Institutional Persistence and Economic Performance in the long-run

Francisco José López Velásquez

Doctorado en Economía Aplicada

Departament d'Economia Aplicada

Universitat Autònoma de Barcelona

Supervisor: Prof. Andreas Kyriacou

Departament d'Economia, Universitat de Girona

Tutor: Prof. Xavier Ramos

Departament d'Economia Aplicada, Universitat Autònoma de Barcelona

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Dedicado a las memorias de *Yolanda* y *Francisco*, por creer e invertir tanto en la educación de sus hijos.

Contents

Introduction

Preface and motivation of the thesis

This thesis is an attempt to gain a better understanding of the causes and mechanisms explaining institutional persistence. As I reviewed the burgeoning literature three main mechanisms appeared to shape the persistence of an institution: geography, culture and history. These forces activated specific channels that affected both the emergence and longevity of institutions. Although several cross-section studies linked institutional persistence to its initial conditions, and thereby, the equilibrium that the primogenial situation left, no work firmly associated the *longevity* or the *lifespan* endured for an institution as a manifestation of persistence. Moreover, with the notable exception of the works by Engerman and Sokoloff (1997, 2005) on the role played by factors endowments in the diverging institutional path followed by the Americas, no previous work explicitly addressed how wealth or political inequality may have affected the persistence of specific formal institutions, nor how do they even may have sharpen the persistence of the informal ones.

Then, motivated by these gaps in the literature I sought to consider political constitutions as the remnants of the institutionalized inequality in the Americas. This led me to the *Comparative Constitutions Project* carried out by Zachary Elkins, Tom Ginsburg, and James Melton. Their ambitious work on building a database on the political constitutions written and enforced worldwide since 1789 not only provided much of the data employed in chapters two and three of the thesis but also forced me to understand *duration* or *survival models* in order to address the endurance of constitutions as a legitimate case of institutional persistence. Although pioneering in many aspects, the subsequent book by Elkins *et al.* (2009) left many questions unanswered. For instance, nothing is said on whether geographical, cultural and historical factors may have shaped the persistence of political constitutions in the long run. Nor do they consider the extent to which institutionalized inequality, or the restriction of basic rights for the great majority of citizens may reduce the life of constitutions. The aforementioned situation led me to devise empirical strategies to determine the effect of geography, culture and history on the endurance of constitutions across the world. Moreover, I have considered the influence of initial wealth inequality on both the endurance of constitutions in nineteenth century Americas and the quality of informal institutions when proxied by *conventions*, *moral rules*, and *social norms*. These approaches called for the introduction of *duration model* techniques, in addition to the Instrumental Variables estimation usually employed by the mainstream

literature. This marriage of approaching institutional persistence from an endurance perspective with the use of duration models is an original but modest contribution of this thesis to the literature, which should be improved in future research.

The outline of the thesis

Chapter one reviews the literature on institutional persistence. A considerable empirical literature in the social sciences has exploited cross-section evidence to suggest that cultural factors, geography, resource endowments, and a country's history play a major role in institutional persistence. However, much of this literature links institutional persistence to institutional quality, something which obscures the study of the causes behind the enforcement of persistent institutions. A rarely cited literature on institutional persistence, mostly based on case studies, connect the persistence of an institution to the forces shaping its emergence but also consider how institutional persistence can be affected by factors related to the enforcement of a given institution. Both strands of the literature have developed separately but, nevertheless, they are more compliments than substitutes. In the chapter I take a step towards integrating both approaches by presenting a critical review of their key insights.

This thesis will attempt to extend the literature on institutional persistence by focusing on the endurance of political constitutions. To fill this gap, chapter two extends the *epidemiological* or *duration* model approach developed by Elkins *et al.* (2009) to study whether *geography*, *culture*, and *history* might have influenced the endurance of constitutional texts in the long run. The findings reveal that, in addition to issues associated to the design of constitutions, increased ethnic diversity tends to increase the risk of constitutional failure, while more genetically distant people from the African serial founder (a proxy for cultural diversity) increase the chances of constitutional survival. Regarding historical legacies, state antiquity decreases the endurance of constitutions; a similar impact is found for those countries engaged in the transition from a centralized to a market economy. Indicators proxying for geography or resource endowments show no significant effect on the survival of constitutions worldwide.

Moreover, chapter three builds a novel empirical analysis of the potential effects of institutionalized inequality on the endurance of the XIX century constitutions of the Americas. The data collected is analyzed with a *duration model* to determine what factors influenced the durability of constitutions at the time. Overall, the findings do not support the claims suggesting that restrictions in acquiring citizenship, voting rights, freedom of religion, or similar had been a source of constitutional failure in XIX century Americas. In contrast, reinstated constitutions, the democratic promulgation of constitutions, the occurrence of coups and the years a country was a colony were important for the survival of constitutional texts in nineteenth-century America.

Finally, the thesis explores the potential negative effect of income inequality on the quality of informal institutions relying on an Instrumental Variable model. In general, the findings suggest that higher inequality significantly reduces the quality of informal institutions. In the context of our desire to contribute towards our understanding of institutional persistence, our estimates moreover show that formal institutions are far more sensitive to variations in income inequality than informal ones, confirming the slow changing nature of the latter presumed in the literature.

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Chapter 1

Institutional Persistence: A review of the literature

1.1. Introduction

A considerable literature in the social sciences has shown that institutions "matter" for development (Acemoglu *et al.* 2001, 2002; Easterly and Levine 2003; Engerman and Sokoloff 1997, 2002; North 1990; Rodrik *et al.* 2004). They matter because they determine the conditions that stimulate investments in key variables causing economic growth: human and physical capital, and technological change. Unfortunately, both growth-promoting and growth-retarding institutions can persist over time, leading some to ask what makes some institutions so resilient (Wallis 2010). An empirical literature based on cross-sectional analysis has focused on the impact of culture, geography or resource endowments and history on the persistence of institutions. The focus of much of this literature is on how these factors may have affected the emergence and prevalence of good or bad institutions in the distant past.

A rarely cited literature on institutional persistence, mostly based on case studies, considers institutional persistence through the prism of enforceability. Works by Greif (1989, 2006) and Kuran (2003, 2004, and 2011) explaining the economic underdevelopment of the Middle East in comparison to Western Europe; the contributions of Epstein (1998), Epstein and Prak (2004), Greif (2006), Greif *et al.* (1995), and Ogilvie (2007a, 2007b, and 2011) regarding the economic role of medieval guilds, or the literature developed by McCloskey (1972, 1989, and 1991) and Allen (1982, 1992, and 2001), among others, on the prevalence of open fields in England and the continental Europe, focus on the enforceable nature of both formal and informal institutions and should be considered major contributions in the literature of

institutional persistence. Beyond providing us with new explanations and experiences of why some specific institutions persist, this literature helps us to understand the role of path dependence in the face of institutional change (Acemoglu and Robinson 2006, 2008; Roland 2004) and illuminates how the mechanisms responsible for institutional persistence may interact with each other in the long run (Berkowitz and Clay 2011; Fenske 2010a; Nunn 2009a, 2012).

Before reviewing the literature some additional point are in order; first, even though my focus is on institutions with prolonged lives, it does not mean that other institutions with a short duration but with dramatic impact in the past are irrelevant for my approach. For example, as we saw above, slavery did not last for centuries in many parts of the world but its impacts still affecting negatively the pattern of development followed by slaved countries through institutional ways (Dell 2010, Nunn 2008, 2009a; Nunn and Wantchekon 2011). Second, I do not assume that a prolonged endurance is an indication of institutional quality; both growth-retarding and growth-promoting institutions may endure for very long periods of time (Acemoglu *et al.* 2001; Eggertsson 2005; Engerman and Sokoloff 1997, 2002; Kuran 2011; North 1990). Third, institutions may persist through informal social arrangements even after they may have been radically changed or banned at formal levels (Acemoglu and Robinson 2006; Roland 2004; Wallis 2011). On this, a useful metaphor is that of an iceberg, where the part that is below the sea (informal institutions) is bigger in relation to what is seemed on the surface (formal institutions).

This review chapter is divided in four sections. Section 2 critically reviews the cross-sectional and panel group studies on institutional persistence. Section 3 reviews case studies approaching institutions from an *enforcement* perspective. Section 4 concludes.

1.2. The cross-sectional studies on institutional persistence

Three main forces appear to shape the emergence and persistence of institutions in the long run according to the cross-sectional studies on institutional persistence: geography or resource endowments, culture and history. Table 1.1. presents a condensed view of the main mechanisms and channels determining the persistence of institutions; note that each proposed channel is linked to the influential works in the field. These three forces affect institutional persistence through different channels.

Table 1.1. Mechanism and Channels of Institutional Persistence

Mechanism of Institutional Emergence	Channels of Institutional Persistence	Source
Geographic or Natural Endowments	Economic inequality	Engerman and Sokoloff (1997)
	Political inequality	Acemoglu *et al.* (2001)
Culture	Generalized trust	Guiso *et al.* (2009)
	Cultural technologies	Jellema (2010)
	Preference for individualism	Gorodnichenko and Roland (2011)
Historical episodes	Labor codes and practices	Nunn (2008, 2009a); Dell (2010)
	Legal framework	La Porta *et al.* (1998, 2008)
	Socio-political exclusion	Acemoglu *et al.* (2006) Mahoney (2003)
	Generalized trust and morality	Tabellini (2008a)

1.2.1. Geography

In the dispute regarding the direct or indirect effects of geography and resource endowments on economic development, much of the evidence has incidentally found that variables proxying for tropical weather, high population densities, and land abundance have influenced the quality of institutions established in colonized countries, and thereby, conditioned the economic development over time. Two influential approaches in this literature are the works by Acemoglu *et al.* (2001; 2002) and Engerman and Sokoloff (1997, 2002); their views concede a significant role to the emergence of exploitative or protective institutions in some parts of the New World due to the adverse disease environment and the relative abundance of labor to land found in the newly colonized territories[1]. Therefore, while slavery, social discrimination, and economic inequality characterized countries with high settler mortality rates and high indigenous population densities, egalitarianism in civil and political rights, in addition to strong institutions protecting individuals´ property emerged in those colonies where settler mortality was lower as were indigenous population densities. The legacy left by such a contrasting institutional heritage has been frequently cited in the literature as the main reason behind the divergent path of development followed by the North and the South of the Americas (Dye 2006; Nunn 2009a).

[1] Other relevant works studying the effects of geography on the performance of institutions or economic development include Diamond (1997), Durante (2010), Easterly and Levine (2003), Gallup and Sachs (1999), Fenske (2010), and Rodrik *et al.* (2004), among many others.

While geographic variables appear to have played a role in the establishment of poor institutions in some areas, less is known about the factors that have contributed to the persistence of these institutions over time[2]. The studies of Acemoglu and associates, as well as Engerman, Sokoloff and coauthors, have proposed political inequality, economic inequality and the unequal provision of public goods as ways of perpetuating the *status quo* of the elite in power (see also Easterly 2007). More recently, evidence is converging on the idea that the potential effects of resource endowments on institutions are mediated through other factors such as the unequal investment of human capital (Bobonis and Morrow 2010), or labor scarcity (Fenske 2010). Nonetheless, there are a few empirical contributions verifying the plausibility of the proposed channels. For instance, Acemoglu *et al.* (2009) argue in favor of political inequality as the main channel through which exclusionary institutions prevailed in nineteenth-century Cundinamarca, Colombia. In a similar way, Engerman and Sokoloff (2005), and Mariscal and Sokoloff (2000) provide historical accounts pointing to restrictions in political rights, wealth inequality, exclusionary schooling and reduced access to other public goods as mechanisms aimed at excluding majorities from essential rights in South America. Accordingly, exclusionary institutions and social practices permeated the social fabric of that region, leading to the entrenchment of exploitative institutions in the long-run. Though impressive, these accounts have been questioned in different ways. For instance, Coatsworth (2005; 2008) doubts that endowments shaped the institutional legacy of Latin America and instead proposes the traumatic adaptation of Spanish institutions and the resistance to them in the region as the cause of its poor performance in the long run. In the same vein, North *et al.* (2000) dismiss any potential role for geographic factors in the design and persistence of American institutions; in contrast, they support a view where the institutional legacy inherited by North America privileged a market-based federalism which was superior to the centralized governments instituted by the Spanish and Portuguese crowns in the rest of the Americas. I will return to the impact of history on institutional persistence below.

