THE DEEP HISTORICAL ROOTS OF MODERN CULTURE:
A COMPARATIVE PERSPECTIVE.[*]
Based on
Keynote lecture at 2nd World Congress in Comparative Economics, June 2017.

Revised December 5 2019
Gerard Roland, UC Berkeley, CEPR and NBER

Abstract: This paper presents evidence showing that there have been since antiquity two opposed types of institutional systems: one resembling central planning and present in ancient China, ancient Egypt, the Inca Empire and other territorial states, and another one with strong market institutions, protection of property rights present mostly in city-states, not just in the Mediterranean but throughout the world. Evidence is presented that these institutional differences dating back to the antiquity are shaped by special geographical conditions. These institutional differences can be seen to be at the root of the two cultural systems in today's world: individualism and collectivism. These cultural differences have effects on economic performance and institutions in today's world.

---

1. Introduction

In recent years, a vibrant new literature has developed on the economics of culture. A large part of that literature examines the effects of cultural values and beliefs on economic outcomes (growth, institutions, fertility choices, female labor force participation, ...) It is more challenging to understand the origins of different cultures. The existing literature on the origins of culture aims at understanding the role of particular historical variables on particular cultural traits. A good example is the research by Alesina et al. (2011) on how differences in soil types led to the choice of use of the plough or the hoe in working the fields, and how this affected gender roles and cultural norms related to gender (other examples are discussed below). To this day, there has not been systematic analysis of the role of historical institutional systems on broad cultural systems. This is what we try to do in this paper.

Economists interested in comparative institutional analysis tend to emphasize institutional differences from the recent past (the salient example being the difference between capitalist and socialist economic systems in the twentieth century), and there is often the preconception that pre-industrial economic systems were roughly similar, or that their differences were not that marked. However, if we go back in history, as early as what Jaspers (1951) calls the axial age (between the 8th and 3rd century BC), we will find that there existed very different institutional systems among early states. The philosophies and religions that emerged during the axial age were a reflection of the existing institutions of the time and one can argue that their differences reflected institutional differences across the major existing civilizations. Surprisingly and interestingly, the philosophies and religions of the axial age (ancient Greek philosophy, Hinduism, Bhuddism, Zoroastranism, Confucianism, Judaism, etc...) nearly all still play an important role in the modern world. They are the main inspiration behind modern cultures and cultural differences observed in today's world.

Looking at economic systems in 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. For lack of a better wording, I will call them **statist systems**. 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 internationnally. I will call them **market systems**. Many other systems were in between both of these systems, as documented below.

These differences have been noted before. Max Weber (1922) used the term of *patrimonial state* to characterize states like Ancient China and others where the absolute domination of the father figure in a family is projected onto the state. Private and public property are not differentiated in the patrimonial state.

Wittfogel (1957) theorized about oriental despotism and hypothesized that the absolutist rule in ancient China and Egypt was based on fact that the absolutist rule facilitated what he called the hydraulic state where the state organized large scale irrigation systems, which created conditions that made bureaucratic and government despotism inevitable.

Polanyi and coauthors (1954) documented the limited role of markets where private goods were exchanged in many locations in the Antiquity.

Trigger (2003) provides a very interesting classification of ancient societies, based on archeological evidence. He emphasizes mostly the difference between territorial states and city-states but his classification is quite comprehensive and based on extensive scholarly evidence.

Among economists, Greif and Tabellini (2017) analyze the relative importance of clans in formation of cities in China and Europe. They find that in Chinese history, the development of cities was based on clans and clan organization, which has played an extended role in Chinese history. In contrasts, cities in Western Europe developed on the basis of individual citizenship. They trace these differences to cultural differences: generalized morality in Europe versus limited morality within the clan in China. The cultural differences they emphasize are close to the difference between individualism and collectivism that we put forward in this study.

British historian MacFarlane (1978) found that as early as the 13th century, individualist culture was more prevalent in Great Britain than on the European continent and that households tended to be more nuclear, relying more on the market in economic transactions than societies where people were embedded in larger clans.

Mayshar et al. (2017) emphasize the role of transparency in production. Whenever output could easily be measured, peasants worked directly for the state, as was the case in ancient Egypt. When output was instead less transparent, peasants had property rights over land like in Mesopotamia.

In this paper, I present a data base constructed I the past few years based on historical and archeological research to characterize the major differences between statist systems and market systems in the antiquity. The evidence presented shows clearly that these two systems form distinct institutional clusters that are comparable to the difference between socialism and capitalism in the twentieth century. These different systems operated in mostly rural societies where modern

industrial technology was absent and where labor and land were the major factors of production.

Why do these differences matter today? Why study the difference between statist and market systems in the distant past except to satisfy our natural historical curiosity? The argument put forward in this paper is that these institutional differences from the past matter a lot to understand the world's long run economic and societal trajectories. Indeed, following Bisin and Verdier's (2001, 2017) canonical analysis of the dynamics of cultural transmission, and especially the joint dynamics of institutions and culture, we can hypothesize that particular early institutions 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 from the Bisin-Verdier model (see also Roland, 2004), institutions may have affected cultural values and beliefs that are still present in today's world.

The main cultural divide in the world today, according to cross-cultural psychology, is the one between individualism and collectivism (see Heine, 2008; see also the survey in Gorodnichenko and Roland, 2012). Individualist culture places the individual at the center, values individual rights and freedom, opportunity and individual success. Collectivist culture sees instead the individual as embedded in a community (tribe, clan), emphasizes conformity, adaptation and harmony.

These cultural differences have important effects in today's world. In Gorodnichenko and Roland (2017), it is shown that individualist culture provides a boost to innovation and long run growth. Individualism also affects institutional change. In Gorodnichenko and Roland (2015), individualism leads to earlier adoption of democracy than collectivism, and the latter may lead to stable autocracy. The degree of vertical integration in multi-national companies is also seen to depend on cultural differences, especially between individualism and collecvitism (see Kukharskyy et al. 2016). Many other variables can be argued to be affected by these cultural differences (see Gorodnichenko and Roland, 2012).

While economists have increasingly recognized the importance of culture, alongside institutions, on economic outcomes, there is also a large literature trying to explain the origin of cultural differences. This is not an easy topic because it is difficult to disentangle the effects of culture from their causes, and filtering out the causes of culture is important to better understand its effects.

Psychologists Kashima and Kashima (1998) remarked that cultural values could be traced back to linguistic differences. To the extent that the structure of a language reflects cultural values and beliefs, one can analyze linguistic and grammatical structures to discover cultural differences. Kashima and Kashima pointed out an important difference: whether or not a language prohibits to drop the personal pronoun in a sentence. This is for example prohibited in French, German and English, but not in Italian or Spanish. The idea is that a prohibition would indicate a more individualist culture as it insists on differentiating individuals

by a clear indication of the pronoun used (first, second or third person). Another distinction is whether a language has or not two different pronouns for the second person (*Tu* and *Vos* in Latin) to differentiate between a more informal and a more formal way of addressing a person. The existence of two distinct pronouns for the second person of the singular (existing in French and Italian but not in English for example) would indicate a more hierarchic and less egalitarian culture. Similarly, they also single out whether there is a single or several expressions for the first pronoun of the singular. For example, there is only one expression in English (I) , but several in other languages like Japanese. The idea is that if there are multiple expressions, language emphasizes more the social function of the person whereas if there is only one expression, language emphasizes more the individuality. Kashima and Kashima (1998) document the statistical correlation between the linguistic measures they put forward and measures of culture such as Hofstede's individualism score. Some of their variables have been used as instrumental variables to analyze the effect of culture on institutions (see e.g. Licht et al. 2003, Tabellini, 2008).

Other researchers have emphasized the role of the distribution of particular variants of genes in different countries in shaping cultural values. For example, Chiao and Blizinsky (2009) analyzed the role of variants of genes (called alleles in life sciences) that lead more easily to depression when faced with stressful situations. Similarly, Way and Liebermann (2010) analyzed the role of variants of genes that create more pain from social exclusion. These authors found that a higher frequency of those variants of genes were more present in societies with collectivist culture. The basic idea is that those societies and communities with higher frequency of those alleles that developed cultural values and social norms to protect individuals from stressful situations and social exclusion would fare better than those that did not develop such values and norms.

A similar logic is found with the historical presence of particular pathogens. Fincher et al. (2008) and Murray and Schaller (2010) find that countries where there was a strong presence of pathogens before the 20th century developed more collectivist cultures. Again, the idea is that in areas with high presence of pathogens, those communities that developed more collectivist norms, restricting individual behavior and showing a less open attitude towards foreigners would be more likely to survive better.

Other explanations for the origin of individualism versus collectivism involve the higher frequency of rice crops over other wheat crops since rice is more labor-intensive and requires better coordination (Thalhelm et al. , 2014) or a higher presence of irrigation (Buggle, 2015), in the spirit of Wittfogel (1957). On the other hand, Knudsen (2017) finds that a higher reliance on fishing for one's livelihood in history is more associated to individualism.

These are all interesting explanations, and most of those variables have been used as instrumental variables for individualism and collectivism. Nevertheless, it is

relatively easy to see that these explanations are partial at best. Given the important effects of culture on institutions and economic performance, one would gain from coming up with a more comprehensive historical explanation of the emergence of cultural differences. In particular, we find it useful to do this within a conceptual framework of coevolution of institutions and culture. This is precisely our goal in this paper. We have gathered a number of variables that characterize institutional differences in the ancient past as well as geographical variables that may explain these early institutional differences.

In section 2, we provide some narratives from the antiquity to illustrate the institutional differences in ancient societies that we focus on. On that basis, we develop in section 3 a classification of variables that should matter to understand these institutional clusters of the past, their origin and their coevolution with cultural value systems. In section 4, we describe the database we have been building to measure those variables. In section 5, we give some preliminary descriptive regression results based on this new data set. Section 6 concludes.

2. Statist versus Market Systems: Some Narratives from the Antiquity.

It is useful to start with a narrative comparison of ancient Egypt and ancient Mesopotamia to illustrate the institutional differences we have in mind.

