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Comparative Economic History

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1   Introduction

Comparative economics has undergone many changes since it was created during the cold war in the twentieth century. The main focus of comparative economics then was the study of the socialist economic system, where allocation of resources was not done through the market but through central planning and where ownership of productive assets was public, not private. Comparative economics was then comparative only in the sense that the socialist economic system was compared to the capitalist economic system, but there was at the time little focus on trying to understand more deeply the workings of the capitalist economic system itself. Some scholars tried then to establish an abstract framework serving as a lens for comparing economic systems in general (see, e.g. Kornai 1971; Montias 1976; Neuberger and Duffy 1976).

With the collapse of the socialist economic system around the fall of the Berlin Wall in 1989, the focus of comparative economics immediately shifted to the study of the transition from the socialist economic system to the capitalist economic system (see, e.g. Roland 2000; Berglof and Roland 2007). There was little real comparative economics during this period, except for the fact that one needed to have some understanding of the capitalist economic

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system in order to be able to understand and evaluate transition strategies. Since the transition from socialism to capitalism had never happened before, there was little prior understanding of how to conduct the transition or what the effects of transition policies would be. As a consequence, there were many unexpected surprises in relation to the transition process, the output fall following price liberalization being only one of them (see Blanchard and Kremer 1997; Roland and Verdier 1999). The mistakes and surprises of the transition process led to a better understanding of the nature of the capitalist system and in particular the central role of institutions. The ideas of North (1990) and Williamson (1975), among others, that had for too long played a peripheral role in economics then became mainstream. The article by Acemoglu et al. (2001) analyzing the fundamental role of institutions in long-run growth, using modern instrumental variable techniques, became an instant classic.

The focus of comparative economics then shifted to the study of comparative institutional analysis, that is, the comparison of institutions focusing on differences in institutions in capitalist countries.[1] Djankov et al. (2003) called this the "new comparative economics", and Aoki (2001) proposed a rather abstract conceptual framework based on game theory to understand both institutions and institutional change. It is the only book to my knowledge that has attempted to provide a comprehensive comparative analysis of institutions. Other research in line with the new focus of comparative economics has been both quite prolific and visible.

One area has been the comparative analysis of legal systems, especially the differences between common law and civil law systems (see, e.g. La Porta et al. 1998), exploiting the fact that former British colonies had a common law system, whereas former Spanish and French colonies had a civil law system. Another line of research has to do with the comparative analysis of political systems. This research has so far been confined to the comparison of democratic political institutions and their economic effects. Persson et al. (1997, 2000) studied the differences between parliamentary and presidential democracies looking at the trade-off between separation of powers and legislative cohesion. Lizzeri and Persico (2001), Perotti and Rostagno (2002) and Persson et al. (2007) studied the economic effects of differences in electoral systems in parliamentary democracies (proportional versus majoritarian). Other research has focused on the differences in political regimes emerging from rural versus urban insurgencies (Wantchekon and Garcia-Ponse 2013).

A more recent line of research relates to the comparative analysis of culture. Sometimes scholars tend to oppose culture and institutions, but the

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[1] In political science, the "varieties of capitalism literature" emerged in a somewhat parallel way.

institutionalist school considers that they are both institutions, the latter being formal and the former being informal institutions. Much of the comparative research on culture by economists has focused on differences in generalized trust, sometimes also interpreted as generalized morality or civic culture (see, e.g. surveys of this large literature by Guiso et al. 2006; Tabellini 2008) but also on differences between individualist and collectivist cultures (Gorodnichenko and Roland 2011, 2012, 2015, 2017; Gorodnichenko et al. 2015; Kyriacou 2016, Ahuja et al. 2017, Davis 2016, Davis and Williamson 2019, Hartinger et al. 2019 and many others). The economic effects of other cultural differences have been studied such as fertility norms or gender norms for labor supply (Fernandez et al. 2004; Fernandez and Fogli 2009).

As we can see, the new comparative economics has focused mostly on understanding the differences in institutions in the post-Cold War world. Because of the nature of this research, it gives a less polarized view of institutional systems compared to the early comparative economics of the Cold War.

However, there is no reason why the new comparative economics should focus only on contemporary institutions. What about comparative analysis of economic systems farther back in history? In the pre-industrial era, that is, in post-neolithic agrarian societies, there were important institutional and cultural differences, possibly as important as the differences studied by the early comparative economics. These differences have barely been studied, but they may affect developments in the twenty-first century and even beyond. China is the emerging power of the twenty-first century. The US-China trade war is already becoming one of the major issues of current international relations. To understand contemporary China, a market economy with a communist political regime, it is not enough to study communism as a political system.[2] One needs to understand Chinese culture and its history but also the long history of its specific institutions.[3]

Economic history has also done little to fill this gap as it has in the past focused too much on history in the Western world and the Mediterranean, and the focus has often been to try to understand the sources of economic success. The same cannot be said necessarily for political history (see, e.g. Fukuyama 2012, 2015) monumental historical work. The three volumes of Finer's *History of Government* provide a wealth of encyclopedic knowledge about institutions in all major civilizations of the world. They are an invaluable source of scholarship to understand institutions in the past. Finer's

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[2] In fact the emergence of a market economy under a communist political regime could not have been predicted, based only on understanding communist ideology or even the Leninist form of organization.

[3] On the nature of the current Chinese economic system, see Roland (2019).

work is in my view one of the major achievements in social sciences in the twentieth century.

A broader geographical view of history gives scope for a broader research agenda, as it tends to show us that there is no unique way in which the evolution of technology led to pre-determined changes in institutions. There may be parallel historical paths or even bifurcations. The reason for diversity for institutional paths of pre-industrial societies has been neglected by researchers who have focused on other important questions such as why states formed earlier in some areas than in others (Bockstette et al. 2002; Carneiro 1970; Turchin 2016: Schönholzer 2017; Mayshar et al. 2015; Dal Bo et al. 2015).

Much of the literature on institutions takes the implicit or explicit view of "good" versus "bad" institutions, "inclusive" versus "predatory" (Acemoglu and Robinson 2012, see also Acemoglu and Robinson 2019). If we take a less normative approach (a positive approach), we realize that there has been in history a large diversity of institutions, not all easily classifiable in broad normative groups. The interest in the role of institutions in economic history has led to discovery of diversity of institutions in antiquity, in pre-industrial and pre-modern societies. This leads us thus to favor a comparative approach in the study of institutions in antiquity and in pre-industrial societies.

Overall, one can find at the time of formation of the first states differences between economic systems that could be as stark as those studied by early comparative economics focusing on the twentieth century. Thus, looking more closely at the ancient world, we find that some systems (Egypt, China, Peru under the Incas and others) were more like centrally planned economies. There was no private property of land (the land belonged to the Emperor or ruler); agricultural goods and craft goods were allocated by the government. Markets were hardly developed and foreign trade was under the control of government. Other economies, like ancient Mesopotamia, Athens, the Aztecs in Mexico, the Champa (covering roughly today's South Vietnam), were more clearly market economies with private property of land and developed markets, both domestically and internationally. Many other systems were in between both these systems. Nevertheless, as I will show, differences in institutions were not distributed randomly. In fact, we find two clear clusters with characteristics that are reminiscent of central planning on the one hand and market economies on the other hand. These two distinct institutional clusters that are comparable to the difference between socialism and capitalism in the twentieth century indicate that these were different systems with complementarities between their own institutions. These different systems operated in mostly rural societies where modern industrial technology was absent and where labor (in particular slave labor) and land were the major factors of

production, and one can make the case for how these complementarities worked, that is, how partial institutions reinforced each other, thus creating clearly identifiable and distinct institutional systems that, following Roland (2017), I will call market versus statist systems.

Legal arrangements relative to land and labor were, for example, quite different. In market systems, there was private property of land but also of slaves. In statist systems, slaves were also used extensively, but they worked for the state. Households did not have the right to buy and sell slaves, and there were no private markets for slaves. In statist systems, land was owned by the state, and there was no market for land. In market systems, legal systems were designed to deal with horizontal conflicts between citizens, in particular over property right disputes. In statist systems, the law was essentially a tool for the ruler to oppress citizens, as in China's "legalist" doctrine developed during the Qin dynasty.

There were also marked differences in political institutions in market versus statist systems. Market systems were often organized in city-states, like in Mesopotamia, ancient Greece and Rome, the Champa Empire in South Vietnam or the Aztec city-states in Mexico. Statist systems, in contrast, were usually organized in territorial states like ancient Egypt, China or the Inca Empire. The latter were also much more centralized and had less developed cities, except for administrative centers.