1.2.2. Culture

A huge social science literature relies on cultural differences to explain the development or underdevelopment of nations (Gorodnichenko and Roland 2011; Jellema 2010; Landes 2006; Spolaore and Wacziarg 2009). Indeed, when culture is proxied by beliefs, moral norms, and values, it appears to guide much of our economic decisions (Fernandez 2010; Guiso *et al.* 2006), shapes our preferences for social cooperation (Guiso *et al.* 2010), conditions our commitment to follow the law (Licht *et al.* 2007), or predisposes us to engage in corrupt behavior (Fishman and Miguel 2007). Even more relevant for my work here, is that cultural differences have been regarded as crucial in the qualitative divergence of institutions in poor and rich countries. For

[2] Despite the initial empirical work by Acemoglu *et al.* (2001, 2002), Easterly and Levine (2003), and Rodrik *et al.* (2004) suggested a direct effect of geographical endowments on institutions.

instance, Greif (2006) has argued that the collectivist system of social enforcement followed by Maghribis´traders in the Mediterranean around the twelfth-century retarded the emergence of more impersonal systems of social responsibility, which has been frequently associated to the expansion of markets. Similarly, Kuran (2004) has identified some religious beliefs and other idiosyncratic values of the Middle East as important obstacles for changing laws ruling inheritance codes and the creation of corporative bodies in the region. In a broader context, Landes (2006), and Greif and Tabellini (2010) attribute the institutional bifurcation shown by China and Europe since medieval times, to cultural differences.

Theories pointing to the prominence of culture in shaping modern institutions may gain support to the extent that the literature provides convincing evidence on the channels or ways through which belief, moral norms, and values influence current institutional design[3]. In this respect, the recent empirical literature on the subject has made significant advances. One example is Guiso *et al.* (2009) who found that the level of bilateral trust varied from high to low as genetic dissimilarity grew, where genetic dissimilarity was taken as a proxy of cultural distance[4]. This finding led Guiso *et al.* to conclude that cultural biases determined the intensity of trade in Europe through its effects on trust. Spolaore and Wacziarg (2009) follow a similar empirical strategy, but this time measuring the genetic distance of a given country in relation to the USA. They found that countries more genetically distant to the USA have lower income levels in the long run than those genetically related to this country[5]. The authors sustain that societies closely related in genetic and cultural terms are prone to share similar values and knowledge. Conversely, genetically unrelated societies face *barriers* in the adoption of common values. Therefore, even when an underdeveloped society is eager adopt a social innovation coming from a developed one, it is doomed to fail because the transmission of the prevalent values will trump the assimilation of the imported social innovation, given that the *old* values are more easily (even unintentionally) transmitted than the *new* ones[6]. The problem with their approach is that genetic distance may imply differences in belief, habits, biases or social conventions, etc. across societies, but they

[3] The impact of culture on institutions includes both formal and informal institutions although it seems that the latter are much more affected (North 1990, 2005; Williamson 2000).

[4] The econometric technique used for the papers reviewed in this paragraph is the instrumental variables strategy where the instrument is the proxy for genetic distance.

[5] Both Guiso *et al.* (2009) and Spolaore and Wacziarg (2009) measure genetic distance by way of DNA polymorphism, a situation in which a DNA sequence exists in at least two different forms (or alleles). Putting it differently, the idea is to calculate the probability that two alleles at a given place selected at random from two populations will be different. Therefore, the probability is zero when allele distributions are strictly identical, but positive when allele distributions differ. Obviously, the genetic dissimilarity or distance between two countries increases when their respective allele distributions are different. Given that the data on genetic distance is only available at population level, the genetic relatedness between countries can be calculated only when information on the population composition of a country is known.

[6] Ashraf and Galor (2010) propose a similar approach and find that moderate levels of genetic (or population) diversity are compatible with increases in economic productivity, but this does not happen at extreme levels of diversity (very low or very high).

do not specify the trait or characteristics that may create and maintain the *barriers of diffusion* between them. In contrast to the already cited work of Guiso *et al.* on proposing the variations in the level trust as the institutional channel causing genetic distance to persist, Spolaore and Wacziarg's thesis lacks of a specific channel for explaining institutional persistence.

Two other studies connect genetic distance with the institutional persistence of culture. Jellema (2010) argues that genetic dissimilarities influence institutions through the variation of *cultural technologies* across societies[7]. Gorodnichenko and Roland (2011), use the genetic distance from the population of a given country in relation to the population in the USA, considered the most individualistic country in the study, for studying whether preferences for individualism or collectivism predict modern economic development. They find that countries with strong preferences for individualist behavior tend to be more developed than those countries with low preferences for individualism. The authors believe that parental transmission and institutions appear to be the most likely channels making individualism persist as a cultural trait over time.

Although the evidence about the presence of channels of institutional persistence driven by cultural values may appear incontrovertible for some, an important flaw of the empirical literature is that it assumes the persistence of the proposed channels without putting too much effort in explaining how cultural traits resist forces eroding or transforming them over time (Wallis 2010). For instance, Nunn (2012) has enumerated several cases in which cultural values were shaped by historical contingencies, such as the massive migrations in the early settlement of the USA or the impact of Protestantism on the moral foundations of the market-based industrial economy. Thus, explanations supporting cultural forces as the reason for institutional persistence require frameworks linking the interplay of a specific cultural mechanism of persistence with institutions and other forces, such as history or technological changes, to highlight the resilience of culture on institutions even under shocks[8].

1.2.3. History

A growing literature tells us that major historical episodes have influenced the paths to development followed by many countries[9]. The contingency of historical episodes may drive the fate of a country in several ways, one of them being the duration of the historical contingency itself. For example, Grier (1999) shows that the length of colonization is positively correlated with the modern economic growth for a sample of

[7] Jellema (2010) proposes class stratification, inheritance rights, and game complexity as proxies of cultural technologies. He assumes that societies with high levels of sophistication in those technologies tend to be developed.

[8] The works by Tabellini (2008b) and Murrell and Schmidt (2011) are significant contributions on this incipient literature.

[9] See Nunn (2009b, 2012) and Woolcock *et al.* (2010) for recent reviews of the literature on the subject.

ex-colonies[10]. But the identity of the colonial power also appears to have influenced the development of colonized countries, as Bertocchi and Canova (2002) demonstrates when studying the impact of the twentieth century European colonization in Africa´s economic performance. They found that African colonies ruled by France and the United Kingdom have higher rates of economic growth than those under Belgian and Portuguese domination[11].

More importantly for this work is that colonialism also implied the transplantation of diverse institutional heritages and, consequently, the subsequent development of former colonies. A very influential contribution on this issue is from North *et al.* (2000) who argue that the market based federalism inherited by the United States and Canada allowed them to build a decentralized self-government structure that was crucial for maintaining socio-political instability under control after their independence. Contrastingly, the centralized control of the Spanish and Portuguese crowns in their Americans colonies impeded the political classes there to develop autonomous forms of government. This led to frequent confrontations among Latin American elites, something which generalized political turmoil in the post-revolutionary period[12]. In a different context, Banerjee and Iyer (2005) have also illustrated the differential impact of institutional legacies by analyzing the sustained differences in agricultural productivity in India. They report that plots of land assigned by the British to the landlords have historically underperformed in relation to those owned by their cultivators. After controlling for potential endogeneity and omitted variables, the authors conclude that the productivity differences reside on the different property regimes and not due to geographical or ecological disadvantages endured by the landlord districts.

Clearly, colonization is not the only source of historical episodes with enduring effects on institutions in the long run. Two memorable episodes with a long-lasting impact on the countries of their origin and abroad were fundamentally domestic. The first is the Glorious Revolution in seventeenth century Britain. North and Weingast (1989) situate the parliament´s demand to the British king in honoring its debts as the

[10] Feyrer and Sacerdote (2007) reach a similar finding for a sample of islands colonized by the Europeans throughout the Atlantic, Pacific and Indians Oceans. Moreover, they show that colonization after 1700 were more beneficial for colonies than those undertaken in earlier years, and that colonies under the US, British, French and Dutch rule performed economically much better than the islands controlled by the Portuguese or the Spanish.

[11] Alternatively, Angeles (2007) has provided statistical evidence on the dark side of colonialism by showing that the modern income inequality of former colonies is high where Europeans settled as the prominent minority, but low where they were majority. Although the author does not clarify why Europeans settled in such different patterns, it is clear from his explanation that neither geographic conditions nor resource endowments motivated the settlements, as presumed by Acemoglu *et al.* (2001) and Engerman and Sokoloff (1997).

[12] Lange *et al.* (2006) develop a similar approach but explaining the differential development of former British and Spanish colonies as the direct consequence of the economic strategies followed by each empire.

start of a sustained protection of individuals´ property rights in England[13]. The second episode is the French Revolution, this not only reconfigured much of the civil, political and social institutions in France but also spread its effects to other countries under French control, and beyond. Acemoglu *et al.* (2009) have reported perdurable beneficial effects of the revolutionary changes in those countries invaded by France in the XIX century given that reforms suddenly stripped nobles, clerics, guilds and oligarchies of their privileges based on unequal laws. According to these authors, the changes resulted in sustained economic growth in most of the countries occupied by the French empire.

More recent work provides potential channels through which historical episodes may have persisted over time. For instance, Nunn (2008) relies on an instrumental variables model to demonstrate the negative effects of a history of slave trade on the current economic situation of Africa. He identifies trade-forced labor in the past as potentially damaging for institutional quality in the African region because, it is argued, it undermined trust relations and introduced instability in ethnically fragmented groups. This in turn, has had a deleterious effect in the development of modern Africa[14]. Dell (2010) has proposed a similar approach but this time using a regression discontinuity model with data on the Peru´s *mita*, a forced system of labor imposed on the colonies by the Spanish crown. She found a negative effect of past slavery practices on the current access to markets, public goods provision and minimum legal income in the populations where the *mita* endured. Legal heritage is another channel of institutional persistence widely cited in the literature. This view suggests that common law is a less interventionist legal framework than civil law, and given that the first is associated to the British legal tradition while the second to the French civil laws, La Porta *et al.* (1998, 2008) found evidence where former British ex-colonies have enjoyed faster economic growth compared to the French ones.

From another perspective, other scholars have argued that socio-political exclusion may have been a source of institutionalized inequality in the Americas. According to Mahoney (2003) the socioeconomic stratification present in most of Latin American societies today, is a consequence of the discrimination created along cultural and ethnic lines by the Spanish and Portuguese policies and rules in colonial times. Acemoglu and Robinson (2006) model the legal transformation that conceded more rights to the black population in the south of the United States after the Civil War where Southern elites for a prolonged period successfully eluded the reforms by blocking them politically or by appealing to coercion, or the intimidation of the pro-rights groups.

[13] This view has been recently challenge by Murrel and Schmidt (2011), and by Pincus and Robinson (2011).

[14] Nunn and Wantchekon (2011) elaborate more on the different levels of mistrust within Africa as a consequence of its history of slave trade.

A final channel of institutional persistence driven by historical forces is presented in a paper by Tabellini (2008a), who find that societies ruled in the past by non-despotic political institutions are likely to experience generalized morality and trust, while those governed by despotic leaders or regimes are not. Recall that the resilience of values, norms, and codes of conduct to change, makes them persistent and relatively difficult to change even under social shocks (Roland 2004, Williamson 2000). Tabellini´s view have received support in a recent study by Becker *et al.* (2011), where it is shown that the Habsburg empire left a lasting legacy in terms of citizens´ trust of state institutions and the rejection of potential corruption in government.

