

Electorally unstable by supply or demand?—an examination of the causes of electoral volatility in advanced industrial democracies

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Abstract The stability of voters' partisan choices from election to election is a key feature of democratic politics, but why it varies across advanced industrial democracies and elections is not well understood. This study makes several key contributions to explaining electoral volatility. Firstly, it is argued and demonstrated that strategic voting plays an independent role in inducing vote switching. Secondly, the analysis shows that demand-side factors—such as socio-economic cleavages and organizations—do not predict voter stability, whereas supply-side factors—such as the party system, government performance, and strategic incentives—do. Thirdly, earlier contradictory findings with respect to the role of the electoral system are clarified, as its effects are shown to be indirect rather than direct. And finally, the importance of the temporal dimension to stability is demonstrated, as the time since the previous election is found to have a positive effect on volatility. The results are based on a comprehensive statistical analysis of 336 elections in 21 countries between 1950–2005, where the significance as well as the robustness of individual variables across different model specifications inform the conclusions.

Keywords Electoral volatility · Strategic voting · Party system · Cleavages · Government performance · Electoral system

1 Introduction: causes and consequences of electoral volatility

This article takes a fresh look at the causes of electoral volatility in advanced industrial democracies. It proposes new hypotheses to explain the differences observed, and its findings challenge commonly held assumptions concerning the determinants of electoral stability. Two key contributions to the literature are made. First, it is argued—and demonstrated—that strategic voting plays an independent role in inducing vote switching. Second, the study

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provides a significant addition to the existing knowledge regarding the role played by institutional, governmental, and social variables in predicting the stability of voter behavior. Most significantly, and contrary to what one might expect, the study reveals that factors related to supply-side rather than demand-side politics are key to explaining the observed variation. In simple terms, “objective” social and economic cleavages do not predict stability, whereas the choice voters have does. Moreover, the role of electoral institutions in causing volatility is clarified in a manner that sheds light on the contradictory findings in earlier studies concerning the role of this institution. Finally, to my knowledge, this study is the first to include the temporal dimension in the study of volatility. The independent influence of time since the previous election on voter’s decisions is explored and found to have a substantial and robust effect on the extent of vote switching. The implications of the findings are discussed in the conclusion.

The degree of voter volatility is a crucial aspect of democratic performance, and examining the underlying causes and their relative impact is therefore no trivial matter. Extreme electoral stability would signal the end of competitive party politics, as parties would have no incentive to align their programs and behaviors with voter preferences (see discussion Bartolini 1999, 2000). Theories addressing political competition have therefore also linked higher potential swing to greater competitiveness and higher stakes in elections to those who contend for seats and office (Elkins 1974; Strøm 1992). Empirically, volatility has been linked to retrospective voting and the extent to which voters hold their governments responsible for economic outcomes (Lewis-Beck and Stegmaier 2000; Bengtsson 2004). Moreover, it has been found to be positively correlated to the “principle of electoral gain,” which predicts that the relative winners of elections form the government (Mattila and Raunio 2004), alternate in the government (Powell 1981; Strøm 1985), and are negatively correlated to majority party hegemony (Gerring 2005). The coin has a flip side, however; in the context of new democracies, high volatility is often seen as the correlate of a polarized or weak party system that falls short in performing representational as well as governing functions (Haggard and Kaufman 1995; Kitschelt 1999; Roberts and Wibbels 1999; Toole 2000; Toka 2004; Tavits 2005; Mainwaring and Zoco 2007). The trend towards increasing levels of volatility in established democracies has not been associated with adverse consequences for governability, although some do speculate as to whether the stability of European democracies is under threat (e.g. Berglund et al. 2005).

Even a cursory glance at the world’s democracies reveals considerable discrepancies between nations and over time. The question is: what makes some electorates and elections more unstable than others? Are the differences related to deeply rooted characteristics in the electorate, or are they better explained by the choice voters are presented with at elections and the institutions that mediate this choice? Although several comparative studies have examined the foundations of electoral volatility, there are numerous reasons to revisit this issue (Bartolini and Mair 1990; Roberts and Wibbels 1999; Madrid 2005; Sikk 2005; Tavits 2005; Mainwaring and Zoco 2007; Tavits 2008). Firstly, none of the existing studies consider the independent effect of strategic voting on electoral volatility. In recent years, many studies have provided ample evidence of the impact of strategic incentives on voting behavior. Its role in explaining the extent of vote switching has yet to be explored, however. Pressures to vote strategically may induce vote switching in response to shifts in the viability of preferred parties or, as some have argued, such incentives may also promote a kind of tactical thinking that undermines emotional attachments to particular parties (Bartolini and Mair 1990; Bowler et al. 1994). As will be discussed further below, there are definite advantages to exploring the hypothesized effect of strategic incentives on data from advanced industrial

democracies. The higher degree of party system institutionalization and stronger informational “infrastructure” in these democracies create favorable conditions for strategic voting. Moreover, empirical studies have revealed how strategic voting is much more prevalent among voters in established democracies than in new democracies (Moser and Scheiner 2009).

The case selection is congruent with a second reason for revisiting the question of the causes of electoral stability. There are presently no comparative studies devoted to studying volatility in the modern advanced industrial democracies, and the causes identified in democratizing and/or economically developing states may simply not be the same. The longer history with democratic institutions and higher level of socio-economic development generally found in these countries provides a very different backdrop for voter instability than in new democracies (Mainwaring and Zoco 2007:164–171). Bartolini and Mair’s seminal study (1990) of electoral stability in Western Europe from the beginning of democracy to the late twentieth century (1885–1985) provided many insights into the stabilizing factors and long-term trends in many of the industrial democracies. Apart from covering pre-modern and modern times, however, a number of relevant factors (e.g., economic performance) were not included, and appropriate statistical techniques for data analysis that include both cross-sectional and time-series variations were not employed. The only other study drawing on data from advanced industrial democracies is by Mainwaring and Zoco, who investigate the determinants of volatility in a pooled—rather than separate—analysis of new and established democracies. Moreover, certain key variables (e.g., party membership and electoral system) are missing from the analysis. Hence, whether electoral stability is determined by demand-side or supply-side factors and what role political institutions play have not yet been satisfactorily answered.

The aim of this study is therefore twofold: firstly, to explore the role of strategic voting in explaining electoral volatility; and secondly, to assess the role played by social, economic, institutional, and political factors in predicting volatility in advanced industrial democracies. In the following, I will first briefly discuss the characteristics of strategic voting and then explore the arguments linking strategic incentives to voter volatility. After this discussion, other possible causes of vote switching described in the literature are reviewed and omitted factors added to the list in order to build as complete a model as possible. Attention will then turn to questions of operationalization. On the basis of a discussion of the factors that induce strategic voting, an original indicator of strategic incentives is constructed, and indicators for the other factors included are also accounted for. Finally, the results of the statistical analysis are presented and the findings discussed.

2 Strategic voting and electoral volatility

Deciding who to vote for becomes a more complex matter when there are incentives to vote strategically than when this is not the case. Increasing the number of factors pertinent to the electoral choice can in fact—if voters act rationally—be expected to lead to greater instability in their choices from election to election. Before discussing the mechanisms leading to this outcome, however, it is necessary to briefly review the nature of strategic voting and the contexts that furnish incentives to vote strategically.