Given these legal and political institutions, trade of private goods, within and across polities, was much more developed in market systems compared to statist systems. There were also important sociological differences, some a consequence of institutional differences, and others more a source of those differences. The role of merchants was much more recognized in market systems compared to statist systems. There was also more ethnic diversity and tolerance toward foreigners. Differences in kinship systems were also quite notable. Market systems were more present in places with bilineal kinship systems, whereas statist systems could be found more frequently in places with unilineal kinship systems. Strength of clan also affected the strength of market development. In societies with strong clans, a lot of economic activities were done inside the clan, on the basis of division of tasks within the clan. In societies with weaker clans, people needed to resort more to the market for their production and consumption.

The new research program laid out by the comparative analysis of institutions in the ancient past may help to revive comparative economics by improving our understanding of the diversity of institutions in the ancient past, the reasons for their emergence as well as their effects on economic trajectories in history, thereby substantially enriching economic history research on

institutions. This would open many avenues such as understanding the diversity of institutions in today's world, understanding different cultural trajectories (such as the major difference between individualist and collectivist cultures) and understanding better economic systems understood as complementarities between various institutions (one example would be the link between the caste system, religious beliefs and marriage institutions in India).

The objective of this chapter is to present an overview of this nascent literature, from possible data sources to emerging research avenues. In Sect. 2, we thus survey some work on comparative archeology, an invaluable source to understand institutions in the ancient past. In Sect. 3, we survey some initial work from comparative psychology and biology on possible reasons for why specific cultures evolved in particular environments. In Sect. 4, we review the emerging literature on comparative institutions in history. In Sect. 5, we describe the comprehensive database we have been building on institutions in the ancient world. We also review some of the main questions raised in this new research program, including possible links between institutions in ancient times and modern cultures. Sect. 6 concludes.

2   Comparative Archeology

Archeology focuses generally on rigorous excavation and analysis of findings from ancient sites. It is rare that archeologists attempt to make broad theoretical syntheses from their observations. Bruce Trigger, a famous archeologist, but also anthropologist and ethno-historian, published a major work in comparative archeology in 2003 entitled *Understanding Early Civilizations: A Comparative Study*. Trigger compares seven important ancient civilizations (Egypt between 2700 and 1800 BC, Southern Mesopotamia between 2500 and 1600 BC, the Shang dynasty in China [1200–950 BC], the Mexico valley—where the Aztec ruled—between 1400 and 1500 CE, the Maya civilization between 250 and 800 CE, the Inca in Peru around 1500, the Yoruba kingdom in Benin between 170 and 1800 CE). The book reads a bit like an Excel file. In 27 distinct chapters, Trigger describes for each of these seven civilizations what he sees as important variables. I will list only the most important ones: kingship rules, whether states were territorial or city-states; the type of urban development (in particular administrative cities versus commercial cities); the characteristics of class systems and the degree of social mobility; patterns of family organization and gender roles, including kinship rules and inheritance rules; characteristics of government administration such as the degree of centralization and decentralization; characteristics of the legal

system such as the legal code and legal procedures and relations between the law and the social hierarchy; military organization and reasons for going to war; geographical surroundings; types of implements; rules for land ownership; private or public nature of foreign trade; modes of transport; characteristics of craft production; ideal lifestyles and role models versus models not to follow; conceptions of the supernatural; religion; art; and architecture.

While Trigger does not theorize that much, the way he organizes his material makes it prone to quantification. His work has been a major source of inspiration for the data collection I report below.

While I know of no other comparative work as impressive as that of Trigger, there is more and more work by archeologists and historians trying to understand institutions in the past, and how they affect economic outcomes. A big topic is inequality. Following Piketty's (2013) monumental study on rising inequality under capitalism, there has been a lot of research on inequality in history. Scheidel (2017) documented that societies tend to have rising trends in inequality that only get reversed under the four following "horsemen" of apocalypse: (1) mass mobilization warfare, (2) transformative revolutions, (3) state collapse and (4) plagues. Kohler and Smith (2019) put together a volume where archeologists discuss what are the best ways to measure Gini coefficients of inequality using data from archeological excavations. Flannery and Marcus (2014) provide a tour de force by describing ancient societies at different stages in their development and showing through what mechanisms inequality appeared alongside with economic development.

3   Comparative Culture

Many studies have looked at the geographical reasons for the emergence of particular cultures. There is a well-known literature in economics giving geographical reasons for why some countries and regions have more trust than others (see, e.g. Buggle and Durante 2017). There is a less well-known literature in biology and psychology looking at geographical determinants of particular cultural systems, in particular determinants of the emergence of collectivist versus individualist cultures.

One strand of the latter literature refers to how different societies responded to the epidemiological environment. One such theory, put forward by a team of biologists and psychologists (Fincher et al. 2008), is the *parasite stress* theory, which states that the epidemiological environment, and in particular the types of infectious diseases faced by societies, affected social behavior, psychology and ultimately societies' culture. The main idea is that societies that

evolved in an environment rich with infectious diseases tended to develop social norms that led them to be more closed toward foreigners and to impose stricter social rules and, more generally, norms that would minimize the spread of infectious diseases. In a nutshell, the idea is that collectivist culture developed as a means to protect societies from the disease environment they were facing. The authors collected data on historic pathogen prevalence for nine pathogens detrimental to human reproductive fitness (leishmanias, trypanosomes, malaria, schistosomes, filariae, leprosy, dengue, typhus and tuberculosis) for countries that also had an individualism/collectivism index from the well-known Hofstede (2001) database on culture.[4] Data on historic pathogen prevalence were based on old atlases, but they also separately collected data on current pathogen prevalence. They found a strong correlation, in particular between historic pathogen prevalence and measures of collectivism. In further work (Thornhill et al. 2010), they make the distinction between zoonotic and non-zoonotic parasite prevalence. Zoonotic diseases are not transmitted via human transmission, whereas non-zoonotic diseases are. According to the parasite stress theory, only the prevalence of non-zoonotic diseases should affect culture. This is indeed what they find, using the GIDEON database that records the presence of every human infectious disease across the world.

Other studies have examined the effect of differences in the distribution of particular variants of genes on cultural evolution. Chiao and Blizinsky (2010), two neuroscientists, found a link between collectivism and the frequency of the S allele of the serotonin transporter gene (5-HTTLPR). The latter is associated with increased negative emotion, including heightened anxiety, harm avoidance, fear conditioning, attentional bias to negative information as well as increased risk for depression in the presence of environmental risk factors. In particular, exposure to chronic life stress, such as interpersonal conflict, loss or threat, is considered a well-known risk factor for depression in S allele carriers of the 5-HTT. In typical East Asian samples, 70–80% of individuals are S-carriers, compared to 40–45% in European samples. East Asian populations nevertheless report less anxiety and mood disorders, despite their higher genetic propensity. This negative correlation is significant. They thus hypothesize that in countries with a higher frequency of the S allele, collectivist values evolved to protect individuals from stressful events that would trigger

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[4] They also used other measures: (1) a measure developed by Suh et al. (1998) who combines Hofstede's index with other indicators by Harry Triandis, a pioneer in the cross-psychology study of individualism and collectivism, (2) a measure developed by Gelfand et al. (2004) on in-group collectivism practices within organizations, (3) Kashima and Kashima (1998) data on whether languages allow to drop first- and second-person pronouns in sentences.

depression and anxiety. They indeed find a robust association between the S allele and collectivism as measured by the Hofstede index and the Suh index. They state: "Emphasizing social norms that increase social harmony and encourage giving social support to others, collectivism serves an 'anti-psychopathology' function by creating an ecological niche that lowers the prevalence of chronic life stress, protecting genetically susceptible individuals from environmental pathogens known to trigger negative emotion and psychopathology. These findings complement notions that cultural values of individualism and collectivism are adaptive and by-products of evolution, more broadly".

A study in a similar spirit is that by Way and Liebermann that finds a positive correlation between collectivism and the frequency of the G allele in polymorphism A118G in the µ-opioid receptor gene, creating a stronger psychological pain from social exclusion. A similar positive correlation can be found between collectivism and the frequency of a variant of the MAOA enzyme (monoamine oxidase A) that breaks down neurochemicals such as serotonin and dopamine. The MAOA-uVNTR was also associated with greater pain from social exclusion. As in the Chiao and Blizinsky study, despite a higher propensity for depression implied by the higher frequency of these variants of genes, they also found a negative correlation between these gene variants and the occurrence of major depression in the population.

A further piece of evidence is provided by Luo and Han (2014), two psychologists from Peking University, who show that a particular variant of the oxytocin receptor gene polymorphism (OXTR rs53576), which has been linked to social cognition and behavior, is related to collectivism. The A allele of OXTR rs53576, which is more present in East Asian populations compared to European populations, is associated with deficits in empathy, positive affect, emotional support-seeking, self-esteem, maternal sensitivity, pro-social temperament and trust behavior, as well as higher reactivity to stress and propensity toward depression. As in the other studies, there is a negative correlation with depression.

