0.0415		
	Change	t	%	Change	t	%
<i>Lag log (DA/10<sup>2</sup>)</i>	0.005***	4.96	0.5	-0.006 * **	3.59	15.6
Manner	-0.012	0.70	13.5	0.042*	2.01	100.9
Military	-0.020	1.70	26.8	-0.016*	2.14	39.3
Entry	0.027**	2.13	29.7	0.010	1.02	23.1
Date/100	-0.017***	3.24	19.2	-0.010 * *	2.75	10.4
<i>Age/10 and (Age/10)<sup>2</sup></i>	0.006***	5.40	7.3	-0.006 * **	3.62	15.0

*Prob* < 0.05; \*\* : *Prob* < 0.01; \*\*\* : *Prob* < 0.001

a constitutional exit rises as *DA* increases. A plausible explanation for this counter-intuitive result is that other sources of heterogeneity may be embedded in the effect that *DA* as on the transition probabilities.

As argued by [Acemoglu and Robinson \(2006a\)](#), [Acemoglu et al. \(2010a, 2011\)](#), [Bueno de Mesquita et al. \(2003\)](#) and [Gallego and Pitchik \(2004\)](#) among others, leaders in democracies depend on a different support group than those governing in non-democratic regimes. That is, the leader's support group depends on the political institutions under which the leader operates. Moreover, the theories of electoral competition, coups and regime transitions predict that the leader's fate depends on the stochastic changes to the well-being of the leader's support group. If economic crises differentially affect economic groups then these crises should exert a differential effect on democratic and non-democratic transitions. That is, the interactions between economic performance and democratic or non-democratic leadership transitions should exhibit different dynamics. Note that some leadership transitions may imply transitions to and from democratic and non-democratic regimes ([Acemoglu and Robinson 2006a](#)).

### 12.3.4 Leader's Support Groups Under Different Regimes

The theoretical political economy and nondemocratic models of leadership transitions given in Sects. 12.1 and 12.2 assume that both democratically elected leaders and dictators are accountable to their power base and that the well-being of the power base is affected by an investment made by the leader and a random shock. To test whether different agents have a differential impact on constitutional and unconstitutional transitions it is necessary to take into account the leader's exit mode as well as to include economic data that more closely measures the well-being of different groups in society. To do so *DA* is replaced by its three components *CON*, *INV*, and *GOV*. The idea is that per capita real *CON* and *INV* are better proxies of the well-being of leader's support groups under different leadership transition modes and that per capita real *GOV* reflects the incumbent leader's decision on how government spending is allocated.

The rationale for including these three economic covariates depends on the leader's exit mode. In the non-democratic literature, the élites in [Acemoglu and Robinson \(2006a\)](#) and [Acemoglu et al. \(2010a, 2011\)](#), the winning coalition in [Bueno de Mesquita et al. \(2003\)](#) and the kingmakers in [Gallego and Pitchik \(2004\)](#) decide when to stage a coup. In addition, in [Acemoglu and Robinson \(2006a\)](#) and [Acemoglu et al. \(2010a\)](#) citizens decide when to stage a revolution to induce a transition to democracy. In the electoral competition literature, the median voter determines whether the incumbent is re-elected (see e.g., [Banks 1990](#); [Banks and Sundaram 1992](#); [Ferejohn 1986](#)). To find the effect that different groups have on constitutional and unconstitutional transitions it is necessary to find variables that better proxy the well-being of these groups. As now explained, real per capita investment (the sum of public and private investment, *INV*) is used to measure the well-being of the élite and real per capita consumption (*CON*) to measure the well-being of the median voter.

We now explain the rationale for using *INV* to measure the well-being of the élites, the members of the winning coalition or the kingmakers. [Clarke \(1995\)](#) finds a significant and negative correlation between the Gini coefficient of income distribution and per capita *GDP*. [Yotopoulos \(1989\)](#) constructs Gini coefficients using Summers and Heston's 1980 purchasing power parity deflator. He finds that during the 1973–1985 period (whenever income and expenditure surveys are available) the top quintile of the population generates a disproportionately large share of income (Bangladesh 33%, India 44%, Sri Lanka 66%, Pakistan 43%, Indonesia 44%, Philippines 51%, Brazil 55%, Mexico 50%, and South Korea 38%). If these countries are representative of others within the same region, then these other countries will also have highly skewed income distributions. Furthermore, [Alesina and Rodrik \(1994\)](#) and [Persson and Tabellini \(1992\)](#) use the Gini coefficient of land distribution to proxy the distribution of wealth. They argue that there is a high correlation between inequality in land ownership and the accumulation of assets. Consequently, the élites in [Acemoglu and Robinson \(2006a\)](#), the winning coalition in [Bueno de Mesquita et al. \(2003\)](#) and the kingmakers in [Gallego and Pitchik \(2004\)](#) are members of the élites of LDCs.

Moreover, the services provided by public infrastructure mostly benefit the élite (World Development Report, 1994, Table 1.4, p. 32). Thus, investment in public infrastructure or its maintenance is a measure of the services that a leader provides for the élite in LDCs. In addition, the crowding-in literature finds that public investment is a determinant of private investment. The public capital hypothesis states that public investment increases the rate of return on private capital. [Greene and Villanueva \(1991\)](#) (after controlling for other variables) find that for LDCs between 1975 and 1987 the rate of public sector investment has a positive and significant effect on the ratio of private investment to *GDP*.

Private investment measures the well-being of the élites. [Perotti \(1994\)](#) argues that in LDCs investment by an individual in human and/or non-human assets is limited by her/his initial wealth. [Lecaillon et al. \(1984\)](#) argue that the distribution of capital depends on the distribution of property. Given that property is highly concentrated, there is then greater inequality of income from capital than there is

from income from work. It is then reasonable to assume that the wealthy élites of the LDCs are the ones with the greatest investment capabilities. The élites invest if it is in their interest to do so, i.e., if they anticipate that their investments will help them prosper and if they are confident that their assets will not be confiscated as otherwise they may engage in capital flight (see, e.g., Özler and Rodrik 1992; Acemoglu and Robinson 2006a). Thus, it is the élites who contribute to the bulk of private investment in LDCs. Private investment is then a good proxy for the well-being of the élites, the members of the winning coalitions and the kingmakers.

Consequently if private investment is done mostly by the LDC élites, and if private and public investment are complements, and public investment benefits mostly the LDCs' élites, then *INV* (private and public) is a better measure of the well-being of the LDCs élites than is *DA*, *GDP* or *GNP*.

Some electoral models assume that only the median voter influences the leader's turnover rate. Acemoglu and Robinson (2006a) argue that the median voter can be either a poor or a middle class voter. The country's per capita real consumption (*CON*) is a good measure the well-being of the median voter. In other models, interest groups also affect electoral outcomes (e.g., Grossman and Helpman 1996). It is unlikely that random shocks such as an economy-wide recession will affect the median voter and interest groups in the same manner and with the same intensity. Moreover, since different interest groups represent different economic interests, a change in aggregate private investment may not capture changes in the well-being of individual groups. In addition, Argimon et al. (1995) and Nourzard and Vrieze (1995) find evidence of crowding-in effects for OECD countries. If private and public investment are complements in both developed and less developed countries, *INV* can be used for leaders exiting by constitutional means. Developed countries have more diversified economies than LDCs and thus a greater variety of interest groups. Being an aggregate measure, *INV* may not reflect changes in investment of particular groups and thus is not expected to affect the constitutional transition probability.

As argued in Sects. 12.1 and 12.2 in this chapter, the well-being of the citizens and of different interest groups also depends the leader's allocation of government resources among competing needs. Each leader must decide how to allocate government revenues between government expenditures *GOV* and public investment (already included in *INV*). Once the leader's revenues for a particular year have been determined,<sup>26</sup> the only way *GOV* can increase, is if public investment falls. As public investment falls so does the well-being of citizens and different interest groups. It is then expected that the constitutional and unconstitutional transition probabilities should rise as *GOV* rises.

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<sup>26</sup>There are no reliable measures of how much dictators swindle out of the country. Moreover, Acemoglu and Robinson (2006a) argue that since some LDCs countries under-report government expenditures or tax revenues, it is difficult to determine how much these leaders divert away from their countries.

Recall that when taking leaders’ exit mode into account, *all* leaders face the risk of being removed from office by constitutional and by unconstitutional means. The CU approach allows then for regime transitions between democratic and non-democratic regimes. By allowing *CON*, *INV*, and *GOV* to have a differential effect on the constitutional and unconstitutional transition probabilities the decision to oust the leader can then be affected by different groups. If the leader’s removal from office depends on multiple groups and the economic activities of these groups differ then the decision to oust the leader is multi-dimensional in nature. By incorporating these three economic covariates into the transition probabilities, the model assess the influence that different agents have on transitions.

The results of the CU model with disaggregated economic covariates are presented in Model 3, Table 12.12 in the Appendix. Of the economic covariates only *INV* has a negative and significant effect on unconstitutional transitions. Thus, suggesting that for LDCs, the timing of unconstitutional transfers is determined *only* by the élites. This supports Acemoglu and Robinson (2006a), Bueno de Mesquita et al. (2003) and Gallego and Pitchik (2004) assumption that it is the élites in LDCs who decide when to stage coups. For constitutional transitions, only *CON* exerts a significant influence though opposite to that anticipated.

Table 12.5 shows that in Model 3 increasing the median value of *CON* by one percentage point increases the constitutional transition probability by 5.4% points; and that a one percentage point increase in the median value of *INV* decreases the unconstitutional transition probability by 1.8% points.

### 12.3.5 Leadership Transitions in Different Political Systems

To explain the counter-intuitive result of *CON* on the constitutional transition probability, it is necessary to take into account that the constitutional transition probability may depend on the country’s political system. To control for differences across political systems, the *PARL* and *PRES* dummies are included in the analysis, leaving countries with other political systems as the excluded category (*PARL* = 0 and *PRES* = 0). Table 12.5 shows that while most constitutional parliamentary leaders

**Table 12.5** Change in transition probabilities for Model 3

Original medians	Constitutional		Unconstitutional	
	0.099		0.035	
Lagged variables <sup>a,b</sup>	Change	t – stat	Change	t – stat
<i>log</i> ( <i>CON</i> × 10 <sup>2</sup> )	0.054*	2.17	0.044	0.51
<i>log</i> ( <i>INV</i> × 10 <sup>2</sup> )	0.004	0.23	–0.018***	3.48
<i>log</i> ( <i>GOV</i> × 10 <sup>2</sup> )	0.001	0.04	0.001	0.11

<sup>a</sup>Other covariates: manner, military, entry, date, age, and age<sup>2</sup>

<sup>b</sup>Also includes duration dummies *D*<sub>0</sub> to *D*<sub>8</sub>, and *D*<sub>912</sub>, *D*<sub>1316</sub>, *D*<sub>1720</sub>

\*: *prob* < 0.05; \*\*: *prob* < 0.01; \*\*\*: *prob* < 0.001

rule in North America, Europe and Australasia (NAEA) countries (76.6%), most constitutional presidential leaders govern in non-NAEA countries (93.6%). Note that of the 91 leaders unconstitutionally overthrown in countries with parliamentary or presidential traditions, 81 ruled in countries with a presidential tradition.

As shown in Table 12.3 the economic covariates of countries with parliamentary traditions regardless of leaders' exit mode have higher medians, means, and standard deviations than leaders in countries with presidential tradition. Moreover, while leaders in parliamentary democracies have lower median and mean durations than their presidential counterparts, the reverse hold when leaders exit by unconstitutional means. Thus, leaders in countries with high levels of *CON*, *INV*, and *GOV* face, on average, shorter durations and are mostly parliamentary leaders.

Figure 12.3 shows the Kaplan–Meier estimates of the constitutional transition probability for leaders in parliamentary and presidential regimes. When exiting by constitutional means, prime ministers face a higher risk of being removed from office than their presidential counterparts at all durations except at durations 4, 6, 12 and 20. Moreover, Table 12.6 shows that almost half (46%) of the unconstitutional exits are by presidents of non-NAEA countries. This suggests that the economic covariates may be absorbing the effect of political system heterogeneity on the transitions. Leaders of parliamentary and presidential systems should face different transition probabilities as Fig. 12.3 indicates.