Simply put, come election time, voters decide between voting strategically or sincerely. Voting sincerely simply means voting for one’s most preferred party, regardless of the consequences of that choice. Strategic voting, on the other hand, means deciding to vote for a less-preferred option in order to avoid an even less desirable electoral outcome. Two main

types of strategic voting can be distinguished, namely *seat-maximizing* and *government-maximizing* voting (Cox 1997). The aim to *maximize seats* means that voters care about the efficacy of their vote in terms of seat allocation. Rational voters want to avoid wasting votes on parties or candidates that cannot win seats. By determining the vote shares necessary to win seats, electoral systems are a key element in the strategic game. However, strategic effects are not limited to one type of system only. Instead, strategic behavior has been identified in plurality-majoritarian systems (Blais and Carty 1991; Heath and Evans 1994; Blais and Nadeau 1996; Ordeshook and Zeng 1997; Alvarez and Nagler 2000; Blais et al. 2001; Kim and Fording 2001; Niou 2001; Blais 2002; Abramson et al. 2004; Blais et al. 2005; Justice and Lanoue 2005; Alvarez et al. 2006; Merolla and Stephenson 2007; Endersby and Shaw 2009), in PR systems (Ordeshook and Zeng 1994; Cox and Shugart 1996; Lago 2008; Shikano et al. 2009), as well as mixed systems (Kriesi 1998; Reed 1999; Karp et al. 2002; Gschwend 2007; Herrmann and Pappi 2008; Moser and Scheiner 2009). The other post-election outcome voters may be concerned about is *government* formation. In this perspective, a vote is wasted if cast for a party that does not influence government formation even if it may win seats. Strategic desertion from such parties for the benefit of parties capable of influencing the government coalition has been referred to as “coalition-targeted Duvergerian voting.” Moreover, voters concerned with maximizing the prospects of a particular coalition government may rationally decide to vote for a less-preferred coalition partner if there is a risk that it may lose its seats in parliament, thereby jeopardizing the coalition’s chances of winning government. Cox (1997) refers to this as a “threshold insurance policy.” Recent studies have provided evidence for both types of coalition-oriented strategic voting (Shikano et al. 2009; Armstrong and Duch 2010; Hobolt and Karp 2010; McCuen and Morton 2010). Strategic incentives are therefore not linked to a particular type of electoral system, arising instead as a result of the institutional context of elections as well as the operation of the party system. Electoral institutions determine whether voters must concern themselves with the viability of parties in terms of winning seats, while the pattern of coalition formation in the party system can make it necessary to evaluate the relevance of parties to government.

As mentioned above, there is reason to suspect that incentives for all types of strategic voting will lead to higher levels of vote switching. Direct as well as indirect causal mechanisms leading to the anticipated effect have been suggested. Bartolini and Mair suggested a *direct effect* related to changes in viability (Bartolini and Mair 1990:151–152). Changes in viability occur when a party’s chances (real or perceived) to win seats or influence the government formation change from one election to the next. The logic is straightforward; in the absence of strategic incentives, voters can decide to switch from one party to another due to changes in party policy or behavior or shifts in their own preferences from election to election. Voters under strategic constraints are subjected to the same influences as well as by changes in the viability of parties from one election to the next. The level of vote switching can therefore, *ceteris paribus*, be expected to be higher in systems that provide strategic incentives. For instance, if a new party, P_{new} , runs for election, voters with preferences closer to the position of P_{new} than to other parties would switch to this party. If it is running for the first time, it may be difficult to know beforehand how much support it can attract or how it will interact with other parties in the party system. Its viability in terms of winning seats as well as influence on government may therefore be uncertain. This vote change may be undertaken by rational and sincere voters alike. However, if P_{new} fails to win seats in parliament or fails to influence government formation and there are no indications of this situation changing, we expect rational voters to shift their vote to a viable party, whereas sincere voters would continue voting for the same party. Bartolini and Mair’s study

did not provide empirical evidence supporting the hypothesis advanced. As I will show in the analysis below, inadequate operationalization explains the lack of a positive finding.

In addition to the direct effect suggested above, it is also possible that strategic incentives cause electoral volatility by means of influencing “the deeper psychology of attachments to political parties” (Bowler et al. 1994:991). Instead of simply assuming that voters are rational, Bowler et al. suggest that the “cognitions” of voters are molded by the electoral context. Their study indicates that the competitive position of political parties and the manner in which voters interpret the choices before them affect the depth of their loyalty to political parties (Bowler et al. 1994:1005). Systems that impose strategic incentives have a negative impact on voter loyalty to political parties, thus rendering voters more rational in their decision making. As loyalty or attachment stabilizes voting behavior, strategic incentives may likely cause voters to switch more often in general—and not merely in response to changes in viability, as suggested above. After a discussion of the general causes of electoral volatility, I will return to the question of how to operationalize the strength of strategic incentives as well as the other variables discussed.

3 The causes of electoral volatility

In order to test whether strategic incentives have the proposed effects and to assess what matters to electoral volatility in advanced industrial democracies, it is necessary to identify the probable causes of this phenomenon. The following briefly outlines the variables identified as important in other studies of electoral stability and two additional factors are proposed.

Firstly, under the heading of institutions, the *electoral system*—and changes in the electoral system—have been associated with electoral volatility in previous studies (Bartolini and Mair 1990; Tavits 2005). The arguments made point to indirect effects. The electoral system may indirectly influence the extent of vote switching by affecting the strategic incentives or type of government (Bartolini and Mair 1990), the strength of partisan attachment (Karp and Banducci 2008), permissiveness to the entry of new parties (Tavits 2008), and the number of parties. Higher electoral thresholds are expected to result in higher volatility, although including independent measures of strategic incentives, number of parties, government type, and partisanship in this study can be expected to attenuate the proposed effect. Somewhat strangely, earlier studies have not considered the independent influence of time on the degree of vote switching. I would argue, however, that the *time since the previous election* is a key factor in predicting levels of volatility.¹ If voters are not completely partisan-identified, we can expect them to be influenced by a set of factors related to their personal situations, the condition of society, the party system, and so on. The probability that one or more of these factors have changed since their last voting decision simply increases with the passage of time. Therefore, we would expect an increase in vote switching as well.

Secondly, a number of variables on the supply-side of the elections must be considered; the *party system* is generally expected to have a direct impact on the extent of vote switching (Crewe and Denver 1985; Bartolini and Mair 1990; Remmer 1991; Mainwaring and Zoco 2007; Tavits 2005, 2007, 2008). Different effects are possible. Firstly, more parties

¹In some countries, the period between elections is stipulated by law (e.g., Australia), whereas in others countries, actors can influence the timing of elections within set limits (e.g., the UK and Denmark).

means greater opportunity for voters to switch.² Secondly, ideological distance may matter, as lower distance increases the probability that voters can find more than one party close to their preferences. Finally, and as briefly mentioned above, the stability or longevity of the party system is also important. Stable patterns of competition and party identification evolve over time and cannot be expected to emerge a few years after the beginning of democracy (Bartolini and Mair 1990; Roberts and Wibbels 1999; Toka 2004; Tavits 2005; Mainwaring and Zoco 2007). Moreover, other factors that can influence the voting decision need to be considered. The *performance of the incumbent government* is important, as voters may be prompted to vote differently in response to their performance. Studies of volatility in new democracies focus on economic performance, since the *economy* is typically regarded as the most important yardstick for how voters assess governments (Remmer 1991; Roberts and Wibbels 1999; Tavits 2005). It is plausible that the effect of the economy on voting behavior is asymmetrical as well as non-linear; asymmetrical, because voters tend to punish poor performance rather than reward positive performance (e.g. Bloom and Price 1975); and non-linear, because voters may not react to changes at the extremes of growth or decline with the same intensity as they react to changes in the “normal” range (Quinn and Woolley 2001). The ability of voters to reward and punish incumbent governments is contingent upon their ability to identify the *responsible parties* (Powell and Whitten 1993; Anderson 2000; Powell and Vanberg 2000; Tillman 2008). When responsibility can clearly be placed, the reward/punishment motive for outcomes enters as an additional factor in vote decisions and increases the probability of vote switching. The possible role of the clarity of responsibility on electoral volatility has not been explored in other studies.