No doubt, geography, culture and history are linked in very complex ways and their combined effects are sure to contribute towards institutional designs. In this sense, Bertocchi (2011) provides an integrated approach of these variables when explaining the institutional performance of Africa. Fenske (2010) follows a similar approach but emphasizing the role of geographic variables in the uneven economic growth of African countries since pre-colonial times. Berkowitz and Clay (2012) also develop a well-motivated statistical strategy for revealing the causal links between the geographic endowments of the states in the USA and the shaping of the legal institutions in that country. Recently, Nunn (2012) has argued that a myriad of cultural mechanisms have played a major role in the persistence of significant historical shocks over time. I already mentioned the influential views of Engerman and Sokoloff (1997) and Acemoglu *et al.* (2001) who appealed to episodes of colonization and resource endowments to build innovative insights regarding the emergence and persistence of the institutions in the newly colonized territories.

1.3. Case studies on institutional persistence

When Paul David (1994) defined institutions as *path dependent*, he referred to the "reinforcement of mutual expectations" among individuals as essential for sustaining an institutional equilibrium over time. Moreover, David (1994) called institutions "carriers of history" because they are the consequence of a social dynamic nurtured by circumstances and decisions made in the past. Thus, not in vain much of the literature on institutional persistence studies it as a path-dependent process, where the focus is on the enforceable nature of formal institutions, but also informal ones such as social conventions, social norms and moral rules. In both cases, enforceability is the key idea. For example, some scholars believe that institutions persist because the state is committed to enforce the rules relentlessly (Mantzavinos 2000). Others think that enforceability emerges when pursuing sustained cooperation through obedience of conventions and social norms (Fehr and Fischbacher 2004; Mantzavinos 2000; Ostrom 1990; Sugden 2005). Finally, the persistence of institutions may have a biological origin that drives enforceability by way of individuals´ intrinsic codes of conduct and values (de Waal 2006).

In this section I propose to review a series of case studies that treat the issue of institutional longevity or endurance and do so, mostly, from the perspective of enforceability. In particular I will review Islamic law in the context of economic growth in the Middle East, the guilds in medieval times, and the open fields in England and continental Europe. These stories provide us with a conceptual framework for disentangling which factors drive institutional longevity, but at the same time, they are helpful for the identification of channels linking this longevity to the purported effects on development in the long run.

1.3.1. The role of institutions in the underdevelopment of the Middle East

A controversial issue in the development literature is the cause of the economic stagnation of the Middle East during the last millennia[15]. Among the different approaches explaining the relative underdevelopment of the Middle East, Kuran (2003, 2004, and 2011) has advanced the idea that a cluster of institutions related to the Islamic religion have played a major role in the backwardness of the Arabian economies[16]. He analyzes the negative effects on economic growth caused by three key institutions of the region: the excessive egalitarianism of the Islamic law of inheritance, the absence of the *corporation* as a consequence of the strict individualism of Islamic law, and the *waqf*, a sort of private foundation intended to provide public goods which ultimately channeled vast resources to dysfunctional organizations[17] (Kuran 2004).

The first institution impeded development because the Islamic inheritance law forced the fragmentation of properties and economic assets in pursuing equality among the potential heirs. In practical terms, much of the legal dispositions led to the fragmentation of property, reducing possibilities of wealth accumulation. Kuran (2004, 2011) points out that while the inheritance law succeeded in protecting those in a vulnerable situation, this was done at the cost of the excessive fragmentation of property. Similarly, the absence of the *corporation* in the Islamic world can not only be linked to this intergenerational fragmentation of property, but also, following Kuran (2011), to the risk of dissolution faced by the partnership if one of the partners dies. This facet of Islamic law denied the possibility that a successful business partnership survive the death of its founders[18]. Finally, the third institution, the *waqf*, emerged as a

[15] See Clark (2007), Landes (1998), and Pommeranz (2000) for alternatives explanations on the rise of West and the relative underdevelopment of other parts of the world.

[16] Kuran´s view should not be taken as evidence of the inferiority of Islamic institutions in relation to those of the West. As a matter of fact, Chaney (2008) has reported the *institutionalized tolerance* of non-Muslims religions as a major determinant in the rapid ascent of the sciences in the early stages of the Muslim world.

[17] In his recent book, Kuran (2011) develops a more comprehensive explanation for a total of eleven institutions that helped to delay the economic modernization of the Middle East.

[18] Cizakca (2010) dismisses Kuran´s concerns about the criticality of the corporation in the Middle East economic expansion by claiming that China invented this figure, *de facto,* in the Sixteenth century but it did not avoid the underdevelopment of that country. In contrast, Cizakca proposes the confiscatory

privately funded trust or foundation with a significant social impact given than they provided for shelter, sanitation, education, and other public services to the poorest in the Middle East. Nonetheless, the waqf´s functioning allowed their benefactors to avoid taxation, or potential expropriation, as well as evade the harsh features of inheritance law. Moreover, as the founders of the waqfs had the right to designate the *mutawalli* or manager of the trust, they may have appointed themselves or their relatives with attractive salaries. Kuran (2011) claims that the waqfs became dysfunctional as their fixed organizational structure did not cope with the economic and technological changes experienced by the Middle East in the eighteen and nineteenth centuries.

Interestingly, even though many of these institutions favored the consolidation of Islam around the tenth century, they gradually became obstacles to development in the Middle East in the subsequent centuries. Kuran (2011) argues that these institutions persisted for a long time due to their *self-enforcing*, if not their *self-reinforcing* nature[19]. For instance, Rubin (2008) has offered reasons behind the persistence of the interest ban in Christian and Islamic religions. He argues that bans on interest were lifted in Christian Western Europe much before than they were in the Middle East because political actions and legal structures in Europe did not relied heavily on Christian doctrine. This gap between politics and religion allowed Europeans businessmen to erode the political condemnation derived from Christianity's rejection of charging interests on loans. It did not happen in the Muslim world, where the strong linkage between the religious groups and politicians largely impeded the legality of interest. Thus, by arguing political and legal independence, challenging the church, and inventing ways for circumventing the ban on interest, Western Europeans bankers changed the institutional (politico-legal) environment. In contrast, in the Middle East attempts to legalize interest on loans failed because of the inextricable relationship between politics and religion. Legalizing interest would have demolished the credibility of religious authorities by questioning the legitimacy of Islamic law.

When explaining the reasons behind the emergence and prolonged duration of those institutions in the Middle East countries, Kuran (2011) attributes them to the historical roots associated with traditional Islamic law, the disorganization of the private and civil society, and the poor innovations in politics. On the other hand, Greif (2006) argues that the cultural heritage of Middle East traders favored collectivist associations in trade that resulted in limited market expansions due to the personal nature of exchanges, while; in contrast, the traders from the West relied more on impersonal exchanges, which required courts and the state apparatus for solving commercial disputes. This

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actions of the Ottoman economic doctrine as the main cause behind the economic stagnation of the Middle East along the last millennia.

[19] Institutions are self-enforced when is in the agents´ interest follow a convention or norm by their own interest in order to facilitate social coordination, for instance, driving on the right side of the way is one of them. Now, institutions are self-reinforced when the agents penalize those who do not follow a social norm. See Greif (2006) for more on this issue.

kind of formal arrangement facilitated the expansion of trade in Europe. Now, what appears to be clear is that much of the social inertia driving those dysfunctional institutions influenced significantly the Middle East´s development prospects even after the derogation or modification of the above-mentioned institutions (Kuran 2004, 2011).

1.3.2. The medieval guilds

Guilds governed much of economic exchange during medieval times and beyond. Guilds organized individuals along religious, commercial, political, or professional activities and carried out a myriad of transactions that could not be made through the markets at that time. The duration and penetration of the guilds varied across countries and regions worldwide, many studies report their presence in Western Europe, America and Asia (Epstein 1998). The prevalence of guilds as institutional arrangements for channeling resources and organizing exchange has been a matter of debate among economic historians. Nonetheless, what is incontrovertible is that guilds appear to have had some particularities that made them very resilient over time. This fact has motivated two types of explanations regarding the guilds´ persistence in Western Europe from 1000 to 1500 AC (Ogilvie 2007a, 2011).

The first explanation relies on the relative efficiency of guilds in relation to others social mechanisms for arranging exchange during medieval times. For instance, Epstein (1998) has elaborated on the reduction in transactions costs caused by guilds when masters and apprentices settled disputes regarding the responsibilities of both parts in the accomplishing of labor contracts. In a similar way, Greif *et al.* (1995) have proposed a game theoretic model supported with historical evidence from the medieval trade at the Mediterranean sea in which merchant guilds may have been instrumental not only for supporting trade among the members of a trade coalition but also for its functions as a political mechanism for coordinating merchants when the guild imposed commercial embargoes against those rulers who abused or alienated the rights of any coalition´s partner. At the heart of the guild´s efficiency in reducing transaction costs resides the system of beliefs and values that drove the expectations of guild's members (Epstein 1998; Epstein and Prak 2004; Greif 2006; Ogilvie 2007a, 2007b). Beliefs facilitated decision-making when the behavior of some members of the coalition called for sanctions or when unexpected situations put the stability of the group at risk and consequently contributed towards the survival of guilds. Now, the belief system did not necessarily determine how sanctions were enforced, but bilateral, multilateral, or community responsibility systems are proposed in the literature as the preferred reputation mechanisms in the enforcement of agency relations (See Greif 2006, 2008; Ogilvie 2011). Thus, guilds persisted as long as their supporting system of beliefs was shared and effectively followed by their partners[20]. The path dependency of those belief

[20] The debate regarding the origins of the system of belief in guilds is still ongoing in the literature. While Greif (2006) suggests cultural traits as the crucial shaping force of beliefs and values, Epstein (1998) invokes historical episodes and social structure as their main determinants. In a critical paper, Ogilvie

systems appeared to be so strong that some historians reject the idea that guilds´ influence ended with the *ancien régime* in Europe. Moreover, they argue that guilds shaped the political, cultural, social and economic institutions built in the most important European urban centers of the time (De Moor 2008; Lucassen *et al.* 2008).

The second explanation about the long persistence of guilds relies on the unequal distribution of coercive power in guilds as essential for the redistributive process carried out by these institutions. Ogilvie (2007a, 2007b, and 2011) denies any kind of transactional efficiency in the functioning of guilds in medieval Europe. She portrays guilds as rent seeking institutions in which guild´s masters are at the center of a complex and potentially conflictive process of rent distribution. According to Ogilvie (2007a), the dyadic master-apprentice relationship in craft guilds, or the merchant-agent in merchant guilds resembles power relationships where the powerful prevail through coercion. Thus, the unequal relation will pervade until the rents disappear or the oppressed rebel against the powerful; this last outcome is discarded by Ogilvie (2007a, 2011) because of its propensity to generate sub-optimal results.

1.3.3. The open fields

We can find other stories of prolonged institutional endurance in the literature. For instance, The Open Fields of England have captured the attention of many scholars seeking for the prevalence of this medieval agricultural system, which was characterized by the farming of multiple strips of land barely demarcated[21]. It is believed that this system persisted in England from the tenth century to the beginnings of the nineteenth. Definitely, McCloskey (1972, 1989, and 1991) has advanced the most influential explanation on the persistence of British open fields; she attributes it to a strategy of risk diversification followed by the farmers in times where the assurance of risks in agriculture was inexistent. At the meta-level of her analysis, McCloskey concedes a significant role to the informal norms and parochialism in British social relations in reducing the transactions costs associated with the protection of individual rights in a context of costly protection of legal property rights. Nonetheless, Allen (1982, 1992, and 2001) has advanced a different view regarding the persistence of open fields in England; he proposes the relative efficiency of open fields in relation to enclosed fields and the freedom of innovating with new crops in commons fields as explanation of their prevalence. Similarly, Clark (1998) argues that the high costs of fencing property in medieval England dissuaded the owners of the land to enclose their properties, even though fencing would has increased land´s rents in about 15%. Richardson (2005) has also criticized McCloskey´s view and instead has linked scattered farming to a strategy

(2007a) calls for skepticism about studies modeling the system of beliefs of a guild as endogenous to the group´s preferences, given that this approach implies that cultural values are malleable in the seeking for "economic efficiency". But Greif (2008) alleged he has refuted Ogilvie and coauthors in this respect.