Egypt was a territorial state. The Pharaoh had authority over the extent of Egypt's territory. The area around the 800 km long Nile was of exceptional fertility. Seasonal flooding deposited minerals on both sides of the Nile, making the earth very fertile for grain like barley and wheat. What is important for our purpose is that the production conditions along the sides of the Nile were geographically rather similar, creating homogeneous conditions of production on the productive parts of the territory. This means that there were no great benefits in trading grain from one region of the Nile with another region. Because of the homogeneity in conditions of production, instead there were great advantages in coordination and specialization producing such great monuments as the pyramids, but also various specialized craftwork (Trigger, 1993). In ancient Egypt, resources were in general allocated by the government. Internal markets were limited and foreign trade was carried out by the government (Trigger, 2003, p. 351). Ordinary peasants did not have private property over land. They were working the land and the government instructed them how much grain to deliver to the government (Trigger, 2003, p. 320). Note also that while slavery was widespread in Egypt like in the rest of the ancient world, slaves were in general property of the government, not of private households. In effect, households did not, as a rule, own private slaves (Trigger 2003, p. 160). Laws that were codified in Egypt were mainly about regulating attitudes and behavior of ordinary Egyptians towards the Pharaoh and the ruling elite (Trigger, 2003, p. 228-233). In contrast to Mesopotamia, there was no formal legal code regulating relations between citizens, but provincial officials had rights of life and death over their subjects. There were detailed regulations defining

punishments in case of theft of state property, evasion of *corvée,* duty towards the government, thefts from temples, royal tomb robberies, conspiracies against the king. Social stratification in society was rather low. There was relative equality between ordinary citizens. They were not slaves but were mostly unfree as they lacked any basic rights. The Egyptian government administration functioned in a relatively meritocratic way. High level officials enjoyed high prestige and becoming a high level official was the most important aspiration among ordinary citizens (Trigger, 2003, p. 627).

On most of these aspects, Mesopotamia, located along the Tigris and Euphrates river, not too far from Egypt , was completely different. Mesopotamia was composed of city-states for a large part of its history starting from the Sumerian city-states. In contrast to the Nile where conditions of production were quite similar and homogenous, there were marked differences between Northern and Southern Mesopotamia. Southern Mesopotamia was quite rich in agricultural goods but had few other natural resources. The North instead had lots of stone, timber, bronze and produced luxury goods. Because of this geographical heterogeneity in conditions of production, there was a lot of trade between cities of Northern and Southern Mesopotamia (Finer, 1997, p. 106). Trade inside cities was less developed as noted in Polanyi et al. (1954). Private merchants had an important role in Mesopotamia since trade was quite developed and organized to a large extent by these private merchants (Trigger, p. 343). Craftwork was also mostly done by private craftsmen (Trigger, p. 364). Markets for land were highly developed, in contrast to Egypt (Trigger, p. 333), and markets for private slaves were thriving (Trigger, p. 158). Also in contrast to Egypt, the law codified relations between citizens, in particular regarding conflicts over private property. One of the biggest aspirations in society for citizens was to become an owner of large tracts of private land (Trigger, 2003, p. 333).

If we look at other ancient civilizations, we find that ancient China had many similarities with ancient Egypt. From what we know even about the earliest dynasties, the Shang dynasty (1600-1046 BCE) and the Zhou dynasty (1046-256 BCE), these similarities are already quite striking. These dynasties developed around the Yellow River. Like in Egypt, conditions of production were quite homogenous, mostly propitious for growing wheat (Keightley, 2014). There is evidence of strong specialization and division of labor in craftwork in imperial workshops (Trigger 2003, p. 371-373). Farmers did not have private property over land as all land belonged formally to the Emperor (Trigger, p. 325-26). Laws were designed to regulate relations between the Emperor and his subjects, specifying punishments associated to breach of obligations of subjects towards the Emperor. When China was unified for the first time by the Founder of the Qin dynasty (221-206 BC), the doctrine of "legalism" stated that the Emperor should use the tool of the Law to exercise his power over citizens. The Law is thus seen as an instrument of oppression to further the interests of the ruler. This is still the case in modern China. Mao Zedong was an admirer of the founder of the Qin dynasty, Ying Zheng, subsequently named Qin Shi Huang Di. When president Xi Jinping mentions the

Rule of Law, he has the Chinese legalist tradition in mind. Like in Egypt, there were no private slaves in ancient China, only public slaves working for the Emperor, for example in the construction of the Great Wall. Prisoners of war were usually killed instead of being taken as slaves. One difference between ancient Egypt and China is that clans played a much larger role in China. Clans were regrouped in cities and the Emperor managed relations with his subjects via the heads of clans (Finer, p. 450; see also Greif and Tabellini, 2017). An important administrative innovation in ancient China is the establishment of population registries to control the movement of populations. In contrast to medieval Europe, people needed an official permit to live in a particular place. The modern *Hukou* thus already existed thousands of years before the Communist Regime, putatively already since the Xia dynasty and the legendary Yu the Great. Interestingly, the Mongols took over the institution of population registry from the Chinese in other territories that they controlled, in particular in Russia when it was under Tatar control, and the Russians took it over in their turn after the collapse of the Mongol Empire and the Establishment of the Russian tsarist regime out of the Grand Duchy of Moscow and kept it under communism as the famous *propiska*, which helped limit freedom of movement of Soviet citizens.

Other ancient civilizations looked much more like Mesopotamia. This was very much the case for Assyria (growing out of Northern Mesopotamia to the West, ancient Greece (covering modern Greece but also Asia Minor and the Sea in between) or ancient Phenicia (located roughly in the territory of today's Lebanon). These civilizations were able to benefit highly from trade and had quite developed foreign as well as domestic trade. They also had strong social stratification with on one hand free citizens enjoying hereditary status, citizenship and political participation rights, and on the other hand people without rights and freedom, such as slaves, but also intermediate categories. Ancient Greece in particular was difficult to conquer because of its geography, alternating mountainous terrains with proximity to the sea, both important obstacles to external conquest. Proximity to the sea made also taxation difficult as merchants could smuggle goods via the sea and evade customs.

These differences in ancient civilizations could be observed on different continents. Everywhere where states had formed, some countries had institutions closer to Egypt and China, while others had institutions closer to Mesopotamia and ancient Greece.

The Inca Empire in Peru and the Andes region was for example very much like Egypt and China. Trade was very limited and production was organized by the state in what was called " vertical archipelagos" (Murra, 1968). The Aztec Empire in Central Mexico and the Mayas in Southern Mexico were instead more organized as city-states where there was a large role for trade and markets (Trigger, pp. 114-16).

3. **Institutional clusters in the Ancient World and their effects on modern culture.**

The narrative of the previous section give us a sense of the kind of variables that may matter in describing ancient systems as either statist systems or market systems.

3.1. Classifying institutions of the Ancient world.

The basic forces at play leading early societies in the ancient world to be either statist or market systems can be characterized in terms of two of the most important, arguably even the two most important principles in economics: the benefits from trade versus the benefits from division of labor or task specialization. The theory of comparative advantage created by Ricardo explains how trade can make everybody better off. One does not even need Ricardo's idea about specializing in one's comparative advantage to understand the benefits from trade. The Coase theorem already explains how trade makes everybody better off. The theory of division of labor created by Adam Smith, and his example of the pin factory, explains how task specialization can spectacularly expand productivity. These two principles 1) the benefits from trade, 2) the benefits from division of labor can deliver the key insights for why we could observe the two systems in the antiquity: market systems versus statist systems.

These two principles have usually been put forward in the context of industrialization. Note that the force of these principles is equally valid in societies where capital and technology were less developed. Indeed, benefits from trade are universally valid, but they become stronger when the costs from trade are brought down via reduction in transport costs made possible by technological progress. Similarly, the benefits from specialization can be reaped without machines. All that is needed is a division of labor and tasks to produce a certain kind of output. Of course, machines help increase the benefits from the division of labor, but they are not a precondition to enjoy its benefits.

Different societies faced different initial conditions. Some were facing heterogeneous conditions of production in their geographical surroundings. This created strong potential benefits from trade, thereby encouraging the formation of markets and a class of merchants, as well as demand for protection of private property rights. Conversely, in societies where conditions of production were more homogeneous and where potential benefits from trade were smaller, it was possible instead to enjoy larger benefits from division of labor by having a larger number of people participate in production so as to establish a much finer division of labor and specialization of tasks. In those societies, strong states developed that exercised control over all of society, with the means available to them at the time.

Other geographical variables could affect the benefits of trade relative to the benefits of specialization. A first one is easiness of transport. Lower costs of

transport made it possible to engage in trade over larger distances, making it more likely to find larger benefits from trade. Geographical closeness to a hot trading zone would similarly affect the benefits from trade.

Geography may also have affected the easiness of taxation, which would favor the development of the state. Trade routes over land made it easier to post customs officers to tax merchants traveling from one place to another. Maritime trade routes on the other hand made it easier to smuggle goods, especially if commodities could be loaded and unloaded at different places along the coast.

Geographical variables may also affect the easiness with which a territory could be invaded, which would also favor the development of a territorial state. Plains are the most vulnerable. Mountainous areas offer more protection from invaders, as well as being surrounded by the sea.

A few clarifications are in order here. First, when economists hear "task specialization", they think "gains from trade". The way we think of task specialization in antique societies is not in the Ricardian sense of sectoral specialization. It is more in the Smithian sense, as explained above. When more people are involved in the production of some good, it is possible to organize the division of labor by allocating specialized tasks to individuals so as to enjoy productivity gains. Some coordination is needed to do that, and states able to organize this coordination may use their power for this purpose. Second, one may think that productivity gains from division of labor were inexistent in ancient societies. They were obviously more limited than in industrial societies, but they were not inexistent. We know that division of labor in plantations via the "gang system" helped improve agricultural productivity. Centralized transport may help reduce transport costs, task specialization in operations after harvesting (threshing, drying, storing) can also improve productivity, etc.. A similar reasoning can be made for craftwork in ceramics, bronze and the like.

The difference in benefits of trade relative to benefits of division of labor led to a certain number of sharp institutional differences. The first relates to property rights and the law. Statist systems did not have private property or a legal system to protect private property rights. One can see this typically for land and slaves. In the antiquity, land and slave labor were two important factors of production; land because output was mostly composed of agricultural products, and slaves because their labor force could contribute to all sorts of products and services. In statist systems, peasants were not owner of their land, which belonged to the ruler. Slaves were put to work on government projects like the Great Wall, of China but there was no private market where households could buy and sell slaves.

Legal systems would be different in statist and market systems. In market systems, the role of the law would be to protect private property rights and the rights of the minority of free men and women. In other words, the law would protect citizens from both the state as well as from other citizens encroaching on their

rights. In statist systems instead, the law is seen as an instrument used by the ruler to ensure obedience of his subjects. This is "rule by law" instead of "rule of law". In this case, the law specifies the duties of subjects towards the ruler as well as the punishments associated to breach of law. The law is thus more an instrument of oppression than an instrument of protection. The best example for this is the "legalist" doctrine in China introduced by the first Emperor who unified the country Qin Shi Huang, the founder of the Qin dynasty.

Differences in property rights and legal property right protection would translate into differences in development of markets, both domestic and foreign. Market systems would have developed private markets. Private merchants would play an important role in trade, and their role in society would be important. In statist systems, domestic markets would be less developed, foreign trade would be conducted mostly for the ruler or via government channels. Private merchants would be more marginalized in society.

Similarly, cities would play a more important role in market systems compared to statist systems since market development is associated to the development of cities. In contrast, in statist systems, one would tend to observe more the development of territorial states since a strong government would be able to coordinate production over sufficiently large territories. Statist territorial states would thus also be more centralized while market systems would have more decentralized forms of government.