Finally, the characteristics of the demand-side cannot be neglected. Different characteristics of the electorate and its relation to the party system also influence voting patterns. Following Lipset and Rokkan, Bartolini and Mair proposed that stronger *cleavages* lead to more stable electorates, as they close off the electoral market and constrain electoral mobility by a process of voter identification with the parties that are seen to represent their segment (Lipset and Rokkan 1967; Bartolini and Mair 1990).³ Theirs and other studies of volatility include measures of cleavage strength (Bartolini and Mair 1990; Mainwaring and Zoco 2007; Tavits 2008). Differences in *mobilization* for individual elections may also matter, as they indicate changes not only in the number of voters but also in the composition of the electorate (Bartolini and Mair 1990; Tavits 2008).

4 Data and measurement

The data set used comprises all of the elections to lower houses held in 21 countries between 1950–2005 (both years included), 336 cases in all. The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece (only 1980–2005), Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal (1980–2005), Spain (1980–2005), Sweden, Switzerland, the United Kingdom, and the United States.

²Causality may also run in the opposite direction, however, as a more volatile electorate could encourage the formation of new parties and thus increase the number of parties. Although this cannot generally be dismissed, there is evidence from a study of volatility in Eastern Europe that the formation of new parties triggers increases in volatility, not vice versa (Tavits 2008).

³Bartolini and Mair (1990:Chap. 9) identified three components of cleavage: a socioeconomic or ethno-cultural basis, a shared identity/ideology, and organizational expression.

4.1 Operationalization and indicators

Electoral volatility The Pedersen index of volatility is the most commonly used measure of the dependent variable, *electoral volatility* (Bartolini and Mair 1990; Roberts and Wibbels 1999; Tavits 2005; Mainwaring and Zoco 2007). It is simply the sum of the changes in individual parties' (P_i) vote shares (v) from one election to the next, divided by two to give it a logical upper boundary of 100 and avoid counting each shift twice.

$$V_{\text{tot}} = \frac{\sum |P_i v|}{2}$$

The index measures net—rather than gross—volatility and is therefore not a perfect reflection of individual level changes. However, correlations of the Pedersen Index with real and computer-simulated gross volatility measures have revealed a high correlation (Bartolini and Mair 1990:27–34; Lane and Ersson 1997:186). Practical decisions related to the construction of the index are summarized in Appendix A.1. The average volatility scores by country and over time are presented in Table 1 in the next section.

The electoral system As a measure of the *barriers to representation in the electoral system*, I use the “proportional threshold,” which is defined as “the vote share with which parties have a 50–50 chance of winning a share of seats proportional to their share of votes.” It reflects the average barrier to representation that the electoral system presents in a given electoral context and was developed to correct certain shortcomings identified in other well known electoral threshold measures (Taagepera 2002; Bischoff 2009). Lijphart's “effective threshold” assumes an even vote distribution of parties across electoral districts, and the district threshold can therefore be equated with the national (Lijphart 1994). This is not realistic, however, and calculated values of parties' vote concentration are therefore used to arrive at more precise estimates of the average vote shares required by parties to win seats. The “proportional threshold” is calculated by taking the average of the district threshold of inclusion (the minimum vote share that can win a party a seat) and threshold of exclusion (the maximum vote share a party can obtain yet fail to win a seat) and divide it by a measure of the average concentration of the parties' votes across electoral districts. Calculated estimates of the proportional threshold and measure of the vote concentration employed in the formula are reported in the Appendix A.2 for countries in periods with constant electoral rules. For reference purposes, the values for Lijphart's effective threshold are listed next to the proportional threshold. The two indices are highly correlated. In cases where countries apply a legal threshold of representation, this is simply used if the calculated threshold does not exceed this. Average values of the proportional threshold for the whole period 1950–2005 are summarized in Table 2 below. It should be noted that calculations were not made for the 2000–2005 period, where the closest values were instead assigned.

Changes in the electoral system are coded as changes in the rules resulting in at least a 20% change in the proportional threshold. The *time since previous election* is simply the number of days that have lapsed since the previous election.

The party system As a measure of the *number of parties*, the average number running at the electoral district level with a lower cut-off point at 2% of the national electoral vote is used.⁴ Unlike the national total, the district average number of parties is the number of

⁴Using the district average instead of the Effective Number of Parties (ENP) used by some (Mainwaring and Zoco 2007; Tavits 2005, 2008) avoids the element of circularity involved in using this measure. The

parties that voters actually have the opportunity to vote for.⁵ The choice not to count parties receiving less than 2% of the vote share relates to data accuracy: some election records lump parties winning small vote shares into a category of “other parties” while others mention them individually. Using a lower cut-off point makes the numbers comparable. The average number of parties is presented in Table 2. It is not possible to find a reliable measure of the *ideological distance* for the countries and period included in this study, and the number of parties is therefore a proxy for this. Pedersen argued that the higher the number of parties, “the smaller will be the average perceived distance between parties.” The degree of *party system institutionalization* is measured by the average age of the party system. Roberts and Wibbels suggest the average age of parties winning at least 10% of the electoral vote at the previous election as an indicator of the age of the party system (Roberts and Wibbels 1999). I follow this method, but weight the age of each party by its share of the total vote of parties receiving over 10% of the total vote in order to reflect differences in the importance of the parties for voters. The natural logarithm of the weighted age is used, as the impact of age on volatility is likely to be non-linear and diminish at higher values. Information regarding the age of parties was mainly obtained from Caramani but complemented by Wikipedia and party websites (Caramani 2000). In a few cases, the value for party age was not entirely straightforward. These decisions are mentioned in Appendix A.3. The scores are presented in Table 2 in the next section.

The strength of incentives for strategic voting The logic of strategic voting and the context giving rise to the incentives appear to be straightforward; however, closer inspection reveals that several preconditions must be met as discussed by Cox (1997:76–78). Some are relatively straightforward and relate to the institutional context, most importantly the electoral system, the party system, and the pattern of government formation. An electoral system that sets a *threshold for representation* that makes it highly improbable that certain parties or candidates can succeed in winning a seat is necessary to induce strategic voting motivated by “seat-maximizing” or “threshold insurance” concerns, as discussed above. Cox argues that strategic incentives are unlikely to emerge in systems with district magnitudes greater than five,⁶ even if objective barriers to representation can be observed. At higher magnitudes—that is, when the number of representatives to be elected exceeds five—voters lose their ability to predict with any certainty who is viable and who is not (Cox 1997:100, 105–106). With a district magnitude of six and using the Hare largest remainder allocation formula, a seat can be theoretically won with as little as 2–5% of the votes. Following Cox’s line of reasoning, I therefore set a lower limit of 5% proportional threshold for strategic incentives of the “seat maximizing” or “threshold insurance” types to come into play at all. Higher thresholds mean higher probabilities that parties and candidates might fail to win representation; and therefore also, *ceteris paribus*, stronger incentives to vote strategically. With regard to the party system, *more than two parties* participating is essential, since strategic voting involves abandoning an unviable party to influence which of the frontrunners take the

ENP reflect both the number of parties as well as their relative electoral strength. Therefore, not only does it capture the opportunity to switch party, but also how voters actually spread their votes among the possible alternatives (see discussion on ENP: Dunleavy and Boucek 2003; Taagepera and Shugart 1989).

⁵The national total differs significantly from the district average in many countries. In Belgium, for instance, the total number of parties is almost double that of the district average since most parties only stand for election in half of the districts.