While some of these studies do not have a very large sample of countries, they nevertheless show a clear pattern between the natural environment faced by collectivities (frequency of pathogens and frequency of particular versions of genes that are related to greater propensity of psychological suffering) and the evolution of cultures. They indicate that genes and cultural values can coevolve in the spirit of the pioneering work of Boyd and Richerson (1985) and provide important foundations for a comparative understanding of cultural systems. Whether they can be the whole story is another matter. Certainly, one can argue that there is also a coevolution between culture and

institutions that may also be important. We now turn to survey some of the recent research on comparative institutions in history, most of which illustrates this coevolution.

4   Comparative Institutions

Research in economics on comparative institutions in history is relatively recent. A series of very interesting papers attempt to explain differences in institutions in antiquity. We only review in this article some of the most salient recent contributions. Mayshar et al. (2017) examine the role of differences in transparency of agricultural production in the formation of institutions. Their theory states that transparency in the conditions of agricultural production affects the government's ability to appropriate revenue from the farming sector. They contrast the case of ancient Egypt and Mesopotamia.

Ancient Egypt had high transparency of agricultural production. The Nile flooded regularly, bringing nutrients to the flooded soil that then delivered crops of cereals (mostly barley). The regular mild flooding of the Nile was thus the source of agricultural output that made it possible to develop the Egyptian civilization as early as seven millennia ago. There is a strong relation between the amount of flooding and the size of crops. So-called "Nilometers" measuring the extent of the flooding made it possible to predict quite accurately the future size of crops. As conditions of production were very homogenous along the Nile, it was thus also possible to predict sizes of crops locally based on the amount of flooding measured in different places. According to Mayshar et al., this helps explain the absence of private property of land in Egypt. Land was said to belong to the Emperor. Peasants were ordered to deliver a particular amount of grain every year, depending on the predictions for that particular year. This transparency assured a high level of revenues for the Egyptian government and thus a strong state capacity. Given the transparency, lower levels of government had few informational advantages, which led to a strong centralization in government power.

Mesopotamia, on the other hand, presented different natural conditions. Southern Mesopotamia had complex and varying farming conditions. Water was scarce and had to be rationed by the local elites. As in Egypt, owner-cultivated farming was also rare as water management assured high transparency to local elites. This informational advantage to local elites also explained why Southern Mesopotamia remained decentralized. In Northern Mesopotamia, agriculture was rainfed, creating uncertainty about the size of crops, with little transparency to local elites. This relative opacity explains the

prevalence of private farming, according to Mayshar et al. (2017). Their model's explanation for the prevalence of private farming is the following: under strong transparency, the government can pay a farmer a fixed wage but dismiss him if he does not deliver the revenues demanded. On the other hand, with low transparency, dismissal does not work as it may be based on wrong information. In that case, it is optimal to let farmers own the land and never be dismissed from it while paying taxes to the government.

In another paper co-authored with Luigi Pascali, Mayshar et al. (2015) emphasize the role of storability of agricultural products on the emergence of states and a government hierarchy. They challenge the conventional wisdom, according to which increases in agricultural productivity led to a surplus that freed resources to fund a government apparatus. They emphasize instead the role of *appropriability*, which depends on storable surplus. They contrast the strong appropriability of grain, a high calorie food that can be stored for long periods and transported easily and can thus be taxed by a government, but also stolen by thieves, which creates demand for protection. In contrast, tubers do not last long when stored and can thus not be appropriated. All major states that emerged in history relied on cereals. They give different pieces of empirical evidence to support their theory. Note that the question addressed in this paper is quite different from the other one. The question here relates to the emergence of state structures, that is, why states appeared early in some areas and not in others. There is a large literature on that very important question (see, e.g. Dal Bo et al. 2015, Carneiro 1970; Turchin 2016; Schönholzer 2017 and others), but it is somewhat different from issues of comparative institutions in history, which is the topic of this paper.

Greif and Tabellini (2017) wrote an important paper comparing the role of clans and the organization of cities in China and in Western Europe. Clans have always played a very important role in the organization of Chinese society. Due to the prevailing patrilineal kinship system, Chinese people could always trace their ancestors only through the paternal side. Clan membership could thus always easily be defined by having a common male ancestor. Clans have always been paramount social organizations in China, and urban concentrations were mainly clan settlements. Non-clan members were allowed to live in urban clan settlements, but always at the margin. In contrast, clans never played a major role in Europe. Moreover, urban concentrations were not at all based on clan membership but were based on the notion of citizenship, implying rights and duties of the individual. European cities can be seen as places where individuals, regardless of their ancestry and family connections, share common interests in providing public goods. European cities were only one form of corporation, a mode of organization based on the

participation of individuals with legally defined rights and responsibilities. Cities were indeed incorporated by a legal charter. European individualism was propagated by the Catholic Church, in particular with the notions of individual salvation of the soul and universal moral values, "generalized morality". In contrast, in China, collectivist values spread, mainly via Confucianism that emphasized ethical norms based on kinship and place within the family and the clan. In China, large migrations most often occurred within the clan structure, with whole clans moving, whereas in Europe, migrations were mostly individual, based on the nuclear family, possibly in its somewhat extended form. We lack the space to dwell further on this quite thorough and insightful comparative analysis.

The role of religion on comparative development has been studied by Grigoriadis (2019). He focuses more on Eastern and Western Europe as well as the Mediterranean. Among others, he analyzes differences between the institutional effects of Protestantism, Judaism, Catholicism, Orthodox Christianity and Islam in increasing order of collectivism. He analyzes in various chapters the effect of different religions on political regimes and the organization of government. While much of his analysis is at a granular level of comparison, and based partly on lab experiments, he finds that more collectivist religions are associated with more centralized, less democratic regimes and less representativeness, with democracy confined more to the local level. They provide public goods based on paternalistic ex post welfare guarantees instead of contractual public goods in more individualist religious environments. More collectivist countries have more accountability of local bureaucrats to the central government rather than the people. Values of solidarity, obedience and universal discipline permeate the organization of the state in societies where religion is more collectivist.

Acemoglu and Robinson (2019) have developed a comparative theory about the emergence of states. They find that in history three types of states emerged: (1) states with very little capacity that cannot impose order and are too weak to arbitrate conflicts between groups of subjects on its territory, (2) despotic states that dominate civil society and do not let it develop and (3) an intermediate case where civil society plays an important role and where the state is not strong enough to muzzle civil society but still strong enough to create the rule of law. In the latter case representing inclusive states, a competition evolves between a strong civil society and the state apparatus. Which one of those three systems emerges depends on a "narrow corridor" in terms of the relative power of the state and civil society. If the state is initially strong enough that it can muzzle civil society, then the state can become ever more despotic over time. If instead, it is initially too weak relative to civil society,

then it leaves a space to various factions in civil society that make it impossible to build sufficient state capacity. It is not easy to fit analyses by Greif and Tabellini (2017) or Mayshar et al. (2017) in this framework, and it appears somewhat simplistic relative to these other types of comparative analysis.

5   A Comprehensive Database on Historical Institutions

I now report on recent work I did to gather data on institutions in antiquity. My motivation stemmed mostly from my interest on the effects of culture on long-run growth (Gorodnichenko and Roland 2011, 2017) and on political institutions (Gorodnichenko and Roland 2015). I thought the historical explanations for the emergence of collectivism versus individualism (e.g. those reviewed above in Sect. 3), while quite convincing and interesting, only gave a partial view of the possible explanations for the historical emergence of collectivist versus individualist culture. In line with recent work by Bisin and Verdier (2017), I thought it more fruitful to look at the coevolution of culture and institutions. Indeed, it is reasonable to hypothesize that particular early institutions may have affected cultural values and beliefs, which has in turn helped consolidate both these institutions and the underlying culture. Given the inertia of culture predicted by the Bisin-Verdier model (see also Roland 2004), institutions may have affected cultural values and beliefs that are still present in today's world. Reading Trigger (2003), I was strongly encouraged by his comparative findings on seven important ancient civilizations showing considerable variation in many institutions. In the spirit of earlier work on legal institutions (La Porta et al. 1998), I launched into a very time-consuming collection of data on institutions and institution-related variables in antiquity for 92 countries[5] (countries for which we have a score on the individualism-collectivism cultural cleavage). With the help of research assistants, data were collected on a number of variables listed in Table 6.1. A detailed description of the definition of those variables as well as the scoring rules used can be found in Roland (2018). It is nevertheless useful to say a few words about these variables.

Table 6.1 includes variables capturing institutional characteristics, grouped into legal, political and sociological institutions. These variables and their scores are described further in Appendix 1. Economic and geographical

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[5] For a full list of countries including the time period covered and the societies investigated, see Table 6.1 in Roland (2018).