Statist systems would tend to be less tolerant towards foreigners whereas market systems would be more tolerant. Indeed, a high level of trade is associated with high level of ethnic diversity as merchants travel in and out of countries. Instead, statist systems would be wary of tolerating too many foreigners on its territory as it is less easy to exercise control over foreigners than over local subjects.[1]

Similarly, weak clan systems would be more favorable to market development whereas strong clan systems would be associated with non market allocation of resources within the clan. Whether clans were strong or weak depended much on existing kinship systems. Many kinship systems in the world are unilineal, meaning that someone's descendance is traced through either the father (patrilineal system) or through the mother (matrilineal system). Unilineal or agnatic systems are more favorable for clan development as somebody's membership of a clan is easily traceable to male or female ancestors. Living in large clans means allocation of resources within the clan, thus without using market transactions. Other kinship systems like the bilineal or cognatic kinship system that has been prevalent in Northern Europe throughout history for example mean that one's ancestors should be traced through both one's father and mother. With bilineal

---

[1] See the very interesting article by Michalopoulos (2012) on the geographical origins of ethnical and linguistic diversity in today's world.

systems, there is no more a clear cut membership of a particular clan. Households tend to be more nuclear families with less extensive ties to other family members. As a consequence, members of nuclear families have to make more use of the market by exchanging goods and services with people outside their family. Bilineal kinship systems would thus tend to be associated with stronger development of markets and property rights, whereas unilineal kinship systems would be associated with strong clans and a smaller development of markets (on the effects of kinship, see the recent paper by Enke, 2017). As was the case in ancient China for example in the Shang dynasty, the Emperor would rule over his territory via relations with clan heads, where clans were living in urban concentrations.

One would also expect to see stronger social stratification in market systems compared to statist systems. Indeed, this is implied by the combination of private markets for slaves as well as laws protecting property rights of citizens. In Athens for example, free citizens enjoyed the most rights as they could hold political offices and vote. Metics, resident aliens, were free but did not have political rights. Finally, slaves had no rights at all. The caste system in India or hereditary aristocracy in feudal Europe are illustrations of strong social stratification. Social stratification tended to be lower in statist systems as most people were unfree and shared this lack of freedom in a rather egalitarian way.

Table 1 summarizes our discussion of the comparison between statist and market systems. Roland (2018) also contains a detailed discussion of this comparison.

INSERT TABLE 1

3.2. The effect of ancient institutions on modern culture.

We now discuss the effects of statist and market systems on culture. Our conceptual framework is very similar to the canonical model of Bisin and Verdier (2017) about the joint dynamic of institutions and culture. We indeed ask to what extent the different institutional systems of the ancient world affected subsequent cultural values and beliefs. We make several arguments to that extent. Given the fact that these different institutional systems existed for a very long time, cultural systems had the time to emerge in a consistent way. Given the inertia of culture (see in particular Roland, 2004), it is plausible to think that cultural differences in the world today are, at least to a partial extent, the legacies of the cultural systems that formed in the ancient world.

First of all, social stratification may have worked as a powerful force for the emergence of individualist culture. Indeed, an important characteristic of individualist culture is the social prestige reward from standing out. Social stratification leads those at the top of the social hierarchy (free citizens in Athens, Brahmin caste members in India, Dukes and Counts in feudal Europe) to stand out. Since the elite plays an important role in elaborating and diffusing cultural values,

one can understand how social stratification leads to values glorifying such stratification.

At the same time, private property is also a factor leading to the development of individualist values. The extent of private property may be seen as defining somebody's intrinsic value. The larger the size of one's property, the more one stands out and the higher one's social status.

One can also understand how statist systems would have fostered collectivist values. First of all, inside large clans, some division of tasks existed between members of the clan. Fulfilling one's position and fitting in the life of the collectivity, whatever one's position, would be rewarded by social prestige. A similar logic can be seen to apply outside the clan and in society at large, in particular for those having a position in the government administration. Being a loyal servant of the Emperor and fulfilling one's duties would be rewarded by promotion, but also by social prestige.

These arguments may seem somewhat abstract but a comparison of some of the main philosophies and religions that emerged in the Ancient world can make these ideas more concrete. Confucianist philosophy is a good example of a collectivist philosophy. It has been argued that the success of Confucianist philosophy at the time of the Zhou dynasty was due to the fact that it codified existing social norms and cultural values. Without explaining in detail Confucianist philosophy, it is quite striking that it insists on people holding their rank in society and fulfilling the duties of their rank. Thus, a younger brother is to show respect towards older brothers, a son to his father, the living to their ancestors, subjects towards the Emperor. Stability and order require that people adhere to and observe the norm of behavior associated to their rank inside the family and within society. Similarly, under Confucianism, fathers were obliged to treat their sons fairly, and the Emperor had the duty of behaving in a benevolent way towards his subjects, or else he would risk losing the "Mandate of Heaven". Buddhist philosophy also has strong elements of collectivism. Buddhism does not encourage individuals to stand out, but are instead encouraged to lose their individuality, abstract from their desires and merge with the surrounding universe. These Eastern philosophies stand in contrast with Greek philosophy as well as Judeo-Christian religion (and later Islam), that are more individualist. Greek philosophy encourages individuals to excel, be it as a soldier, a philosopher, a politician or a merchant, and considers competition as healthy means to excellence. Christian religion emphasizes salvation of the individual and the relation between the individual and God. These aspects of Christian religion were reinforced later with the different variants of Protestantism.

If our hypotheses are valid, then we should see an empirical link between variables characterizing statist systems and collectivism on one hand, and variables characterizing market systems and individualism on the other hand. It is not the first time such hypotheses have been formulated, but I am not aware of any

historical data collection, similar to what we present in this paper, with the purpose of investigating whether these hypotheses hold water.

4. A data base on Comparative Historical Institutions

Using extensive historical and archeological sources, we collected data on the variables listed in Table 1 for 97 countries. The country list is not exhaustive. We restricted ourselves to the list of countries for which we have Hofstede individualism/collectivism scores, since the primary aim of our research is to understand how ancient institutional systems still affect modern culture, i.e. values and beliefs.

This first data collection is based uniquely on the reading of historical and archeological scholarly sources on the topic. Needless to say, this involves a huge effort in the collection of historical information. In doing this data collection, we had to make several choices.

A first choice we had to make was on the exact time period to focus on for each country for the data collection. The basic choice we made was to choose the oldest period of early civilization for which we have historical and archeological sources, and which coincides with ancient state formation, but not always.[2] Since there is a relative invariance in institutional characteristics, especially at the time of the formation of ancient civilizations, we can be confident to measure variables that had a certain degree of persistence. There is of course no absolute time invariance on all variables, but it is nevertheless quite strong when we consider all variables together. This time choice was relatively straightforward in most cases, as these ancient civilizations affected future historical developments. This is obvious for example in the case of China, ancient Rome or ancient Greece. It is not obvious at all for ancient Egypt, the longest lasting ancient civilization, that was not only wiped out two thousand years ago, but that does not seem to have left many traces in contemporary Egypt. One might argue in that case that later periods might be more relevant. It would, in our view, however be arbitrary to do things this way, and this kind of data selection would bias our data collection towards finding strong persistence of early institutions. We think it is more transparent to look as far as possible in history to understand the emergence of particular institutional clusters and their historical impact. On the other hand, in some cases, not only have ancient civilizations disappeared, but their ancient populations were replaced by new and completely different populations. This is the case for example with British colonies in the United States, Australia, Canada and New Zealand where immigration and the quasi-elimination of indigenous populations by the new migrants profoundly transformed those countries. For those countries, we simply used the institutional data we have for the UK since this is the largest origin

---

[2] For example, the Philippines did not really have state formation before Spanish colonization. This is also the case for some African tribes.

of the migrants. Similarly, for Singapore, we used the data from China. We made similar adjustments in some other cases to reflect lasting invasions and important population movements. Country composition of migrants thus played an important role in our choice of time period for a country. A choice that is potentially more controversial is the choice of the post-Tatar Duchy of Muscowy for Russia. Russian historiography always emphasizes Kievan Rus as the cradle of Russian civilization, but this has become more and more controversial over time. We think our choice is reasonable since tsarist Russia really started to develop only after the elimination of the Tatar yoke, and our data collection shows that the Tatars left a deep influence on Russia's institutions.

A second issue has to do with the absence of overlap between current country boundaries and ancient boundaries. If ancient boundaries are larger than the current ones, there is no problem. The problem arises when ancient boundaries were smaller than the current ones. This is mostly the case for some big countries. The most obvious case is India. Here, we collected data on the institutions of three ancient empires/kingdoms: the Mauryan Empire (322 BCE-185 BCE) that covered mostly Northern India but expanded most to the South under Emperor Ashoka; the Bengal Kingdom that straddled current Bangla Desh and current West Bengal in India, as well as the Tamil kingdoms. Similarly, the current territory of South Vietnam was covered for a very long time by the Champa Empire (27 BCE-1453 CE), while North Vietnam was part of China for more than thousand years.

A third issue has to do with the fact that in some cases, there have been multiple influences. We tried to avoid as much as possible to choose multiple time periods in history, but in some cases it was impossible to do otherwise. The most obvious case is that of Latin America. On one hand, important ancient civilizations had developed there, which are impossible to ignore: the Inca in the Andes region, the Aztec in Central Mexico and the Maya around the Yucatan peninsula. On the other hand, Spanish colonization lasted more than 400 years and had an enormous influence on Latin America. In some cases, the influence of the Spanish was predominant as they occupied territories inhabited by tribes that had not yet reached statehood, that died out or were quasi-exterminated, and for which we have very little information. Again the population criterion played an important role in our choices. The Philippine tribes had not yet reached statehood by the time of Spanish colonization, but the autochtonous population remained very large, so we took their influence into account. A choice that may appear controversial is that we did not take into account any colonial influence in Africa, except for South Africa colonized by the Boers. Indeed, the colonial era in Africa has been much shorter (roughly 100 years) than in Latin America and one can argue that colonial powers in Africa did not leave an imprint as big as the Spanish (or the Portuguese) left in Latin America.

Table A1 in Appendix A shows the mapping between modern countries and ancient founding civilizations.

We scored most of the variables we collected with numbers from 1 to 10, using particular criteria for our scoring. In some cases, we constructed variables as sum of particular sub-indicators. The purpose is to capture as much as possible continuity in measurement of variables. Other variables were by necessity coded as dummy variables. This is the case for kinship variables (unilineal vs bilineal) as well as whether the ancient countries were city-states or territorial states. The appendix contains the scoring criteria used for each of the variables for which we collected information. A 500 page long web appendix is available that contains not only the scores but also the supporting historical evidence. Appendix B contains the scoring rules we used for the most important variables for which we collected data. Many of these variables can be better measured, especially those determined to a large extent by geography, something which we are determined to do in a comprehensive way in future work.