⁶District magnitude refers to the number of representatives elected from a given district to the same legislative body.

“prize;” i.e., seat and/or government.⁷ While three parties constitute the minimum requirement, a greater number of parties increases the probability that voters will face strategic incentives. On the one hand, more parties participating will in itself increase the chances that coalition-targeted strategic voting becomes relevant. On the other hand, it is also likely that more parties competing in a system where seats are only won by those passing a certain threshold of votes will be associated with greater changes in viability; and thus more vote switching on the whole.

In addition to the electoral and party system, the structure of individual preferences and ability to predict outcomes are also key factors. Of direct relevance to this study, Cox argues that incentives to vote strategically only come into play if voters “know” who is trailing (i.e., highly unlikely to win) and who are the frontrunners.⁸ The publication of reliable polls and a relatively well functioning media system transmitting relevant information about the electoral race to the general population are therefore critical, although voters can also use electoral history to predict upcoming results under stable conditions (Lago 2008). When conditions are highly unstable, however, voters and elites alike may find these to be poor guides for action (Cox 1997:122). Moreover, polls may be difficult to rely upon for guidance in situations with many undecided voters. As Moser argued, the expected effects of electoral institutions may fail to materialize in countries with “weakly institutionalized party systems and poorly developed sources of political information” (Moser 2001:4). Uncertainty surrounding elections and their outcomes undermines strategic actions on the side of supply as well as demand, as many candidates and parties running for election and voters fail to focus on a few of them (Moser 1999, 2001). Compared to established democracies, far fewer voters thus vote strategically in new democracies (Moser and Scheiner 2009). Since the varying ability of voters to forecast results is extremely difficult to measure precisely across democracies and elections, there are advantages to selecting cases where relatively stable patterns of party competition enhance the predictability of outcomes. It is reasonable to assume that predictability is high and relatively constant across the advanced industrial democracies selected for this study.

The indicator of strategic incentives is therefore constructed as follows; all systems with two participating parties or a proportional threshold of less than 5% are given a score of 0, reflecting that strategic incentives are not relevant in these systems. In all others, the strength of strategic incentives is modeled as the product of the proportional threshold and the average number of parties. Constructing the indicator in this manner captures the strength of incentives to engage in seat-maximizing strategic voting or coalition-targeted voting of the “threshold insurance” type. Since it depends on a minimum electoral threshold, however, it does not capture the vote switching resulting from the abandoning of parties that are not viable in government terms. The scores are summarized in Table 2.

⁷Cox (1997) formulates an “ $M + 2$ rule” for single member districts, implying that the number of competing parties and candidates must exceed the district magnitude by at least two. Cox does not discuss whether this rule also applies to multimember districts—and in fact it does not. It can instead be reformulated as a simple minimum of “3 parties” rule applicable to all systems irrespective of magnitude and applying to all types of strategic voting.

⁸The other conditions mentioned by Cox (1997:76–78) are: voters must care which of the frontrunners win, since otherwise there would be no incentive to abandon a preferred candidate or party to attempt to influence who subsequently wins. Moreover, if there is a clear winner, the incentive to vote strategically is simply not present, and higher uncertainty increases the pressure for strategic behavior. Finally, voters must be short-term instrumentally rational. If not, they possibly continue voting for parties that are unviable in the present in the hope that the situation will change in the long run.

Cleavage strength refers to a combination of the socio-economic or cultural segmentation of the populations together with ideological and organizational representation. Different measures have been used to capture these factors.⁹ Measures of ethnic, religious, and linguistic fragmentation were used to gauge social cleavages (Alesina et al. 2003), and union density and employment in industry were used as measures of economic cleavages (OECD 2010, 2011) (party membership can be used as an indicator of the organizational closure of the electoral market). Accurate membership data for each election is unavailable, but Scarrow (2000) provides data on the decade average for most countries, Mair and Biezen (2001) for Greece, Portugal, and Spain, where the decade average is calculated on the basis of annual data points, and (Carty 2002) for Canada (1980–2000). See details on how missing values were handled in Appendix A.4.

Performance of incumbents As a measure of *government performance*, the average annual growth in GDP per capita since the previous election was calculated (data source for 1950–2005: Conference Board 2010; Data for 1946–1950 Maddison 2010. Data sets bound at 1950 values).¹⁰ If two elections were held in the same year, the GDP per capita growth for that year was used for the latest of the two elections. In order to test for possible non-linear effects of economic growth, a squared term is included. As an indicator of *incumbent accountability*, the type of government was ranked according to the ease with which voters can identify the party/parties responsible for policy. The following scores were assigned: single party majority (6), single party minority (5), minimum winning coalition (4), surplus majority coalition (3), coalition minority (2), and caretaker government (1). Each election was scored in terms of the type of government holding power in the period immediately before the elections. Data on government types: classifications in Comparative Political Data Set 1960–1998 (Armington et al. 2010) used, classifications constructed for 1999–2005 EJPR Political Data Year Books 1999–2006 (Katz and Koole 1999, 2002; Koole and Katz 2000, 2001; Katz 2003; Biezen and Katz 2004, 2005, 2006).

4.2 The causal model and the variables

Figure 1 presents the overall causal model. The variables are grouped in the three categories of institutions, supply-side, and demand-side factors. As noted above, the time between elections is only partly institutionally determined and is therefore not a pure institutional variable. Moreover, party membership can be viewed as an aspect of the supply side as well as the demand side.

Table 1 summarizes the average total volatility by country and decade. As the table clearly shows, the average volatility across countries has increased over time. The overall trend towards elections with higher volatility is clear, as the elections in the 1990s and the first five years of the 2000s are marked by noticeably higher volatility than the preceding decades. The presence of such a strong trend highlights the importance of control for spurious correlations caused by time trends in the subsequent analysis. The upward trend is noticeable in most countries, but not all. Particularly, but not only, the three latecomers in

⁹Measures of fragmentation (ethnic, religious, or linguistic) are included by Bartolini and Mair (1990), Roberts and Wibbels (1999), Tavits (2005, 2008), union membership (Bartolini and Mair 1990; Tavits 2005, 2008), and percentage labor force in industrial (blue-collar) jobs (Mainwaring and Zoco 2007).

¹⁰Inflation is frequently used as an indicator of performance in new democracies—e.g. Mainwaring and Zoco (2007) and Tavits (2008)—but it did not add anything to the analysis here and was left out.