Model 4, Table 12.12 incorporates the parliamentary and presidential dummies. The results are easier to understand when taking into account the political system. To do so, the changes in the transition probabilities are calculated for the median

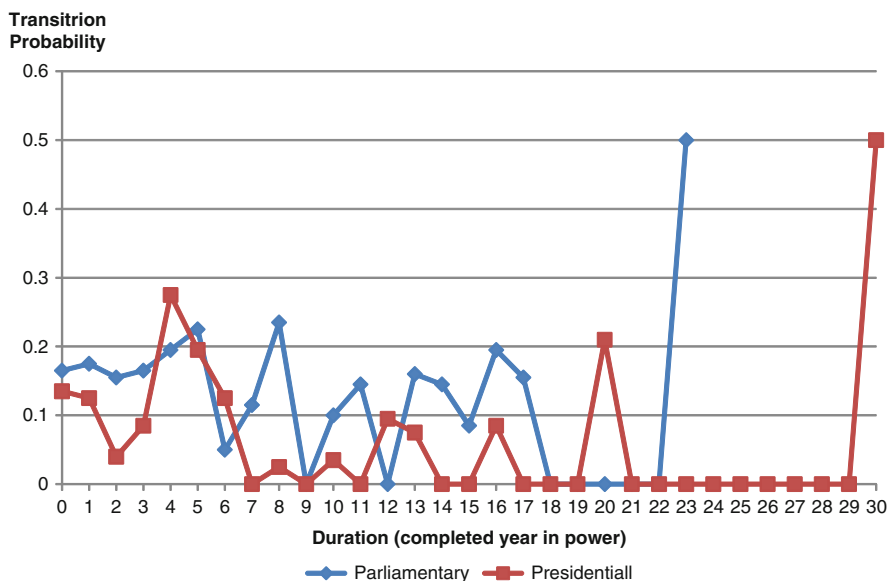


Fig. 12.3 Constitutional Transition – Kaplan–Meier estimates

**Table 12.6** Number of leaders by exit mode and by political regime

Leaders	Constitutional				Unconstitutional			
	Total	Parl	Pres	Other	Total	Parl	Pres	Other
Total	377	205	109	63	177	10	81	86
NAEA	188	157	7	24	4	2	1	1
Non-NAEA	189	48	102	39	173	8	80	85

**Table 12.7** Change in transition probabilities for Model 4

Variable <sup>a,b</sup>	Constitutional		Unconstitutional	
	Change	t	Change	t
At original medians and $PARL = 0, PRES = 0$				
	0.0582		0.0383	
PARL	0.062***	3.53	-0.029**	2.63
PRES	0.048***	3.10	0.017*	1.83
Lag log( $CON \times 10^2$ )	0.003	1.55	0.22E-3	0.79
Lag log( $INV \times 10^2$ )	-0.20E-3	0.27	-0.49E-3**	2.80
Lag log( $GOV \times 10^2$ )	0.90E-3	1.01	0.10E-3	0.56
At original medians and $PARL = 1, PRES = 0$				
	0.1206		0.0096	
Lag log( $CON \times 10^2$ )	0.005	1.70	0.22E-3	0.73
Lag log( $INV \times 10^2$ )	-0.56E-3	0.38	-0.49E-3*	2.04
Lag log( $GOV \times 10^2$ )	0.002	1.01	0.10E-3	0.49
At original medians and $PARL = 0, PRES = 1$				
	0.1060		0.0559	
Lag log( $CON \times 10^2$ )	0.004	1.66	0.001	0.76
Lag log( $INV \times 10^2$ )	-0.24E-3	0.19	-0.003**	3.01
Lag log( $GOV \times 10^2$ )	0.002	0.97	0.56E-3	0.51

<sup>a</sup>Other covariates: manner, military, entry, date, age, and age<sup>2</sup>

<sup>b</sup>Also includes duration dummies  $D_0$  to  $D_8$ , and  $D_{912}$ ,  $D_{1316}$ ,  $D_{1720}$   
 \*:  $prob < 0.05$ ; \*\*:  $prob < 0.01$ ; \*\*\*:  $prob < 0.0011$

leader in each political system. That is, the transition probabilities are estimated for the median leader of the countries with a parliamentary ( $PARL = 1, PRES = 0$ ), a presidential ( $PARL = 0, PRES = 1$ ), and “other” ( $PARL = 0, PRES = 0$ ) political system.

The effect that changes in economic covariates have on the transition probabilities for Model 4 are reported in Table 12.7. An increase of 1% point in  $INV$  significantly decreases unconstitutional transition probability under any political regime, though its effect is weakest for parliamentary leaders. The effect of an increase in  $CON$  on the constitutional transition, although positive, is much smaller and no longer significant. For constitutional transitions, a parliamentary and a presidential leader exiting within the year following her/his third anniversary face significantly greater risks than a leader governing in other political systems. A parliamentary leader faces a significantly lower risk of being overthrown by



**Table 12.8** Unconditional and conditional exit probabilities for Model 4

At original Medians and	Unconditional			Conditional on Exit	
	Const.	Unconst.	Hazard	Const.	Unconst.
<i>PARL</i> = 0, <i>PRES</i> = 0	0.058	0.038	0.096	0.604	0.396
<i>PARL</i> = 1, <i>PRES</i> = 0	0.121	0.010	0.131	0.924	0.076
<i>PARL</i> = 0, <i>PRES</i> = 1	0.106	0.056	0.162	0.654	0.345

unconstitutional means (0.0096) than either a president (0.0559) or a leader in an other system (0.0383), reflecting the fact that 81 out of 91 leaders unconstitutionally overthrown in parliamentary or presidential systems, 81 were presidential systems (see Table 12.5). This result accords with [Stephan and Skach \(1993\)](#) finding and [Acemoglu and Robinson \(2006a\)](#) assertion that presidents are much more prone to regime changes than leaders in parliamentary democracies.<sup>27</sup>

The *conditional on exit* constitutional (unconstitutional) transition probability is the ratio of the constitutional (unconstitutional) transition probability to the hazard rate (the sum of the two transition probabilities). Table 12.8 shows that at duration 3, the median duration and conditional on exit, the risk of a leader exiting by constitutional parliamentary means is 12 times higher ( $12.15 = 0.924/0.076$ ) than that of exiting by unconstitutional means. Conditional on exit, presidential leaders face almost *twice* the risk of exiting by constitutional ( $1.89 = 0.654/0.345$ ) rather than unconstitutional means.

Summarizing, the positive effect of *CON* on the constitutional transition probability found in specifications where the *PARL* and *PRES* dummies are excluded can be explained by differences in the constitutional transition probability arising from the higher turnover rate of leaders in parliamentary systems (governing mostly in developed countries), relative to leaders in presidential systems (governing mostly in LDCs). Note however that even after controlling for political system differences (and thus the country's fixed effects) and controlling for time fixed effects through *DATE*, *AGE* and the duration dependence polynomial, *INV* continues to have a negative and robust effect on the unconstitutional transition probability. So that it is the élites of LDCs that determine when to stage an unconstitutional transition.

### 12.3.6 Transition Probabilities and Duration Dependence

Up to now, the transition probabilities were examined for the median leader of the corresponding sub-sample at the median duration. As suggested by the Kaplan–Meier transition probability estimates in Figs. 12.1, 12.2 and 12.3, a leader's risks

<sup>27</sup>[Stephan and Skach \(1993\)](#) explain that under presidentialism, the opposition may use coups to transfer power to overcome political impasses generated by the separation of powers between the executive and the legislature. Parliamentarism engenders mutual dependence, and political impasses are solved by holding early elections, thus, making it harder to stage unconstitutional transfers.

of losing office changes as duration increases. Moreover, the analysis above suggests that the transition probabilities should depend on the political system.

Using the results of Model 4, the transition probabilities are estimated as duration increases for each political system. The median values of the economic covariates of the parliamentary, presidential and “other” sub-samples are used to estimate the transition probabilities for a leader having the median political characteristics in each of these sub-samples.

The transition probabilities are calculated as duration increases for up to 20 years for each duration. So that for example, the constitutional transition probability at duration 0 is estimated using (12.11) after calculating the observable component of the utility given by (12.12) when  $D_0 = 1$  and all other dummies are set to zero using the coefficients of model 4 given in Table 12.12. The same procedure is followed to estimate the transition probabilities at each duration. The constitutional and unconstitutional transition probabilities can then be graphed as a function of duration. The figures below illustrate the effect that duration has on the transitions after controlling for the influence the political and economic covariates have on the transitions.

Figure 12.4 shows the constitutional and unconstitutional transition probabilities for parliamentary leaders estimated using the coefficients in Model 4. As anticipated, leaders in parliamentary countries face basically no risk of exiting by unconstitutional means at all durations. Their constitutional transition probability however varies with duration and exhibits a hump at durations 4 and 8. That is, Model 4 predicts that parliamentary democracies tend to have elections at regular intervals, such as at duration 4 and 8, even though elections may be called at any time before the maximum constitutional inter-election period is reached. The model also predicts that parliamentary leaders face extremely high risks of being ousted by constitutional means (93.13%) before their first anniversary. For leaders surviving

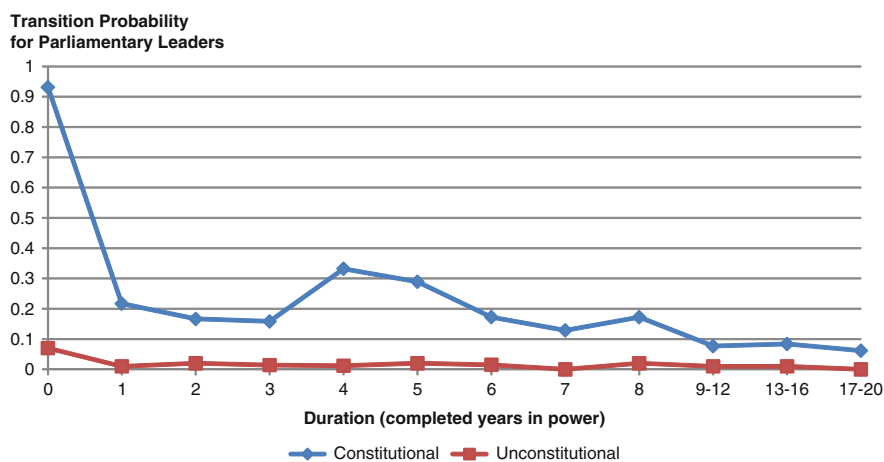


Fig. 12.4 Transition Probability - Parliamentary Systems – Model 4

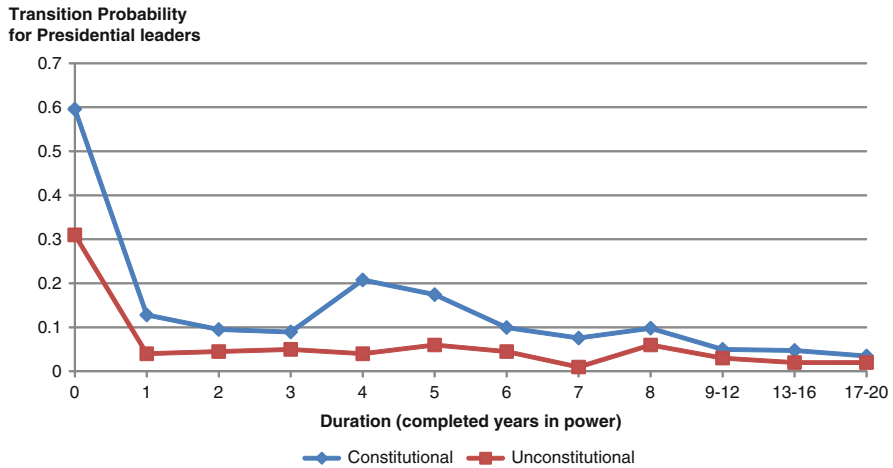


Fig. 12.5 Transition probability – Presidential systems – Model 4

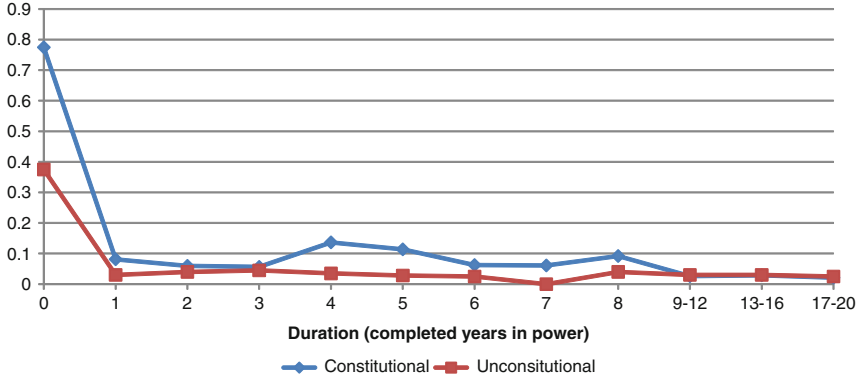
their first year in office, their risks substantially decrease until they reach their fourth anniversary. The higher risks faced by leaders at durations 4 or 5 reflect the fact that the probability of calling an election rises as the leader’s time in office approaches the maximum inter-election period (which varies by country). This contrast with Warwick (1992) results that after controlling for inflation, unemployment, and GDP growth, as well as differences between socialist and bourgeois governments and between pre-oil and post-oil crisis, the hazard for leaders in Western Parliamentary countries rises as duration increases.