The disadvantage of our method is that we can be accused of arbitrariness in the scoring. This is why we want to make the data available in a transparent way so as to correct possible mistakes of judgment.

5. Preliminary data analysis

We start by showing the correlation matrix between the variables we collected. This is shown in Table 2. As we can see from significance levels, many of the variables are strongly correlated, which is not surprising given our expectations of observing institutional clusters.

INSERT TABLE 2

5.1. Institutional clusters in ancient times.

To put some order in our descriptive analysis, we start by looking at the relation between exogenous variables and institutional variables. In Tables 3 and 4, we look at the effect of geographical variables on the intensity of trade in ancient times. In Tables 5 to 10, we look at institutional and social effects associated to higher levels of trade, and in Table 11, we look at long term effects of early institutions on culture. In Table 12, we look at the effects of a different set of geographical variables, based on objective measurement, showing the direction of some of our future work.

Table 3 looks at the relation between heterogeneity of production conditions, ease of transportation, easiness of taxation and closeness to a hot trading zone on intensity of domestic trade, intensity of foreign trade as well as on the importance of merchants in society. Note that easiness of conquest was not significantly correlated with those variables and we omitted it in the Table. The variables have the right sign and are mostly significant.

INSERT TABLE 3

Table 4 looks at the importance of cities in ancient times as a function of the same variables and the results are roughly similar. Note that easiness of taxation and easiness of conquest are not significant. The latter effect is somewhat surprising. Cities were usually not only hubs for commerce, but also places of protection of citizens from outside aggression. Better measurement is needed to better understand the issue of easiness of conquest.

INSERT TABLE 4

Table 5 looks at the determinants of legal systems, i.e. whether legal systems were "citizen to citizen" protecting property rights, or instead "ruler to subject" regulating the behavior of subjects towards their ruler. This is the distinction between "rule of law" and "rule by law" specified above. In this revised version of the paper, we use a composite law index to measure this as objectively as possible. As described in the appendix, this variable is composed of three sub-variables: the extent of law on private property, the extent of contract law and development of procedural law in public law. As one can see, a higher value of our law composite index is associated with a higher intensity of domestic and international trade as well as the importance of cities and merchants. It is also associated with closeness to a hot trading zone, which, as seen in Tables 3 and 4, affected the intensity of trade.

INSERT TABLE 5

Note that in Table 5 and all subsequent Tables, we do not make any claims of causality. Only geographical variables used in Tables 1 and 2 so far are plausibly exogenous. First of all, causal chains between the variables we are looking at are arguably quite complex. For example, intensity of private trade may affect demand for legal systems, but protection of property rights should also foster intensity of private trade. Similar remarks can be made about all the other variables we are looking at. We do not argue that causality is not important. Rather, in this first exploration of date, we find it extremely useful to document first significant and meaningful correlations between the variables we collected. Finding convincing causal links between different variables is more demanding, and in some cases, may be out of our reach, given data availability. We are well aware of this limitation in the empirical analysis presented in this paper.

Table 6 looks at the extent of the institution of private slavery. Our variable for the extent of private slavery is based on the sum of four sub-indices: 1) the prevalence of private slavery, 2) the extent of the legal norm for private slavery, 3) the extent of markets for slaves and slave trade, 4) the relative importance of the private slave population in the total population. Regression results show similar effects as in Table 5. Private slave markets were more present in places where there was high intensity of domestic and international trade and where merchants and cities played a more important role. It is also correlated with geographical variables

affecting the intensity of trade, in particular the ease of transportation and heterogeneity in conditions of production.

INSERT TABLE 6

Table 7 looks at the extent of private property of land. The results are quite similar to those of Table 6. Note, however, that heterogeneity in conditions of production is not significant here, where as closeness to a hot trading zone is. This is the opposite of what we had in Table 6.

INSERT TABLE 7

Table 8 looks at the extent of social stratification in ancient times. As we can see, it is positively correlated with the importance of markets for private slaves, with the law being "citizen to citizen", with the importance of merchants and with private land ownership. It is not significantly associated with clan strength. It is positively associated with heterogeneity in conditions of production. These results are not surprising given our above discussion that market systems tend to create more social stratification than statist systems, where most people are not free.

INSERT TABLE 8

Figures 1 and 2 look at the relationship between some variables that take only two values. In Figure 1, we can see that clan strength was stronger in unilineal kinship systems relative to bilineal kinship systems. This is not surprising given our discussion of kinship systems. In Figure 2, we see that property rights of land were more developed in places with bilineal kinship systems, which also corresponds to our analysis above.

INSERT FIGURES 1 AND 2

Table 9 looks at clan strength. It is negatively associated with variables related to the development of markets, but when we include unilineal kinship in the regression, most of these variables become non significant, except for the importance of merchants in society, with which it is significantly negatively correlated.

INSERT TABLE 9

Table 10 looks at the correlates of power centralization. This is a composite variable that combines the degree of concentration of power of the executive at the Center and fiscal centralization. It is significantly negatively correlated with variables of market development as well as with ease of transportation.

INSERT TABLE 10

From these descriptive regressions, we get a pretty good picture of statist versus market systems. Statist systems had a lower intensity of domestic and foreign trade, cities played less of a role and the role of merchants was smaller; legal systems were focused on the relation between ruler and subjects rather than relations between citizens, the institution of private slavery was less present and private land ownership was less developed; social stratification was also less developed and there was more power centralization. Our empirical analysis also shows that statist systems were more likely to emerge under geographical conditions where conditions of production were more homogeneous, where transport was less easy but where conditions of taxation were easier. These results are all consistent with our theoretical discussion from section 3.

Note that Fenske (2014), following Bates (1983) shows empirically that in pre-colonial Africa, countries with higher ecological diversity (which can be interpreted as higher heterogeneity of production), had a higher centralization of government in the sense of Murdock's Ethnographic Atlas. While this seems to be in contradiction to the general results we found, this is mostly about where states emerged versus where they did not. There is a large literature on the question of the conditions of emergence of states, but that is not what is discussed in this paper. Our sample does not have many Sub-Saharan countries, but the data we collected do not seem to contradict our general story. For example, the Yoruba (in current Nigeria) have a high index in Murdock's centralization index, but were essentially organized along city-states and have a low government centralization index in our database, as well as average scores on trade and legal variables.

5.2. Ancient institutions and modern cultures.

We now examine to what extent these ancient institutional systems may have affected modern culture, as we hypothesized in section 3. In particular, we look at the extent to which market systems tended to develop a more individualistic culture, whereas statist systems developed a more collectivist culture.

First, we see in Figure 3 that individualism scores are higher in places that used to be organized as city-states rather than as territorial states. Indeed, individualist culture is associated with the culture of citizenship, which has deeper roots in societies that were organized as city-states. Figure 4 shows that individualism scores are higher in societies that had bilineal compared to unilineal kinship systems. Indeed, the latter had stronger clan systems, which is more conducive to collectivist culture.

INSERT FIGURES 3 AND 4

Table 11 looks at the relation between a certain number of variables and the Hofstede individualism scores. Column 1 shows a positive and significant

correlation between private slavery in antiquity and individualism. This can be interpreted as a reduced form regression as the link from private slavery to individualism is certainly not direct. Column 2 shows the same for private property of land. Column 3 shows that ancient legal systems emphasizing relations between citizens are positively and significantly associated with individualism scores. Column 4 shows a negative and significant positive association with clan strength. Column 5 shows a positive but non significant effect of social stratification. Column 6 shows the same result with all these five variables in a joint regression. Column 7 looks only at the geographical variables and shows a positive and significant effect for ease of transportation.

INSERT TABLE 11

We must be careful in interpreting these results. They by no means prove causality from ancient institutions to modern culture, but they are suggestive that this might be the case. These results are consistent with our view that ancient market systems fostered individualist culture giving social prestige to individual achievement whereas statist systems bred a collectivist culture awarding social status to conformity and embeddedness.

5.3. Using geographical regressors.

Most of the results reported in this paper are based on scoring variables using historical and archeological variables. In this subsection, we report some results using modern geographical variables. The justification is that geography does not change much over time so the correlations we are able to report between these geographical variables and our historical variables, while not a proof of causality, should be indicative of the forces that have shaped institutions and culture over time. The results we report below should, however, be seen only as a very first exercise in this direction. We would need a much more comprehensive set of geographical measurements in order to fully capture all the relevant data we collected from the historical and archeological literature.

The most obvious variables relate to transport costs. Distance to the sea is measured by the distance in km to the capital of the polity considered. A lower distance should facilitate trade, due to the lower costs of trade by sea. It would thus make it possible to increase the benefits from trade. Ruggedness is a variable that has been used extensively in the development literature starting with Nunn and Puga (2012). It can play a role in many ways. High ruggedness implies high transport costs, and is thus not beneficial for trade. On the other hand, it may protect from foreign invaders and reduce easiness of conquest, which, as argued above, should favor market systems. Here, we use 100km distance in all directions to measure ruggedness centered around the capital to countries' capital.[3] We use

_____

[3] We also looked at ruggedness at 50km distance, with similar results to those we report here.

the log of ruggedness as a dependent variable. We also use the log of the distance to a country's capital to the closest hot trading zone, measured here in kms. Lower distance should also increase the benefits from trade.

While it is relatively easy to construct variables that affect transport (and trade) costs, it is much more difficult to come up with comprehensive geographical variables that measure well the heterogeneity of conditions of production. We use here soil fractionalization data from the Harmonized World Soil database. Soil fractionalization calculations are centered around the countries' ancient capitals, using a 100km radius. This is clearly an imperfect measure as it only captures potential heterogeneity in agriculture, and is only based on soil conditions, not on actual crops grown in the antiquity. In future research, we should also look at the presence of natural resources and their geographical distribution.

We show the most relevant regressions using these variables in Table 12. We use as left hand variables our two measures of trade (domestic and international), the three main legal institutional variables (private property rights of slaves and of land as well as the law composite index) and social stratification. The last column is a reduced form regression where individualism is regressed on the four geographical variables.

INSERT TABLE 12

The results are quite encouraging. We see that distance to the sea is generally significant, and has the expected (negative) sign for trade and market institutions. The same thing is true for the distance to a hot trading zone. There thus seems to be a clear effect of transport costs on the formation of market systems. Distance to the sea is also positively related to power centralization, which is also consistent with what we would expect. The results are somewhat more mixed, in terms of significance, for ruggedness and soil fractionalization. Ruggedness always has the expected sign if we interpret it as related to transport costs. Soil fractionalization does not have the expected sign for foreign trade, but is strongly negatively correlated with power centralization and positively related with individualism. The reduced form for individualism is particularly interesting because all coefficients have the right sign and they are all significant, except for distance to the sea. While these results are obviously preliminary, they tend to be consistent with the other tables in this paper as well as with the hypotheses formulated.