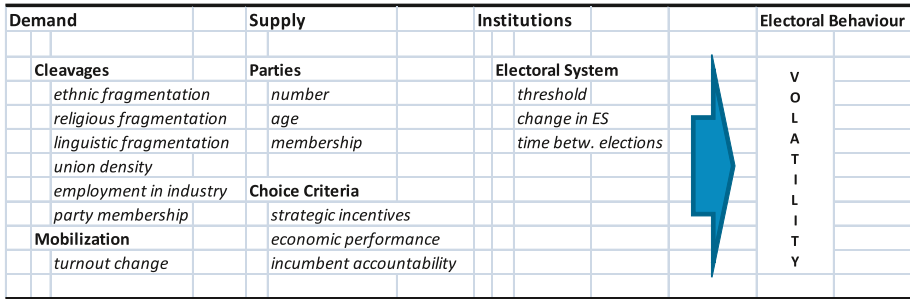


Fig. 1 The causes of electoral volatility

Table 1 Total volatility by country over time

Country	Decade						All Years	Std. Dev.
	50s	60s	70s	80s	90s	00s (5 yrs)		
Australia	4.6	5.8	7.0	3.2	10.4	8.0	6.5	2.3
Austria	4.1	3.3	2.8	7.3	9.6	21.0	6.5	6.3
Belgium	8.0	9.5	8.2	6.8	12.4	19.0	9.7	4.1
Canada	8.7	9.1	6.6	13.9	24.9	20.0	12.1	6.6
Denmark	6.6	8.5	17.7	8.7	12.9	11.4	11.0	3.6
Finland	4.4	9.6	6.3	10.8	11.3	6.8	8.2	2.5
France	21.5	14.1	13.1	13.6	14.6	27.8	16.4	5.4
Germany	15.3	9.4	4.8	7.2	9.7	7.3	8.7	3.2
Greece				11.3	8.7	6.2	9.3	2.1
Ireland	11.1	7.2	6.3	8.1	14.7	16.7	9.5	3.9
Italy	10.7	8.2	8.3	9.1	38.6	25.8	17.1	11.5
Japan	11.6	6.4	4.7	4.1	18.4	12.6	9.8	5.1
Netherlands	6.4	9.8	11.4	9.7	19.0	24.7	12.4	6.3
New Zealand	5.7	4.4	7.9	18.2	18.6	19.7	11.4	6.5
Norway	4.5	5.3	11.9	16.1	16.4	17.6	11.2	5.3
Portugal				15.1	12.2	11.3	13.3	1.6
Spain				13.7	8.4	10.5	11.3	2.2
Sweden	4.5	5.2	6.7	7.9	14.0	14.4	8.0	4.0
Switzerland	2.5	5.3	5.4	7.2	8.1	9.0	5.8	2.1
United Kingdom	5.0	5.4	9.1	7.8	9.5	6.8	7.0	1.7
United States	2.7	4.0	3.2	3.0	2.6	2.4	3.0	0.5
All countries	7.2	7.2	8.0	9.4	13.4	13.1	9.5	

the family of industrial democracies, namely Greece, Portugal, and Spain, evince an opposing trend in the 1980–2005 period. It might be argued that including these three countries jeopardizes the homogeneity of the cases in democratic terms due to their late democratization (in the 1970s). As can be seen from the table, however, none of these countries evince volatility levels above those observed in the other countries. By the same arguments, other countries (e.g., Germany) would have to be excluded in earlier decades. In order to be cer-

Table 2 Descriptive overview of key explanatory variables 1950–2005

Country	Average number of parties		Proportional threshold		Strategic incentives		Party system age	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Australia	3.1	0.6	37.3	2.4	34.4	22.2	59.6	15.4
Austria	3.9	0.7	4.2	2.0	1.2	1.8	52.9	13.9
Belgium	5.0	0.6	2.6	0.8	0.0	0.0	102.5	13.1
Canada	3.6	0.3	27.4	2.2	35.3	6.3	87.6	10.1
Denmark	8.0	1.6	2.1	0.6	0.0	0.0	86.3	15.2
Finland	6.9	0.9	4.7	0.2	0.0	0.1	62.3	16.0
France	5.6	0.7	17.4	5.7	43.6	21.4	41.1	10.1
Germany	4.3	0.9	5.0	0.0	0.0	0.0	45.2	17.2
Greece	4.0	1.2	9.0	5.5	4.9	4.6	16.2	5.9
Ireland	3.7	0.9	11.1	1.6	9.2	2.4	44.9	15.0
Italy	6.9	2.0	6.2	8.9	14.1	43.0	42.4	13.0
Japan	4.3	0.6	11.3	2.9	15.8	12.0	24.9	12.6
Netherlands	7.3	1.8	0.7	0.0	0.0	0.0	24.6	11.1
New Zealand	4.0	1.3	26.1	11.1	27.8	19.7	45.8	14.7
Norway	6.7	0.6	7.2	2.8	11.6	10.3	80.5	12.4
Portugal	4.4	0.7	5.1	0.2	0.4	0.3	17.9	5.8
Spain	3.7	0.7	9.2	0.3	7.1	2.5	19.3	6.5
Sweden	5.6	1.0	4.7	0.9	1.0	1.4	75.1	14.5
Switzerland	5.0	0.7	5.2	0.1	0.5	0.3	89.5	15.0
United Kingdom	2.7	0.3	34.9	3.3	20.3	8.9	109.6	19.3
United States	2.0	0.0	34.0	8.4	0.0	0.0	132.5	15.7

tain that it did not change the results, the analysis was repeated without the three countries. This did not change the findings substantially.

The key explanatory variables constructed for this study are presented in Table 2. The mean values and standard deviation for the scores for the whole period 1950–2005 are presented. Further details on the proportional threshold are available in Appendix A.1.

5 Analysis and results

Since the data set draws on cross-sectional variation across 21 countries and time-series variation over a period of 55 years (1950–2005), the hypotheses are tested in a random-intercept multilevel model (Snijders and Bosker 1999; Rabe-Hesketh and Skrondal 2008). The observations for each election (level 1) are “nested” in countries (level 2), and the assumption of independent observations is therefore likely to be violated. In fact, the intra-class correlation coefficient was calculated at 0.33, signifying that one-third of the variance observed is between countries rather than randomly across individual elections. All of the other variables in the main models vary over time within most countries as well as from country to country. To test whether the findings are robust to the use of other similar statistical models, a pooled OLS regression with standard errors clustered by country was also applied. The results were close to those identified using the random-intercept multilevel model, although one variable

Table 3 Determinants of electoral volatility

	(1) Basic model	(2) + Strategic incentives	(3) + GDP squared	(4) Trimmed model + time
Electoral system				
Proportional threshold	0.08 (0.10)	-0.04 (0.50)	-0.04 (0.46)	-0.01 (0.81)
Changes	2.10 (0.06)	2.02 (0.20)	2.14 (0.18)	
Years since last election	1.05** (0.00)	1.00** (0.00)	1.07*** (0.00)	0.98** (0.00)
Party system				
Number of parties	2.01*** (0.00)	1.66*** (0.00)	1.62*** (0.00)	1.47*** (0.00)
Average age (ln)	-1.67* (0.01)	-1.32* (0.03)	-1.12 (0.07)	-1.72** (0.00)
Electorate & cleavages				
Party membership	-0.38*** (0.00)	-0.35*** (0.00)	-0.33*** (0.00)	-0.23*** (0.00)
Turnout change (10%)	0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	0.02* (0.01)
Incumbent performance				
Government accountability	0.38 (0.20)	0.44 (0.12)	0.41 (0.15)	
GDP growth	-0.46** (0.01)	-0.44** (0.01)	-0.62*** (0.00)	-0.48* (0.01)
Strategic incentives				
GDP growth ²		0.08*** (0.00)	0.08*** (0.00)	0.08*** (0.00)
Year			0.10* (0.02)	0.11* (0.01)
Constant	7.96* (0.01)	7.22* (0.01)	5.95* (0.05)	8.06** (0.00)
Pseudo R ²				
Level 2	0.32	0.37	0.38	0.39
Level 1	0.27	0.29	0.30	0.30
<i>N</i>	336	336	336	336

p-values in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

was no longer significant at the 0.05 level but still significant at the 0.10 level (see Table B.1, Appendix B).

Four models are presented in Table 3. The first model includes all of the variables with the exception of strategic incentives, which is added in Model 2. Since this variable draws on features of the electoral system as well as the number of parties, it is useful to evaluate

its importance by considering its contribution to the variance explained by comparing to Model 1 as well as the strength and significance of its coefficient. In Model 3, the squared annual average GDP growth in the period from the preceding election is added to identify the non-linear effects of economic performance on volatility. Model 4 is the trimmed model, where only significant variables are included and a time variable (number of years since 1950) is added to control for spurious correlations between variables that have identical time trends, as is often done in time-series analyses. Alternative models are summarized in Table B.1, Appendix B. The models presented there are useful to assess the impact of different indicators as well as to test the robustness of the main variables across different model specifications.