Table 6.1 Comparative economic history project

Legal institutions
- Strength of private property of land
- Index of importance of private property of slavery (4 variables)
- Horizontal versus vertical law composite index (3 variables)

Political institutions
- City-state versus territorial state
- Centralization of government (two variables)
- Importance of cities (two variables)

Sociological institutions
- Importance of merchants in societies
- Bilineal versus unilineal kinship of system
- Strength of clan in society (5 variables)
- Social stratification
- Ethnic diversity

Economic variables
- Intensity of private trade within the polity (domestic trade)
- Intensity of private trade across polities (international trade)
- Ease of transportation

Geographical variables
- Heterogeneity in conditions of production
- Distance to a hot trading zone outside the country
- Easiness of taxation
- Easiness of conquest
- Soil fractionalization

variables were also collected and are presented in more detail in Sects. 5.2 and 5.3, respectively.

Our starting point is that there was a very large difference in institutions in antiquity. As mentioned already above, some countries like ancient Egypt, ancient China and Peru functioned more like centrally planned economies. Private property of land was mostly non-existent and the land belonged to the Emperor. The same can be said of private property of slaves. Households could not buy and sell slaves, and the existing slaves were the property of the government.[6] This stands in stark contrast to market economies such as in ancient Greece or ancient Rome where private property of land and slaves played an important role. There were also marked differences between the legal systems. In China, but also in Egypt, and other countries, the nature of the legal system can best be characterized by China's "legalist" doctrine, which is still fully alive in China's communist regime. The essence of the legalist doctrine is that the law must be used as a tool of oppression of subjects by the government apparatus. In particular, it specifies punishments for violations of prohibitions, in particular relative to behavior with respect to government

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[6] Contrary to received wisdom, the Egyptian pyramids were not built by slaves but by gangs of workers.

officials or government property. In that sense, it can be seen as regulating "vertical relations" between the state apparatus and the population. It can be characterized as "rule by law". This stands in stark contrast to "rule of law", where the law is established, as was the case for example in ancient Greece and ancient Rome to rule "horizontal conflicts" between citizens, in particular, conflicts over property or contract enforcement. In the former case, the law is there as an instrument of oppression; in the latter case, it exists to protect private property and private interests. Not surprisingly, in those countries where there was no private property over land and slaves, the organization of production and the allocation of resources were done via the state apparatus, not via the market. Mayshar et al. (2017) already emphasize this in their comparison between ancient Egypt and ancient Mesopotamia. It is therefore justified to say that some countries had a *statist institutional system*, whereas others had a *market institutional system*.

We did not want to satisfy ourselves simply with a narrative of the institutional differences between various states in antiquity, but wanted to collect data to see what kind of patterns would emerge in the distributions of data across countries, but also in the correlations between variables.

The title of some of the variables listed in Table 6.1 is mostly self-explanatory (we refer to Roland 2018, for an explanation of the exact scores), but it is worthwhile giving some explanations with respect to indicators built on the sum of different variables. Our index on the importance of private slavery is based on four sub-variables: (1) the prevalence of private slavery, that is, the importance of private slavery among the slave population, (2) the existence and extent of legal norms for private slavery, (3) the presence of slave trade and slave markets and (4) the importance of private slaves in the total population. Our index for "horizontal law" or rule of law is based on (1) the extent of property law, (2) the extent of contract law, (3) the extent of procedural law in public law. Our index of government centralization covers two variables: (1) the extent of centralization of government between the center and local government and (2) the extent of concentration of power in the hands of the executive. Our index on the importance of cities is based on two variables: (1) the degree of urbanization and (2) the importance of commercial cities relative to administrative cities. Finally, the strength of clan is measured by five sub-variables: (1) extent of family size (from nuclear to extended family), (2) the importance of unilineal kinship in society, (3) degree of geographical concentration of descent group, (4) degree of cooperation within the descent group and (5) power of clan structure in conflict resolution within descent group.

5.1   Are There Institutional Clusters?

We now present some figures showing the distribution of some of the institutional variables we collected. We computed synthetic indices to represent legal, political and social institutions. As shown in Table 6.1, our first index is a synthetic legal indicator, presented in Fig. 6.1, and is based on an average of scores for private land ownership, ownership of slaves and our horizontal law composite index. As one can see, the distribution is quite bimodal. Just to give an idea, the lowest scores (below 2) are for China, Egypt, Fiji, Ghana, Namibia, Nepal and Sierra Leone and the highest scores (above 9) are for ancient Greece and Rome, Anglo-Saxon and Scandinavian countries, Belgium and Spain.

There were thus presumably two clusters of countries: a first group with no or little private property of land and slaves and a legal system focused on imposing the power of the state on unfree subjects, and a second group with private property of land and slaves, and a legal system focused on protecting these property rights. We should expect the first group to have had very autocratic institutions. In that sense, there should be strong complementarity between legal and political institutions in early states. We do not have good measures of how autocratic they were, but it is useful to look at a synthetic index of political institutions, that is an average of government decentralization (including lack of concentration of executive powers), whether countries were city-states or territorial states and the importance of cities (including whether big cities were commercial rather than administrative centers). The distribution of this synthetic political index is presented in Fig. 6.2.
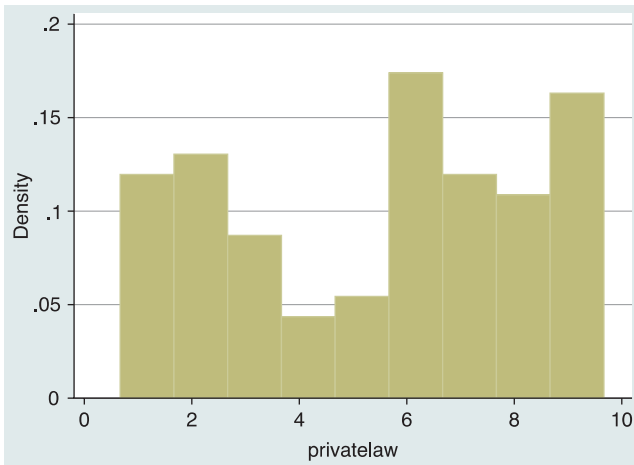

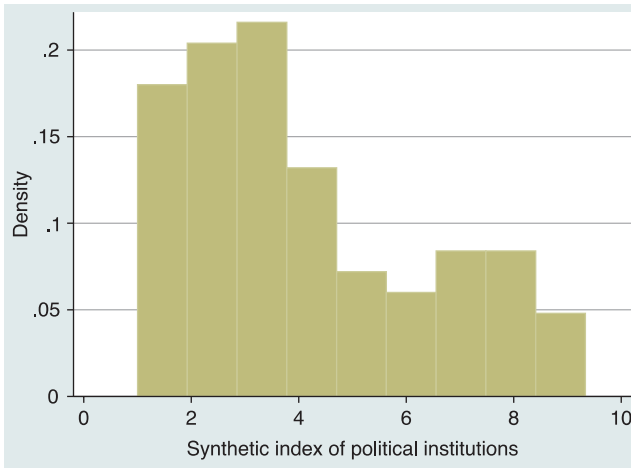**Fig. 6.1**   Synthetic legal system indicator

Fig. 6.2 Synthetic political institutions index

As we can see, this indicator is also quite bimodal. Among countries with the lowest scores, we have China, Bhutan, Chile, Japan, Korea and Nepal. Among countries with a high score, we have Greece, Italy, Belgium, the Netherlands, Malaysia, Nigeria and the United Arab Emirates. Note that Anglo-Saxon and Scandinavian countries do not have a high score on this synthetic political institutions index, because they had territorial states, albeit with checks on the executive, and not city-states. An important institution was the assembly of free citizens (*althing, althung, thing* in different Scandinavian or Germanic languages) that met at least annually to settle judicial conflicts between free citizens but also to make important political decisions. The king could not make important decisions without the support of that assembly. This presence of territorial states among these European countries is also the reason why the distribution of our political index is skewed to the right. This "Anglo-viking" exceptionalism is quite interesting, and worth of further research, especially since Trigger (2003) considered that the difference between city-states and territorial states was a fundamental one. This exceptionalism is something one needs to be aware of, especially given the often "Anglo-centric" nature of a lot of historical research.

Finally, we built a synthetic sociological index composed of (1) the role or merchants in society, (2) the weakness of the clan system (the opposite of the strength of clan indicator), (3) bilineal instead of unilineal kinship system, (4) social stratification and (5) ethnic diversity. As we can see below (Fig. 6.3), this indicator is only weakly bimodal with modes around 5 and 7. In particular,
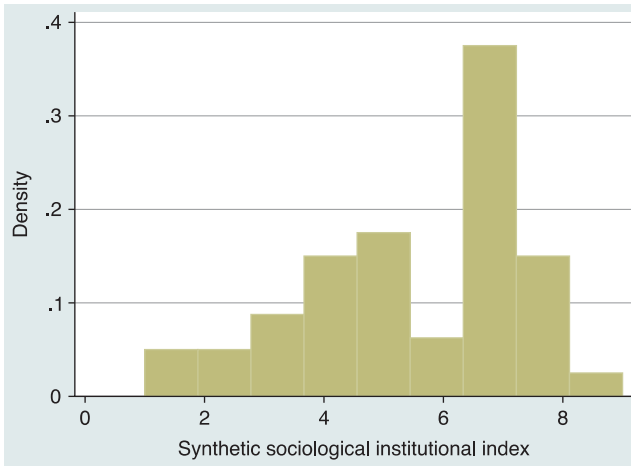
Fig. 6.3 Synthetic sociological index

the social stratification variable (not shown here) is more or less normally distributed.