Figure 12.5 shows that the leader of countries with a presidential tradition are at risk of losing office by both constitutional and unconstitutional means at certain durations. Like their parliamentary counterparts they face higher risks of exiting by constitutional means at durations 4 and 8 but in this case this is due to the *fixed* inter-election period in presidential democracies. The probability of a constitutional exit before the leader’s first anniversary is 60%—much *lower* than for parliamentary leaders – and that of an unconstitutional exit is 30% – much *higher* than for parliamentary leaders.

Model 4 predicts that leaders in “other” political systems (see Fig. 12.6) also face non-negligible chances of losing office by both constitutional and unconstitutional means at certain durations. As their parliamentary and presidential counter-parts, they face higher risks of exiting by constitutional means at durations 4 and 8 and face very high probabilities of losing office before reaching their first anniversary (77% by constitutional and 37% by unconstitutional means).

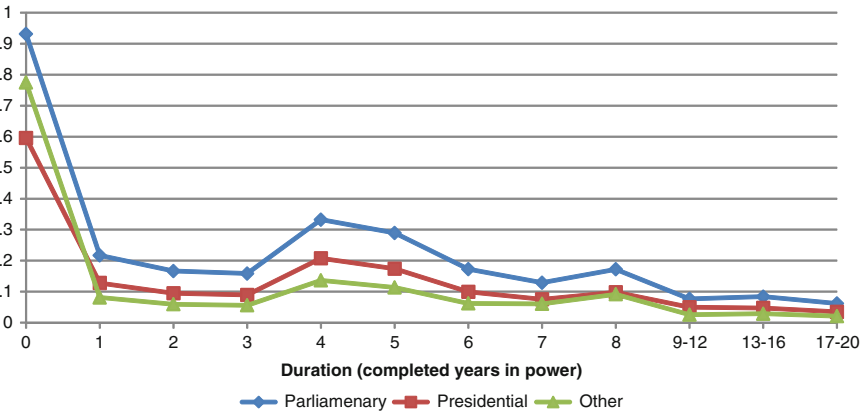
Figure 12.7 shows the constitutional transition probability by political system. Relative to their counterparts, parliamentary leaders face higher risks of exiting by constitutional means at every duration not just before their first anniversary.

**Transition Probability for Leaders in Other Systems**



**Fig. 12.6** Transition probability – Other political systems – Model 4

**Constitutional Transition Probability**



**Fig. 12.7** Constitutional transition probabilities – Model 4

Figure 12.8 illustrates that the unconstitutional transition probability for leaders in countries with presidential or other types of executive systems tend to be *higher* than that of countries with parliamentary executives at every duration. Note that even after accounting for being ousted by unconstitutional means, the risks of being removed from office tend to be higher at durations 5 and 8. This suggests that democratic institutions tend to have an effect on unconstitutional transitions. There seems to be some sort of institutional memory when it comes to the dictator’s duration in office that is affected by the type of political system that is adopted when the country is going through democratic spells.

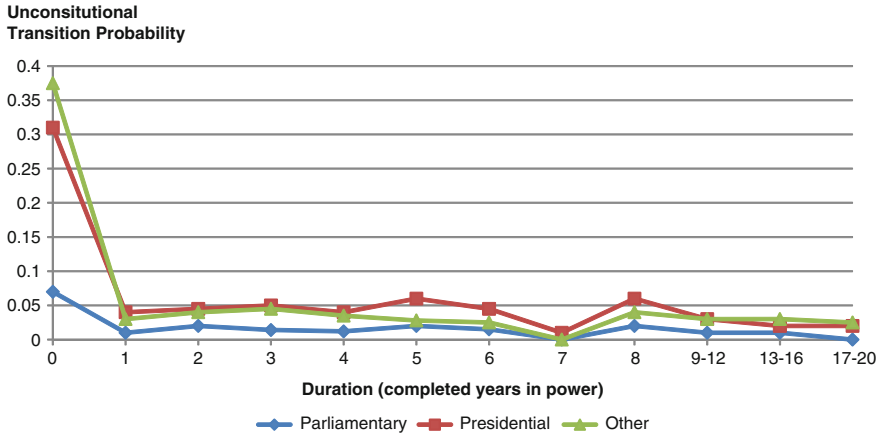


Fig. 12.8 Unconstitutional transition probability – Model 4

### 12.3.7 Negative Duration Dependence

Figures 12.7 and 12.8 suggest that except for the higher risks faced by leaders at durations 4 or 5 and 8 regardless of exit mode, the transition probabilities exhibit negative duration dependence. That is, the risks of exiting by constitutional and unconstitutional means tend to decline with duration in office except at election times which seem to be determined by the country’s institutions regardless of exit mode. This may be explained by the fact that when going through democratic spell the country adopts a political system (parliamentary, presidential, or other) that determines the timing of elections. In addition, though not considered in Gallego (1996, 1998) study, some dictators govern alongside legislative bodies, with legislative elections being held at regular intervals (see Sect. 12.4).

Bienen and van de Walle (1991) (after controlling for other covariates) estimate the hazard rate without taking into account the leader’s exit mode and find that the empirical hazard rate declines with duration. They conjecture that variable innate ability might explain this result. Of the papers surveyed in this chapter only the coup model of Gallego and Pitchik (2004) show the theoretical micro-foundations for this conjecture. That is, that a more able, low cost dictator faces a lower hazard rate, even though, conditional on initial exogenous beliefs, in equilibrium, kingmakers are indifferent as to the ability of the current dictator. Theorem 3 in Sect. 12.1.5 shows that when kingmakers’ condition only on how long the dictator has been in office, i.e., condition only on duration in office, the longer a dictator is in office the lower the dictator’s transition probability/hazard rate in the next period.

One of the contributions of Gallego and Pitchik (2004) is to show that after conditioning on the lowest shock/price observed during the dictator’s tenure in office, the conditional hazard rate of a coup is independent of duration in office (Theorem 3, Sect. 12.1.5). So that if empirical studies were to include the worst

shock faced by a dictator up that date this might account for differences in hazard rates across dictators due to differences in ability. In the coup model, the exogenous i.i.d. shock that affects kingmakers' profits is an export price. If the empirical data contains a sequence/stream of aggregate i.i.d. shocks affecting the kingmakers' profits (e.g., shocks to export demand, production or prices), then these stream of shocks provide additional information on the dictator's ability. Including these exogenous shocks as variables that explain the unconstitutional transition probability should diminish the empirically observed decline in the unconstitutional transition probability as duration increases. This prediction has not yet been tested in the literature.

The coup model predicts that other variables may also help explain the empirical decline in the coup rate<sup>28</sup> with duration (see Sect. 12.1.6). Differences among kingmaker group size ( $n$ ) and among the probability that kingmakers exit after a coup, i.e., differences in  $(1 - q)s$  due to either differences in  $q$  or  $s$  may account for differences in coup rate across dictators. The coup rate increases when either  $n$  or  $q$  increases or  $s$  decreases (Corollary 12.1, Sect. 12.1.6). Thus, including proxies for  $n$ ,  $q$ , and  $s$  as explanatory variables in cross-country studies may diminish observed decline in the coup rate with duration.

Evidence on the effect that the size of the group of kingmakers  $n$  has on the coup rate is provided by Bueno de Mesquita et al.'s (2006) empirical tests of the selectorate theory. They find that the leader's survival rate decreases in the size of the leader's coalition. The kingmakers in the coup model correspond to the winning coalition in [Bueno de Mesquita et al.](#) and the dictator's investment (an excludable public good targeted exclusively to the kingmakers) to the services the leader provides for the winning coalition (a black market premium) in test of the selectorate theory. This evidence supports the prediction of the coup model that the probability of a coup increases in  $n$ .

Evidence on the effect that  $n$ ,  $q$ , and  $s$  have on the coup rate is given by [Londregan et al. \(1995\)](#) for African countries. They find that the probability of an unconstitutional exit increases as the population share of the leader's ethnic group increases. It seems reasonable that as an ethnic group grows so do the élite members in the group. Moreover, since African politicians rule through personal patronage ([Bratton and van de Walle 1994](#)), when the current leader's ethnic group is large, it is the élites of the current leader's ethnic group that benefit from any investment made by the dictator (see arguments given in Sect. 12.3.4 for LCDs). They find that any immediate successor is disproportionately more likely to emerge from within the ethnic group of the current leader. They explain that this "ethnic incumbency advantage" arises because as the size of a leader's ethnic group grows, allegiance to any particular leader weakens as the élites of this group believe that the new leader will most likely be a member of their group (high  $q$ ) and that they will remain members of the dictator's click (low  $s$ ). Thus, the élites of a leader's large ethnic

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<sup>28</sup>The unconstitutional transition probability corresponds to the hazard or coup rate in the coup model.

group are the kingmakers of the coup model. Londregan et al.'s findings then support the coup model's prediction that leadership turnover increases as  $n$  or  $q$  increases or as  $s$  decreases.

The Gallego and Pitchik (2004) model was developed after the empirical work of Gallego (1996, 1998). As a consequence, Gallego did not control for the effect that the worst shock observed since a dictator took office, or variables measuring  $n$ ,  $q$ , or  $s$  can have on the transition probabilities. If variables that account for heterogeneity across dictators are included in the analysis, they may explain the tendency to observe the negative duration dependence effect on the constitutional and unconstitutional transitions.

### 12.3.8 Duration Models with Growth Covariates

Some argue that growth rates rather than the levels economic covariates should be used in the analysis as it is the change in the well-being of the leader's support group that matters. To test the effect of growth rates Gallego (1998) replaces the economic covariates (up to now measured in levels) with variables that measure their growth. Two different growth rates are used in the analysis. The *long-run* growth rate is calculated as the deviation of log values from their corresponding 5-year moving average centered on the current year (*DEVCON*, *DEVINV* and *DEVGGOV*). These long-run growth rates test the effect that long-run growth has on the transition probabilities. Short-run growth rates are estimated as the first difference of log values (*FDCON*, *FDINV* and *FDGOV*). The short-run rates test whether recent changes in economic conditions affect the transition probabilities. Only lagged values of the growth covariates are used in the analysis.

The results reported in Table 12.9, although smaller in magnitude, are similar to those discussed above. The growth of *INV* (short or long run values) continues to exert a significantly negative impact on the unconstitutional transition for leaders governing in presidential and other political executive regimes. In addition, *INV* now exerts a marginally significant and negative impact on constitutional transitions. A plausible explanation is that positive *INV* growth signals improvements in overall economic conditions in the near future that improve the well-being of many groups in society. The anticipation of better economic conditions reduces the current probability that a leader exits by constitutional means as constitutional changes in leadership may create economic costs<sup>29</sup> for these groups. The effect of the growth of *CON* on constitutional exits for all political systems, although insignificant, is positive for the deviation covariates but negative for the first difference variables.

Summarizing, the results of Gallego (1998) show that negative short and long run growth in *INV* increases the unconstitutional transition probability. This reinforces

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<sup>29</sup>Economic costs could come in the form of increase uncertainty of the policies that could be implemented by the new leader.