The main hypothesis to be tested in this paper concerned the impact of *strategic incentives* on electoral volatility. The stronger the incentives for strategic voting, the higher the expected volatility as voters respond to shifts in the viability of parties in the short term or because the incentives challenge the loyalty of voters toward parties in the long run. The hypothesis was confirmed, as the variable crafted to capture these incentives proved to be positive and highly significant as well as raise the variance explained by about 5%. The coefficient proved to be robust across many different model specifications, including the control for time (see also Table B.1, Appendix B). The evidence that volatility does indeed increase when the contextual pressures for strategic behavior are present is therefore solid.¹¹ In concrete terms, the results signify that, given an increase in the proportional threshold of 5%, the effect of an additional party on total volatility is 2% instead of 1.6%. The effect of party on volatility thus increases by about 25% when the threshold is raised by 5%. Strategic incentives clearly cause vote switching, but the magnitude of the effect appears to be moderate. It should be kept in mind, however, that the strength of the effect is likely to reflect inaccuracy in the indicator of strategic incentives. Random error in the measurement of an independent variable leads to an attenuation bias, meaning that the observed effect is weaker than the real effect (King et al. 1994:157). Moreover, the direct impact of strategic incentives on vote switching at the individual level is likely to be higher. As discussed, the indicator captures the general contextual preconditions for strategic incentives but does not capture the proportion of voters who in fact have such incentives. Capturing this would require individual and district level data and thus require further research.

The *electoral system*—and changes in it—were not found to have any important direct effects on electoral stability. The finding is robust across various model specifications and confirmed when using other indicators of the electoral system.¹² The absence of a direct effect of the electoral system is not surprising at a theoretical level, although other empirical studies have linked it to volatility. It was argued above that mediated causal mechanisms should be expected (rather than direct effects). Since the intermediary variables are all represented in the models above (i.e., government type, strategic voting, party membership, and party system), the absence of an effect is not strange. That the electoral system is not irrelevant to electoral stability—but instead has indirect effects—finds support in the results of testing a model without the intermediary variables except the party system. Here, it was found that the electoral system returns a significant positive coefficient, indicating that a 5% change in the proportional threshold will increase the expected volatility by approximately

¹¹It should be mentioned that when the indicator for strategic incentives is made on the basis of the effective threshold (Lijphart 1994), the results are the same.

¹²District magnitude is possibly the most commonly used indicator of the electoral system. In Appendix B (Model 4), this indicator replaces the proportional threshold, but this does not change the conclusion.

0.6% (see Table B.1, Appendix B). Tavits finds that the electoral systems in Eastern European democracies have a negative effect (using the district magnitude as an indicator), but since the intermediary variables—except for the party system—are not included, it is impossible to know whether the observed effect would in fact disappear if they were controlled for (Tavits 2005). Bartolini and Mair identified a bivariate effect of the electoral system in the same direction, but it disappeared in the multivariate analysis, where only change in electoral institutions (including franchise) was found to have an effect. The inclusion of a measure of partisan attachment as well as differences in the indicators used may explain this (Bartolini and Mair 1990:Chap. 10).

The hypothesis that time itself plays an important role in explaining volatility is also amply confirmed by the data. *The time passed from the previous election* has the anticipated effect of increasing the share of voters that switch party. One year longer between elections raises the expected aggregate volatility by approximately 1%. The relatively strong and highly robust effect shows how it is important to include this variable in studies of electoral stability.

The *number of parties* has a strong and significant impact on the level of electoral volatility, indicating that the alternatives presented to voters matter. Other studies have reached the same finding, and there is no reason to suspect it to be strongly context-dependent (Crewe and Denver 1985; Bartolini and Mair 1990; Remmer 1991; Mainwaring and Zoco 2007; Tavits 2005, 2007, 2008). The effect of an increase of one party on aggregate volatility is around 1.6%, and this finding is robust across different model specifications. The effect is 5–6 times stronger than as described in Bartolini and Mair’s study, which might be explained by the fact that they use the national total rather than the average number running per district as well as differences in cases/time period. It is difficult to compare directly with the findings in new democracies, since these studies use the effective number of parties as an indicator (Roberts and Wibbels 1999; Tavits 2005; Mainwaring and Zoco 2007). However, it is also possible that the strong effect identified—whatever the indicator—partially reflects endogeneity in the Pedersen volatility index. The index captures net—not gross—volatility, and it is plausible that vote shifts in party systems with few parties cancel each other out to a higher extent than when voters shift to and from a higher number of parties. There does not seem to be awareness regarding this problem in studies of volatility, however, and I am unaware of any method that would effectively control for it. The analyses confirm that the *age of the party system*—or party system institutionalization—also matters. The logarithm of the age of the party system has a significant negative effect on volatility, thus confirming the expectation that it is a stabilizing factor on behavior. Roberts and Wibbels (1999) find a similar effect for Latin American democracies. In this connection, it is interesting to observe how the age of democracy, which Zoco and Mainwaring find has an impact on volatility in their pooled study of new and old democracies, does not have a significant effect in this group of countries when it replaces the age of party systems (see Table B.1, Appendix B). This is possibly because the party system factor is sensitive to the fact that party systems possibly have histories preceding the disruption of democratic regimes. The date of the inauguration of democracy ignores that, in spite of disruptions, many European countries had parties that “returned to business” after WWII or periods of fascist rule. For instance, the Communist Party in Italy did not first start with the re-introduction of democracy to Italy in 1946–1948 after a lengthy period of fascist rule. In fact, it had a much longer history and had played an important role in the resistance movement (Rossi 1992; Cotta and Verzichelli 2007).

Perhaps the most surprising finding in this study is that none of the indicators representing *socio-economic bases of cleavages* contributed to explaining variation in electoral

volatility. In order to simplify the presentation, the variables associated with this dimension were omitted from the main models presented in Table 3 and instead presented in Table B.1, Appendix B. Linguistic and religious fragmentation were found negatively correlated with volatility but insignificant, while the exact opposite was the case for ethnic fragmentation. Contrary to findings in other studies, neither union membership (Bartolini and Mair 1990) nor employment in industry (Mainwaring and Zoco 2007) play a role. However, the organizational dimension of cleavage strength represented by *party membership* has a clear effect on voter stability, which is also robust when controlling for spurious time trends. The analysis reveals that a 1% increase in membership decreases aggregate volatility by about 0.25%. Another indicator of organizational closure—union density—was found significant by Bartolini and Mair (1990), but this study did not identify any effect of this variable and was therefore not included in the main model (see Table B.1, Appendix B).

The changes in electoral turnout were found to have a positive effect on volatility. The effect is very weak, however, as a change in turnout of 10% is associated with a mere 0.2% in aggregate volatility.

Motivation to reward and punish governments clearly plays a role. The average *economic growth* in the period from the previous to the present election¹³ has a negative effect on volatility, indicating that voters are less inclined to shift from one party to another when the economy is faring well than otherwise, and the effect is robust when controlling for time. In other words, voters tend to punish incumbents for poor performance more than reward them when all is well, which is in line with the results obtained in other studies (Roberts and Wibbels 1999; Lewis-Beck and Stegmaier 2000; Tavits 2005; Duch and Stevenson 2006; Mainwaring and Zoco 2007). The impact of economic performance on vote switching is not linear, however, as indicated by the significant squared term of economic growth in Model 3. The model predicts that around the mean value of annual GDP growth between elections for all the countries, that is 2.65%, the impact of a decline of 1% in average annual growth rates between elections is an increase in volatility of 0.6%.¹⁴ However, where a drop from -0.35 to -1.35 predicts a 1.3% increase in volatility, a drop from 5.65% to 4.65% predicts volatility to increase by no more than 0.1%. On the face of it, the results indicate that voters do not respond as strongly to changes in economic performance at the positive extremes as they do at the negative end. It is possible, however, that historical circumstances play into the results, as a number of countries experienced historically high growth rates in the 1950s. In fact, when this decade is dropped from the analysis, the non-linear term becomes insignificant, while the magnitude of the linear coefficient increases to around 0.8 (0.6 after controlling for time). It is therefore possible that the non-linear association identified is the result of specific historical circumstances but are not causal.