Overall, there are good reasons to consider that there were two main clusters of institutions, especially considering the distribution of legal institutions, which is not only the most striking but also the most emblematic of these institutional differences.

5.2   Links Between Institutions and Markets

After having given an overview of the distribution of institutional variables we collected, the presumption is that there should be a link between institutions and market development. We should expect market development to be strong in countries having what we have labeled as "market institutions" and weaker in countries having statist institutions. This is indeed what we find. Obviously, we do not have precise measures for market development, but we collected data on the intensity of private trade within polities as well as across polities.

Here are the scoring rules.

Score for Trade Within a Polity

1–2: No private trade. Mainly distribution via the state apparatus. Some barter.

3–4: Very limited private trade. Distribution economy and subsistence production.

5–6: Trade limited in scope (goods traded), location and time.

7–8: Active trade with some limits and significant non-market activity.

9–10: Intensive internal trade an important engine of the economy, possibly in conjunction with intensive international trade.

Scores for Trade Across Polities

1–2: Mostly autarky or foreign trade conducted only by government emissaries.

3–4: Foreign trade controlled by the government, using some private merchants.

5–6: Substantial private foreign trade but overall limited relative to the size of the economy. Significant trade barriers and contraband.

7–8: Large foreign trade with trade barriers but quite widespread smuggling.

9–10: Intensive international trade conducted by private merchants playing a key role for the economy.

Note that the distribution of those variables is also quite bimodal (see Roland 2018). Countries with low scores for domestic trade are China and ancient Egypt, many Asian countries (Bhutan, Nepal, Korea, Japan) as well as some countries from Africa and Latin America. Among countries with the highest scores, we have the usual (ancient Greece and Rome, Northern European countries), but also Slovenia, Morocco and Libya, Saudi Arabia, Indonesia, Malaysia and Pakistan, Uruguay and Mexico. Scores for international trade are distributed quite similarly.

Figure 6.4 shows a regression where we create a combined institutional index, averaging our legal, political and sociological institutions and regress the intensity of private domestic trade on that index. As we can see, it is positive and highly significant.

In Fig. 6.5, we do the same thing for the intensity of private trade in international trade, and we see a similar result.

This clearly demonstrates that there is a strong correlation between institutions in antiquity and market development at the time. Statist systems had less market development, while market systems had more market development. This should obviously not come as a surprise, but the result further underlines the clusters we have identified, and shows a clear complementarity
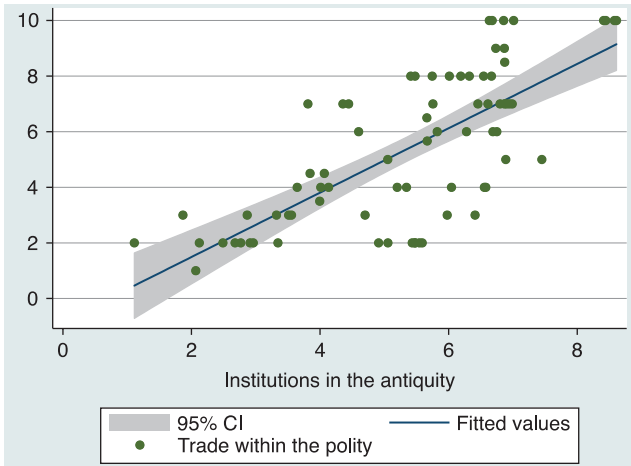
Fig. 6.4 Institutions in antiquity and intensity of domestic private trade
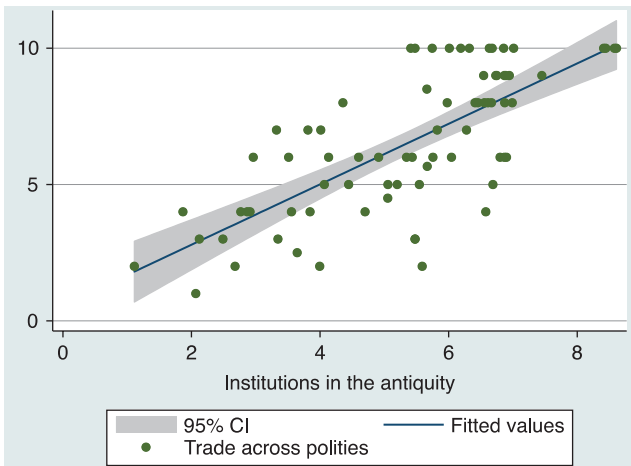

Fig. 6.5 Institutions in antiquity and intensity of private international trade

between institutions and the extent of the use of the state or the market as the main means of allocation of resources.

This of course raises the question of causality: were institutions the cause for market development, or was it instead market development that created a demand for institutions protecting private property? We are not in a position to answer that question. It is also not clear that that question is a crucial one, as there may have been a coevolution between both: better institutions fostered private trade which in turn led to more demand for institutions

protecting property rights, and so forth. In any case, the complementarities evolved and possibly led to institutional divergence that is quite clear in the data.

5.3   What Explains the Differences in Systems?

The question then raised is why we see these differences, and what could have triggered a dynamic of divergence between market and statist systems.

Quite possibly, the answer can be found in differences in geographical conditions. In Table 6.2, we regress the combined synthetic institutional index on a number of geographical variables.

The first variable is a measure of heterogeneity in conditions of production. It measures the extent to which conditions of production differed in different parts of the territory.

Here is the scoring rule:

Heterogeneity in Conditions of Production

- 1–2: Very homogeneous geographical environment, one or only a few kinds of resources. Typically, barren land due to climate or other geographical constraints; alluvial plain only for grain production; plantation economy.

Table 6.2 Institutions in the antiquity and geography

	(1)	(2)	(3)	(4)	(5)	(6)
Heterogeneity production	0.334***					
	(0.104)					
Soil fractionalization		4.278**				
		(1.761)				
Ease of transportation			0.310***			
			(0.057)			
Log distance hot trading zone				−0.635***		
				(0.192)		
Distance to sea					−0.002*	
					(0.001)	
Log ruggedness (100 km)						−0.049
						(0.097)
Observations	75	75	75	66	75	72
R-squared	0.160	0.067	0.278	0.158	0.040	0.005

Robust standard errors in parentheses. ***$p<0.01$, **$p<0.05$, *$p<0.1$

3–4: A few kinds of resources/products, some differences of environment across the geographical surroundings.

5–7: Some diversity of notable resources, a differentiated environment across the geographical surroundings and closeness to places with different resources.

8–10: Very diverse geographical environment, many kinds of resources. Typically, vibrant interregional trade of natural resources.

The hypothesis is that strong heterogeneity of production would favor trade inside the polity, and thus the development of institutions protecting private property and trade. If instead, conditions of production were homogenous, there would be less advantages to trade across space, but instead more advantages to centralized allocation of resources by the government, possibly to take advantage economies of scale.

Soil fractionalization is another indicator of heterogeneity of conditions of production. It is based on data on the maximal potential production capacity in t/ha over 17 crops from the FAO's Global Agro-ecological Zones (GAEZ) database, scaled by historical calories per ton for each crop by the FAO.

Ease of transportation is based on the following scoring rule:

1: No access to water transportation (lakes, rivers or sea); land transportation has to overcome significant natural barriers (jungles, swamps or high mountains) typically lacked beasts of burden and wheeled carts.

2: Lacked navigable rivers, land transportation encounters significant natural barriers (jungles, swamps, high mountains).

3: Lacked water transportation, land has some natural barriers that block communication.

4–5: Lacked river transportation, but land routes are well-maintained and do not encounter much natural barriers.

6: Moderate river transportation, land transportation has some barriers (hills, trails, forests, deserts).

7: Moderate river transportation, easy land transportation (well-maintained roads or plains).

8: Fairly easy maritime and/or river transportation, difficult land transportation (e.g. jungles, mountains, bogs).

9: Easy maritime and/or riverine transportation, moderate difficulty of land transportation (e.g. forests, deserts, hills, trails).

10: Easy maritime and/or riverine transportation; easy land transportation (road systems; plains, etc.).

Distance to a hot trading zone is based on the number of km from the capital of a country at the time of the measurement and the closest hot trading zone where merchants used to gather to trade goods. Distance to the sea is the closest distance to the sea from the capital of the country at the time of the measurement (see Roland 2018, for details). Ruggedness is for 100 km distances (see Nunn and Puga 2012, for how to measure ruggedness).