**Table 12.9** Change in transition probabilities for Model 4

Variable <sup>a,b,c</sup>	DEV variables				FD variables			
	Const.		Unconst.		Const.		Unconst.	
	$\Delta$	$ t $	$\Delta$	$ t $	$\Delta$	$ t $	$\Delta$	$ t $
At orig. medians & <i>OTHER</i> = 1								
	0.0546		0.0503		0.0526		0.0509	
PARL	0.10***	4.95	-0.04**	3.18	0.10***	4.99	-0.04**	3.18
PRES	0.05***	3.28	0.02	1.53	0.05***	3.32	0.02	1.51
<i>DEVCON</i>	0.1E-5	0.82	0.5E-6	0.32				
<i>FDCON</i>					-0.1E-5	0.11	0.5E-5	0.39
<i>DEVINV</i>	-0.4E-6	0.13	-0.3E-5*	1.85				
<i>FDINV</i>					-0.6E-5*	1.85	-0.7E-5*	1.99
<i>DEVGGOV</i>	-0.6E-6	0.91	0.6E-6	0.94				
<i>FDGOV</i>					-0.1E-4	1.25	0.8E-5	0.75
At orig. medians & <i>PARL</i> = 1								
	0.1561		0.0078		0.1552		0.0078	
<i>DEVCON</i>	0.3E-5	0.85	0.6E-7	0.25				
<i>FDCON</i>					-0.3E-5	0.10	0.8E-6	0.39
<i>DEVINV</i>	-0.1E-5	0.19	-0.5E-6	1.54				
<i>FDINV</i>					-0.2E-4*	1.98	-0.1E-5	1.58
<i>DEVGGOV</i>	-40.2E-5	0.88	0.1E-6	0.97				
<i>FDGOV</i>					-0.4E-4	1.23	0.2E-5	0.83
At orig. medians & <i>PRES</i> = 1								
	0.1025		0.0671		0.1002		0.0676	
<i>DEVCON</i>	0.2E-5	0.82	0.5E-6	0.28				
<i>FDCON</i>					-0.3E-5	0.12	0.7E-5	0.40
<i>DEVINV</i>	-0.6E-6	0.11	-0.4E-5*	1.87				
<i>FDINV</i>					-0.1E-4*	1.87	-0.9E-5*	1.99
<i>DEVGGOV</i>	-0.1E-5	0.94	0.9E-6	1.00				
<i>FDGOV</i>					-0.3E-4	1.29	0.1E-4	0.82

<sup>a</sup>All economic covariates are lagged

<sup>b</sup>Other covariates: manner, military, entry, date, age, and age<sup>2</sup>

<sup>c</sup>Also includes duration dummies  $D_0$ ,  $D_8$ , and  $D_{912}$ ,  $D_{1316}$ ,  $D_{1720}$

\*:  $prob < 0.05$ ; \*\*:  $prob < 0.01$ ; \*\*\*:  $prob < 0.001$

the conclusion derived above that it is the élites in LDCs who determine the timing of unconstitutional transfers. Moreover, this conclusion holds regardless of whether levels or growth rates of *INV* are used, so that this conclusion is not due to differences in development or investment levels.

These results for the growth covariates are consistent with those in the literature that we now discuss. Using a worldwide sample and after controlling for endogeneity between political instability and economic growth, Alesina et al. (1996) find evidence that probability of a government collapse increases when growth is negative. Note that Alesina et al. do not distinguish leaders by exit mode.



Bueno de Mesquita et al. (2003) use the country's black market exchange rate premium as a proxy for the provision of private goods that the leader provides to the winning coalition and economic growth as a proxy for the provision of public goods. They find that the higher the growth rate in a given year, the lower the probability of the leader being ousted from office. In small-coalition countries (that they identify with autocracies), growth improves the leader's survival probability but by a smaller amount than in large coalition countries (that they identify with democracies). This is due to the fact that in small-coalition countries a leader's risks of being overthrown was already relatively low. The presence of a black market exchange rate premium substantially improves the leader's survival chances in small-coalition countries. However, once the black market premium is taken into account, the survival rate of leaders in countries experiencing extremely high growth improves only by a small amount.

Acemoglu and Robinson (2006a) model predict that regime transitions between democracy and non-democracy are more likely to occur when there are economic and political crises. An economic crisis is defined as a annual *GDP* growth rate of less than  $-5\%$  in any of the previous 5 years for the 1970–1995 period (p. 66). They then use figures to illustrate their results. Their Fig. 3.19 shows that the percentage of countries that transition to democracy is one third higher in periods of economic crises than when there are no crises. Similarly, their Fig. 3.20 shows that the percentage of countries transitioning to non-democracy is three times higher in periods of economic crises relative to periods with no crises. They conclude that even though transitions to both democracy and non-democracy are more likely during economic crises, it is coups that far more likely to occur.

Geddes (1999) also finds that regime transitions are also more likely to occur during economic downturns. Haggard and Kaufman (1995) find that transitions to democracy tend to occur during severe economy crisis. Gasiorowski (1995) finds that coups tend to occur during recessions.

The evidence presented in this section using growth covariates also supports the hypothesis that leadership transition depend on changes in the well-being of different support groups. Because Gallego (1998) data covers the 1950–1987 period, the second and third waves of democratization that occurred during the 1990s and 2000s are not part of her analysis. These regime transitions were possible because the cold war ended. We now examine autocratic and anocratic rule in further detail.

## 12.4 Anocracies

Earlier in this chapter we presented theories and evidence that different power groups are responsible for leadership transitions in democratic and non-democratic regimes. More recently, researchers have argued that systematic differences across autocratic regimes affect the leader's survival probability (see, e.g., Gandhi and Przeworski 2007; Magaloni 2008; Wright 2008). Magaloni (2008) classifies

autocratic regimes as military, monarchic, or dictatorships that govern using either single-party or multi-party legislatures. She finds (p.732) that

[b]etween 1950 and 2000, 62% of the world's regime-years were autocratic. Single-party autocracies constitute the most common dictatorship. These account for 32% of the dictatorship-years, followed by hegemonic party autocracies (23%), military dictatorships with no political parties (14.3%), and absolutist monarchies (9.7%). Military dictatorships with political parties and electoral monarchies are not that common. (Magaloni 2008:732)

Moreover, Golder (2005) finds that between 1946 and 2000 about half of the world's elections were authoritarian in nature. Specifically, in his sample 737 legislative and 300 presidential elections occurred under authoritarian rule compared to 867 legislative and 294 presidential elections under democracy. It is not surprising that recent research focuses on explaining the use of parties, elections and legislatures by autocrats. The major explanation emerging from these studies is that these democratic institutions generate incentives that help the dictator stay longer in power.

In these hybrid systems, identified in the literature as anocracies or semi-democracies, the autocrat governs alongside a legislature where members are chosen in tightly controlled elections. In single party anocracies candidates compete for positions within the party and if elected become members of the legislature. In multi-party legislatures, the dictator's party always wins a large majority of seats in the legislature with opposition parties gaining some legislative representation.

For Gandhi and Przeworski (2007) dictators use consultative councils, juntas or political bureaus to deal with threats from the élite and use democratic institutions such as parties and legislatures to neutralize the threat of rebellions (see also Geddes 1999). They explain that dictators may need the cooperation of "outsiders" – a large group of non-élite members – to generate rents.<sup>30</sup> Access to the legislature and limited policy influence gives outsiders incentives to cooperate and support the regime. In the legislature, members make policy demands on the dictator without appearing rebellious and dictators negotiate policy concessions without fearing a coup. The party mobilizes popular support for the leader, penetrates society to prevent rebellions, and rewards members through a stable patronage system. The dictator uses the party, elections and the legislature as strategic variables to lengthen their term in office. A weak opposition leads to a single-party legislature, a strong one to a multi-party legislature. They show evidence that legislatures allow dictators stay longer in office.

For Magaloni (2008) dictators use the party, elections and legislatures to make credible long-run rent-sharing commitments. She explains that to tie his hands the dictator gives the party's leadership control over access to power positions, spoils and privileges and the ability to promote party members to these positions. A long lived party allows for repeated interactions between the dictator and

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<sup>30</sup>When rents come from oil or foreign aid, dictators do not need outsiders. Otherwise, to generate rents dictators need to tax domestic production and thus needs the "outsiders" to cooperate in production activities.

its supporters<sup>31</sup> and conditional on support, members expect to receive future benefits.<sup>32</sup> By selectively rewarding members and credibly threatening to withdraw access to benefits, the party creates loyalties and decreases the incentive to switch allegiances. Regular elections are used as a means of promoting the “rank-and-file” to power positions. She argues that in multi-party autocracies, the political mobility of the élite increases their bargaining power vis-à-vis the dictator. Magaloni finds evidence that party autocracies are more stable than military ones and that single-party dictatorships survive longer in office than multi-party autocracies.

Wright (2008) examines the role of the legislature in autocratic regimes as a function of revenue sources. He argues that when rents come mainly from taxing the domestic economy, dictators use “binding” legislatures to credibly constrain their confiscatory power which creates incentives for greater domestic investment, increased production and higher profits, all leading to increased tax revenues for the dictator (see, Olson 1993, 2000; McGuire and Olson 1996). When rents come from natural resources, Wright argues that dictators use “nonbinding” legislatures to reward or punish credible opponents by giving them offices in high places (a reward) but seats in the legislature (a punishment). After controlling for demographic characteristics, level of development, and former colonial status, Wright finds that military and single-party regimes are more likely to occur in countries that have larger populations, greater domestic investment and smaller oil reserves. The reverse holds true for personalist regimes and monarchies. Wright concludes that conditions that bring about single-party or military dictators differ from those of personalist dictators. Moreover, he finds evidence that binding legislatures exert a positive impact on economic growth and domestic investment, and that non-binding legislatures have instead a negative impact on economic growth.<sup>33</sup>

Kim and Gandhi (2010) find evidence that institutional dictators, those with legislatures, provide more benefits to manufacturing workers (measured through higher average wages or higher labor share in manufacturing value added) than non-institutional dictators after controlling for per capita *GDP*, average labor productivity and the average price level of consumption. They also find that institutional dictators face lower levels of labor unrest, i.e., fewer strikes, after controlling for per capita *GDP*, inflation, unemployment and strike duration.

In Eastern European countries, opposition parties used scheduled elections to force a transition from authoritarian rule to democracy (see, e.g., Bunce and Wolchik 2006a,b 2009). These popular uprisings, the so called “color” revolutions, spread

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<sup>31</sup>As argued by Gallego and Pitchik (2004, p. 2371), it is “[t]he repeated nature of the dictator/kingmaker relationship [that] provides the incentives in the model. The dictator and kingmakers are unable to sign binding contracts that determine payments as a function of individual behavior.”

<sup>32</sup>For Magaloni (2008) the party offers exclusive access to privileges and positions (government jobs, education opportunities, and regularized cash transfers) to selected members and trade protection, government contracts, and political positions to the élite.

<sup>33</sup>Boix (2003) argues the presence of legislatures in autocratic regimes is evidence of the existence of multiple veto players, which in his view reinforce property rights. He argues that this in turn reassures investors that their income will not be expropriated by the dictator.

from one country to another through out eastern Europe. Thus giving support to the hypothesis that dictators can be ousted through elections in multi-party legislatures. [Bunce and Wolchik \(2006b, p. 14\)](#) argue that countries are more likely to democratize when they receive democratic assistance and

[d]emocracy assistance is more likely to bear fruit in states that (1) have kept one foot in the democratic door, perhaps by holding regular and at least somewhat competitive elections; (2) have parties and a developed civil society that can act as local allies for democratization efforts; (3) exhibit short-term democratization-friendly trends such as increasingly competitive local elections, popular protests, vigorous legislatures and courts, cooperation among opposition groups, and popular opposition leaders; and (4) share borders with states that are both democratic and similar to them.

Popular uprisings played a major role in the democratic transitions in Eastern European countries. It is yet unclear (at the present time) whether the popular uprising that ousted the longtime dictator of Tunisia Ali on 14 January 2011 and the Egyptian Mubarak on 11 February 2011, will allow Tunisia and Egypt to transition to democracy. Even more uncertain is the outcome with the uprising, almost civil war, in Libya.

For [Fjelde \(2010\)](#) a dictator's ability to deal with civil unrest depends on whether the dictator exercises power through political parties or through other organizations, such as the military or the royal family. She studies onset of civil conflict between 1973 and 2004 for four types of authoritarian regimes (military, monarchy, single-party, and multi-party electoral autocracies). Her findings indicate that military regimes and multi-party electoral autocracies experience higher risk of armed civil conflict than single-party authoritarian regimes.

## 12.5 Concluding Remarks

The theories and evidence provided in this chapter allow us to predict that we should see a greater number of democratic and non-democratic leadership transitions in the near future. These transitions will be triggered by the depth of the great recession created by the financial and sub-prime mortgage crisis that lead to a worldwide economic recession from 2007 to 2010. We say in the near future as this international crisis may have a distinct impact on different countries and within each country the crisis may affect various groups with different intensities. Moreover, constitutional transitions will depend on the timing of elections.

In this volume we have discussed a number of constitutional leadership transitions and have suggested that they stem from this crisis.

A year into the sub-prime crisis, the Americans elected Obama, a democrat, to replace Bush, a republican, as president. The British gave the Conservative leader, David Cameron, a minority mandate in the 2010 election forcing the Conservatives to form a coalition government with the Liberal Democrats.