The same electoral response to economic performance was identified in new democracies in Eastern Europe and Latin America. Moreover, the effect of GDP growth rates is of comparable magnitude, although differences in modeling and indicators make it difficult to draw firm conclusions in this regard.¹⁵ The coefficient for the clarity of government responsibility was positive, as expected, but did not pass tests of significance. This suggests that retrospective voting aimed at punishing incumbents does not depend on how clearly responsibility

¹³Similar results were obtained when the economic growth in the election year was used as an indicator for performance.

¹⁴The variable for GDP growth was centered at the grand mean for the sample—2.65%—to avoid multicollinearity problems in the model with the squared term.

¹⁵Linear coefficients of GDP growth rates for Latin America: approximately -0.85 (Mainwaring and Zoco 2007:582) and approximately -1 for Eastern Europe (Tavits 2005:292).

can be placed with the individual parties. It is possible that there is an opposite, confounding effect, as coalition governments ranking low on the clarity of responsibility index may cause coalition-targeted strategic voting—and thus increased volatility. Such effects cannot be disentangled here, and other studies have not included this variable.

6 Conclusion

There were two principal aims of this study: to investigate the impact of strategic incentives on electoral volatility and more broadly to identify the causes of electoral volatility in advanced industrial democracies. Substantially, the analysis and results provided strong and robust evidence for the influence of strategic voting on the extent of vote switching. At a general level, the results confirm findings that voters respond to incentives to vote strategically, but they add to this by showing that strategic voting also makes the electorate more unstable as a whole. The results thus provide tangible evidence supporting the theory that strategic voters are also more volatile voters. However, whether the effect is also transmitted through cognitive changes in voters—as Bowler et al. suggested—or it is merely an expression of changes in party viability between elections is beyond the scope of this study to determine. Moreover, although the strength of the effect on net volatility is moderate, it should be noted that the actual strength of the effect on gross volatility is likely to be much stronger. Further analysis of this using individual and district level data would make a more finely tuned measurement of the independent and dependent variables possible. For instance, individual level preferences or the competitiveness of elections, which influences strategic incentives as discussed earlier, could also be taken into account. At this level, it would also be interesting to explore whether changes in viability or partisan attachment mediates the effect on vote switching.

The analysis also provided important insight into other determinants of electoral volatility in advanced industrial democracies. Undoubtedly, the most interesting conclusion that can be drawn from the analyses is that factors related to the supply-side of politics far outweigh the role played by the demand-side. The “objective” composition of the electorate in terms of its social and economic cleavages was not found to play a role in predicting the level of stability. In light of the prominent role played by socio-economic segmentation in explaining electoral stability—most notably in Bartolini and Mair (1990)—the negative findings related to this dimension in this study are highly important. Segmentation of the electorate may have played a historical role linking voters to parties, but evidence of stabilizing effects for advanced industrial democracies in the post war era is entirely lacking. Since many different indicators were used to capture the socio-economic aspect of cleavages, it is highly unlikely that the non-finding is related to problems of measurement. Interestingly, while the socio-economic divides and organizations do not matter, *parties* clearly do. In fact, parties do most of the explaining. The number of parties, average age of the party system, and membership of political parties (as the only factor related to the “demand-side”) explain slightly more than half of the variation compared to the full model. The fact that the longevity of the party system and party membership stabilize electoral behavior lends support to the theory that political parties play a role in these countries that they may not (yet) play in new democracies, as discussed by Mainwaring and Zoco (2007).¹⁶ Moreover, it was also found that voters use the state of the economy as a measure of party performance. Volatility goes

¹⁶However, the observation made earlier concerning endogeneity in the relationship between the number of parties and the Pedersen index of volatility suggests that party system format may not be as strong a predictor as the results indicate.

up when the economy is sluggish, indicating that voters react to poor performance rather than good performance by voting for a different party. The clarity of responsibility of government does not appear to have any significant effect in this regard, but it is possible that the effect is hidden by coalition-targeted strategic voting. Further analysis of voter instability using cross-national survey data could provide valuable information on such effects.

Finally, the analysis shed light on the role of political institutions. Previous studies have reported contradictory results with respect to the role of the electoral system. The finding that the electoral system matters to volatility but only through its effects on other variables is therefore interesting. There was no evidence of an independent effect. The prospects for influencing volatility levels through institutional engineering are not strong, however, as the effects of electoral systems are contradictory. On the one hand, higher thresholds are correlated with higher volatility through the effects on strategic incentives and possibly also party membership; on the other, it lowers volatility through its effects on the number of parties. The timing of elections, which is partly determined by electoral rules, was found to have a noticeable impact, as there is a positive relationship between the length of time between elections and volatility. It makes perfect sense that changes become more likely over time, and the results emphasize how studies of electoral change must account for this.

Appendix A: Indicators

A.1 Electoral volatility

In the practical construction of the volatility index, I control for the volatility induced by the behavior of political elites rather than voters' decisions. Changes in voting patterns due to party mergers and party splits—if the party of origin ceased to run or no longer existed—were therefore omitted. This is done to capture the propensity of voters to change their vote from one party to another, whereas it can be argued that when the parties voted for in a previous election cease to exist, voters are forced to change their votes—rather than any independent decision to vote differently. Cases in which parties changed names were ignored for the same reasons. Information on party splits and mergers were based on the following: (Caramani 2000; Hug 2001; Mackie and Rose 1990, 1997) and the Political Data Year Books published by European Journal of Political Research (Katz and Koole 1999, 2002; Koole and Katz 2000, 2001; Katz 2003; Biezen and Katz 2004, 2005, 2006). Finally, the “other parties” category was included as a party in the calculations, but as the vote percentages in this category are typically small, this has a limited impact on the average scores.

A.2 The proportional threshold

The proportional threshold is defined as *the average vote share with which parties have a 50–50 chance of winning a share of seats proportional to their share of votes*. It resembles Lijphart's effective threshold (Lijphart 1994) in terms of being calculated as an average of district level thresholds of inclusion (T_{id}) and exclusion (T_{xd}). Unlike the former, however, it takes the national vote concentration of parties into account. The threshold of inclusion is the minimum share of the votes that a party requires to win a seat, whereas the threshold of exclusion is the maximum vote share a party can earn while failing to win a seat. The thresholds are calculated on the basis of the electoral formula, district magnitude, and the number of participating parties (see formulas Hug 2001:177). Since the *national* thresholds vary according to the distribution of parties' votes across districts (Taagepera 1998, 2002; Bischoff 2009), this is included in the calculation of the threshold values. To calculate the average vote concentration of a party system, the following steps are taken:

Table A.1 Single-member district systems

Country	Threshold indicators		Vote Conc.
	T_{pro}	T_{eff}	V_{eff}
Australia (1951–1998)	37.1	35	1.41
Canada (1953–1997)	27.9	35	1.41
France (1958–1997)	20	35	1.57
New Zealand (1951–1993)	32	35	1.16
United Kingdom (1950–1997)	31.2	35	1.24
United States (1950–1998)	33.7	35	1.65

1. First, the parties' vote concentration in electoral districts is calculated. It is similar to the effective number of parties formula (Taagepera and Shugart 1989), however, it is applied to the party vote shares in each district in a country instead of the votes for each party in a party system:

$$D_{\text{eff}} = \frac{1}{\sum (v_i)^2}$$

where v_i is the share of each party's total vote in each district.