6. Conclusions.

We have put together a new database relative to institutions in ancient history. We find that some societies were organized as statist systems with resource allocation done by the state, underdevelopment of property rights and legal systems

focusing on enforcing the power of the ruler. Other societies were more market oriented, with a big role for trade, both domestically and internationally. These societies had legal systems focusing more on conflicts between citizens, such as conflicts over property.

It appears that geography may have played an important role in determining whether ancient societies became statist or market systems. One important variable relates to heterogeneity or homogeneity of conditions of production. Heterogeneity created large benefits from trade, which may have led to the emergence of market systems, whereas greater homogeneity may have generated benefits from division of labor, which may have led to the formation of statist systems.

We have shown that countries that used to be ruled by statist systems tend today to have a more collectivist culture, while countries where market systems developed in the past, tend to have a more individualistic culture.

This research is only in its beginning and many questions are raised relative to the deeper reasons behind the emergence of these two different systems in the antiquity. For example, how to explain why could the benefits from trade not be reaped via centralized resource allocation?

A major weakness of the current paper is that it does not have a theoretical model to formulate hypotheses about the relations between the different variables for which data were collected.

The data collection needs to be much improved. In particular, many of the geographical variables used to explain different institutions can certainly be better measured. A more complete set of geographical data accounting for the heterogeneity of conditions of production in different parts of the world would in particular be much needed. Given that the institutional data have been collected and scored via existing historical scholarship, one may also be concerned of potential biases in data collection. We will put online not only our scores for particular variables, but also literature notes to justify particular scores.

Finally, it is important to disentangle relationships between many of the variables introduced here. We are well aware that the current paper does not go beyond broad quantitative description. Nevertheless, given the novelty of the data and the approach, we think this descriptive exercise is an important first step.

REFERENCES

Bates, R. (1983) *Essays on the Political Economy of Rural Africa* Cambridge University Press, Cambridge U.K. .

Bisin, A. and T. Verdier (2001) "The Economics of Cultural Transmission and the Dynamics of Preferences," *Journal of Economic Theory* 97, 298-319.

Bisin, A. and T. Verdier (2017) " On the Joint Evolution of Culture and Institutions" NBER working paper.

Buggle, J. (2015) "Irrigation, Collectivism and Long Term Technological Divergence" working paper, University of Lausanne.

Chiao, J.Y., and K.D. Blizinsky (2010) "Culture-gene coevolution of individualism-collectivism and the serotonin transporter gene," *Proceedings - Royal Society. Biological sciences* 277(1681), 529-537.

Enke, B. (2017) "Kinship Systems, Cooperation and the Evolution of Culture" , working paper Harvard University.

Fenske, J. (2014) "Ecology, Trade and States in Pre-Colonial Africa", *Journal of the European Economic Association* 12(3): 612-640.

Fincher, C.L., R. Thornhill, D.R. Murray, and M. Schaller (2008) "Pathogen prevalence predicts human cross-cultural variability in individualism/collectivism" *Proceedings - Royal Society. Biological sciences* 275(1640), 1279-1285.

Finer, S. (1997) *The History of Government from the Ancient Times,* Oxford University Press, Oxford, UK.

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

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

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

Gorodnichenko, Y. and G. Roland (2017) "Culture, Institutions and the Wealth of Nations," *Review of Economics and Statistics* .

Greif, A. and G. Tabellini (2017) "The Clan and the Corporation: Sustaining Cooperation in China and Europe," *Journal of Comparative Economic* .

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

Jaspers (1951) *The Origin and Goal of History* Routledge.

Kashima, E., and Y. Kashima (1998). "Culture and language: The case of cultural dimensions and personal pronoun use," *Journal of Cross-Cultural Psychology* 29, 461-486.

Keightley, D.N. "What did make the Chinese Chinese? Some Geographical Perspectives in *These Bones Shall Rise Again: Selected Writings on Early China* SUNY Press, New York, pp. 75-86.

Licht, A.N., C. Goldschmidt and S. H. Schwartz (2003) "Culture Rules: The Foundations of the Rule of Law and Other Norms of Governance," *Journal of Comparative Economics* 35(4), 659-688.

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

Michalopoulos, S. (2012) "The Origins of Ethno-Linguistic Diversity", *American Economic Review* 102(4): 1508-1539.

Murra, Jose Victor (1968) "An Aymara Kingdom in 1567" Ethnohistory 15(2), p. 115-151.

Murray, Damian R., and Mark Schaller (2010) "Historical Prevalence of Infectious Diseases Within 230 Geopolitical Regions: A Tool for Investigating Origins of Culture," *Journal of Cross-Cultural Psychology* 41(1), 99–108.

Polanyi, K. , C. M Arensherg and H. M. Pearson (1954) *Trade and Market in the Early Empires* Free Press, Glencoe Illinois.

Roland, G. (2004) "Understanding Institutional Change: Fast-Moving and Slow-Moving Institutions," *Studies in Comparative International Development* 38(4): 109-131.

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

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

Talhelm, T, X. Zhang, S. Oishi, C. Shimin, D. Duan, X. Lan and S. Kitayama (2014) "Large-Scale Psychological Differences Within China Explained by Rice versus Wheat Agriculture" *Science* 344(6184): 603-608.

Trigger, B (1993) *Early Civilizations. Ancient Egypt in Context.* University of Cairo Press, Cairo Egypt.

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

Way, B.M. and M.D. Lieberman (2010) "Is there a genetic contribution to cultural differences? Collectivism, individualism and genetic markers of social sensitivity," *Social Cognitive & Affective Neuroscience* 5(2-3), 203-211.

Weber, M. (1922) *Economy and Society* republished in 1978 by University of California Press.

Wittfogel, Karl A. (1957) *Oriental Despotism. A comparison of Total Power.* New Haven Yale University Press.

TABLES

TABLE 1. Statist and Market Systems Compared.

	market institutions	statist institutions
Comparative advantage of trade		
heterogeneity of production conditions	strong	weak
easyness of transport	strong	weak
closeness to hot trading zone	strong	weak
Other geographical variables		
easyness of taxation	weak	strong
easyness of conquest	weak	strong
strength of property rights		
Legal system	citizen-citizen	Ruler-subject
Land ownership	Private and public	Public
Right to own slaves	private and public	public only
Development of markets		
internal markets	strong	weak, central allocation
foreign trade	private	for the ruler
role of merchants	strong	weak
Importance of cities	large	weak
Government and society		
type of state	city-state	territorial state
government decentralization	strong	weak
tolerance to foreigners	strong	weak
ethnic diversity	strong	weak
social stratification	strong	weak
strength of clan	weak	strong
kinship	bilineal	unilineal

Table 2. Correlation matrix

	individualism	trade within	trade across	strength clan	social stratification	role merchants	tolerance foreigners	ease transport	city-state	territorial state	imp.cities	law composite	private slaves	hetero. Prod.	closeness trad. zone	etnic diversity	easiness taxation	easiness conquest	bilineal	unilineal	private land	power centralization
individualism	1																					
trade within	0.482***	1																				
trade across	0.451***	0.814***	1																			
strength clan	-0.508***	-0.21	-0.154	1																		
social stratification	0.0781	0.231	0.208	0.00293	1																	
role merchants	0.414***	0.764***	0.754***	-0.310**	0.258*	1																
tolerance foreigners	0.204	0.517***	0.653***	-0.103	0.0802	0.533***	1															
ease transport	0.519***	0.563***	0.604***	-0.252*	-0.0505	0.422***	0.572***	1														
city-state	0.0537	0.375**	0.389***	-0.0196	0.0231	0.308**	0.290*	0.166	1													
territorial state	-0.0537	-0.375**	-0.389***	0.0196	-0.0231	-0.308**	-0.290*	-0.166	-1	1												
imp.cities	0.144	0.609***	0.757***	-0.0619	0.202	0.597***	0.679***	0.507***	0.355**	-0.355**	1											
law composite	0.457***	0.546***	0.524***	-0.451***	0.240*	0.660***	0.408***	0.296*	0.288*	-0.288*	0.355**	1										
private slaves	0.545***	0.597***	0.690***	-0.284*	0.0304	0.630***	0.582***	0.577***	0.283*	-0.283*	0.521***	0.690***	1									
hetero. Prod.	-0.0139	0.359**	0.387***	0.0264	0.260*	0.301*	0.226	0.00692	0.438***	-0.438***	0.385***	0.195	0.188	1								
closeness trad. zone	0.319**	0.585***	0.636***	-0.193	0.0794	0.508***	0.761***	0.718***	0.238*	-0.238*	0.561***	0.369**	0.538***	0.246*	1							
etnic diversity	-0.317**	-0.188	-0.0328	0.204	0.188	-0.0553	0.235*	-0.329**	0.183	-0.183	0.13	-0.178	-0.126	0.465***	0.0163	1						
easiness taxation	-0.415***	-0.433***	-0.498***	0.0694	0.0999	-0.544***	-0.272*	-0.285*	-0.179	0.179	-0.311**	-0.415***	-0.517***	-0.0954	-0.323**	0.234*	1					
easiness conquest	-0.103	-0.135	-0.0479	0.0156	-0.124	-0.0679	0.315**	0.263*	0.155	-0.155	0.0893	0.067	0.0132	-0.0611	0.251*	0.13	0.13	1				
bilineal	0.426***	0.357**	0.143	-0.639***	0.109	0.384***	-0.0134	0.144	0.043	-0.043	0.0545	0.529***	0.235*	0.217	0.122	-0.178	-0.242*	-0.095	1			
unilineal	-0.426***	-0.357**	-0.143	0.639***	-0.109	-0.384***	0.0134	-0.144	-0.043	0.043	-0.0545	-0.529***	-0.235*	-0.217	-0.122	0.178	0.242*	0.095	-1	1		
private land	0.745***	0.691***	0.708***	-0.440***	0.146	0.714***	0.375**	0.516***	0.261*	-0.261*	0.384***	0.775***	0.760***	0.106	0.481***	-0.395***	-0.650***	-0.091	0.426***	-0.426***	1	
power centralization	-0.443***	-0.327**	-0.325**	0.196	0.047	-0.373**	-0.0671	-0.244*	-0.498***	0.498***	-0.189	-0.255*	-0.244*	-0.236*	-0.145	0.0365	0.463***	0.0819	-0.283*	0.283*	-0.440***	1