The severe economic crisis in Ireland has evolved into a deep political crisis that on 23 January, 2011 left prime minister Cowen's government without its coalition partner, the Green party. This crisis forced Cowen to resign as leader of his party, and

Cowen's party, Fianna Fáil, was swept from power on March 11, 2011, suffering the worst defeat any government has suffered since the Irish state was formed in 1921. Moreover, the electorate chose not to elect a majority government. In the new coalition government, the largest party—Fine Gael—will get ten of the fifteen main ministries led by Enda Kenny, while Labor will get the remaining five main ministries.

The great recession of 2007–2010 has also affected non-democratic countries. In Tunisia, the authoritarian regime of President Zine El Abidine Ben Ali who governed since 1987 was deposed on 15 January 2011, after wide-ranging popular protests – named the Jasmine Revolution after the national flower – forced the president to flee the country.

After declaring that he would not leave office on two occasions in spite of facing growing popular discontent and massive and growing demonstrations for 3 weeks, Mubarak resigned on February 11. Moreover, massive protests have emerged in Yemen, Oman, with some in Iran and Iraq. The regimes in these countries have responded by unleashing the security forces, the police and the military against the demonstrators while trying to engage the opposition in a “unity” dialogue. Saudi Arabia has responded by increasing the food subsidy and the payments to poor people. In Libya, Gaddafi has refused to step down unleashing his weak armed forces and his airforce against the demonstrators.

We anticipate increased leadership turnover in democratic and non-democratic countries in the near future for the following reasons. Many countries followed the Keynesian response to deep economic crisis. Countries borrowed, some heavily, and engaged in quantitative easing (printing money) to stimulate their economies. Government spending was increased to compensate for the large decrease in domestic and international demand that accompanied the crisis. It was believed that without government intervention the economies of these countries would have collapsed sending the world economy into a depression similar to the great depression that was triggered by the financial crisis of 1929.

The financial credit rating agencies downgraded the credit worthiness of certain countries (e.g., Greece, Portugal, Ireland and others that may follow) once deficits and debts passed certain levels. The higher borrowing costs has forced these countries to make heavy cuts in government spending in 2010–2011. Moreover, it is expected these cuts will remain in place for years to come. The European Union and the IMF gave Greece and Ireland a bail-out package under the conditions that they slash public spending and increase tax revenue. Other governments in Europe and across the world have also cut government spending. As a consequence of these large cuts, there have been massive demonstrations in some countries (e.g., Greece and France). We believe that this deep, unexpected and prolonged shock to the world economy will generate a wave of leadership transitions in both democratic and non-democratic countries as the leaders responses to the crises may be unable to compensate their power base for their losses. Moreover, the government cut backs to programs that benefit the poor will lead to massive protests. From the analysis carried out in this chapter, we know that both of these will increase the risks that leaders will be overthrown by constitutional means and in some countries by unconstitutional means.

## Appendix

**Table 12.10** Kaplan–Meier probabilities for the Hazard, Constitutional and Unconstitutional transitions

Duration	Hazard (H)		Const. trans.(CT)		Unconst. trans. (UT)	
	H	SD	CT	SD	UT	SD
0	0.1766	0.0144	0.1097	0.0118	0.0670	0.0094
1	0.1472	0.0149	0.1064	0.0130	0.0390	0.0082
2	0.1309	0.0156	0.0837	0.0128	0.0472	0.0098
3	0.1418	0.0177	0.0928	0.0147	0.0490	0.0101
4	0.2181	0.0230	0.1807	0.0215	0.0374	0.0106
5	0.2016	0.0257	0.1523	0.0231	0.0494	0.0139
6	0.1209	0.0242	0.0824	0.0204	0.0385	0.0143
7	0.0738	0.0214	0.0604	0.0195	0.0134	0.0094
8	0.1395	0.0305	0.0853	0.0246	0.0543	0.0110
9	0.0278	0.0158	0	0	0.0278	0.0158
10	0.0990	0.0297	0.0495	0.0216	0.0495	0.0216
11	0.1395	0.0374	0.0698	0.0275	0.0698	0.0275
12	0.0411	0.0232	0.0274	0.0191	0.0137	0.0136
13	0.0938	0.0364	0.0625	0.0303	0.0313	0.0217
14	0.0364	0.0252	0.0364	0.0252	0	0
15	0.0612	0.0342	0.0204	0.0202	0.0408	0.0283
16	0.0909	0.0433	0.0455	0.0314	0.0455	0.0314
17	0.1026	0.0486	0.0769	0.0427	0.0257	0.0253
18	0.0294	0.0290	0	0	0.0294	0.0290
19	0.0645	0.0441	0	0	0.0645	0.0441
20	0.0769	0.0523	0.0769	0.0523	0	0
21	0	0	0	0	0	0
22	0.0455	0.0444	0.0455	0.0444	0	0
23	0.05	0.0487	0.05	0.0487	0	0
24	0.0588	0.0571	0.0588	0.0571	0	0
25	0.0667	0.0644	0.0667	0.0644	0	0
26	0.0714	0.0688	0	0	0.0714	0.0688
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0.250	0.1531	0.250	0.1531	0.1250	0.1169
32	0.1667	0.1521				
33	0	0				
34	0	0				
35	0	0				
36	0	0				
37	0.5	0.3536				

**Table 12.11** Coefficients of the hazard rate<sup>a</sup>

Variable	Model 1		Model 2			
	Total		Const.		Unconst.	
	Coeff.	t	Coeff.	t	Coeff.	t
$(DA \times 10^2)^b$	0.17*	2.56	0.10***	5.43	-0.34***	5.57
Manner	0.39**	2.08	-0.16	0.66	0.89***	3.58
Military	-0.36*	2.08	-0.41**	1.92	-0.38	1.56
Entry	0.37*	3.22	0.25*	2.09	0.41*	2.12
Date/100	-2.52*	4.00	-3.03***	4.17	-1.66	1.60
Age/10	0.90*	2.01	1.96*	3.12	1.14**	1.83
Age <sup>2</sup> /100	-0.06	1.63	-1.39*	2.60	-1.04**	1.81
$D_0$	5.99***	11.06	6.58***	10.38	6.28***	8.06
$D_1$	1.96***	4.74	1.98***	4.07	1.21*	1.77
$D_2$	1.66***	4.03	1.64**	3.32	1.38*	2.02
$D_3$	1.67***	4.05	1.56**	3.13	1.47*	2.15
$D_4$	2.29***	5.63	2.49***	5.16	1.30*	1.85
$D_5$	2.19***	5.30	2.27***	4.63	1.52*	2.18
$D_6$	1.59***	3.63	1.58**	3.00	1.10	1.49
$D_7$	0.94**	1.88	1.20*	2.10	-0.77	0.65
$D_8$	1.68***	3.72	1.55**	2.83	1.35*	1.82
$D_{912}$	0.94*	2.26	0.59	1.13	0.92	1.35
$D_{1316}$	0.65	1.39	0.62	1.10	0.36	0.46
$D_{1720}$	0.52	1.01	0.18	0.27	0.12	0.14
Constant	14.42**	2.58	18.32**	2.56	9.01	0.89
-Log-L	1092		1364			
-Log-L <sup>c</sup>	1305		1734			
$\chi^2$	426.20		740			
df	19		38			

<sup>a</sup>\*: *prob* < 0.05; \*\*: *prob* < 0.01; \*\*\*: *prob* < 0.001

<sup>b</sup>All economic covariates are measured in log levels

<sup>c</sup>At slopes = 0

**Table 12.12** Coefficients of the hazard rate<sup>a</sup>

Variable	Model 3				Model 4			
	Const.		Unconst.		Const.		Unconst.	
	Coef.	t	Coef.	t	Coef.	t  <sup>a</sup>	Coef.	t
(CON × 10 <sup>2</sup> ) <sup>b</sup>	0.56**	2.73	0.21	0.85	0.39*	1.81	0.24	0.95
(INV × 10 <sup>2</sup> ) <sup>b</sup>	0.02	0.12	-0.53***	4.54	-0.05	0.41	-0.49***	4.25
(GOV × 10 <sup>2</sup> ) <sup>b</sup>	0.01	0.04	0.02	0.12	0.16	1.02	0.12	0.61
Manner	-0.09	0.36	0.92***	3.86	0.01	0.02	0.91***	3.75
Military	-0.42*	1.98	-0.32	1.26	-0.38*	1.75	-0.41*	1.77
Entry	0.25*	2.03	0.41*	2.10	0.23*	1.84	0.53**	2.67
Date/100	-3.01***	4.14	-2.44*	2.28	-2.87***	3.93	-2.59**	2.39
Age/10	1.54**	2.46	1.12**	1.76	1.23*	1.92	0.99	1.56
Age <sup>2</sup> /100	-1.06*	2.00	-1.01**	1.72	-0.81	1.49	-0.91	1.56
Parl.					0.77***	3.79	-1.34**	3.15
Pres.					0.68***	3.46	0.46*	2.15
D <sub>0</sub>	6.50***	10.23	6.14***	7.83	6.26***	9.73	6.08***	7.68
D <sub>1</sub>	1.91***	3.90	1.01	1.47	1.69***	3.37	0.97	1.38
D <sub>2</sub>	1.58***	3.16	1.20**	1.74	1.35**	2.67	1.15	1.65
D <sub>3</sub>	1.51**	3.00	1.29*	1.87	1.30**	2.54	1.23*	1.77
D <sub>4</sub>	2.45***	5.03	1.13	1.60	2.27***	4.58	1.09	1.52
D <sub>5</sub>	2.24***	4.53	1.34**	1.90	2.07***	4.11	1.36*	1.91
D <sub>6</sub>	1.56**	2.94	0.89	1.20	1.40**	2.60	0.96	1.28
D <sub>7</sub>	1.21*	2.11	-0.96	0.81	1.05*	1.81	-0.87	0.73
D <sub>8</sub>	1.57**	2.83	1.14	1.52	1.40**	2.50	1.22	1.63
D <sub>912</sub>	0.61	1.16	0.72	1.05	0.48	0.90	0.78	1.13
D <sub>1316</sub>	0.69	1.20	0.01	1.17	0.58	1.00	0.11	0.14
D <sub>1720</sub>	0.27	0.41	0.10	0.12	0.24	0.35	0.16	0.19
Const.	12.79**	1.84	18.51**	1.81	13.31*	1.91	18.61*	1.81
-Log-L			1352				1328	
-Log-L <sup>c</sup>			1734				1734	
χ <sup>2</sup>			762				810	
df			42				46	

<sup>a</sup>\*: *prob* < 0.05; \*\*: *prob* < 0.01; \*\*\*: *prob* < 0.001

<sup>b</sup>All economic covariates are measured in log levels

<sup>c</sup>At slopes = 0



**Table 12.13** Coefficients of the hazard rate <sup>a</sup>

Variable	Model 5 ( <i>Lag Dev</i> )				Model 5 ( <i>Lag FD</i> )			
	Const.		Unconst.		Const.		Unconst.	
	Coeff.	t	Coeff.	t	Coeff.	t	Coeff.	t
( <i>CON</i> × 10 <sup>2</sup> )	1.36	0.86	0.63	0.38	-0.09	0.09	0.40	0.39
( <i>INV</i> × 10 <sup>2</sup> )	-0.09	0.20	-0.50*	2.04	-40.49*	2.06	-0.54*	2.30
( <i>GOV</i> × 10 <sup>2</sup> )	-1.06	0.87	1.13	0.93	-0.94	1.25	0.55	0.70
Manner	-0.15	0.64	0.94***	3.96	-0.15	0.62	0.94***	3.95
Military	-0.38*	1.81	-0.37	1.59	-0.38*	1.80	-0.38	1.62
Entry	0.22*	1.76	0.57**	2.93	0.21	1.67	0.57**	2.96
Date/100	-1.85**	2.71	-2.49*	2.40	-1.97**	2.88	-2.53**	2.41
Age/10	1.68**	2.65	0.81	1.31	1.66**	2.62	0.80	1.29
Age <sup>2</sup> /100	-1.17*	2.17	-0.81	1.42	-1.15*	2.14	-0.80	1.40
Parl.	1.12***	6.21	-1.80***	4.50	1.15***	6.31	-1.80***	4.50
Pres.	0.71***	3.78	0.36**	1.84	0.72***	3.84	0.36***	3.95
<i>D</i> <sub>0</sub>	6.12***	9.55	6.16***	7.80	6.15***	9.61	6.17***	7.81
<i>D</i> <sub>1</sub>	1.54**	3.13	1.18*	1.70	1.55**	3.16	1.21*	1.73
<i>D</i> <sub>2</sub>	1.21**	2.42	1.36*	1.97	1.23**	2.45	1.37*	1.98
<i>D</i> <sub>3</sub>	1.19*	2.37	1.40*	2.02	1.20*	2.38	1.43*	2.06
<i>D</i> <sub>4</sub>	2.14***	4.37	1.27*	1.78	2.17***	4.43	1.30*	1.83
<i>D</i> <sub>5</sub>	1.93***	3.88	1.57*	2.22	1.96***	3.94	1.59*	2.25
<i>D</i> <sub>6</sub>	1.24*	2.33	1.19	1.60	1.27*	2.39	1.21	1.62
<i>D</i> <sub>7</sub>	0.88	1.53	-0.61	0.52	0.92	1.60	-0.57	0.48
<i>D</i> <sub>8</sub>	1.24*	2.23	1.49*	2.00	1.26*	2.26	1.52*	2.04
<i>D</i> <sub>912</sub>	0.29	0.56	1.02	1.49	0.32	0.61	1.04	1.52
<i>D</i> <sub>1316</sub>	0.37	0.64	0.44	0.57	0.33	0.57	0.46	0.59
<i>D</i> <sub>1720</sub>	0.08	0.12	0.32	0.39	0.12	0.17	0.35	0.41
Const.	7.96	1.19	17.27*	1.74	9.18	1.37	17.55*	1.78
-Log-L			1353				1351	
-Log-L <sup>b</sup>			1734				1734	
χ <sup>2</sup>			761				766	
df			46				46	