The heterogeneity score and soil fractionalization are measures of the potential benefits from trade inside a country, whereas the other measures (easiness of transportation, distance to the sea, distance to a hot trading zone and ruggedness) are measures of the cost of transport. The latter would affect the benefit from trade as low costs of transport would make it possible to trade at a lower cost. As we can see from Table 6.2, the variables all have the right sign and are all significant, except for ruggedness. This does indicate that there is a correlation between geographical variables measuring potential benefits from trade and market institutions. This likely indicates a causal effect because geographical conditions do not change very much.

5.4   Comparative Economic History and Its Relevance for the Modern World

Why do these institutional differences from antiquity matter? I think they do for the following reason. As stated above, if there has been coevolution of institutions and culture in history, differences in institutions from antiquity may have affected cultural differences over time. Today's main cultural differences according to cross-cultural psychologists are between individualism and collectivism (see, e.g. Heine 2007). The difference between individualist and collectivist culture is explained in detail in Gorodnichenko and Roland (2012). The most common database measuring these cultural differences comes from Hofstede (2001). These cultural differences matter to understand the determinants of growth and innovation (Gorodnichenko and Roland 2011, 2017), the likelihood of adopting democracy (Gorodnichenko and Roland 2015) or differences in the organization of multinational firms (Miroshnik 2002; Gorodnichenko et al. 2015).

More broadly, tensions between China and the West are playing a central role in today's world. China has developed a collectivist culture in its millennial history. This culture has shaped China's institutions, and one can argue that collectivist culture plays a central role in China today. Understanding these cultural differences and the effects they have on the modern world is thus of crucial importance. If today's cultural differences date back to the

ancient past, one cannot expect today's important cultural systems to change any time soon. We have no other choice than to try to learn to live peacefully, taking account these differences and understanding the role they play.

In Fig. 6.6, we show the result of a regression between our composite institutional index and Hofstede's individualism score. We see a significantly positive relation. This thus indicates a likely effect of institutions in the ancient past and modern culture. We are not in a position to identify the exact channels through which past institutions affected modern culture, but Fig. 6.6 is consistent with the Bisin-Verdier theory of coevolution of institutions and culture.

We also show in Table 6.3 reduced form regressions of Hofstede's individualism score with respect to geographical conditions that facilitated the emergence of market institutions. They have the expected sign and are all significant, except for the measure of heterogeneity of production. It would be difficult to argue that these geographical variables affected individualism directly. Most likely, they would be mediated via the joint development of market trade and market institutions. The development of private trade and protection of private property likely fostered the development of values of individualism, whereas embeddedness in statist institutions likely encouraged the development of collectivist values. These reduced form regressions thus confer plausibility to the idea that particular geographical conditions affected institutional systems in antiquity as well as the intensity of private trade in the ancient past.
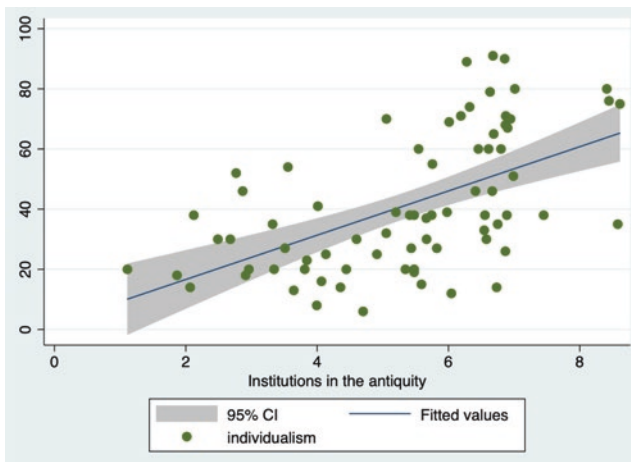

Fig. 6.6 Individualism in the modern world and institutions in antiquity

Table 6.3   Reduced form estimates: Individualism and geography

	(1)	(2)	(3)	(4)	(5)	(6)
Heterogeneity production	0.903					
	(0.987)					
Soil fractionalization		64.901***				
		(20.030)				
Ease of transportation			3.908***			
			(0.678)			
Log distance hot trading zone				−8.607***		
				(1.674)		
Distance to sea					−0.020**	
					(0.008)	
Log ruggedness (100 km)						−2.683***
						(0.865)
Observations	95	92	95	82	92	88

Robust standard errors in parentheses. ***$p<0.01$, **$p<0.05$, *$p<0.1$

6   Conclusion

In this chapter, we have argued that comparative economic history may be a fruitful avenue to do research in comparative economic analysis. We reviewed research on comparative archeology documenting patterns in institutional differences observed in early states. We reviewed the literature on the historical origins of cultural differences, based on pathogen prevalence and social adaptations to differences in the frequency of particular variants of genes. We also reviewed some recent work on comparative institutional analysis in ancient history. Finally, we presented research based on intensive data collection on institutions in antiquity for close to 100 countries. We do find institutional clusters that confirm that some ancient societies had statist systems, systems akin to centrally planned economies that existed for a few decades in the twentieth century. We also find that statist versus market systems in antiquity are strongly correlated with modern collectivist versus individualist cultural systems.

Reviewing the material discussed in this chapter, questions are raised about how to evaluate the differences between statist and market systems in the past, in some measurable dimensions. One measure might be economic performance. This is often done by population growth. Another might be stability. Egyptian and Chinese civilizations, which are prime examples of statist

systems, lasted for millennia and were arguably very stable. Egyptian civilization, arguably the longest in human history, nevertheless disappeared and never recovered from the Roman conquest and subsequent domination by Copts and later Muslims. It seems also that statist systems could have been less territorially expansionist. Arguably, there are many other aspects of performance that could be compared with more data collection and analysis.

I would certainly in any case urge not to make too many comparisons between communist systems in the twentieth century and statist systems in antiquity. As devastating as they have been on the lives of hundreds of millions, communist systems only lasted a few decades, not much in historical perspective. The analysis of statist systems may, however, be fruitful in understanding better the current institutional system in China, as it emerged after the launch of economic reforms in 1978. That system has already lasted longer than Mao's communist system that lasted not more than 30 years. The current Chinese institutional system may still last for many more decades.

Appendix: Scoring Rules for Our Institutional Variables

(Numbers indicate the score)

Legal Institutions

Land Ownership

1: No evidence of private ownership, all land property belongs to the state or the ruler.
2: No evidence of private ownership in society, state ownership and institutional ownership.
3: No evidence of private ownership, communal ownership dominates. Land exchange is very limited (may only exist between tribes, villages or communities under very specific conditions).
4: Private ownership is limited and coexists with communal or institutional ownership. Land is inheritable within the family. Land transaction is rare.
5: Private ownership coexists with communal or institutional ownership. Land is conditionally inheritable. Land transaction (leasing, purchase and sale) is present but conditional, limited or restricted.

6: Private land ownership dominates. Land is conditionally inheritable. Land transaction is very rare.

7: Private land ownership dominates. Land is inheritable. Land transaction is rare.

8: Mostly private land ownership by individual. Land is inheritable. Some evidence of land transaction (leasing, purchase and sale).

9: Mostly private land ownership by individual. Land can be inherited, rent or sold and disposed at the owner's own will. Land transaction is common.

10: Mostly private land ownership by individual. Land can be inherited, rent or sold and disposed at the owner's own will. Land transaction is very common and land market exists.

Private Slavery

Four sub-variables: (A) prevalence of private slavery, (B) legal or social norm of slavery, (C) presence of slave trade and slave market and (D) (private) slave population

A: Prevalence of Private Slavery

1: Almost all unfree labors are owned as public slaves working for the ruler, the state or public institutions (temples, armies, etc.); no private slavery.

2: Most unfree labors are public slaves.

3: Private slaves and other types of unfree dependent labor such as serfs coexist.

4: Most unfree labor are private slaves.

5: Predominant most unfree labors are owned as private slaves.

B: Legal or Social Norm of Slavery

1: Slaves are not recognized as property but usually being regarded as servants or dependents of the ruler. Slaves cannot be mortgaged, bought or sold; or no slaves.

2: Slaves are not defined as property but usually being regarded as servants or dependents of the ruler or master. Slaves can rarely be transferred or mortgaged under special conditions.

3: Slaves are not defined as property but retain certain rights as person. Slaves are bounded to land or clans and generally cannot be bought, mortgaged or sold conditionally (debt bondage, limited service slavery, etc.).

4: Slaves are not defined as full private property but only partially or conditionally or they retain certain rights as person. Slaves can be mortgaged, bought or sold.
5: Slaves are defined in law or custom as full private property, and they can be mortgaged, bought or sold at the owner's will.

C: Presence of Slave Trade and Slave Market

1: Absence or near absence of slave market or slave trade.
2: Slave markets and slave trade exists but limited in scale.
3: Slave market and slave trade exist.
4: Active slave trade and slave market; a large number of slaves are traded.
5: Very active private slave trade and private slave market; very large number of slaves traded in markets.