[21] The open fields were not exclusive of medieval England; Allen (2001), Clark (1998), De Moor (2008), McCloskey (1998) and others scholars have reported the phenomenon in other parts of Europe, America, and Asia.

for diversifying risk by showing historical evidence in which medieval English peasants formed *Fraternities* and *customary poor laws* as mechanisms to help fellow farmers in need when poor crops reached them. Richardson (2005) views these mechanisms as examples of informal institutions and makes the case for considering, especially, *Fraternities* as a self-reinforced social organization which adopted collective decisions for mitigate free riding, moral hazard, and adverse selection by restricting the number of people belonging to the group, imposing sanctions to infractors, or seeking for the recommendations of current members for the admittances of new applicants, among many other strategies[22].

1.4. Conclusion

I presented two ways of approaching institutional persistence. The first relies on the influence of geography, culture and history on both the emergence of institutions and the channels transmitting their effects over time. The second approaches institutional endurance by way of the forces supporting the enforcement of an institution over time. Both approaches are complimentary in many ways. For example, the enforcement mechanisms studied by Greif (2006) and Greif *et al.* (1995) rely on cultural differences, and specifically, to religious beliefs as the main institutional channel of persistence through which traders arranged sanctions for maintaining the stability of the group. Similarly, the *mita* or the *enconmiendas*, both long-enduring slavery institutions implemented in Spanish America have been associated to competing channels of institutional persistence; one is *wealth inequality* (Engerman and Sokoloff 1997, 2002), and the other *political inequality* (Acemoglu et al. 2001, 2009; Dell 2011). This controversy appears to be decided in favor of the latter when an enforcement mechanism is brought into the analysis by Acemoglu *et al.* (2009), and Acemoglu and Robinson (2006, 2008) who propose practices such as bribery, clientelism, or lobbying as collective action activities promoted by elites for maintaining their privileges over time. Finally, the complementarity between both strands of literature can be seen in the studies of English open fields. In this case we can appreciate how the same source of institutional emergence, geographical endowments, may lead to alternative enforcement mechanisms for the persistence of the fields: one focuses on the peasants' risk diversification strategy as an individual's perception phenomenon (McCloskey 1972, 1989); while the second, acknowledges it as a collective action based on religious beliefs (Richardson 2005). In my opinion, this issue can be clarified if each enforcement mechanism is associated to a channel of persistence, something that is briefly addressed by Richardson's paper but absent in the works by McCloskey.

[22] According to Richardson (2005), religious beliefs motivated the members of the Fraternity to fulfill charitable obligations and meet the ordinances emanating from collective decisions.

Chapter 2

The Endurance of Political Constitutions: The Impact of Geography, Culture and Historical Legacies

2.1. Introduction

Political constitutions have proven to be beneficial for political stability, economic growth, social development and global political integration. A huge literature in economics, law, and political science has demonstrated that constitutional design matters for economic development[23]. While these approaches may be summarized with the claim that *constitutional design matters*, a complimentary view maintains the endurance of political constitutions may depend on *environmental factors* such as cultural traits, domestic politics, historical contingencies, and other contextual factors have been mentioned as key elements of constitutional survival (Elster 1995b, 2000; Lutz 2006; Simeon 2009; and Tushnet 2008). In a related way, a more general literature in institutional economics has also been studying the mechanism through which factors such as geography, culture and history may have shaped the protection of property rights and other individuals' liberties (Acemoglu *et al.* 2001, 2002; Engerman and Sokoloff 1997, 2002), the antiquity of the state (Bockstette *et al.* 2002; Putterman 2008), the origins of accountable political behavior (Tabellini 2008a), or the quality of economic institutions in the long run (Easterly and Levine 2003; Nunn 2009b; Rodrik

[23] For instance, by structuring the state (Elster 1995a, 2000), limiting the government and provisioning for human, civil and property rights (North and Weingast 1989), or framing political competition and affecting the formulation of economic policy (Persson and Tabellini 2003), or stating which organs administer and interpret its dispositions (Shane 2006), through these and other channels, political constitutions appear to have had a profound and systematic impact in the prospects of countries´ development (Elkins *et al.* 2009; Persson and Tabellini 2003; Weingast 2005).

et al. 2004, among others). Unlike work explaining institutional change in the long-term, the literature dealing with constitutional endurance is characterized by a scarcity of empirical analysis of the positive determinants of constitutional survival. A notable exception is a recent book by Elkins *et al.* (2009), which applies an epidemiological approach (or duration model approach) to examine factors that may increase the risk of constitutional failure. The work by Elkins and associates tells us that, among other findings, flexible amendment procedures, inclusive ratification processes, detailed constitutional texts, limits in the permanence of the head of states, and the type of political regime matter for constitutional endurance. Moreover, these authors also consider the role of environmental factors such as sociopolitical or economic crisis, wars, and succession in power. What they do not consider is the possible role of long term factors such as geography, culture or history on constitutional endurance.

Inspired by the previously cited work, which has identified an important role for geography, cultural traits and historical legacies for institutional change, my objective in this chapter is to study whether these factors might have also influenced the survival of constitutions in the long run. By incorporating a set of variables proxying for these determinants of institutional performance and reassessing some methodological issues, I extend the epidemiological model delivered by Elkins *et al.* (2009). My findings indicate that cultural traits and historical legacies matter for constitutional performance above and beyond the impact of constitutional design. When culture in proxied through ethnic diversity and genetic distance I find that higher cultural diversity increases the likelihood of constitutional failure. Regarding historical legacies, the prolonged timeline of early states allowed them to pioneer new constitutional texts, but it also put them at the verge of frequent constitutional failures. Unsurprisingly, countries with a past of transitioning from a centralized to a market economy have a high probability of constitutional replacement. Another important finding is that none of the indicators proxying for geographic endowments used in this work pose any significant risk to constitutional endurance.

The chapter is structured in six sections. In Section 2, I survey the literature studying how geography, culture and historical legacies have shape the emergence and performance of institutions in the long run. The third section introduces the literature on the beneficial effects of political constitutions in development and also presents the views centered on the *design* and *environmental* determinants of constitutional performance. In the next section, two alternative theoretical approaches are reviewed for understanding what makes successful constitutions endure in the long run. In Section 5, the empirical strategy is deployed and the empirical results are discussed. Three appendices at the end of the chapter complement the empirical section. Finally, Section 6 concludes the work.

2.2. Long-run determinants of institutional performance

2.2.1. Geography

Many scholars have argued that geographical factors may either spur or hinder the prospects of development of a nation (Diamond 1997; Gallup and Sachs 1999; Hibbs and Olsson 2005; Putterman 2008). Differences in climatology, resource abundance, and the risk of contagious disease propagation appear to have a direct impact on the path of economic growth followed by many countries. Nonetheless, empirical studies have questioned the alleged direct impact of geography on the economic development, suggesting that geographic factors appear to affect economic progress through indirect channels, such as institutions, trade, or human capital (Acemoglu *et al.* 2001, 2002; Easterly and Levine 2003; Engerman and Sokoloff 1997, 2002; Putterman 2008; Rodrik *et al.* 2004).

In this relation, much of the empirical research agrees that geography appears to shape economic development through its impact on the quality of institutions. For instance, after controlling for a myriad of geographical proxies Easterly and Levine (2003), and Rodrik *et al.* (2004) found that when either settler mortality (a proxy for institutional quality), latitude, or if a country is landlocked are regressed on alternative measures of institutions, they are statistically significant. More importantly, work by Engerman and Sokoloff (1997, 2002) built on the different paths to development followed by North and South America since colonization to explain how weather conditions and resource endowments may have shaped the ways institutions emerged in both regions. The authors maintain that the scarce land, the abundance of native labor, and favorable weather conditions in the tropics, allowed colonial powers in South America to develop a large-scale plantation system that favored the slavery of natives and contributed towards huge economic inequality between the governing elite and the rest of the population. According to Engerman and Sokoloff, initial disparities in wealth permeated institutions as well, in such a deep form that they are still hindering the economic progress of South America today. On the contrary, the small ratio of labor relative to land in North America, along with the strict margins for large-scale agriculture in most parts of the region, forced the British crown to allow the emergence of a significant number of small farmers, who demanded equality in social and political rights at early stages of the colonization period. Therefore, more equal institutions in North America put the region on a track of sustained development in the long run[24]. A related but slightly different approach linking geography and institutions is developed by Acemoglu *et al.* (2002), who claim that the reversal of fortune suffered by former rich countries in 1500 (e.g. most of Latin American and the Caribbean countries) is

[24] Easterly (2007) provides a favorable econometric test to the story of Engerman and Sokoloff. On the contrary, Nunn (2009a) did not found evidence of the large-scale economies in large sugar plantations of the West Indies predicted by the Engerman and Sokoloff approach; notwithstanding, Nunn confirms the deleterious impact of slavery on development.

explained by the decision of colonial powers in establish low quality institutions in those colonies plagued by tropical diseases and high native population density. The direct consequence of extractive institutions in former rich countries is the pervasive poverty affecting most of former colonies nowadays. In contrast, those countries formerly poor in 1500 (e.g. Canada and United States), endowed with temperate weather and low population density replicated much of the geographical conditions usually endured by the colonizing forces, so there they created institutions protective of property rights and equality. Eventually, these better institutions paved the way of economic progress[25]. A more recent account on the alleged impact of geography on institutional quality in the long run is made by Fenske (2010) who, relying on a formal model, links land abundance and high population density with the emergence of land rights, slavery, and polygamy in certain regions of Sub Saharan Africa in pre-colonial times. In the empirical section of the work, Fenske finds that agricultural land with high productivity in densely populated regions of Africa induced local chiefs to slave native Africans for laboring in farming activities; similarly, inequality in wealth also resulted in bigger families because many wealthy men became polygamous.

2.2.2. Culture

Another group of social scientists have largely argued in favor of cultural explanations as the major source driving the unequal economic development among nations (Landes 2000; Harrison 2000). These scholars believe that the strict adherence to certain beliefs, attitudes, moral values and social norms led western countries to achieve economic development. Moreover, a growing literature in economics asserts that cultural traits affect economic outcomes through multiple ways, and in particular, through institutions (Greif 2006; Guiso *et al.* 2006, 2010; Fernández 2010; Nunn 2012).

Even though the empirical evidence is still preliminary, it suggests an important incidence of culture on a myriad of institutions[26]. For instance, Guiso *et al.* (2009) found that the level of bilateral trust varied from high to low as genetic dissimilarity grew, where genetic dissimilarity was taken as a proxy of cultural diversity. This finding led Guiso *et al.* to conclude that cultural biases determined the intensity of trade in Europe through its effects on trust. When cultural diversity is proxied by genetic distance, or the time elapsed since two populations shared a common ancestor, what emerges is that increasing genetic distance predicts international differences in income. For example, Spolaore and Wacziarg (2009) found that countries more genetically distant to the USA have lower income levels in the long run than those genetically

[25] The works by Acemoglu *et al.* (2001, 2002) and Engerman and Sokoloff (1997, 2002) have been heavily criticized by Glaeser *et al.* (2004) and Coatsworth (2008), respectively.
[26] The impact of culture on institutions includes both formal and informal institutions although it seems that the latter are much more affected (North 1990, 2005; Williamson 2000).

related to this country[27]. The authors maintain that genetic and cultural un-relatedness create *barriers of diffusion*, or the opportunity to transmit similar values and knowledge across different societies. Thus, even when an underdeveloped country is eager adopt a social innovation coming from a developed one, it is prone to fail because the transmission of the precedent values will derail the adoption of the imported social innovation. This happens because the *old* values are more easily (even unconsciously) transmitted than the *new* ones[28]. Although Spolaore and Wacziarg admit that these traits can be transmitted intergenerationally by biological or cultural means; they propose belief, customs, habits, and biases, when channeled by informal institutions, as the main method of diffusion. Two other studies connect genetic distance with the institutional persistence of culture. Jellema (2010) argues that genetic dissimilarities influence institutions through the variation of *cultural technologies* across societies[29]. Gorodnichenko and Roland (2011) use the genetic distance from the population of a given country in relation to the population in the USA, considered the most individualistic country in the study, to determine whether preferences for individualism or collectivism predict modern economic development. The authors believe that parental transmission and institutions appear to be the most likely channels making individualism persist as a cultural trait over time.