*** p<0.01, ** p<0.05, * p<0.1.

TABLE 3: Potential benefits of Trade and intensity of Trade in Ancient Times

VARIABLES	(1) trade within polity	(2) trade within polity	(3) trade across polities	(4) trade within polity	(5) importance of merchants	(6) importance of merchants
Ease of transportation		0.333*** (0.105)		0.284** (0.113)		0.091 (0.103)
Hetero. cond. production	0.473*** (0.095)	0.308*** (0.103)	0.439*** (0.090)	0.328*** (0.091)	0.282*** (0.096)	0.167* (0.100)
Close to hot trading zone		0.232** (0.103)		0.272** (0.108)		0.322*** (0.104)
Easiness of taxation	-0.293*** (0.082)	-0.227*** (0.072)	-0.414*** (0.087)	-0.242*** (0.081)	-0.407*** (0.069)	-0.330*** (0.079)
Observations	95	83	95	83	95	83
R-squared	0.230	0.510	0.316	0.600	0.251	0.426

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

Table 4. Importance of cities in ancient times (commercial cities + urbanization)

VARIABLES	(1) importance of cities	(2) importance of cities	(3) importance of cities	(4) importance of cities	(5) importance of cities
Ease of transportation		0.431***		0.435***	0.433***
		(0.132)		(0.125)	(0.130)
Hetero. cond. production	0.408***	0.372***	0.406***	0.369***	0.370***
	(0.135)	(0.112)	(0.131)	(0.111)	(0.112)
Close to hot trading zone		0.156		0.162	0.159
		(0.127)		(0.133)	(0.131)
Easiness of taxation	-0.160	-0.025			-0.022
	(0.100)	(0.096)			(0.093)
Easiness of conquest			0.137	-0.018	-0.012
			(0.110)	(0.094)	(0.090)
Observations	95	83	92	83	83
R-squared	0.124	0.410	0.115	0.410	0.411

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

Table 5. Institutional effects on law composite index

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Trade within polity	0.505***				-0.008	
	(0.086)				(0.146)	
Trade across polities		0.536***			0.043	
		(0.083)			(0.187)	
Role of merchants			0.751***		0.731***	
			(0.067)		(0.129)	
Importance of cities				0.362***	-0.014	
				(0.092)	(0.096)	
Ease of transportation						0.059
						(0.149)
Hetero. cond. production						0.154
						(0.136)
Close to hot trading zone						0.317**
						(0.158)
Observations	93	93	93	93	93	81
R-squared	0.249	0.264	0.455	0.132	0.455	0.201

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

Table 6. Institutional effects. Private ownership of slaves.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trade within polity	0.396***				-0.126		
	(0.072)				(0.130)		
Trade across polities		0.500***			0.321**		
		(0.069)			(0.160)		
Role of merchants			0.528***		0.350***		
			(0.074)		(0.116)		
Importance of cities				0.334***	0.062		
				(0.071)	(0.096)		
Ease of transportation						0.370***	0.266**
						(0.067)	(0.105)
Hetero. cond. Prod.						0.249**	0.283***
						(0.110)	(0.100)
Close to hot trading z.							0.068
							(0.105)
Observations	95	95	95	95	95	95	83
R-squared	0.238	0.352	0.359	0.180	0.422	0.284	0.298

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

Table 7. Institutional effects. Private Ownership of land

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trade within polity	0.709***				0.105		
	(0.075)				(0.125)		
Trade across polities		0.787***			0.518***		
		(0.066)			(0.142)		
Role of merchants			0.833***		0.479***		
			(0.055)		(0.121)		
Importance of cities				0.339***	-0.230***		
				(0.108)	(0.078)		
Ease of transportation						0.539***	0.263**
						(0.083)	(0.127)
Hetero. cond. Prod.						0.183	0.061
						(0.128)	(0.129)
Close to hot trading z.							0.323**
							(0.130)
Observations	95	95	95	95	95	95	84
R-squared	0.474	0.538	0.563	0.117	0.669	0.323	0.330

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

Table 8. Institutional effects. Social stratification in ancient times.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Private slavery	0.190* (0.096)					-0.172 (0.143)	
Law composite		0.241*** (0.078)				0.237** (0.117)	
Role of merchants			0.269*** (0.074)			0.365*** (0.129)	
Private land				0.147* (0.076)		-0.147 (0.122)	
Strength of clan					-0.097 (0.066)	0.018 (0.069)	
Ease of transportation							-0.077 (0.080)
Hetero. cond. production							0.183** (0.090)
Close to hot trading z.							0.157** (0.079)
Observations	95	93	96	95	96	91	84
R-squared	0.052	0.128	0.134	0.050	0.031	0.222	0.122

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

Table 9. Clan strength

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trade within polity	-0.300**	-0.043					0.462***		
	(0.122)	(0.114)					(0.173)		
Trade across polities			-0.342**	-0.174			-0.232		
			(0.133)	(0.112)			(0.228)		
Role of merchants					-0.562***	-0.297**	-0.432**		
					(0.116)	(0.130)	(0.191)		
Importance of cities							-0.049		
							(0.122)		
Unilineal kinship		3.605***		3.514***		3.120***	3.590***		
		(0.617)		(0.588)		(0.657)	(0.691)		
Ease of transportation								-0.358***	-0.133
								(0.113)	(0.186)
Hetero. cond. production								-0.077	-0.002
								(0.154)	(0.153)
Close to hot trading z.									-0.248
									(0.182)
Observations	96	90	96	90	96	90	90	96	84
R-squared	0.060	0.323	0.073	0.340	0.180	0.365	0.403	0.096	0.106

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

Table 10. Power centralization

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Trade within polity	-0.243***				-0.214	
	(0.078)				(0.146)	
Trade across polities		-0.236***			-0.206	
		(0.079)			(0.156)	
Role of merchants			-0.162*		0.099	
			(0.092)		(0.134)	
Importance of cities				-0.062	0.123	
				(0.079)	(0.084)	
Ease of transportation						-0.251**
						(0.103)
Hetero. cond. production						-0.193
						(0.118)
Close to hot trading z.						0.168*
						(0.097)
Observations	93	93	93	93	93	82
R-squared	0.095	0.084	0.036	0.007	0.121	0.069

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

Table 11. Long run effects of early institutions on individualism.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Private slavery	4.227***					-0.176	
	(0.927)					(1.330)	
Private land		5.885***				7.641***	
		(0.552)				(0.974)	
Law composite			3.328***			-3.343***	
			(0.600)			(0.960)	
Strength of clan				-2.952***		-1.450**	
				(0.575)		(0.593)	
Social stratification					0.949	0.020	
					(1.047)	(0.771)	
Ease of transportation							4.082***
							(1.032)
Hetero. cond. Prod.							0.098
							(0.952)
Close to hot trading z.							-0.038
							(1.038)
Observations	94	94	92	95	95	90	83
R-squared	0.169	0.532	0.166	0.192	0.006	0.598	0.274

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

Table 12. Using geographical regressors.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Trade within the polity	Trade across the polity	Private slavery	Private land	Law composite index	Power centralization	Social stratification	Individualism
Distance to the sea	-0.002	-0.003**	-0.003**	-0.003***	-0.002	0.003**	-0.002**	-0.014
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.010)
Log(rugged.100km)	-0.160	-0.098	-0.161	-0.164*	-0.012	0.196**	0.129	-2.292***
	(0.099)	(0.092)	(0.119)	(0.086)	(0.119)	(0.085)	(0.083)	(0.762)
Soil fractionalization	-2.601	-6.239***	-0.280	1.178	2.028	-4.968**	-2.606	54.300***
	(2.505)	(2.196)	(3.315)	(2.693)	(3.210)	(2.008)	(1.848)	(20.312)
Log(distance hot trad. zone)	-0.903***	-1.154***	-1.593***	-1.121***	-1.077***	0.008	-0.238	-6.379***
	(0.252)	(0.225)	(0.301)	(0.220)	(0.303)	(0.233)	(0.164)	(1.610)
Observations	80	80	80	79	78	80	80	79
R-squared	0.203	0.313	0.349	0.324	0.205	0.188	0.100	0.308

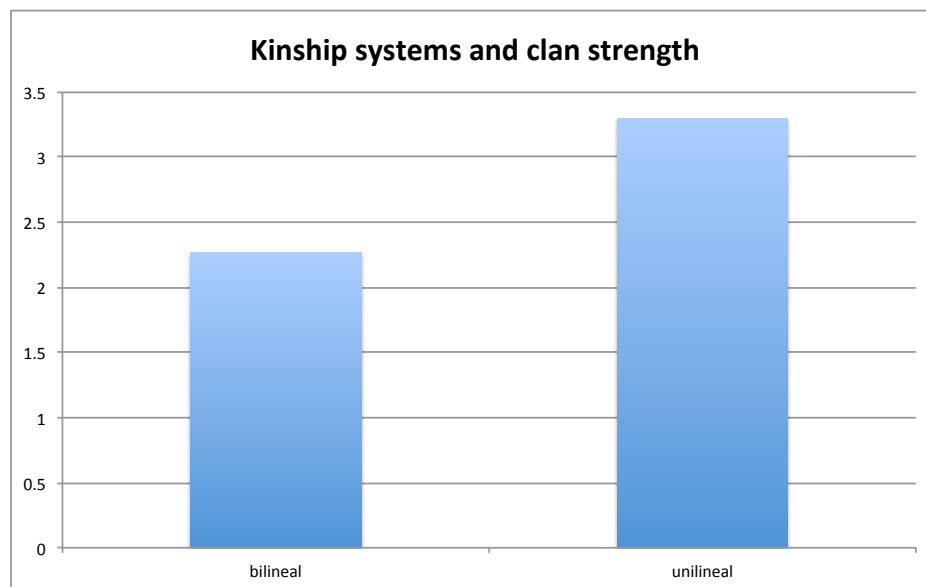Notes: Robust standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