D: Private Slave Population

1: No (private) slave population.
2: Private slaves constitute a very small portion of total population.
3: Private slaves constitute a portion of total population.
4: Private slaves constitute a large portion of total population.
5: Private slaves constitute a very large portion of total population.

Composite Law Index

Sum of three variables: property law, contract law and formal public law

A. Property Law

0: No mention of private property nor its protection or no concept of private property. Strong emphasis against transgression against state property.
1: No mention of private property nor its protection, or no concept of private property.
2: No explicit mention of protection of private property, but written codes on transfer of property, inheritance of property of individuals and how to solve disputes on property.

3: Written codes on transfer of property, inheritance of property of individuals and how to solve disputes on property, and the law also explicitly mentions protection of private property against potential expropriation.

B. Contract Law

0: No mention of contract in laws (the existence of commercial law usually suggests contract law).
1: Unwritten or customary law that has cases related to contract.
2: Written contract law mentioning cases of contract and enforcement.
3: Written contract law that has detailed conditions on regulation and enforcement of contract.

C. Comparison on Public Law

0: No procedural law, usually no specific procedure is followed.
1: Procedure but little protection.
2: Some formalized way of procedure.
4: Written procedural law.

Note. Customary law=0 or 1

Political Institutions

Government Centralization

Sum of two variables (concentration of power and degree of centralization)

Concentration of Power in Executive in the Central Government 1–5

1: The ruler's executive power is greatly limited by legislature and judiciary institutions. The ruler is subject to changes made by elections or assembly disapproval.
2: The ruler has large power in the executive realm but is limited in others.

3: The ruler has large power in legislature, executive and judiciary realms but his power constrained by other organizations or institutions (term limits, assembly consent, legal constraints, etc.).

4: The ruler has large power in legislature, executive and judiciary realms, but his power is potentially constrained.

5: The ruler has unlimited power in legislature, executive and judiciary realms. The ruler generally rules for life.

Relationship Between Central and Local Governments 1–5

1: Decentralized. The local government is independent from the center. The central government has no power in appointing local officials or intervening local administration.

2: Decentralized. The local government is de facto autonomous from the center. The central government has limited power in appointing local officials or intervening local administration.

3: Centralized delegational system. The local government is administered by hereditary local rulers, and the central government cannot replace local officials at will. No separation of different aspects of local administration.

4: Centralized bureaucracy. The local government is directly appointed by and responsible to the central government. The separation of powers and regular transfer of local officials are not institutionalized or not executed.

5: Centralized bureaucracy. The local government is administered by separate officials who are directly appointed by and responsible to the central government. Local officials cannot appoint lower-level officials at will, and they are transferred at regular intervals.

*A total score of 1 if no political authority beyond community (e.g. autonomous bands and villages)

Importance of Cities

Urbanization Rate:

0: Completely rural.

1: The polity has only a few settlements/towns, cities in the real sense do not exist; low urban population. =0%

2: The polity has a few towns or large settlements; relatively low urban population. <5%

3: The polity has a number of towns or cities, medium-level urban population. 5–10%

4: The polity has a notable number of towns and cities; urban population is relatively high. 10–15%

5: The polity is highly urbanized. Population is concentrated in urban centers and very high. >15%

Commercial Function of Cities:

1: Almost all cities are administrative/ceremonial/military centers; cities are not commercial centers.

2: Cities mostly are administrative/ceremonial/military centers; some commercial function.

3: Cities combined the function of administration and commerce.

4: Cities are primarily commercial and manufacturing centers.

5: Cities are commercial and manufacturing centers.

Sociological Institutions

Importance of Clan

Scores are based on the sum of scores of the following five variables.

A: Family Type (Nuclear Family vs. Extended Family) (2)

0: Nuclear family is the most common family type.
1: Mixed (stem families or mixed nuclear and extended family).
2: Extended large family/compound is the most common family type.

B: Importance of Unilineal Descent Group in Society (2)

0: No unilineal descent group.
1: Unilineal descent group only exists in particular social groups (e.g. only important in nobility).
2: Unilineal descent group is prevalent in all parts of social groups.

C: Localized vs. Non-Localized Descent Group (2)

0: The descent group is dispersed. Unilineally or bilaterally related individuals are not localized in one particular area.
1: Mixed.
2: The descent group is localized. Unilineally related individuals live in proximity (within a village, settlement, community, etc.).

D: Cooperation Within Descent Group (2)

0: The descent group is noncorporate. Individual relies more on kindreds, networks of relatives and friends.
1: The descent group is an economic or political corporation to some extent, but its role in sustaining cooperation is limited.
2: The descent group, acting as an economic and political corporation, sustains cooperation within the group by providing members public goods and social safety nets, including education, defense and protection, rituals, common economic activities, regulation of marriage, or mutual assistance and so on.

E: Conflict Resolution (2)

0: Authorities of the descent group has no formal power to resolve dispute between individuals.
1: Mixed.
2: Authorities of the descent group have supreme power to resolve disputes between individuals within the group. The whole descent group has collective responsibility while in conflict with outsiders.

Social Stratification

1: Society is not stratified. Status is not hereditary. Typically seen in pre-states or in tribes, clans based on kinship.
2: Few distinguishable social strata existed in society. Status is not hereditary for the most cases and widespread mobility between different social strata.
3: Society has a few social strata. Status is not strictly hereditary, and vertical mobility is possible through meritocracy, individual skill, valor, piety or wisdom.

4: Society has a few social strata. Some strata are hereditary, while there is mobility in the others. (Example: hereditary freemen and slaves. Lacked hereditary aristocracy within freemen. The vertical mobility within the group of freemen is possible and prevalent.)

5, 6: Society has many social strata. Some strata are hereditary while there is mobility in the others. (Example: Hereditary freemen and slaves. Weak hereditary aristocracy within freemen. The vertical mobility within the group of freemen is possible.)

7: Society has many social strata. Most strata are hereditary; limited vertical mobility between strata. Example: hereditary freemen and slaves. Within the freemen group, there were the distinctions between hereditary aristocratic groups and commoners/peasants/serfs.

8: Society is highly stratified. Caste exists in most social classes/groups. An individual's status is almost hereditary. Limited vertical mobility among different strata in the hierarchy.

9: Society is highly stratified. Caste exists in most social classes/groups. An individual's status is almost strictly hereditary. Limited vertical mobility among different strata in the hierarchy.

10: Society is highly stratified. Strong caste distinction in almost all classes/groups. An individual's status is strictly hereditary. Very limited vertical mobility among different strata in the hierarchy.

Ethnic Diversity

1: Perfectly homogeneous: single ethnic group sharing the same culture, ancestry, religion and language.

2: Two major ethnic groups roughly 10-20% to 80-90%.

3: Two major ethnic groups roughly 1/3-2/3.

4: Two major ethnic groups 50-50%.

5: Three major ethnic groups 5–20–75%.

6: Three major ethnic groups 20–30–50%.

7: Three major ethnic groups 1/3, 1/3, 1/3.

8: Four major ethnic groups.

9: Four or more ethnic groups.

10: Perfectly heterogeneous: many (more than four) ethnic groups with different culture, ancestry, religion and languages.

References

Acemoglu, D., & Robinson, J. (2012). *Why Nations Fail*. New York: Crown.

Acemoglu, D., & Robinson, J. (2019). *The Narrow Corridor. States, Societies and the Fate of Liberty*. London: Penguin Press.

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The Colonial Origins of Comparative Economic Development. *American Economic Review, 91*(5), 1369–1401.

Ahuja, K., van der Schaar, M., & Zame, W. (2017). *Individualism, Collectivism and Economic Outcomes: A Theory and Some Evidence*. Discussion Paper UCLA.

Aoki, M. (2001). *Towards a Comparative Institutional Analysis*. Cambridge, MA: MIT Press.

Berglof, E., & Roland, G. (2007). *Economics of Transition. The Fifth Nobel Symposium in Economics*. London: Palgrave Macmillan.

Bisin, A., & Verdier, T. (2017). *On the Joint Evolution of Culture and Institutions*. NBER working paper No. 23375.

Blanchard, O., & Kremer, M. (1997). Disorganization. *Quarterly Journal of Economics, 112*(4), 1091–1126.

Bockstette, V., Chanda, A., & Putterman, L. (2002). States and Markets: The Advantage of an Early Start. *Journal of Economic Growth, 7*(4), 347–369.

Boyd, R., & Richerson, P. (1985). *Culture and the Evolutionary Process*. Chicago: University of Chicago Press.

Buggle, J., & Durante, R. (2017). *Climate Risk, Cooperation, and the Co-evolution of Culture and Institutions*. CEPR DP No 12380.

Carneiro, R. (1970). A Theory of the Origin of the State. *Science, 169*(3947), 733–738.