In a different empirical approach, Licht *et al.* (2007) employ data from cross-cultural psychology to verify whether individual preferences for autonomy and egalitarianism explain the quality of the *norms of governance*, which include the rule of law, control of corruption and democratic accountability. They find a strong correlation between increased individual autonomy and better governance, even in those specifications when they control for potential endogeneity. Moreover, Licht *et al.* report that aspects of authority and vertical relations as determinants of governance are of little relevance, which contradicts a key finding by Tabellini (2008a). Finally, it is worth mentioning a microeconometric study on the impact of cultural values on corruption, which was carried out by Fisman and Miguel (2007) who used data on the illegal parking made by

[27] Both Guiso *et al.* (2009) and Spolaore and Wacziarg (2009) measure genetic distance by way of DNA polymorphism, a situation in which a DNA sequence exists in at least two different forms (or alleles). Putting it differently, the idea is to calculate the probability that two alleles at a given place selected at random from two populations will be different. Therefore, the probability is zero when allele distributions are strictly identical, but positive when allele distributions differ. Obviously, the genetic dissimilarity or distance between two countries increases when their respective allele distributions are different. Given that the data on genetic distance is only available at population level, the genetic relatedness between countries can be calculated only when information on the population composition of a country is known.

[28] Ashraf and Galor (2010) propose a similar approach and find that moderate levels of genetic (or population) diversity are compatible with increases in economic productivity, but this does not happen at extreme levels of diversity (very low or very high).

[29] Jellema (2010) proposes class stratification, inheritance rights, and game complexity as proxies of cultural technologies. He assumes that societies with high levels of sophistication in those technologies tend to be developed.

vehicles with United Nation´s plates in New York[30]. The authors find a close association of illegal parking by diplomats with the perceived level of corruption in their respective countries and as such help clarify the link between culture and corruption.

2.2.3. History

Historical episodes are frequently cited as sources of major institutional change for many countries around the world (Nunn 2009b). The contingency of history matters because it may shape the development prospects of countries in the long run. According to David (1994) institutions are the carriers of history, in the sense that institutions contain the inertia caused by path breaking episodes of the past. Thus, institutions are the privileged, but not exclusive, mechanism through which history speaks.

Colonization has been considered for many as the most influential and dramatic episodes in a country's history. During the last decade, some studies in economics have tried to disentangle how the colonization period shaped the path of economic development followed by colonies. Bertocchi and Canova (2002) have shown a direct negative effect of the Portuguese and Belgian colonial legacies in a sample of former African colonies. Similarly, Feyrer and Sacerdote (2007) build a database of islands colonized in the past to study the impact of colonization on modern levels of income. In general, they found an important positive effect of colonization on the present economic development of the islands. But the islands ruled by the British, Dutch, France and the US benefited more from colonization than those colonized by Portugal or Spain. Another way of analyzing the incidence of colonization is by studying how institutional transplantation carried out by colonial powers shaped the institutional quality, and thereby, the pattern of development of the colonized. For instance, La Porta *et al.* (1998, 2008) have examined how the legal inheritance bequeathed by colonial powers has affected the development of former colonies. They find that British common law tends to be beneficial for economic progress, while French civil law is considered an obstacle. La Porta *et al.* (2008) argue that the common law advantage resides in its support to market outcomes, whereas the civil law replaces markets with state-desired allocations. Many other works contradict these findings. Some scholars have pointed to the precarious entrenchment of law in the societies of former colonies (Levine 2005; Weingast 2008). Of course, colonizers did not transplant only their legal frameworks in the new territories; they also imposed a myriad of new practices, rules and policies with long lasting effects in the institutional evolution of ex-colonies. Banerjee and Iyer (2005) document the effects caused by the agrarian institutional transplantation made by the British authorities in colonial India during the XIX century. There, the British rulers changed the system for collecting revenues from agricultural lands, by instituting a regime of property beneficial for landlords. This change had such a profound impact

[30] It is important to note that the study was partially motivated for the legal exemption made by the New York City in prosecuting the vehicles with United Nation' s plates when they parked illegally. The exemption was derogated in 2002.

that even today the lands affected by the British rule are less productive than those excluded from the law. Nunn (2008) studies the impact that slavery had in the subsequent economic performance of Africa; he found a deleterious effect of slavery on the economic growth of modern countries where slavery practices used to be intense. In a recent work by Nunn and Wantchekon (2010) they report that slavery hindered the economic prospects of Africa by deteriorating the quality of social norms shared by the individuals of the region. The authors pointed to slavery as a causal mechanism for destroying trust among Africans, because the hunt for slaves usually meant that slavers included the members of one ethnic group while the slaves where members of other groups.

2.3. On the determinants of constitutional endurance

A huge literature in economics and political science agrees that political constitutions matter for the economic prosperity of nations (Persson and Tabellini 2003; Voigt 2009; Whytock 2008). By analyzing the structure, statements and intentions of constitutional provisions, researchers have largely debated on those key issues that must be included in optimal constitutional designs (Colomer 2006; Shane 2006). Nonetheless, until recently, little was known on how design factors explained the endurance of constitutions. Thanks to the empirical work by Elkins *et al.* (2009) I have some preliminary evidence revealing which aspects of constitutional design matter, but also those related to everyday politics, social and political instability, economic crises, and international relations, called here *environmental factors*, which also condition the constitutional endurance. Unfortunately, Elkins *et al.* focus on issues of constitutional design, leaving aside whether long term factors as geography, culture and history could have influenced the performance of constitutions, even though many scholars have argued that legitimate constitutions should be based on general principles without putting aside the culture, social, and political contexts (Lutz 2006; Simeon 2009; Tushnet 2008). Furthermore, many scholars have reported that the elaboration of constitutions and their respective enforcement are critically determined by a vast set of norms, moral codes, and social conventions, which in turn were shaped by a heterogeneous combination of geographical, cultural and historical factors (Elster 1995b; Dye 2006; Gargarella 2005). But before assessing whether long-term factors could affect the performance of constitutions, a better understanding of the theory and empirics surrounding constitutional design is required.

2.3.1. Constitutional design

The literature on the normative and legal implications of constitutional design is vast and scattered in different fields of economics, law, and political science. But at risk of simplifying, the consequences of the structure of the state, the limits of government, the electoral system or the dispositions on civil rights, in matters as economic policy, legal interpretation, or electoral performance are some of the key constitutional features

identified by this literature (Colomer 2006; Person and Tabellini 2003; Shane 2006). In fact, comparative studies in constitutional design have allowed us to begin to understand about how different constitutional frameworks may improve political decisions, and hence, spur economic development (Persson and Tabellini 2003). On this basis, one might also imagine that alternatives constitutional designs could also affect the endurance of constitutions. But this question has been scarcely addressed in the literature, with important exemptions. A contribution by Hammons (1999) builds an empirical strategy to study if the length of U.S. states constitutions affected their endurance. He found that, after controlling for some geographic variables, constitutions stating a few general provisions outlived lengthier documents full of detailed constitutional dispositions[31]. In a related work, Rasch and Congleton (2006) report longer lives for those constitutions with few and flexible steps for amendment procedures, while, in contrast, more rigid constitutions disappear at young ages. But, the authoritative work on whether constitutional design issues impact the endurance of them has been made by Elkins *et al.* (2009), who after building an extensive database on enforced constitutions worldwide, carried out an epidemiological study seeking for those aspects of constitutional design contributing towards constitutional failure[32]. As we shall see in more detail in the empirical section, Elkins *et al.* found that the amendment procedure, the details in constitutional texts, the explicit limits to the head of state for staying in power, and the level of inclusiveness in the constitutional making process favored the endurance of constitutions around the world. Unfortunately, even though Elkins *et al.* controlled for whether disruptive events, such as sociopolitical or economic crisis, wars, and succession in power affected constitutional survival, they did not control for long term factors such as geography, culture or history, which, as we have seen, have played a prominent role in the emergence and persistence of a myriad of institutions.

2.3.2. Environmental factors

Domestic and international events have had demonstrable effects on institutions. Conflicts ranging from political assassinations, coups, unstable political leadership, ethnic conflict, high economic inequality, wars, natural disasters, and periods of economic hardship have undermined the stability of institutions in different countries over time. Cortell and Peterson (1999) report pressures in the reform of institutions as countries signed new defense treaties or engage in growing trade; the formation of European Union illustrates this scenario. Similarly, countries embroiled in civil wars

[31] In the same vein, Berkowitz and Clay (2004) rely on the comparative history of the legal systems adopted in southern and northern states of the US, in an attempt to verify empirically Hayek´s hypothesis suggesting that the Common Law legal framework is superior in protecting economic rights than the Civil Code or French legal tradition. They find significant statistical support for Hayek´s insight; however, this issue is controversial in the more general literature of property rights protection and development, as mentioned above.

[32] Negretto (2008) follows the same empirical strategy for explaining the determinants of constitutional durability in twentieth century Latin America.

could seem as the general support to their institutions vanish as conflict intensify, though this situation could be reversed if reconciliation is embraced by the parts in conflict (Blattman and Miguel 2009). In the same vein, when leaders stay in power for long, they could bring stability to the institutional framework at the cost of reduced liberties in undemocratic regimes, but when they are ousted from power by assassinations or through irregular means, their dismissal could provoke significant institutional restructuring (Jones and Olken 2009). With regards to the negative effects of ethnic confrontation, a growing literature in economic development has studied the deleterious impact of ethnic fractionalization on the provision of public goods, the efficiency of taxation institutions, or the vitality of social cooperation in weak states (Alesina and La Ferrara 2000, 2005; Alesina *et al.* 2003; Easterly and Levine 1997). For the case of constitutions, Elkins *et al.* (2009) found disruptive effects of sociopolitical conflicts, and regime transition to either democracy or autocracy on the survival of constitutions. Additionally, increased constitutional replacement by neighboring countries, or at global scale, also increases the risk of constitutional failure for any country, a sort of contagion effect. Though illuminating, this preliminary evidence does no account for long-term factors affecting constitutional performance. While geographic, cultural and historical factors may affect constitutions indirectly through the design process, there are no priors to believe that it is the only channel through which geography, culture, and history shape constitutions.

To my knowledge, there are no accounts linking the endurance of national constitutions with resource endowments. A recent work by Berkowitz and Clay (2012) elaborates a plausible story on how initial endowments, as the temperature in agricultural lands or the access to navigable sea or rivers key for trade in US states, shaped the occupational homogeneity of the elites, and this in turn, may have affected the intensity of political competition and thereby, the size and independence of states legislatures[33]. Moreover, according to Berkowitz and Clay, resource endowments defined political competition by shaping the firsts constitutional designs of American states at specific issues such as the length of constitutional dispositions and statutory laws, or the particularistic contents of states constitutions[34]. Therefore, this evidence suggests that some modern national constitutions may have been indirectly designed by

[33] The diversity in resource endowments may have reduced the occupational homogeneity of the elite, and through it, their support to an homogenous political group (Berkowitz and Clay 2012).

[34] As a matter of fact, the authors specify several econometric models regressing measures of temperature, rain precipitation, and distance to ocean and rivers, among other proxies for geography, on the length of states constitutions, its particularistic contents, and their dispositions regarding the seats in the state legislatures; the results show a statistical significant positive impact of growing temperatures on the length of constitutions, but a negative one on the number seats for the legislature, implying it that states with a large agricultural sector designed very detailed constitutions but reduced political competition. The impact of temperatures on agriculture persist in modern American states constitutions through the path-dependency of the length of past constitutions and the kind of topics addressed.

the driving force of resource endowments through its path-dependent effects on their predecessors.