FIGURES

Figure 1

Figure 2

Kinship systems and land property rights

Figure 3

Early State Type and average individualism scores

Figure 4

Kinship systems and average indvidualism scores

.
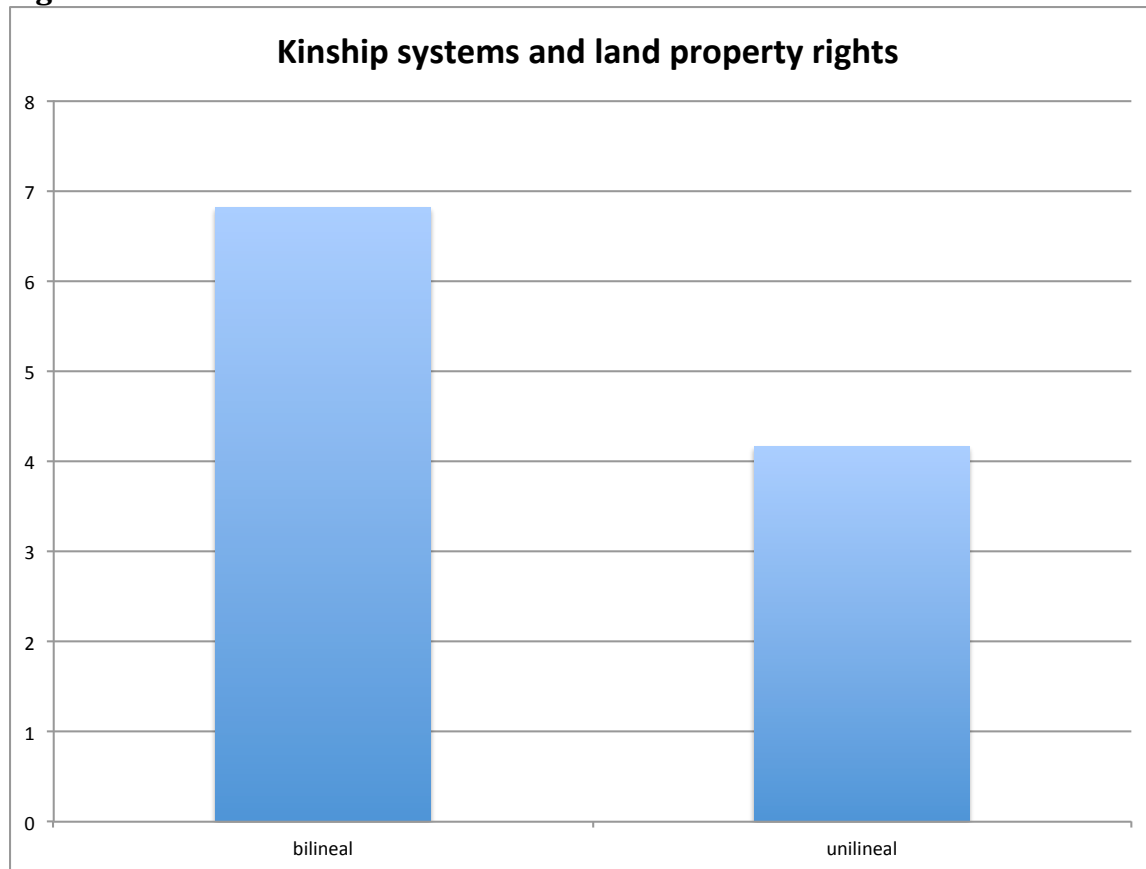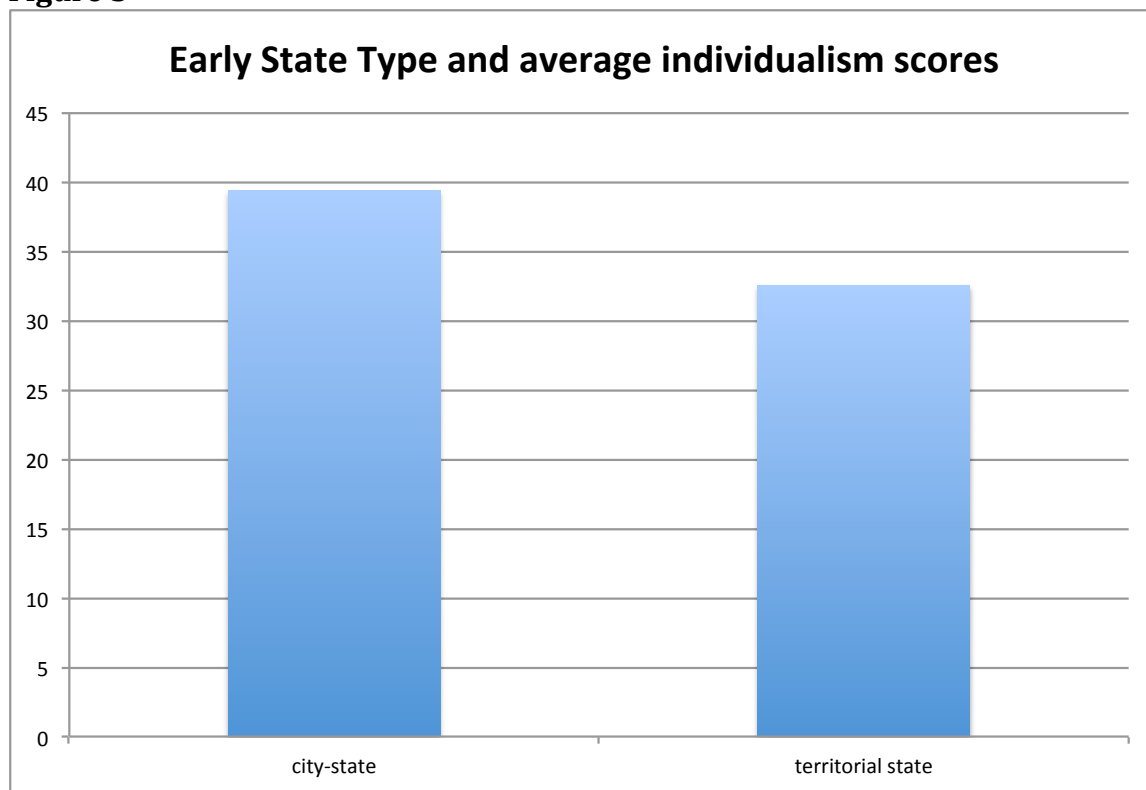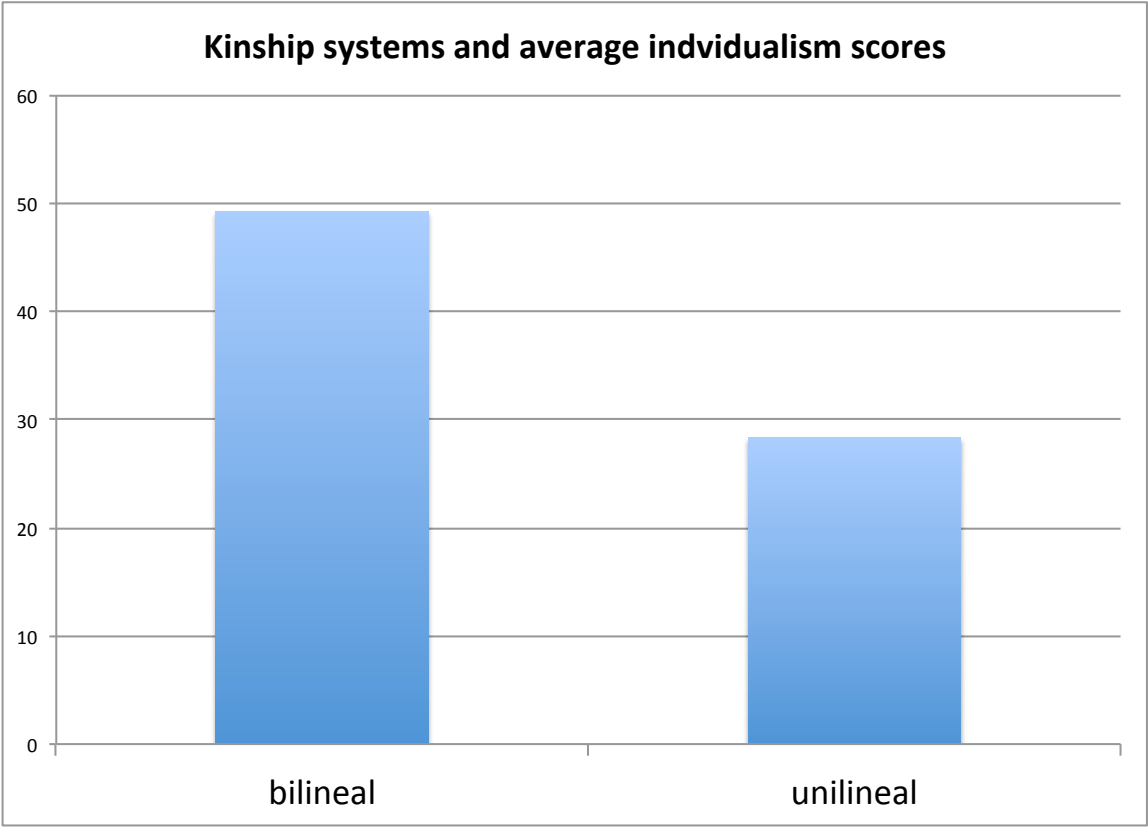
Table A1. Time period choice for the analysis.

Country	Time period(s)
Albania	Ottoman Albania (1385-1912)
Angola	Pre-colonial kingdoms: Kongo Kingdom (1390-1857), Ndongo Kingdom, Matamba Kingdom
Argentina	Spanish colony early 16th century (1516)-1816
Australia	British colony (1788-1850)
Austria	Germanic tribes (1st century to 6th century)
Bangladesh	Bengal (5th century BC- 6th century AD)
Belgium	- Ancient Rome (22BC-5th century) - Independent cities (1100s-1600s)
Bhutan	Pre-modern Bhutan Theocracy government (Early 17th century-1907)
Brazil	Portuguese colony (16th century (1500)-1822)
Bulgaria	- First Bulgarian Empire (618-1018) - Second Bulgarian Empire (1185-1396) - Ottoman Bulgaria (1396-1878)
Burkina Faso	Pre-colonial Mossi States (16th century-1896)
Canada	English colony after 1763
Chile	- Inca Empire (1438-1533) - Spanish colony (1541-1810)
China	Shang Dynasty (c. 1600 BC- c. 1046 BC) Western Zhou Dynasty (c. 1046 BC-771 BC)
Colombia	- Inca Empire (1438-1533) - Spanish Colony (early 16th century (1525)-1810)
Costa Rica	Spanish Colony (early 16th century (1524)-1810)
Croatia	- Ancient Rome (1st century AD-476AD) - Duchy, Kingdom of Croatia (8th century-925-1102, Frankish vassal) - Republic of Ragusa (Dubrovnik, 13th-19th century)
Czech Republic	Bohemia (Přemyslids) (867-1306)
Denmark	The Vikings (8th century-mid-11th century)
Dominican Republic	Spanish Colony (1492-1795)
Ecuador	Inca Empire (1438-1533), Incan Conquest of Ecuador, 1463-1500 Spanish colony (1534-1822)
Egypt	Ancient Egypt (3150 BC-525 BC)
El Salvador	Spanish Colony (1525-1821)
Estonia	Estonian tribes (8th century-13th century, before the Crusade)
Ethiopia	Kingdom of Axum (c. 100- c.900)
Fiji	British Colony (1874-1970)
Finland	Finn tribes (8th century-13th century, before Christianization)
France	- Ancient Rome (509 BC-476 AD)