<sup>a</sup>\* : *prob* < 0.05; \*\* : *prob* < 0.01; \*\*\* : *prob* < 0.001

<sup>b</sup> At slopes = 0

# Chapter 13

## Concluding Remarks on Knowledge of Science and Society

### 13.1 Moral Sentiments

It was no accident that the most important cosmologist after Ptolemy of Alexandria was Nicolaus Copernicus (1473–1543), born only a decade before Martin Luther. Both attacked orthodoxy in different ways.<sup>1</sup> Copernicus formulated a scientifically based heliocentric cosmology that displaced the Earth from the center of the universe. His book, *De revolutionibus orbium coelestium* (*On the Revolutions of the Celestial Spheres*, 1543), is often regarded as the starting point of the Scientific Revolution. Moreover, in 1526 Copernicus also wrote a study on the value of money, *Monetae cudendae ratio*. In it Copernicus formulated an early version of the theory, now called Gresham's Law, that bad (debased) coinage drives good (non-debased) coinage out of circulation.

Margolis (2002) noted that something very significant occurred in the years after Copernicus. His ideas influenced many scholars: the natural philosopher, William Gilbert, who wrote on magnetism in *De Magnete* (1601); the physicist, mathematician, astronomer, and philosopher, Galileo Galilei (1564–1642); the mathematician and astronomer, Johannes Kepler (1571–1630).

*Philosophiæ Naturalis Principia Mathematica* (1687), by the physicist, mathematician, astronomer and natural philosopher, Isaac Newton (1642–1726) is considered to be the most influential book in the history of science.<sup>2</sup> Margolis (2002) argues that, from about 1600, scholars learnt to look at scientific and social problems from different angles, and that within the next 200 years this habit of mind became quite common, and was, in fact, the reason why the technological/industrial revolution gathered apace in the eighteenth and nineteenth centuries.

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<sup>1</sup>Weber (1904) speculated that there was a connection between the values of Protestantism and Capitalism. It may be that there are connections between the preference for scientific explanation and protestant belief about the relationship between God and humankind.

<sup>2</sup>See Feingold (2004).

After Newton, a few scholars realized that the universe exhibits laws that can be precisely written down in mathematical form. Moreover, we have, for some mysterious reason, the capacity to conceive of exactly those mathematical forms that do indeed govern reality. We believe that this mysterious connection between mind and reality was the basis for Newton's philosophy. While celestial mechanics had been understood by Ptolemy to be the domain most readily governed by these forms, Newton's work suggested that *all* reality was governed by mathematics.

We shall call the underlying hypothesis entertained by these scholars *the universality of mathematics*. Major universal mathematicians include the Scot, James Maxwell (1831–1879), the Frenchman, Henri Poincaré (1854–1912), the German, Albert Einstein (1879–1955), and the Englishman, Stephen Hawking (born 1942).<sup>3</sup> [Hawking and Mlodinow \(2010\)](#) argue for this universal principle, citing its origins in Pythagoras (580–490 BCE), Euclid (323–283 BCE) and Archimedes (287–212 BCE), and the recent developments in mathematical physics and cosmology. They present a strong form of this principle, called *model-dependent realism*, arguing that it is *only* through a mathematical model that we can properly perceive reality.

Without the application of this universal mathematics, our society would be quite different and much poorer. [Jardine \(2008\)](#) discusses the scientific innovations by Hooke and Huygens in the period round the glorious revolution, while [Appleby \(2010\)](#) discusses the technological changes wrought by Arkwright, Hargreaves, and Crompton soon after. There is still controversy over whether the rapid technological and economic transformations that we experience today are the consequence of the development of science itself, or the result of the institutional changes in the political economy that started in Great Britain in the 1600s.<sup>4</sup> [Ferris \(2010\)](#) argues that the political and economic innovations of the time were linked to these developments in mathematics and science.

The influence of Newton can perhaps be detected in the work of the philosopher, mathematician, and political scientist, Marie Jean Antoine Nicolas de Caritat, Marquis de Condorcet (1743–1794), known as Nicolas de Condorcet. His work in formal social choice theory (Condorcet (1994, [1785])) was discussed in Chap. 1 in connection with the arguments about democracy by Madison and Jefferson. We also noted in Chap. 1 the influence of the work on Moral Sentiment by the Scottish Enlightenment writers, Francis Hutcheson (1694–1746), David Hume (1711–1776), Adam Smith (1723–1790) and Adam Ferguson (1723–1816).

Between Copernicus and Newton, the writings of Thomas Hobbes (1588–1679), René Descartes (1596–1650), John Locke (1632–1704), Baruch Spinoza (1632–1677), and Gottfried Leibnitz (1646–1716) laid down foundations for the modern search for rationality in life.<sup>5</sup> Hobbes was more clearly influenced by the scientific method, particularly that of Galileo, while Descartes, Locke, Spinoza, and Leibnitz

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<sup>3</sup>Hawking (1988) writes of being able to read the “Mind of God.”

<sup>4</sup>See, for example, [Landes \(1998\)](#) and [Warsh \(2006\)](#).

<sup>5</sup>For Hobbes, see [Rogow \(1986\)](#). For Descartes, see [Gaukroger \(1996\)](#). For Spinoza and Leibnitz see [Stewart \(2006\)](#) and Goldstein (2006).

were all concerned in one way or another with the imperishability of the soul.<sup>6</sup> Leibniz in particular was concerned with an

[E]xplanation of the relation between the soul and the body, a matter which has been regarded as inexplicable or else as miraculous.

Without the idea of a soul it would seem difficult to form a general scheme of ethics.<sup>7</sup> Indeed, the progress of science and the increasing secularization of society over the last century led Ferguson (2003) to note that

[l]oss of faith in [the British Empire] often went hand in hand with loss of faith in God.

### 13.1.1 Beliefs

In the 1920s and 1930s, after World War I and the devastation wrought by the application of science and technology, a general fear became prominent that civilization would fall, just as the Ottoman, Russian and Habsburg empires had fallen, soon to be followed by the British Empire.<sup>8</sup> These fears were exemplified first by Spengler's *Decline of the West* (1918, 1922) and later by Toynbee's *Study of History* (1934).

Ferguson (2006) quotes Spengler's remark that

the masses will accept with resignation the victory of the Caesars.

Mead (2007) suggests, in contrast, that "it is to a dynamic religion rather than secularization that we must look for explanations of the Anglophone ascendancy [of the American empires]."<sup>9</sup>

Indeed, much recent work substantiates the ideas of the Scottish moral philosophers, and the later suggestions of Darwin (1982, [1871]), proposing that we all have an innate sense of moral values. Ober and Macedo (2006) suggest that moral goodness is something real, and does not need to be based on the notion of a transcendent soul.

As discussed in Chap. 3, the last 20 years has seen a growing literature on a game theoretic analysis of the evolution of social norms to maintain cooperation in

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<sup>6</sup>It is of interest that the English word "soul" derives from Old English *sáwol* (first used in the eighth century poem, *Beowulf*).

<sup>7</sup>Hawking and Mlodinow (2009) assert that God did not create the Universe, perhaps implying that the soul does not exist. However they do say that they understand Isaac Newton's belief that God did "create" and "conserve" order in the universe. See other books by Dawkins (2008) and Hitchens (2007) on the same theme, as well as Wright (2009) on the evolution of the notion of God and Lilla (2007) on political theology.

<sup>8</sup>See Lieven (2000) for a brief history of these empires and Overy (2009) for the fears about collapse in the interwar years in Britain.

<sup>9</sup>A recent Gallup poll found that 70% of Americans regarded religion is an important part of their daily lives, compared with 27% of British. See Putnam and Campbell (2010) for a recent study of the importance of religion in the US.

prisoners' dilemma like situations. [Gintis \(2000, 2003\)](#), for example, provides evolutionary models of the cooperation through strong reciprocity and internalization of social norms.<sup>10</sup> The anthropological literature provides much evidence that, from about 500 KYBP years ago, the ancestors of *homo sapiens* engaged in cooperative behavior, particularly in hunting and caring for offspring and the elderly.<sup>11</sup> On this basis we can infer that we probably do have very deeply ingrained normative mechanisms that were crucial, far back in time, for the maintenance of cooperation, and the fitness and thus survival of early hominids.<sup>12</sup> These normative systems will surely have been modified over the long span of our evolution.

A related literature deals with various detailed aspects of how these norms may have evolved.<sup>13</sup> Some of this literature is also based on evolutionary theory,<sup>14</sup> some from neuroscience,<sup>15</sup> some from child development,<sup>16</sup> and some from the study of primates.<sup>17</sup>

[Hauser \(2006\)](#) argues that there is a deep structure to moral values, akin to the notion of a template in language,<sup>18</sup> while [Deacon \(1997\)](#) argues instead that language and the brain co-evolve.<sup>19</sup>

Since language evolves very quickly ([McWhorter 2001](#); [Deutscher 2006](#)), we might also expect moral values to change fairly rapidly, at least in the period during which language itself was evolving. In fact there is empirical evidence that cooperative behavior as well as notions of fairness vary significantly across different societies.<sup>20</sup> While there may be fundamental aspects of morality and "altruism," in particular, held in common across many societies, there is variation in how these are

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<sup>10</sup>Strong reciprocity means the punishment of those who do not cooperate.

<sup>11</sup>Indeed, [White et al. \(2009\)](#) present evidence of a high degree of cooperation among very early hominids dating back about 4 MYBP (million years before the present). The evidence includes anatomical data which allows for inferences about the behavioral characteristics of these early hominids.

<sup>12</sup>Gintis cites the work of [Robson and Kaplan \(2003\)](#) who use an economic model to estimate the correlation between brain size and life expectancy (a measure of efficiency). In this context, the increase in brain size is driven by the requirement to solve complex cooperative games against nature.

<sup>13</sup>"Culture" can be thought of as the social context in which these norms are maintained. See [Cavalli-Sforza and Feldman 1981](#); [Wilson \(1978\)](#); [Lumsden and Wilson \(1981\)](#); [Distin \(2010\)](#).

<sup>14</sup>[Gigerenzer \(2007\)](#), [Ridley \(1998\)](#), [Wright \(1994, 2000\)](#), [Boyd and Richerson \(2005\)](#), [Richerson and Boyd \(2005\)](#), [Jablonka and Lamb \(2006\)](#).

<sup>15</sup>[Gazzaniga \(2006, 2008\)](#) and [Harris \(2010\)](#).

<sup>16</sup>[Bloom \(2004, 2010\)](#).

<sup>17</sup>[De Waal \(1996, 2006\)](#).

<sup>18</sup>This is derived from the work of [Chomsky \(1972\)](#) and [Pinker \(1997, 1999\)](#).

<sup>19</sup>See also [Bowles et al. \(2003\)](#), [Bowles \(2006\)](#), [Choi and Bowles \(2007\)](#) and [Pinker and Bloom \(1990\)](#) who present models of the co-evolution of language, institutions and cooperation.