Constitutions contain cultural elements reflected in constitutional texts as a direct consequence of our pre-political origins (Lutz 2006). Constitutions emerge on a broad set of socio-political norms through which people carried out social transactions at low scale levels. Thus, many of the constitutional texts try to address the identity, values, and ideas of justice that each society aspires towards. Statements on the political division of territory, open declarations about identity, individuals´ rights, and the characterization of citizenship are a small sample of the cultural issues depicted in constitutions. For many scholars, a significant number of constitutions have failed in the past because they were transplanted from abroad without acknowledging the cultural and contextual nature of recipient societies (Dye 2006; Simeon 2009; Tushnet 2003). For the specific case of Latin America, Schor (2006) argues that the systematic failure of constitutions in the post-independent period could have been caused by the low entrenchment of social norms in the new constitutions, which were heavily based on the United State´s constitution of 1789. Moreover, Schor argues that even though subsequent constitutions closed the gap between law and norms in the region, the new constitutional arrangements still failed because they were transplanted in an environment inimical to political liberalism.

Historical episodes have been shaping constitutional design and endurance. Stories on the contingent nature of the constitution making process are rich in details. Elster (1995b) address many of them by describing how the timing for elaborate the constitution, the pressure of interest groups, public opinion, the passion of constitutional makers, the presence of external forces, or the method for electing those with the responsibility to write the new constitution was sharply modeled by politics as usual and social dynamics. But the whole process of constitution-making sometimes may be conditioned by a past of recurrent confrontations between powerful institutions or groups, leading it to recurrent replacements of the constitution. North and Weingast (1989) examine the Glorious Revolution in Seventeenth century Britain and reveal that before the imminence of failing to honor its debts, the British monarchy recurred to predatory behavior by successively confiscating the wealth of the king´s lenders. This situation led the British parliament to limit the king´s power by subjecting his decisions to parliament´s approval. This episode of the constitutional redistribution of power in England increased property right protection and limited the confiscatory powers of government paving the way towards the sustained development for the British economy.

2.3.3. Constitutions and coordination devices

Stable institutional performance is associated to minimal uncertainty or low risk in social exchange. Successful institutional arrangements hardly change when their effectiveness in reducing transactions costs expand social transactions (North 1990). In

this respect, an influential view in constitutionalism reminds us that in addition to the beneficial effects of appropriately designed constitutions, enduring constitutions also can improve social performance because they depend on self-generating incentives and expectations (Hardin 2006). Thus, given that establishing constitutions is extremely costly, arrangements helping them to endure are crucial to avoid the huge price of setting up a new constitution. Now this point does not entirely answer the following question, what makes a constitution endure for long?

Well, when a constitution is approached as a *coordination device* its endurance will depend on the commitment shown by the fundamental political and social actors supporting their enforcement. This notwithstanding, behavioral inconsistencies among actors might emerge which may provoke the failure of the constitution. This situation leads to the writing of constitutions with inflexible dispositions for delaying its amendments or replacements, thereby reducing the temptations for frequent constitutional change (Elster 2000). Henceforth, by making constitutional change relatively costly, inter-temporal inconsistencies of relevant political or social figures can be reduced while the strength of the commitment around the constitution ascends. Moreover, a coordination problem emerges when political actors lack *focal points*, like pacts, to reach some basic agreements regarding what should be considered constitutional transgression and how they should be sanctioned through collective action (Schelling 1960). As a consequence, if individuals fail to achieve consensus on violations of the constitution, no credible threat is issued against violators, which would open the door to future transgressions, and eventually, constitutional demise.

Weingast (2005, 2008) provides a renewed *coordination device* approach for explaining the survival or demise of constitutions. Based on the notion of "rationality of fears" he claims that constitutions endure when stakes in politics do not trigger "fears" of losing basic tenets in individual´s rights, such as, property or, even, life. Indeed, if political developments lead to the reasonable suspicion that those in power will retain it through forceful ways or at the cost of violating individual or collective rights, the individuals affected would call for extra-constitutional means to protect themselves (Weingast 2008). Therefore, when the stakes in politics are high, they will be a main cause of recurrent constitutional failure.

To sum up, the maintenance of a constitution is a delicate equilibrium which does not only depend on the constitution´s design, but also on the changeable political and social arrangements upon which it depends.

2.4. The Empirical strategy

2.4.1. The Model

The dependent variable under study is the time elapsed before a constitution is replaced. Concerns regarding the distribution of time residuals arise when they are nonsymmetrical. In that case, linear models are unhelpful due to their restrictive assumption of normality in the residuals. An alternative is to employ *duration models*, a flexible statistical technique which allows us to model residuals by using a semi-parametric estimation when a reasonable assumption on residuals' distribution is unavailable (Box-Steffensmeier and Jones 2004, Cleves *et al.* 2008). Since we do not know how constitutional failures occur as time passes, I will employ a semi-parametric Cox model for estimations. This method does not assume a specific distribution of the residuals. Additionally, Cox models are quite flexible analyzing data conveyed by multiple observations per subject with repeated failures; a critical aspect of the sample of constitutions studied here. Previous work by Elkins *et al.* (2009), Hammons (1999) and Negretto (2008) have successfully employed duration models in the analysis of constitutional lifespan for a variety of contexts and subjects.

A plethora of methodological issues arises when constitutional lifespan is explained by a set of covariates. However, three of them are critical in this work. The first one is the very nature and meaning of the "duration of constitutions," which in the case of the data used for this study, is measured in years. Logically, a long time span per constitution implies few constitutional replacements over time, and is indicative of institutional endurance. Conversely, frequent short life spans for constitutions along time reveal high constitutional instability, and thereby, reduced constitutional endurance. A second issue regards the impact of the covariates. In the models estimated below, there are time varying and time constant covariates, which can both reduce or prolong the life of constitutions. For example, it is believed that when head of states leave power through extra constitutional ways, there is a significant risk of constitutional failure because the new leadership would be eager to write a new constitution according to their interests. Increased democratization could prolong the durability of constitutional texts. Therefore, the incidence of the covariates will be assessed in terms of the increase or decrease in risk they pose to the survival of constitutions. Consequently, a key aspect of duration models is the notion of *hazard*, which measures the rate that constitutions fail in a given time frame. For the Cox model, hazard ratios below one in coefficients imply decreasing hazard, while ratios above one indicate and increase in risk posed by the covariate. Thus, increased hazard involves frequent constitutional replacements, and consequentially, more institutional instability. A final issue is the management of missing data. Given the extensive constitutional tradition of several countries in the sample, many covariates are missing for time varying covariates. I rely on a multiple imputation process for dealing with missing data. The multiple imputation strategy incorporates a large variability in the

missing covariates, so this imputation process outpace conditional or unconditional averages imputing methods, which are associated to deflated variances when they are not. Elsewhere, many simulations and works with real data suggest that multiple imputation techniques are a useful tool for address the potential bias introduced by missing data (Schafer and Graham 2002, Schafer 1997). In Appendix B details on the imputation process are reported.

2.4.2. The Data

The data on the lifespan of constitutions analyzed in this chapter come from the database built by Elkins *et al.* (2009) as a part of the *Comparative Constitutions Project*[35]. The chronology of constitutions under scrutiny here amount to 689 constitutional systems. The US constitution of 1789 was the first entering the sample, while 125 constitutions censored as they still in force for the deadline date of the research in 2005, the other 564 constitutions have been replaced or suspended at the same year[36]. In order to follow the methodology developed by Elkins and associates, a constitutional replacement occur when a constitutional system is displaced by other one which could be a *new*, a *reinstated* or a *interim* constitution; in consequence, each time that a constitution is replaced the clock measuring its longevity stops, and it starts anew for the entrant constitutional system.

In general, six groups of variables are analyzed in the models estimated below. The first group deals with issues on political leadership, regime transitions, and the diffusion of constitutional changes at continental or global level[37]. A second group of variables assess aspects of constitutional design, like possibilities of constitutional amendments, the scope of constitutions or if they contemplate courts checking for the constitutionality of laws. The third group of variables test whether the structure of the state (e.g. if it is democratic regime) or the intensity of ethnic diversity may affect the endurance of constitutions. The first three set of variables are identical or similar to those introduced in the pioneer work by Elkins *et al.* (2009) as predictors of constitutional performance. The next three groups of covariates proxy for geographical endowments, cultural traits and historical episodes that will be instrumental for testing whether constitutional performance is at risk when it is confronted with long-term factors. The whole set of variables used in the empirical section contain both, time-variant or time-invariant covariates, which in addition to the repetitive number of constitutions for a given country imply that the empirical analysis must stratify constitutional systems by country to estimate the appropriates standard errors. Additionally, models are estimated controlling for regions and specific time periods in order to check for the robustness of

[35] Accessible on the Internet at: www.comparativeconstitutionsproject.org.
[36] Details regarding the sample of constitutions studied here can be found in **Appendix 2C.**
[37] Details on the variables are provided in **Appendix 2A**.

results. Now I proceed to describe each group of variables and their expected sign according to the literature[38].

At a first glance, the design and performance of constitutions appear to be explicitly shaped by domestic politics in a given country, but there is no doubt that external influence might also play a relevant role in the endurance of domestic constitutions. Elster (1995b) has argued that constitutional replacements came in waves across the world since early XIX century. In fact, based on the data from Elkins *et al.* on the *new* constitutions made around the world since 1900 I construct Figure 2.1 by focusing on the number of new constitutions issued by "continental" regions. The descriptive evidence suggests that constitutional making not only comes in waves but also in regional or geographical waves rather than across regions for a given period of constitutional change. This finding would suggest that an increase in the number of new constitutions written globally (***gdiffusion***) should not affect the risk of constitutional failure across countries. On the other hand, when some countries situated in a same region or continent (***cdiffusion***) experienced constitutional replacement, then there is a high risk of contagion to neighboring countries[39]. Other critical factors risking the endurance of constitutions are domestic conflicts (***domconfd1***), economic crisis (***gdppccrisis***), sudden changes in the political regime toward autocracy (***autchg***) or democracy (***demchg***), or even the way that governing leaders lost power, which can be in accordance to constitutional means (***intra_exit***) or by ways not prescribed in the constitution (***extra_exit***). These variables were originally introduced by Elkins *et al.* (2009) as potential environmental determinants of constitutional performance, I employ them for verifying their results; however, the treatment given to lagged variables here is different to the approach used by Elkins and associates[40].

The variables dealing with the aspects of constitutional design and their incidence on the survival of constitutions come from the epidemiological (or duration analysis) model estimated by Elkins *et al.* (2009). It is believed that a good and comprehensive design of constitutions is mainly responsible for their prospects of endurance. As a matter of fact, preliminary evidence shows that interim (***interim***) or reinstated (***reinstated***) constitutions are prone to failure. Regarding the plural origins of the constitutions and its potential longevity, the literature points out that a more inclusive constitutions