	- The Franks (3rd century AD-7th century AD)
Germany	Germanic tribes (1st century to 6th century AD)
Greece	Classical Greece (510BC-323BC)
Ghana	Ashanti Confederacy (mid-17th century-1902)
Guatemala	- Mayan city-states (c. 250 AD- 16th century) - Spanish colony 1524-1821
Honduras	- Maya city-states (c. 250 AD- 16th century) - Spanish colony 1526-1821
Hungary	Arpad Dynasty (c. 895-1301)
Iceland	Icelandic Free State (Vikings) (c. 930-1262)
India	- Mauryan Empire (326 BC-180 BC) - Tamil kingdoms (4th century BC-5th century AD) - Bengal (5th century BC-6th century AD)
Indonesia	Early Indianized Kingdoms (1st century AD -1377 AD, end of Srivijaya)
Iran	Achaemenid Empire (550 BC-330 BC)
Iraq	Assyria, Mesopotamia (c. 3000 BC-539 BC)
Ireland	Irish Kingdoms (5th century-9th century)
Israel	Ancient Israel (c. 1000 BC- 586 BC, end of Kingdom of Judah)
Italy	Ancient Rome (509 BC-476 AD)
Jamaica	Spanish Colony (1494-1655) British Colony (1655-1962)
Japan	Yamato and Asuka Japan (c.250-710)
Kenya	Swahili city-states (8th century or 9th century-16th century) Kikuyu tribes (3d-13th century)
Korea	Old Choson (3rd century BC-108 BC)
Kuwait	Mesopotamia (c. 3000 BC-539 BC)
Latvia	Medieval Livonia (Bishoprics, archbishopric of Livonia, Livonian Order, Municipal City of Riga) (13th century-16th century)
Lebanon	Phoenicia (c. 1500BC- 539 BC)
Libya	Same as Saudi Arabia
Lithuania	Grand Duchy of Lithuania (c. 1236-1569)
Luxembourg	Germanic tribes (1st century to 6th century)
Malawi	Pre-colonial kingdoms (17th century-19th century)
Malaysia	Early Indianized Kingdoms (1st century AD-1377 AD, end of Srivijaya)
Mexico	- Maya city-states (c. 800 BC-c. 1600 AD) - Aztec Empire (1428-1521) - Spanish colony (1521-1821)
Morocco	Berber Morocco Dynasties: Idrisid Dynasty (788-974) Almoravid Dynasty (1040-1147) Almohad Dynasty (1121-1269)
Mozambique	Portuguese Colony (1498-1975)
Namibia	German colony (1884-1915)
Nepal	Licchavi Kingdom (c. 400AD -879 AD)
Netherlands	Germanic tribes (1st century to 6th century) Independent cities (1100s-1600s)
New Zealand	British colony (1841-1907)
Nigeria	Yoruba states (1300s-1896)
Norway	Viking Age (8th century-mid-11th century)

Pakistan	Ghaznavid Empire 977-1186 Ghurid Empire 1186-1215
Panama	Spanish Colony (1510-1821)
Peru	- Inca Empire (1438-1533) - Spanish colony (1534-1821)
Philippines	- Pre-colonial Philippines (900-1565) - Spanish Colony (1565-1898)
Poland	Piast Dynasty (c. 960-1370)
Portugal	Medieval Kingdom of Portugal (1139-15th century)
Romania	Ancient Rome (Roman Dacia) (106 AD-271 AD) Medieval: Transylvania (Hungary), Principalities of Moldavia and Wallachia (in 14th century-16th century)
Russia	Muscovy (1283-1584)
Saudi Arabia	Arab tribes (early 7th century), Rashidun Caliphate (632-661), Umayyad Caliphate (661-750)
Senegal	Pre-colonial states and kingdoms (Bundu and Gajaaga states, Wolof kingdoms, Fulani Futa Toro) (1600s-1885)
Serbia	Nemanjić dynasty (1166-1371) Ottoman Serbia (14th or 15th century-1817)
Sierra Leone	The Temne and the Mende states (17th century? –before the 20th century) British colony (1808-1961)
Singapore	- China - Malaysia
Slovakia	Same as Hungary
Slovenia	Ancient Rome + Slav tribes
South Africa	Dutch Cape Colony (1652-1795)
Spain	- Reconquista Castile (1065)-Leon(910); Crown of Castile (1230-1492) (1492: end of Reconquista) - Aragon (est. 1035) - Catalonia (12th century-15th century)
Sri Lanka	Ancient Sri Lanka (Anuradhapura Kingdom) (377BC-1017)
Sweden	Viking Age (8th century-mid-11th century)
Switzerland	Germanic tribes Germanic tribes (1st century to 6th century)
Syria	Assyria, Mesopotamia (c. 3000 BC-539 BC)
Taiwan	China
Tanzania	Swahili city-states (8th century or 9th century-16th century) Sukuma tribes (14th -19th century)
Thailand	Dvaravati Kingdoms (6th century-13th century)
Trinidad and Tobago	Colony (1498-early 19th century)
Turkey	Seljuk Rum Sultanate (1077-1308); Ottoman Empire (c.1299-1922) Evidence from early Ottoman Empire.
United Arab Emirates	Arab tribes (early 7th century), Rashidun Caliphate (632-661), Umayyad Caliphate (661-750)
United Kingdom	Anglo-Saxons (5th century- 11th century AD)
United States	British colony (17th century-1776)
Uruguay	Banda Oriental (Spanish Colony and Portuguese Colony) (1624 (First permanent settlement founded Banda

	Oriental (Spanish Colony and Portuguese Colony) by the Spanish; 1680 Colônia do Sacramento founded by the Portuguese)-c. 1830)
Venezuela	Spanish Colony (1522-1811)
Vietnam	North Vietnam Chinese rule and domination (111BC-938AD) Champa city-states (2ⁿᵈ century-1832)
Zambia	Pre-colonial kingdoms (Lozi, Kazembe, Bemba, 18ᵗʰ -late 19ᵗʰ century)

Table A2. Mapping between modern countries and ancient or founding civilizations

Albania	Illyria	France	Franks
Angola	Kongo, Mbundu, …		ancient Rome
Argentina	Spanish colony	Germany	Ancient Germanic tribes
Australia	English colony	Ghana	Ashanti
Austria	ancient Germanic tribes	Greece	Ancient Greece
Bangladesh	Bengal	Guatemala	Spanish colony
Belgium	independent cities	Honduras	Spanish colony
Bhutan	Bhutan	Hungary	Hungary
Brazil	Portuguese colony	Iceland	Viking
Bulgaria	Blakanic Bulgaria	India	Mauryan Empire
Burkina Faso	Mossi kingdoms		Tamil states
Canada	British colony		Bengal
Chile	Inca	Indonesia	Indonesian Islands
	Spanish colony	Iran	Ancient Persia
China	Ancient China (Shang and later)	Iraq	Mesopotamia
Colombia	Inca		Assyria
	spanish colony	Ireland	Celtic Ireland
Costa Rica	Spanish colony	Israel	ancient Israel
Croatia	Ancient Rome + Eastern Adriatic coast	Italy	Ancient Rome
Czech Rep.	Bohemia	Jamaica	Spanish colony
Denmark	Viking	Japan	Ancient Japan
Dominican Rep.	Spanish colony	Kenya	Swahili kingdoms
Ecuador	Inca	Korea	Ancient Korea (Gokuryo, Baekje, Silla)
	spanish colony	Kuwait	Mesopotamia
Egypt	Ancient Egypt	Latvia	Livonia
El Salvador	Spanish colony	Lebanon	Phenicia
Estonia	estonian tribes	Libya	Arabia
Ethiopia	Aksum	Lithuania	Grand Duchy of Lithuania
Fiji	Fiji	Luxembourg	Germanic tribes
Finland	Finnish tribes		

(continued below)

Table 2 (continuation)

Malawi	Maravi	South Africa	Boers
Malaysia	Malaysia + Sumatra	Spain	reconquista Castille
Mexico	Aztec		Catalonia
	Maya		Aragon
	Spanish colonizer	Sri Lanka	Sri Lanka
Morocco	Morocco	Sweden	Viking
Mozambique	Tonga, Makua, Maravi and Karanga	Switzerland	Germanic tribes
Namibia	German colony	Syria	Mesopotamia
Nepal	Nepal		Assyria
Netherlands	Independent cities	Taiwan	China
New Zealand	English colony	Tanzania	Swahili kingdoms
Nigeria	Yoruba	Thailand	Dvaravati
Norway	Viking	Trinidad and Tobago	Spanish colony
Pakistan	Ghaznavid	Turkey	Seljuk/Ottoman
Panama	Spanish colony		Assyria
Peru	Inca	United Arab Emirates	Arabia
	Spanish colony	United Kingdom	Saxons
Philippines	Spanish colony	United States	English colony
	pre-colonial	Uruguay	Spanish colony
Poland	Piast dynasty	Venezuela	Spanish colony
Portugal	reconquista Portugal	Vietnam	Champa
Romania	Balkanic region	Vietnam	North Vietnam/Southwest China/Tonkin
Russia	Russia post-Tatar (Muscowy)	Zambia	Bemba Kingdom
Saudi Arabia	Arabia		
Serbia	Balkan		
Sierra Leone	Tribes of Sierra Leone		
Singapore	China		
Slovakia	Hungary		
Slovenia	Ancient Rome + Balkan		

APPENDIX B . SCORING CRITERIA.

Heterogeneity 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
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

Trade within Polity

1-2: No private trade. Mainly distribution via the state apparatus. Some barter.
3-4: Very limited private trade. Distribution 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.

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.

Role of Merchants

1: Almost all exchange is based on reciprocity or redistribution. No markets and merchants in real sense exist in the economy.
2: Most exchange is mainly based on reciprocity or redistribution. Merchants are few in number and are generally rulers' agents. Markets barely exist.
3: Most merchants are rulers' agents and work for the ruler, or rulers themselves are merchants. Markets are limited.

4: Merchants are generally rulers' agents but also participate in private trade. The state has strong monopoly and regulation in the economy. Markets are limited.

5: Private merchants participate in a strictly regulated market subject to state interference. Some merchants may be state agents. Merchants are subject to close supervision, regulation and predation from the state. The state may have monopolies in many industries. Markets exist.

6: Private merchants participate in a strictly regulated market subject to state interference. Merchants are subject to supervision, regulation or predation from the state. The state monopolizes certain industries. Markets exist.

7: Private merchants participate in a regulated market. Merchants are subject to certain regulation, monopoly or predation from the state. Markets exist.

8: Private merchants participate in a partly free market. Merchants are subject to certain regulation, monopoly or predation from the state. Large markets exist.

9: Private merchants participate in a mostly free market. Large and numerous markets exist.

10: Private merchants participate in a free, developed market; large and numerous markets exist.

Importance of Cities

Estimated urbanization rate (U)
0: completely rural
1: the polity has only a few settlements/towns, cities in the real sense do not exist; very 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. Urban population is very high. >15%

Commercial Function of cities (C)
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

Total score: Adding (U) and (C)

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 subvariables A) prevalence of private slavery B) legal or social norm of slavery C) Presence of Slave trade and slave market 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; 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

 Law

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
*Customary law=0 or 1

Importance of Clan

Scores are based on the sum of scores of the following 5 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. nonlocalized 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, etc.

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

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 government 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)