Chiao, J. Y., & Blizinsky, K. D. (2010). Culture-Gene Coevolution of Individualism-Collectivism and the Serotonin Transporter Gene. *Proceedings – Royal Society. Biological Sciences, 277*(1681), 529–537.

Dal Bo, E., Hernandez, P., & Mazzuca, S. (2015). *The Paradox of Civilization: Pre-industrial Sources of Security and Prosperity*. NBER working paper No 21829.

Davis, L. (2016). Individual Responsibility and Economic Development: Evidence from Rainfall Data. *Kyklos, 69*(3), 426–470.

Davis, L., & Williamson, C. (2019). Does Individualism Promote Gender Equality? *World Development, 123*, 104627.

Djankov, S., Glaeser, E., La Porta, R., Lopez de Silanes, F., & Shleifer, A. (2003). The New Comparative Economics. *Journal of Comparative Economics, 31*(4), 595–619.

Fernandez, R., & Fogli, A. (2009). Culture: An Empirical Investigation of Beliefs, Work and Fertility. *American Economic Journal: Macroeconomics, 1*(1), 146–177.

Fernandez, R., Fogli, A., & Olivetti, C. (2004). Mothers and Sons: Preference Formation and Female Labor Force Dynamics. *The Quarterly Journal of Economics, 119*(4), 1249–1299.

Fincher, C. L., Thornhill, R., Murray, D. R., & Schaller, M. (2008). Pathogen Prevalence Predicts Human Cross-Cultural Variability in Individualism/Collectivism. *Proceedings – Royal Society. Biological Sciences, 275*(1640), 1279–1285.

Flannery, K., & Marcus, J. (2014). *The Creation of Inequality: How Our Prehistoric Ancestors Set the Stage for Monarchy, Slavery and Empire*. Cambridge, MA: Harvard University Press.

Fukuyama, F. (2012). *The Origins of Political Order*. New York: Farrar, Strauss and Giroux.

Fukuyama, F. (2015). *Political Order and Political Decay*. New York: Farrar, Strauss and Giroux.

Gelfand, M. J., Bhawuk, D. P. S., Nishii, L. H., & Bechtold, D. J. (2004). Individualism and Collectivism. In R. J. House, P. J. Hanges, M. Javidan, P. W. Dorfman, & V. Gupta (Eds.), *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies* (pp. 437–512). Thousand Oaks, CA: Sage Publications.

Gorodnichenko, Y., & Roland, G. (2011). Individualism, Innovation and Long Run Growth. *Proceedings of the National Academy of Sciences, 108*(4), 21316–21319.

Gorodnichenko, Y., & Roland, G. (2012). Understanding the Individualism-Collectivism Cleavage and Its Effects: Lessons from Cross-Cultural Psychology. In M. Aoki, T. Kuran, & G. Roland (Eds.), *Institutions and Comparative Economic Development*. London: Palgrave.

Gorodnichenko, Y., & Roland, G. (2015). *Culture, Institutions and Democratization*. NBER Working Paper No 21117.

Gorodnichenko, Y., & Roland, G. (2017). Culture, Institutions and the Wealth of Nations. *Review of Economics and Statistics, 95*(3), 868–883.

Gorodnichenko, Y., Kukharskyy, B., & Roland, G. (2015). *Culture and Global Sourcing*. NBER Working Paper No. 21198.

Greif, A., & Tabellini, G. (2017). The Clan and the Corporation: Sustaining Cooperation in China and Europe. *Journal of Comparative Economics, 45*(1), 1–35.

Grigoriadis, T. (2019). *Religion and Comparative Development*. Cheltenham, UK: Edward Elgar.

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives, 20*(2), 23–48.

Hartinger, K., Resnianski, S., & Wiederhold, S. (2019). *Individualism and Cognitive Skills: Evidence from a Large-Scale Skill Assessment*. Working Paper Ifo Institute, Munich.

Heine, S. J. (2007). *Cultural Psychology*. W. W. Norton & Company.

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, and Organizations across Nations*. New York: Sage Publications.

Kashima, E., & Kashima, Y. (1998). Culture and Language: The Case of Cultural Dimensions and Personal Pronoun Use. *Journal of Cross-Cultural Psychology, 29*, 461–486.

Kohler, T., & Smith, M. (Eds.). (2019). *Ten Thousand Years of Inequality. The Archeology of Wealth Differences*. Tucson, AZ: University of Arizona Press.

Kornai, J. (1971). *Anti-equilibrium*. New York: North Holland.

Kyriacou, A. (2016). Individualism-Collectivism, Governance and Economic Development. *European Journal of Political Economy, 42*(C), 91–104.

La Porta, R., Lopez de Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and Finance. *Journal of Political Economy, 106*(6), 1113–1155.

Lizzeri, A., & Persico, N. (2001). The Provision of Public Goods under Alternative Electoral Incentives. *American Economic Review, 91*(1), 225–239.

Luo, S., & Han, S. (2014). The Association between an Oxytocin Receptor Gene Polymorphism and Cultural Orientations. *Culture and Brain, 2*(1), 89–107.

Mayshar, J., Moav, O., Neeman, Z., & Pascali, L. (2015). *Cereals, Appropriability and Hierarchy*. CEPR Discussion Paper No 10742.

Mayshar, J., Moav, O., & Neeman, Z. (2017). Geography, Transparency and Institutions. *American Political Science Review, 111*, 622–636.

Miroshnik, V. (2002). Culture and International Management: A Review. *Journal of Management Development, 21*(7), 521–544.

Montias, J. M. (1976). *The Structure of Economic Systems*. Yale: Yale University Press.

Neuberger, E., & Duffy, W. (1976). *Comparative Economic Systems: A Decision-Making Approach*. Boston: Allyn and Bacon.

North, D. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge, UK: Cambridge University Press.

Nunn, N., & Puga, D. (2012). Ruggedness: The Blessing of Bad Geography in Africa. *Review of Economics and Statistics, 94*(1), 20–36.

Perotti, R., & Rostagno, M. (2002). Electoral Systems and Public Spending. *Quarterly Journal of Economics, 117*(2), 609–657.

Persson, T., Roland, G., & Tabellini, G. (1997). Separation of Powers and Accountability. *Quarterly Journal of Economics, 112*(4), 1163–1202.

Persson, T., Roland, G., & Tabellini, G. (2000). Comparative Politics and Public Finance. *Journal of Political Economy, 108*(6), 1121–1161.

Persson, T., Roland, G., & Tabellini, G. (2007). Electoral Rules and Government Spending in Parliamentary Democracies. *Quarterly Journal of Political Science, 2*(2), 155–188.

Piketty, T. (2013). *Capital in the Twenty First Century*. Cambridge, MA: Harvard University Press.

Roland, G. (2000). *Transition and Economics: Politics, Markets and Firms*. Cambridge, MA: MIT Press.

Roland, G. (2004). Understanding Institutional Change: Fast-moving and Slow-moving Institutions. *Studies in Comparative International Development, 38*, 109–131.

Roland, G. (2017). *The Deep Historical Roots of Modern Culture*. Based on the Keynote Lecture at the Second World Congress in Comparative Economics, St Petersburg.

Roland, G. (2018). Comparative Economics in Historical Perspective. *Comparative Economic Studies, 60*(4), 475–501.

Roland, G. (2019). Coexisting with China in the Twenty First Century. *Acta Oeconomica, 69*, 49–70.

Roland, G., & Verdier, T. (1999). Transition and the Output Fall. *The Economics of Transition, 7*(1), 1–28.

Scheidel, W. (2017). *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty First Century*. Princeton, NJ: Princeton University Press.

Schönholzer, D. (2017). *The Origin of the State: Extraction, Environmental Circumscription and Protection*. Working Paper UC Berkeley.

Suh, E., Diener, E., Oishi, S., & Triandis, H. C. (1998). The Shifting Basis of Life Satisfaction Judgments across Cultures: Emotions Versus Norms. *Journal of Personality and Social Psychology, 74*, 482–493.

Tabellini, G. (2008). Presidential Address: Institutions and Culture. *Journal of the European Economic Association, 6*, 255–294.

Thornhill, R., Fincher, C. L., Murray, D. R., & Schaller, M. (2010). Zoonotic and Non-Zoonotic Diseases in Relation to Human Personality and Societal Values: Support for the Parasite-Stress Model. *Evolutionary Psychology, 8*(2), 151–169.

Trigger, B. (2003). *Understanding Early Civilizations*. Cambridge, UK: Cambridge University Press.

Turchin, P. (2016). *Ultra-Society: How 10,000 Years of War Made Humans the Greatest Cooperators on Earth*. Chaplin, CT: Beresta Books.

Wantchekon, L., & Garcia-Ponse, O. (2013). *Critical Junctures: Independence Movements and Democracy in Africa*. Working Paper Princeton University.

Williamson, O. (1975). *Markets and Hierarchies: Analysis and Anti-trust Implications: A Study in the Economics of Internal Organization*. New York: Free Press.