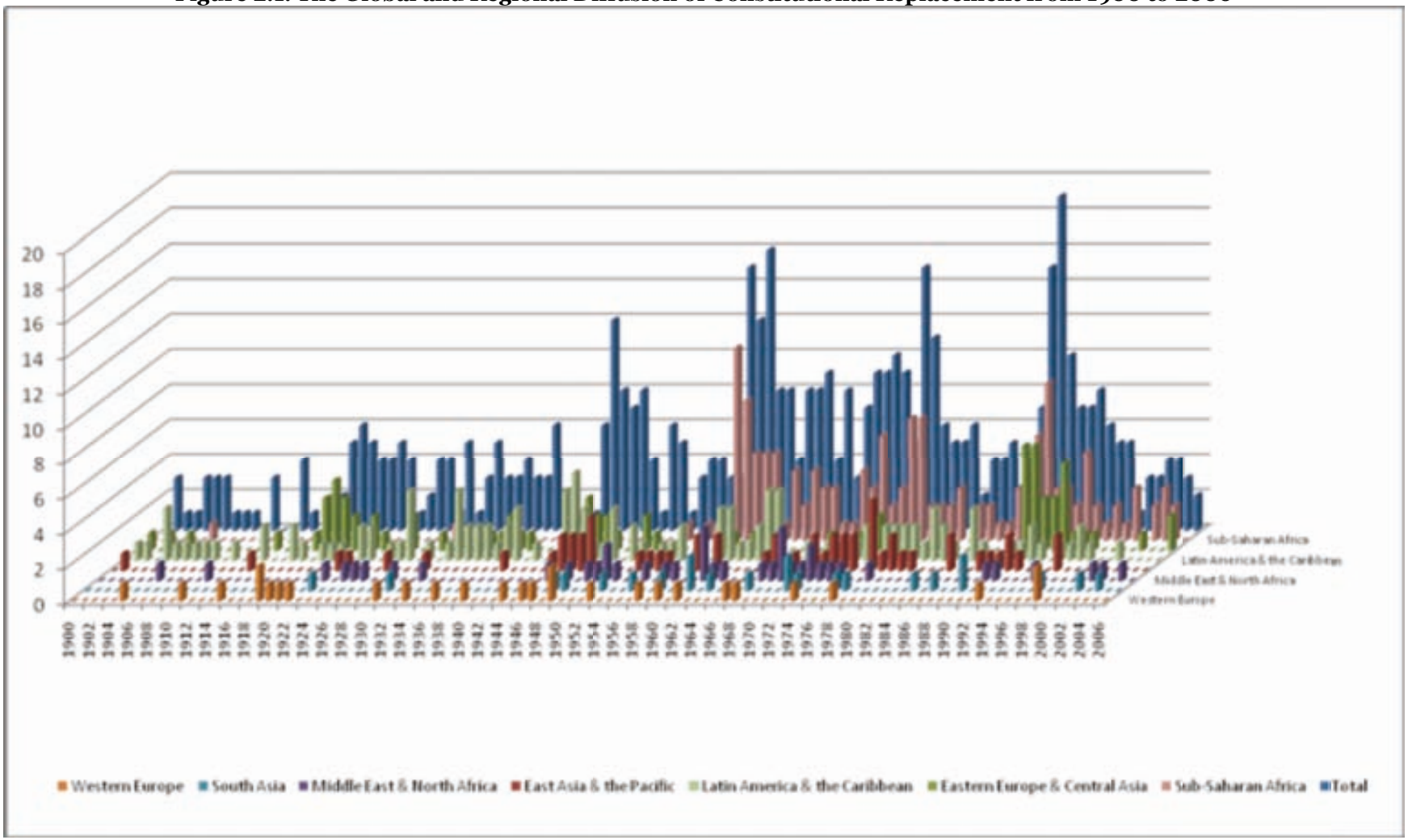
[38] The variables under analysis will appear in italics between parentheses as they are presented in this section.

[39] The measurement of ***gdiffusion*** in this work exclude from the calculations the country for which the variable is accounted for, if it has a constitutional replacement the same year, as Elkins *et al.* (2009) does, but I also exclude the neighbor countries of the region where the country in question belongs to. This would help to control for the net impact that ***gdiffusion*** has in the failure of constitutions.

[40] The variables ***domconfd1***, ***gdppcgcrisis***, ***autchg***, and ***demchg*** are lagged by one year as a way to take account of the delayed impact caused by sociopolitical, economical, and political crisis, respectively. Though this strategy sacrifices valuables degree of freedom in the empirical models reported below, it could tell us whether the timing of the *critical factors* matter in the failure on constitutions. All empirical models estimated in this work include lagged variables.

process (***inclusiveness***) may prolong the life of constitutions, as well as those which are promulgated in democracies (***democ_pro***). In contrast, countries that embarked in constitutional making processes under the occupation of foreign forces (***occ_const***) may write constitutions with short life spans. When the structure of constitutions states provisions facilitating constitutional amendments (***amend_rate***), or that any court may review the constitutionality of laws (***jud_review***), then the risk of constitutional replacement in the face of political or legal controversies declines. Moreover, constitutions provisioning for many issues (***scope***) in combination with detailed (***detail***) specification of them in the body of constitutional texts might endure because of their comprehensiveness, though Hammons (1999) found evidence of the contrary for the case of US states constitutions, as reported in the section reviewing the literature on constitutional design. In relation to the executive power, I expect that constitutions calling for a single executive (***sinlge_exec***) and precise term limits (***term_limits***) for the head for state may reduce the risks of political conflicts. In the case of parliamentary powers, more powerful parliaments (***ppi***) might favor the endurance of constitutions, but possible parliamentary extralimitations could enter in conflict with the executive, this could cause the disruption of constitutional texts. Finally, because of path-dependence, the life span of a previous constitution (***legacy***) might predict the endurance of the successive constitutions.

Figure 2.1. The Global and Regional Diffusion of Constitutional Replacement from 1900 to 2006



The potential effect of structural changes of the state on the performance of constitutions is verified through various indicators. For example, the potential impact of democracy (***democracy***) on the survival of constitutions is assessed to determine the proclivity of democracies to constitutional replacement. An index of cultural diversity (***cdiv***) by Fearon (2003) is included in the analysis to test if increasingly diverse societies are prone to conflict, and thereby, putting constitutions at the risk of failure, as suggested by the literature on institutions and development (Alesina *et al.* 2003; Easterly and Levine 1997). Although there is no conclusive evidence on the causality between institutions and the level of income, many scholars associate economic development to institutional stability. In the context of this study, is expected that higher levels of income (***lngdppc***) must be associated to lower levels of constitutional mortality (Elster 1995a; Persson and Tabellini 2003; Voigt 2009). All these three variables are pretty close to those used by Elkins *et al.* (2009) as control variables[41]. Now I proceed to present the variables motivating this research.

Following the influential literature on the alleged impact of geographical forces in development, I choose the country´s percentage of land located in the tropics (***tropicar***) as a proxy of those natural endowments and weather conditions pointed out by Engernan and Sokoloff (1997, 2002) and Acemoglu *et al.* (2001, 2002), respectively, as pre-conditions for the setting of extractive institutions in colonized countries[42]. Therefore, countries outside the tropics of Cancer and Capricorn might have enduring constitutions compared to their counterparts in the tropics. The geographical isolation of some countries is associated to scarce sociopolitical exchange and economic backwardness (Gallup and Sachs 1999), relying on this idea, is expected that countries landlocked (***landlock***) or distant from coastlines or navigable rivers (***distcr***) would experience prolonged constitutional stability in comparison to those countries geographically accessible[43]. Although geographical isolation is a decreasing concern with the advent of new transportation systems and modern engineering, for many countries in the past, and in the poor regions of the world today, it still an critical issue. The data for ***tropicar*** and ***distcr*** come from Gallup and Sachs (1999), while the data for ***landlock*** is obtained from the Development Research Institute (2005). Two additional

[41] In accordance with the literature about the adverse effects of economic inequality on institutional quality (Easterly 2007; Engerman and Sokoloff 1997, 2002), a variable proxying for economic inequality should be included in this work. Unfortunately, data on income inequality before 1960 is not available. On the other hand, as I suggest elsewhere in this thesis, inequality could be proxied by ***tropicar***.

[42] Previous to this indicator, two alternatives measures were considered, the logarithm of soldiers and priest mortality used by Acemoglu *et al.* (2001) and the log of the ratio of land suitable for grown sugarcane relative to the land suitable for grown wheat, built by Easterly (2007). Unfortunately, the limited availability of these variables would have reduced the sample of constitutions to less than a half of the cases contained in the original dataset.

[43] In contrast, Easterly and Levine (2003) show that being landlocked is negatively correlated with the quality of political institutions, implying that isolation may be a cause of constitutional failure. As mentioned above, the mechanisms through which geography may impact constitutional performance is poorly understood, but Berkowitz and Clay (2012) made a novel contribution on the subject.

variables used as proxies of geography are the percentage of arable land available in a country (***arabland***) and the years since a country started its agricultural revolution (***yst_cs***). The first indicator is highly correlated with poverty and low quality institutions (Easterly and Levine 1997), while the second suggests that an early start in agriculture would help in the setting of basic rules among individuals who lived in the first sedentary groups (Hibbs and Olson 2005; Putterman 2008). Consequently, while growing percentage of arable land might be associated with more constitutional failures, the inverse is expected in the relationship between the start of agriculture and constitutional endurance[44]. The data for ***arabland*** and ***yst_cs*** come from The World Bank (2008) and Putterman (2008), respectively.

Two additional but different indicators capturing cultural diversity are regressed on the lifespan of constitutions. A first indicator approaches cultural diversity based on the correlation between genetic diversity and distance from the *serial genetic founder* in Africa, meaning that populations located in more distant places of the world (***gendist***) are increasingly homogeneous (or less cultural diverse) in comparison to those near the African ancestors (Ramachandran *et al.* 2005). Thus, as a rule of thumb, increases in ***gendist*** implies low genetic diversity, while its decrease tells us the contrary[45]. Ashraf and Galor (2010) construct worldwide measures of genetic diversity relying on the probable migratory routes followed by humans in the past and find a strong association between increasing migratory distance and economic progress in the long run. Although Ashraf and Galor do not address extensively the issue on the potential channels through which genetic distance affected development, they appeal to social capital and technological creativity as major forces affected by genetic distance. In a similar work, Spolaore and Wacziarg (2009) go deeper on this point and show that genetic distance would have created cultural barriers to access certain institutions and technologies favorable to economic development. Correspondingly, in my analysis I expect that increased migratory distance (***gendist***) from Africa will be associated to few constitutional replacements. A second measure of cultural diversity is the probability that two individuals randomly selected from a sample belong to the same ethnic group (***ethnic***). This index developed by Alesina *et al.* (2003) has been used in the literature as a proxy of ethnic diversity and it has been found to be negatively correlated with indicators of development[46] (Alesina and La Ferrara 2002; Alesina and La Ferrara

[44] Results with ***yst_cs*** are not reported because they are highly correlated with ***statehist***, an index of state antiquity described in the next paragraph.

[45] This inverse relation between genetic diversity and the genetic distance in relation to the African serial founder comes from the fact that populations increasingly distant from Africa only carried a small portion of the overall genetic diversity found in the location of their ancestors. For more on this see Ramachandran *et al.* (2005).

[46] ***ethnic*** differs from Fearon's ***cdiv*** because its does not contemplate the language distance between groups. According to Fearon (2003) the inclusion of language distance between groups makes his index a robust measure of cultural diversity. Both measures are positively correlated (0.6972) and used alternatively in this work. Additionally, ***ethnic*** and ***cdiv*** are different from ***gendist*** because they do not

2005; Alesina *et al.* 2003; Easterly and Levine 1997). Henceforth, elevated levels of ethnic fractionalization predict high risks of constitutional replacement.

Finding variables capturing the essence of certain historical episodes is an arduous task. Given the contextual and fairly complex details involving historical forces, no variable is entirely satisfactory. However, some scholars have point out the longevity of state foundations (***statehist***) or the incidence of British and French legal frameworks (***leg_british*** and ***leg_french***, respectively) as key historical events reflecting the path dependence of mature statehood, and the preservation of colonial legacy in legal and political practices over time. Indeed, prolonged statehood appears to explain persistent economic development through its positive effects bureaucratic efficiency and institutional stability (Bockstette *et al.* 2002). But historical episodes could also lead to differential patterns of institutional development through erecting, for instance, legal traditions with uneven consequences on development (La Porta *et al.* 2008). I expect that countries with different legal origins might experience contrasting paths of constitutional endurance; while countries with ancient states have a higher risk of constitutional failure. This may happen because long-enduring states are prone to adopt constitutional texts at early stages, thus increasing the probability of constitutional replacement in response to important societal changes over time. The data for ***statehist*** comes from Bockstette *et al.* (2002), while the data on legal origins (***leg_british*** and ***leg_french***) is provided by the Development Research Institute (2005). In the twentieth century the many countries went from authoritarian planned economies to free market democracies (***transition***). These changes not only required the derogation of old constitutions, but also the creation of some new states, who ambitioned their own constitutional texts. Therefore, I expect that transitioning from a socialist to a market economy will increase the probability of constitutional failure. Given the unequal path of constitutional success experienced by diverse regions around the world, and the relative drop of constitutional mortality after the II World War, all models include regional and time period dummies[47].