<sup>20</sup>See [Henrich et al. \(2004, 2005\)](#), which reports on experiments in 15 "small-scale societies," using the game theoretic tools of the "prisoners' dilemma," the "ultimatum game," etc. See also the review by [Samuelson \(2005\)](#).

articulated. [Gazzaniga \(2008\)](#) suggests that moral values can be described in terms of various *modules*: reciprocity, suffering (or empathy), hierarchy, in-group and out-group coalition, and purity/disgust. These modules can be combined in different ways with different emphases.

It is interesting that much of this recent work on language and moral sentiment derives in some sense from Adam Smith's lectures on language in Edinburgh, in 1749–1751, where he presented a conjectural mode of reasoning based on the imagination.<sup>21</sup> Smith deployed the same mode of reasoning in *Moral Sentiments*<sup>22</sup> and *Wealth of Nations*.<sup>23</sup> Indeed, it would seem that both Hume and Smith were searching for an evolutionary human science, without having a theory of evolution to work with. One possible distinction between these two friends was that Hume had a somewhat sceptical theory of knowledge, whereas Smith was much more optimistic about human nature.<sup>24</sup> Both, however, were searching for an escape from the Hobbesian world with

no knowledge of the face of the earth; no account of time; no arts; no letters; no society; and which is worst of all, continual fear and danger of violent death, and the life of man, solitary, poor, nasty, brutish and short.<sup>25</sup>

Smith in particular had a coherent research plan. He first conjectured how language evolved, as in the essay on “Considerations concerning Language.” Then he pondered, in *Moral Sentiments* (1759), the general question of how moral sentiments arise, and what we would now call the equilibrium selection problem over the creation of values and institutions. Then in *Wealth of Nations* (1776) he considered the technical question of the economy. Each of these questions involves the others.<sup>26</sup>

The recent literature, discussed above, attempts the same project as Adam Smith, using the notions derived from evolutionary theory, but to some extent this literature lacks a fundamental unifying theoretical structure. Perhaps the earlier work by George Price ([1971], 1995) gave a formal stochastic model relating fitness to traits that can be used to study selection in any evolving process, including economic development, and might form the basis for an evolutionary theory of mind, language and morality.<sup>27</sup>

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<sup>21</sup>See [Smith \(1980 \[1762\]\)](#).

<sup>22</sup>See also [Phillipson \(2010\)](#) for the influence of Hume on Smith's thought.

<sup>23</sup>See also [Phillipson \(2010\)](#) for the influence of Hume on Smith's thought.

<sup>24</sup>See Chap. 1, where we comment that Condorcet shared Smith's optimism. Madison was influenced by Hume's scepticism, but he also accepted Smith's recognition of virtue as a crucial component of civilization.

<sup>25</sup>[Hobbes \(2009 \[1651\]\)](#).

<sup>26</sup>There is a literature on the Adam Smith problem ([Paganelli 2008](#)) since it may seem that *Wealth of Nations* depends on self interest, whereas *Moral Sentiments* focuses on altruism. However, this presumption seems ill-founded. See, for example, [McCloskey 2006](#).

<sup>27</sup>Price's work was used by [Maynard Smith \(1972, 1982\)](#) to develop the idea of an evolutionary stable strategy, and by [Hamilton 1970](#) in a model of spite. See [Frank \(1995\)](#), [Hamilton \(1995\)](#) and [Harman \(2010\)](#) for discussion of Price's work.

Binmore (2005, 2008) makes a number of very relevant comments on norms and culturally determined values. The most important point is that norms can be seen as particular kinds of equilibrium selection mechanisms that are generated by the nature of the technology that the society has developed, and the environment in which it is located. So hunter-gatherer societies will tend to exhibit equity or egalitarian share and effort norms.<sup>28</sup> Agricultural, or limited access societies, of the kind discussed in Chap. 2, will focus on norms associated with hierarchy, power, honor and obedience. Open access societies will focus on norms of freedom, fair play and merit. The industrial development that occurred in Britain and the US in the past brought these equity norms into contest with economic principles of “efficiency”.<sup>29</sup> As we noted in Chap. 3, the recent technological changes have exacerbated economic inequality, particularly in the US.

These different normative beliefs about the proper balance between efficiency and equity are just as important as preferences in affecting political choice. For example, in the US we find there are two relevant dimensions, one economic (essentially associated with efficiency) and one social (associated with equity or freedom). In Britain we label the axes economic and nationalism (which may be associated with hierarchy).

In any polity the underlying moral beliefs can be fairly heterogenous, reflecting these different emphases on efficiency, equality, freedom, and hierarchy.<sup>30</sup> There is still no generally accepted theory about how these beliefs are propagated and transformed in a society. It has been suggested that they can be regarded as “memes,” acting like genes, mutating and multiplying under selection pressure.<sup>31</sup> Indeed scientific notions, such as that of “meme” itself, as well as moral principles can be thought of memes.<sup>32</sup> Bikchandani et al. (1992) write about *fads* and *information cascades*. Chapter 2 has introduced the notion of belief cascades in an attempt to capture the idea that such changes of political beliefs can be the result of new theories about how the world works, constructed in order to deal with the quandaries that the society faces.<sup>33</sup>

As we have suggested above, political beliefs will be affected by expectations about the future, as well as interpretation of the past. The collapse of the Soviet Empire in 1989 first brought about a sense of relief, as exemplified by the notion of the triumphant “end of history” of Fukuyama (1992), and a period of stability and

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<sup>28</sup>Wrangham (2010), for example, argues that the discovery of fire for cooking enhanced sharing norms.

<sup>29</sup>Mokyr (2010) charts the changes in belief that occurred in Britain in the period of industrialization, 1700–1850. David Kennedy 2001 gives a historical account of the beginning of US dominance in the period up to 1945.

<sup>30</sup>Westen (2007) comments on the influence of moral values on political choice.

<sup>31</sup>See Dawkins (1976) and later work by Dennett (1995) and Blackmore (2000).

<sup>32</sup>Dennett (2003).

<sup>33</sup>Indeed, much of the literature cited above can be seen as part of an extensive effort to construct a formal theory of moral values and beliefs based on the mathematical model of game theory.

globalization. In Chapter 4 we referred to this as the *holocene*, lasting most recently from about 1990 until 2001. However, American hegemony was short-lived. The “Clash of Civilizations” (Huntington 1998) after 2001, the recent recession of 2008/9, and the current fears over the effects of climate change and international disorder, remind us of the earlier fears, in the inter war years, about the over-rapid development of science and the possibility of civilization’s collapse through war. In hindsight, these earlier fears in the 1930s over future war were entirely justified.

## 13.2 Uncertainty

Many authors, from Paul Kennedy (1987) on, have discussed the similarities and differences between the Roman, British and American empires in terms of military over-reach and hubris.<sup>34</sup> Indeed, Ferguson (2005) uses an interesting typology of empire, distinguishing between those that are autocratic, aristocratic, oligarchic or democratic, and whether they are based on the principal factors of land, labor or capital. While there are obvious differences between these empires, Ferguson (2010) also suggests that the American empire, like earlier ones, may collapse in a chaotic fashion, possibly bringing about catastrophe.

He notes that the total US external debt increased from \$5 trillion in 1992 to \$7 trillion (about 70% of GDP) in 2000, to \$17 trillion (about 117% of GDP) in 2010. In fiscal year 2000 there was a federal surplus of \$236 billion, which by 2004 had become a deficit of about \$520 billion, partly because of the Bush tax cuts. The estimated federal deficit for the fiscal year ending September 30, 2010, is \$1.47 trillion, over 10% of GDP. Stiglitz and Bilmes (2008) laid part of the blame for the increasing federal deficit on the Iraq war, citing a total estimated past and future cost of \$3 trillion. In mid May, 2011, the US Federal debt reached its legal limit of \$14.3 trillion inducing the possibility that the US would be regarded as in default of its obligations.

The Stockholm International Peace Research Institute estimated that the US 2009 military budget was \$663 billion about 4.3% of GDP. An estimate for the Department of Defense budget for fiscal year 2010 is \$685 billion. This expenditure has risen since 1999 when it was about 3%. However, other defense spending on Iraq and Afghanistan brought the total for 2010 to about \$1 trillion, about 7.5% of GDP.<sup>35</sup>

President Dwight Eisenhower’s farewell address on January 17, 1961 appears prophetic. As he said

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<sup>34</sup>See Ferguson (2001, 2002, 2004), Zakaria (2003), James (2006), Murphy (2007), and Bacevich (2008, 2010).

<sup>35</sup>See also the discussion in Johnson (2004) on militarism.



In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex... We must never let the weight of this combination endanger our liberties or democratic processes.

[Bacevich \(2010\)](#) develops this theme of military over-reach, suggesting that the US has become wedded to permanent war. Like Kennedy and Ferguson, [Bacevich \(2010\)](#) argues that the recent crisis, and the problem of debt, has made this imperial military and economic strategy impossible for the US to maintain. In terms of economic decline, the trade deficit of the United States with China increased from \$103 billion in 2002 to \$268 billion in 2008, though it dropped to \$227 billion in 2009. China now holds about about \$1 trillion in US Treasury and government agency bonds, followed by Japan with \$800 billion. Indeed, [Weiner \(2010\)](#) notes that China's central bank, the People's Bank of China, controls \$2.5 trillion in foreign exchange reserves mostly in China's sovereign wealth fund. The rest of the US debt is spread between OPEC, Brazil, Hong Kong, Taiwan and Britain,<sup>36</sup>.

[King \(2010\)](#) emphasizes the extraordinary change that has occurred over the last 15 years in the monetary relationship that exists between the advanced and developing economies. In 1995, the developed economies held about \$0.9 trillion in foreign exchange reserves, nearly half of which was dollar denominated, and the developing world held \$0.5 trillion, again about half in dollars. In 2008, the advanced economies held \$2.5 trillion (about 6% of their total GDP), with about half in dollars, and the developing economies held \$4.2 trillion (worth about a quarter of their total GDP). As King says, "current and future US taxpayers are enormously in debt to the rest of the world and, in particular to foreign governments."

We seem to be entering a new type of multipolar world, with no hegemon, and potential conflicts between regional powers such as China, India, Brazil, as well as the oil rich states of the Middle East and Russia.<sup>37</sup> Obama's visit to Asia in November 2010, was due to the increasing importance of the geopolitics of the area.

The 1990s may, in the future, seem like an economic holocene, maintained by the economic and military hegemony of the United States. An important aspect of this dominance lay in the belief in the "soft power" of the US, namely the validity of the principles of democracy and capitalism.<sup>38</sup> The double shock of 2001 and the crisis of 2008/9 has brought this period to an end, and it may well be that without such a hegemon, political *and* economic instability will be exacerbated.

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<sup>36</sup>The US reported that countries other than China had bought over \$700 billion of US Treasury securities in 2010, including over \$350 billion by Britain, over \$120 billion by Japan and \$84 billion by Canada. China seems to be somewhat reducing its exposure.

<sup>37</sup>See [Fishman \(2006\)](#), [Emmott \(2009\)](#) and [Jacques \(2009\)](#) on the rise of China as a rival to the US, and [Shapiro \(2008\)](#) and [Kaplan \(2010\)](#) on the changes in the balance of power as a result of globalization. [Karabell \(2009\)](#) sees China and the US as partners, perhaps unwilling, in maintaining global stability.

<sup>38</sup>As discussed in Chap. 2, it seems that full democracy is far more difficult to build than was originally believed. The economic crisis has also led many to infer that the economic model underlying capitalism is completely wrong.

In recent years, fears over an uncertain future have been compounded by changes in our understanding about how the world, and society really work. Hayek 1974 in his Nobel lecture, suggested that we can never really understand economics:

While in the physical sciences it is generally assumed, probably with good reason, that any important factor which determines the observed events will itself be directly observable and measurable, in the study of such complex phenomena as the market, which depend on the actions of many individuals, all the circumstances which will determine the outcome of a process... will hardly ever be fully known or measurable.

For Milton Friedman (1953) on the contrary, it was irrelevant whether economic theory made unrealistic assumptions, as long as it worked. But the recent recession strongly suggests that economic theory just does not work.

The collapse of belief in the logic of economic theory is exemplified by the confession of Alan Greenspan, former chairman of the Federal Reserve, to Congress in 2008, when asked whether his ideology about market equilibrium was right, and working, replied that he was shocked to learn that it was wrong.<sup>39</sup> He has also commented that “our current understanding of the future is extremely limited.”