2. Next, the average vote concentration for a party system is identified by dividing the number of electoral districts by the party vote concentration multiplied by that party's share of the votes.

$$\text{System } V_{\text{eff}} = \frac{D_{es}}{\sum D_{\text{eff}(i)} \cdot v(i)}$$

The formula for calculating the proportional threshold is:

$$T_{\text{pro}} = \frac{(T_{id} + T_{xd})}{(\text{System } V_{\text{eff}} \cdot 2)}$$

Although the scores differ from those obtained when using Lijphart's effective threshold, T_{eff} (Lijphart 1994), and are typically lower for countries where parties' votes tend to be concentrated in regions rather than dispersed across all districts in the countries, the scores calculated for these 21 countries in this period have a very high correlation of Pearson's R of 0.94, indicating that the two indicators are not very different in practice. However, the proportional threshold is calculated for single-member district systems as well as for multimember district systems, whereas the effective threshold is not calculated for SMD systems but based on Lijphart's "guesstimates." In Tables A.1 and A.2, the scores for the T_{pro} and T_{eff} are compared for countries with constant electoral rules, and the average vote concentration for the respective periods is given.

Values are not calculated when a legal threshold is applied (e.g., it is 5% for Germany and 2% in Denmark (1953–2005)).

System V_{eff} was calculated for all countries 1950–2000 using district level data (data: Caramani 2000: and various national electoral archives) except Australia and Canada, where values were calculated for selected elections in the absence of district level data for the whole period. Since the calculated V_{eff} values for the Australian senate were highly stable, the lack of measures for more years for house elections is unlikely to give very imprecise scores (1955, 1977). In Canada, a measure in 1974 and one in 1997—after the entry of the *Parti Québécois*—were used. The French scores are based on data aggregated from 94–99 districts, since data on primary districts was lacking. The calculation of threshold values

Table A.2 Multimember district and mixed systems

Country	Threshold indicators		Vote Conc.
	T_{pro}	T_{eff}	V_{eff}
Austria (1953–1966)	3.8	8.5	1.17
Austria (1970–1990)	1	2.6	1.05
Belgium (1950–1991)	2.5	4.8	1.6
Belgium (1995–1999)	3.1	5.2	1.96
Denmark (1950)	5	5.5	1.1
Finland (1951–1999)	4.7	5.4	1.3
France (1986)	5.6	11.7	1.15
Ireland (1951–1997)	11.3	17.2	1.19
Italy (1953–1992)	2.4	2	1.13
Italy (1994–1996)	25.7	28.2	1.32
Japan (1952–1993)	9.8	16.4	1.34
Norway (1953–1981)	9.6	8.9	1.14
Portugal (1980–1999)	6.6	5.7	1.18
Spain (1982–1996)	9.14	10.2	1.23
Sweden (1952–1968)	6.1	8.4	1.06
Switzerland (1951–1999)	5.2	8.5	1.86

for Greece in the periods where a legal threshold was not enforced is complicated. The T_{pro} scores used were based on Lijphart's method of calculation (1994) and divided by the vote concentration.

Contact cb@ifs.ku.dk for further details on data and calculations.

A.3 Age of party systems

The sum of the difference between the founding year for each party and the election year weighted by the parties' respective shares of the vote is the age of the party system. For parties in systems where democracy had been interrupted, decisions regarding the age of the parties in question had to be taken. For Germany's Social Democratic Party, founded in 1905, the 15 years of fascist rule were deducted. The age of the party in 1950 was therefore 30, not 45. Likewise for Greece, the periods where the Communist Party was banned (1936–1942; 1949–1974) were deducted; and likewise the United Democratic Left (1967–1974) so that their respective ages were not directly counted from the founding years 1901 and 1952, respectively. For Italy's Communist Party, founded in 1921, the years of fascist rule were not deducted due to its prominent role in the resistance movement. The socialist party in Spain—PSOE—founded in 1879, and the Communist Party founded in 1921 were banned for a very long period (1939–1977), but both retained some organization during the Franco period. The age is therefore set at 15 years, as democracy was introduced in 1977.

A.4 Party membership

To avoid the exclusion of cases due to missing values, the closest observed values were assigned to Australia (1950s), Belgium (1950s), Ireland (1950–1960s), Norway (1950s), and Switzerland (1950s). Since a longer period was missing for Canada, party membership was estimated by using data for partisan attachments in the 1960–1970s. The ratio of partisan attachment to party membership was calculated to be 5.9% for the 1987–1994 period. This

ratio was assumed constant, and membership was calculated to be 4.5% for the 1960s and 3.7% for the 1970s. The 1950s were set at 1960 values. Calculations based on data provided by Carty (2002).

Appendix B: Alternative models

Table B.1 Determinants of electoral volatility (alternative models)

	(1) District magnitude	(2) E.S. indirect effects	(3) Cleavage social	(4) Class cleavage	(5) Inaug. democracy	(6) OLS pooled
Electoral system						
District magnitude	−0.02 (0.26)					
Proportional threshold		0.13** (0.00)	0.01 (0.91)	−0.02 (0.76)	−0.03 (0.60)	−0.03 (0.42)
Years since last election	0.94** (0.00)	0.97** (0.00)	0.99** (0.00)	0.97** (0.00)	0.99** (0.00)	1.00** (0.00)
Party system						
Number of parties	1.64*** (0.00)	1.86*** (0.00)	1.61*** (0.00)	1.49*** (0.00)	1.33*** (0.00)	1.32*** (0.00)
Age of parties (ln)	−1.99** (0.01)	−2.72*** (0.00)	−2.03** (0.00)	−1.62* (0.02)		−1.25* (0.02)
Inauguration of democracy					0.01 (0.39)	
Electorate & cleavage						
Party membership	−0.28*** (0.00)		−0.22*** (0.00)	−0.21** (0.00)	−0.26*** (0.00)	−0.19*** (0.00)
Ethnic fragm. (1990s)			7.04* (0.03)			
Linguistic fragm. (1990s)			−4.38 (0.22)			
Religious fragm. (1990s)			−2.23 (0.35)			
Union density				−0.01 (0.59)		
Employment in industry				−0.05 (0.50)		
Turnout change (10%)	0.02* (0.02)	0.20* (0.01)	0.20** (0.01)	0.20* (0.01)	0.20* (0.01)	0.20*** (0.00)
Incumbent performance						
GDP growth	−0.54** (0.00)	−0.49* (0.01)	−0.47* (0.01)	−0.48** (0.01)	−0.45* (0.01)	−0.45 (0.10)
GDP growth ²	0.10* (0.02)	0.12** (0.00)	0.10* (0.01)	0.11* (0.01)	0.12** (0.00)	0.10 (0.08)
Year	0.06** (0.01)	0.12*** (0.00)	0.06** (0.01)	0.05 (0.12)	0.04 (0.05)	0.07* (0.04)

Table B.1 (Continued)

	(1) District magnitude	(2) E.S. indirect effects	(3) Cleavage social	(4) Class cleavage	(5) Inaug. democracy	(6) OLS pooled
Strategic incentives			0.08*** (0.00)	0.08*** (0.00)	0.08*** (0.00)	0.10*** (0.00)
Constant	10.35*** (0.00)	7.29** (0.01)	9.03*** (0.00)	10.12** (0.01)	−17.07 (0.46)	6.14* (0.01)
<i>N</i>	336	336	336	336	336	336

p-values in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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