In the face of this uncertainty about the future, we argue that it behoves us to attempt to create an ethical basis for our actions when they have such possibly dire consequences. There may be disagreements about an ethical foundation for society, with a pure free market orientation at one pole, and an extremely egalitarian focus at the other. Almost all people believe in some version of “propinquity”, my family, my neighborhood, my country. On the other hand, there is belief that the future, our children, and future generations, should be protected from our greed. As an illustration, both Jefferson and Condorcet argued that debt or other liabilities should not be incurred if they could not be paid off in a generation. (Their argument was that in about a generation of 20 years, half the population would have changed through birth and death.) This is a version of “intergenerational utilitarianism” proposed by Collier (2010).

This principle asserts that we should be “fair” towards the future, by taking into account the expected overall utility of future generations.<sup>40</sup> A natural consequence of this principle is that we should avoid destroying the world we live in for short term gain. Note that this is a utility principle, not an income principle. If climate change is expected to have greatest impact on the poor, in Africa say, then this principle implies that costs should be borne in the developed economies to offset the likely enormous utility costs of the poor in the future. One aspect of this calculation is the appropriate discount parameter to use. Collier suggests that if we do choose to burden the future, then we should lay aside assets to cover the anticipated future costs. Relatively risk free assets such as US Treasury bonds give about 3 to 4% return, so this can be used to infer the appropriate transfer to the future. Posner (2005) estimates that the cost of climate change could reach about \$8 trillion a

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<sup>39</sup>The comments by von Hayek and Greenspan are cited in Ramo (2009).

<sup>40</sup>See also the argument in Chichilnisky (1996).

year, so discounted at 3%/annum would give a total cost of about \$65 trillion. If we follow Collier (2010) and do not discount the future then the total cost would be astronomical. An ancillary calculation made by Collier is that when we deplete non-renewable natural resources, oil, minerals etc. then we should also lay aside economic assets, namely investment capital, to cover the fact that these resources will not be available to the future.<sup>41</sup>

Finally, carbon, generated by our own economic activity, is a burden, a negative externality, that will affect the future, through its impact on climate. One way to cover the transfers to the future would be through a carbon tax. Since the developed economies currently produce the bulk of CO<sub>2</sub>, a carbon tax would have the beneficial effect of somewhat reducing consumption, in these economies, of carbon based fuels, and this would make non carbon fuels more viable. Collier suggests a tax of \$40/ton of carbon emitted.<sup>42</sup> Such a tax has the advantage that if estimated costs to the future rise, then the tax rate can be adjusted. One further aspect of this way of dealing with the externality is the matter of uncertainty. There is a great deal of uncertainty at present, over the effects of economic activity. Even with the mathematical models of climate change that we discuss below, this uncertainty will persist. If our activities cause even more uncertainty over the consequences of our actions, then we should further compensate the future.

In Chap. 4 we discussed the work of Stern, who has argued that we should be extremely risk averse over climate effects. Since future generations will face the costs of our decisions, we too should be uncertainty averse, and devote resources to the attempt at gauging these costs.<sup>43</sup> One of the problems with dealing with climate change is that it concerns decision making in what are known as “large worlds.” Models of decision making work well in “small worlds” where probabilities can be estimated. Chichilnisky (2009, 2010a,b) provides the beginning of a theory of decision-making in such “large worlds” involving uncertain, potentially disastrous “black swan” events.<sup>44</sup> In our opinion, uncertainty about the future resides in the possibility that the dynamic systems that will determine our future are, in fact, *chaotic*.

From the time of Newton to Laplace, the dominant notion in science was *determinism*. In the developing social sciences and economics, statistics provided

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<sup>41</sup>One troubling aspect of this calculation comes from the fact that the world’s population is, on average, getting older (Fishman 2010). The future is going to be a struggle anyway, with relatively fewer young people to produce for the growing aging population. The old may dominate politically, as they will tend to control capital, and may also discount the future more heavily than the young.

<sup>42</sup>Total US emissions are about 5.6 million metric tons/annum. One US gallon of gasoline costs \$2.70 and emits about 20lb of CO<sub>2</sub> when combusted. If the USA imposed a tax of \$40 on every quantity of gasoline that would emit one metric tonne of CO<sub>2</sub> during combustion, the carbon tax on this gallon of gasoline would be 22 cents, an 8% increase. An average motorist uses about 400 gallons/annum and so emits less than 4 tons of CO<sub>2</sub>/annum.

<sup>43</sup>See Coyle (2011) for example.

<sup>44</sup>In fact, Binmore (2009) argues that decision making in “large worlds” faces epistemic problems resulting from the Gödel–Turing Theorem mentioned in Chap. 3.

a way of interpreting and controlling events. But the efforts to extend the simple Newtonian model of celestial mechanics by Poincaré in the late nineteenth century showed that apparently deterministic physical systems could be deeply chaotic or non-predictable.<sup>45</sup> An essentially mathematical theory that have been developed in the last decade or so is *complexity or chaos* theory, dealing with the essential non-deterministic properties of dynamic systems.<sup>46</sup> This theory is only a few years old but it already forces us to rethink habits of mind about how the world and society work.

One area where this theory has proved of use is in understanding the complex positive and negative feedback mechanisms that govern climate and its effect on human evolution. Chapter 4 suggested how celestial mechanisms to do the Earth's orbit interact with geological processes on the planet to affect the CO<sub>2</sub> level. For example, the uplift of the Tibetan plateau has acted to remove CO<sub>2</sub> over the last 40 million years, inducing oscillations between glacial and interglacial periods. The current ice age, the Pliocene-Quaternary glaciation, started about 2.58 million years ago during the late Pliocene. The planet generally became drier during this ice age, and the ancestors of our species, *Homo habilis* (from 2.5 MYBP) and *Homo erectus* (from 1.8 MYBP), adapted to the new savanah conditions in Africa. Remains of *H. erectus* have been found in Java dating to 1.6 MYBP. Above, we mentioned the extensive literature on the evolution of these early hominids. It has been argued that *Homo erectus* began to eat meat, and used fire, thus increasing the energy available to become an efficient and cooperative predator.<sup>47</sup>

Mitochondrial analysis from modern humans suggests a common ancestor in Africa about 200 KYBP.<sup>48</sup> Equipped with language, a system of moral values, associated with cooperation, and a technology of increasingly sophisticated tools, this early hunter gatherer spread throughout the planet. It is thought that there were two conduits out Africa, about 70 KYBP, one from the Horn of Africa and one across the Sinai peninsula into Asia.

As we discussed in Chap. 4, from about 90 to 10 KYBP, climate became highly unstable. Without our ancestors' braininess, language and culture, the uncertainty induced by climatic chaos could have driven *Homo sapiens* to extinction. Indeed, it has been argued that an eruption in Sumatra about 70 KYBP induced an instant ice age and almost killed off all *H. sapiens*. It may well have finished off *H. erectus*.<sup>49</sup> As observed in Chap. 2, the human population grew to a figure between 250,000 and

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<sup>45</sup>See [Hawking and Mlodinow \(2010\)](#) for a discussion of chaos and randomness and [Thuan \(2001\)](#) for a discussion of the applicability of the idea of chaos in scientific revolutions.

<sup>46</sup>See [Prigogine \(1997\)](#) for a philosophical discussion of the general ideas underlying this theory, and [Beinhocker \(2006\)](#) for a wide ranging application of some of these ideas to economics.

<sup>47</sup>[Wrangham \(2010\)](#).

<sup>48</sup>[Cann et al. \(1987\)](#). As before, we use KYBP to mean thousand years before the present.

<sup>49</sup>Such a catastrophic event would cause a bottleneck in the development of *H. sapiens*, and may have induced a sudden and very rapid transformation in the evolutionary path. [Fagan \(2011\)](#) argues that this event almost wiped out homo sapiens, leaving maybe 20,000 members. This "bottleneck" induced intense pressure on the remnants, inducing the kind of group competition between small

500,000 in 62 KYBP, slowly increasing to about 6 million in 12 KYBP, at the end of the ice age.

Climatic amelioration at this beginning of the *Holocene* in 12 KYBP meant warm, wet conditions over much of Eurasia allowing for the transformation of hunter gatherer society to agricultural communities in the Middle East.<sup>50</sup> After the transition, human population increased to about 60 million in 3 KYBP (the beginning of the bronze age) and then to about 240 million in 2 KYBP. The change from hunter gatherer society to agriculture and “closed access society” was associated not only with a dramatic increase in population and “total economic product,” but also in inequality, and the division of society into poorly fed peasants and military and technological elites. The induced Malthusian constraint meant that the “real wage” tended to decline except at catastrophic times when population crashed because of plague, as in the fourteenth century. Such crashes increase the real wage because of the reduction in the labor supply.<sup>51</sup>

From about 1600 our very braininess triggered a scientific explosion in the development of mathematical languages which allowed for the deeper analysis of the world and society. The beginnings of the agricultural and industrial revolutions in the United Kingdom and then the United States, while stimulating economic and population growth, also initially caused an increase in inequality.<sup>52</sup> This was reversed from about 1860, as a result in a change in the balance between capital and labor during the late nineteenth and early twentieth centuries. In 1860, GDP/capita in both the UK and the US was about \$2,800, rising in parallel to about \$5,500 by 1914, and staying roughly constant during the times of turmoil until the 1930s.<sup>53</sup> After World War II, GDP/capita started to rise rapidly from \$9,500 in 1950 to \$30K by 2003 in the US, and from \$7K to \$21K in the UK.<sup>54</sup> Until about 1970, this pattern of growth seems to have lessened the degree of inequality in the developed economies.<sup>55</sup>

We have suggested that the period from 1950 to the onset of the recent recession can be seen as an economic holocene, but one that we have in a sense wasted by

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bands as discussed in [Richerson and Boyd \(2005\)](#), and resulting in the cultural co-evolution of language and co-operative behavior.

<sup>50</sup>see Chap. 2.

<sup>51</sup>[Fischer \(1999\)](#).

<sup>52</sup>For Britain, [Maddison \(2007\)](#) estimates that GDP/capita grew from \$1,400 in 1700 to \$1,750 in 1820, measured in 1990 international Geary Khanis (GK) dollars. The growth over the long period from 1086 to 1700 had only been about 0.3%. However, as noted in Chap. 2, [Clark\(2007\)](#) estimates the real wage of building workers in 1700 and 1820 to be identical. This implies inequality increased.

<sup>53</sup>The estimates by [Rourke and Williamson \(1999\)](#) suggest that inequality in the US increased from 1890 to after World War I.

<sup>54</sup>These are the estimates by [Maddison \(2007\)](#), measured in 1990 international Geary Khanis dollars.

<sup>55</sup>[Reich \(2007\)](#) notes that the richest 1% received about 20% of income in 1927 but only 10% in 1970.

extravagance, for which we now have to pay.<sup>56</sup> We may see the previous long periods of growth in these two periods from 1860 to 1914 and from 1950 until the recession as *economic and political holocenes*.

Maddison estimates that world population grew from a billion in 1820 to about 1.8 billion in 1914. For this most recent period from 1950, world population grew from 2.5 billion to 6.8 billion. The population growth rate increased from about 1.5% in 1950 to over 2% in 1971, and has gradually fallen to 1.1% at present. This process of technological and population growth has induced a number of changes in the world political economy.

First, technological development has shifted the balance of economic power both within developed economies and between the developed and less developed economies. Second, the dramatic increase in the amount of global capital to about \$200 trillion (about three times world GDP) has meant that nation states have much less control over economic effects of globalization.<sup>57</sup> Third, inequality within the developed polities has tended to increase from about 1970, especially because of the premium put on technological skill and the change in the age distribution of the population.<sup>58</sup> This has been exacerbated by the transfer of manufacturing comparative advantage from developed to less developed countries, particularly China and India.

As commented on above, these global changes have made political economic conflict much more difficult to resolve, and have suggested similarities between the present and the end of the last holocene in 1914. It is unlikely that we face anything like World War I, but it does now seem that the human world is much more complex than implied by the various social theories that were developed to facilitate growth in the past. It is still unclear what triggered the transition to open access society after 1700, to be followed by the disorder of the interwar period and then the astonishing changes after 1950.

This book has been titled *Leadership or Chaos* because we face deep quandaries over how to deal with an uncertain future, with the possibility of climate change and economic disorder. As in earlier periods like the 1860s and 1930s we depend on strong leadership to guide our choices over how to create a better world.

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<sup>56</sup>The estimates by Rourke and Williamson (1999) suggest that inequality in the US increased from 1890 to after World War I.

<sup>57</sup>Shapiro (2008).

<sup>58</sup>In the US, for example, the real median income, according to the US census was about \$50K in 2009, almost the same at \$45K in 1974.

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