2.4.3. The Results

The Figures 2.2 and 2.3 provide an overview of what follows[48]. Figure 2.2 plots the *survivor function* for the sample of constitutions under study revealing that half of the constitutions endure fifteen year or less (the median of the distribution). Although many scholars agree that stable and prolonged constitutions are desirable for sustained

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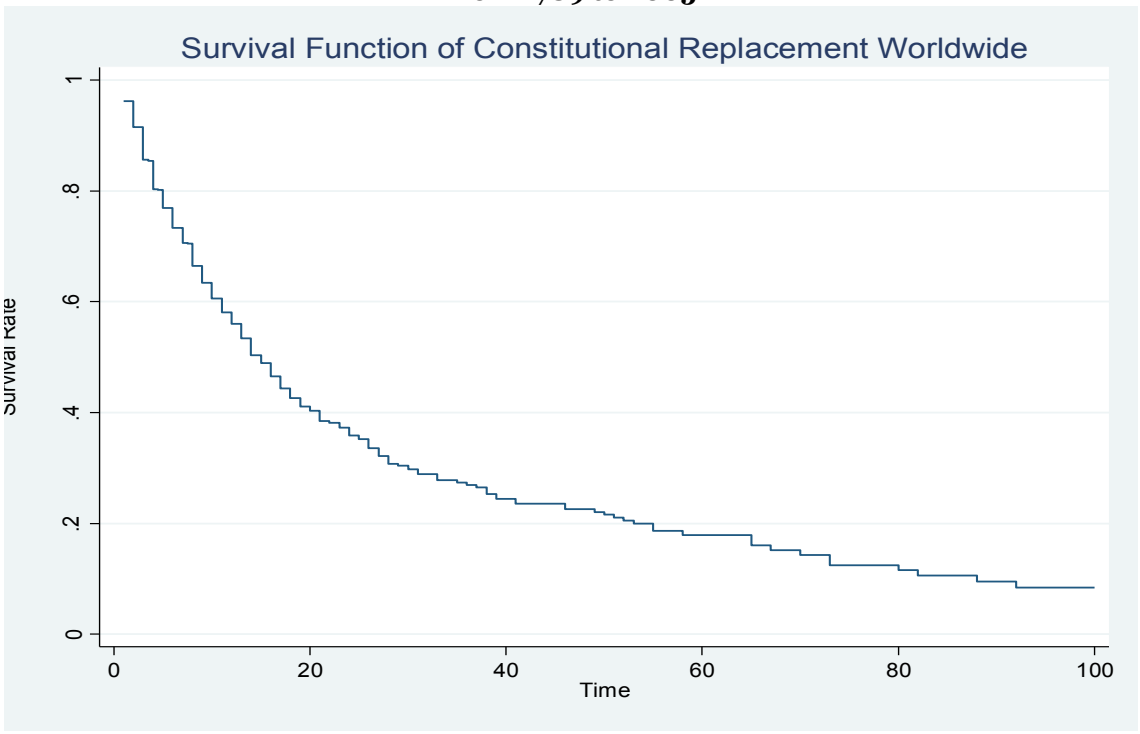
capture the genetic diversity associated to the migratory routes followed by humans in the remote past (Ashraf and Galor 2010; Ramachandran *et al.* 2005).

[47] These regional dummies will help us to determine whether the proclivity of some regions having a prolific history writing constitutions (e.g The Americas in the nineteenth-century) may drive the risks of constitutional failures reported below. Note that the regional dummies are different from ***gdiffusion*** and ***cdiffusion*** because these two are intended to capture the contagion effects of new constitutions made at neighboring countries on the risks of constitutional failure in another country.

[48] All these figures are built with the data coming from the first dataset of the five that are imputed.

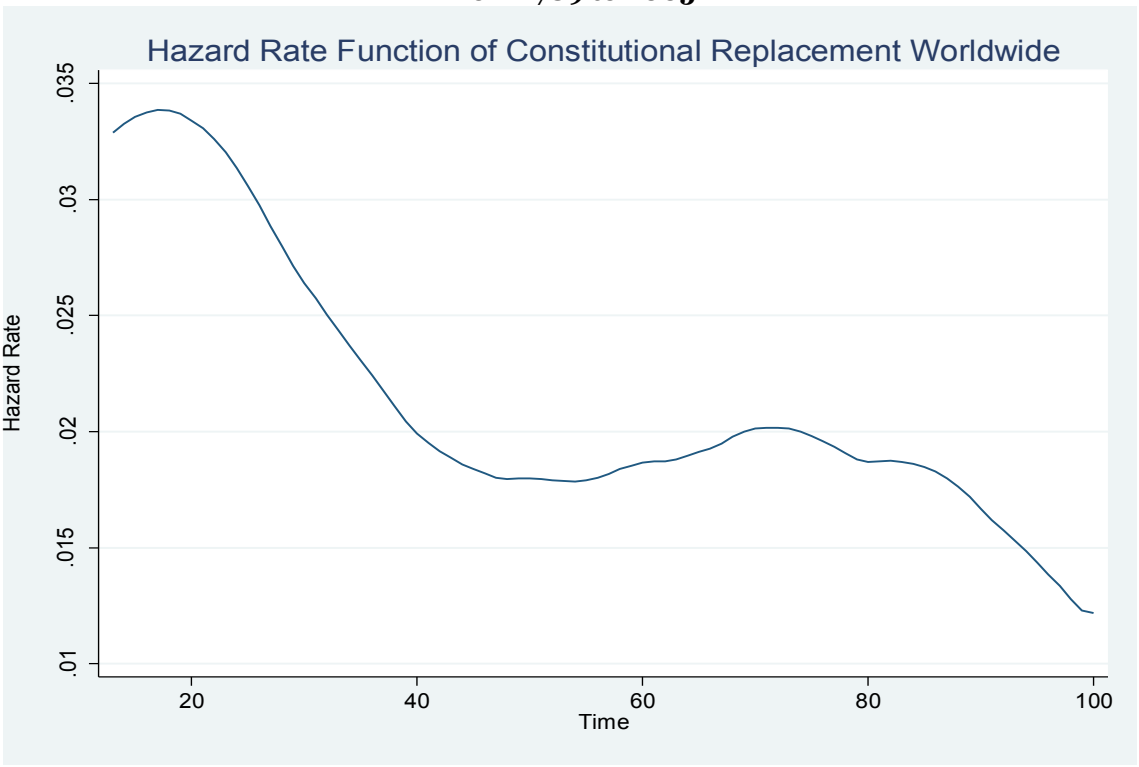
development in the long run, there are no solid priors for claims regarding an *optimal age* for constitutional replacement (Elkins *et al.* 2009; Elster 1995a; North and Weingast 1989). Figure 2.3 depicts the *hazard rate* function of constitutional failures; this rate tells us that given that a constitution has lasted a certain age, what is the chance that it will be replaced in the next year? The hazard function peaks at 17 years old, so there is huge risk of constitutional failure at that age; however, constitutions older than seventeen years old have better survival prospects because the hazard declines dramatically as constitutions mature[49].

Figure 2.2. The Survivor Function of Constituional Replacement Worldwide from 1789 to 2005



[49] As can be seen, the hazard rate increases again when constitutions reach fifty five years old.

Figure 2.3. The Hazard Rate Function of Constitutional Replacement Worldwide from 1789 to 2005



Results shown in Table 2.1 follow the main specification of the epidemiological model built by Elkins *et al.* (2009). Logically, I do not expect identical results to those reached by them because the sample and the treatment given to some variables are different in this work, as commented in the data section[50]. Notwithstanding, much of the coefficients analyzed below are qualitatively similar to their findings. For instance, there is a high risk of constitutional replacement for a country in a given region where neighbors start changing their constitutions, coefficient for ***cdiffusion*** is positive and above 1, indicating such as risk[51]. Moreover, as we shall see later, this finding confirms the expectation of constitutions being replaced worldwide by geographical waves rather than for specific periods of time. The coefficient for ***extra_exit*** indicates that when head of states are ousted from power through ways not prescribed in the constitutions there is a great chance for failure of the enforced constitution; probably the new elite would like a new constitution fitting their interests. Unsurprisingly, interim (***interim***) constitutions die young, while more inclusive (***inclusiveness***) constitutional texts have longer life spans than more restrictive constitutional process. Constitutions having long

[50] All the estimations reported in the coming tables rely on the five datasets imputed before (See **Appendix 2B** for details on the imputation process).

[51] As the coefficients are reported in hazard ratios, a simple rule of thumb to interpret the results is that those values below 1 indicate a lower risk of failure (e.g. constitutions endure longer), while values above 1 imply a growing risk of constitutional replacement.

standing predecessors (***legacy***) are endowed with better life expectancies at the time of birth than constitutions followed by successive constitutional failures. Now I report some findings which differ from those shown by Elkins *et al.* (2009).

The global diffusion (***gdiffusion***) of constitutional replacement has a protective impact on countries belonging to regions not affected by constitutional failure. This confirms the prediction that constitutions are likely to be replaced when a wave of constitutional replacement is sweeping the region where the country belongs to, but replacement rarely occurs when changes are far abroad. The estimates reported here do not indicate that domestic conflicts (***domconfd1***), authoritarian (***autchg***) or democratic transitions (***demchg***) put at risks the survival of constitutions at statistically significant levels. Probably, the source of this difference with Elkins *et al.* (2009) is because their emphasis on aspects of constitutional design led them to disregard the importance of timing in constitutional failure, a critical factor which the models reported here do consider (See footnote 18 for details). Unexpectedly, amendment rates variables (***amend_rate*** and ***amendsq***) are not statistically significant; though the coefficients are compatible with theoretical predictions, first decreasing, and then increasing the risk of constitutional failure when amendments are squared, their significance declines when additional variables of constitutional design are incorporated in the model. Nonetheless, I must warn the reader that given data constraints, the sample of constitutional amendments computed in this work is one-fifth smaller than the total amendments computed by Elkins and associates and so it could be that this gap in the data may be driving the results[52]. Constitutions incorporating more issues (***scope***) tend to survive longer than those less diversified ones, but the level of constitutional detail (***detail***), though indicating a reduced risk of failure was not statistically significant. Regarding the effects of cultural diversity (***cdiv***) and the level of income (***lngdppc***) on the viability of constitutions, the estimations reveal that increased cultural diversity expose constitutions to early failure in comparison with more homogenous societies. While for the second variable, higher levels of income are associated with endurable constitutions. The Latin American region accounts for nearly one-third of the constitutions under analysis, and the ***reg_lac*** coefficient shows a hazard ratio above 1, indicating that those constitutions written in the region have a high risk of failure. Finally, coefficients for ***betwars*** and ***aftwars*** tell us that the risks of constitutional failure are pretty similar for those constitutions made in between and after the world wars.

[52] The drop in the sample used here lead us to a mean of 0.365 and a standard error of 0.342, which are lower than the 0.374 and 0.394, respectively, calculated from the Elkins *et al.* (2009) dataset.

Table 2.1. Determinants of Constitutional Replacement (Basic Model)

Variable	Hazard ratio	Standard error	t-statistics
gdiffusion	.029695*	(.0548)	-1.90
cdiffusion	2.23763*	(1.0109)	1.78
domconfd1	1.16865	(.2566)	0.71
gdppcgcrisis	1.09088	(.2241)	0.42
demchg	1.18935	(.3014)	0.68
Autchg	1.44155	(.3551)	1.48
extra_exit	1.72398***	(.3054)	3.07
intra_exit	1.19146	(.1917)	1.09
interim	2.92218***	(.5310)	5.90
reinstated	1.07316	(.1958)	0.39
inclusiveness	.37764***	(.1300)	-2.83
democ_prom	.866488	(.1991)	-0.62
occ_const	1.03858	(.2150)	0.18
amend_rate	.663994	(.3856)	-0.71
amendsq	1.24524	(.7073)	0.39
jud_review	1.07627	(.1926)	0.41
review_democ	1.08814	(.2391)	0.38
scope	.219954*	(.1714)	-1.94
detail	.456906	(.4527)	-0.79
single_exec	1.03221	(.1393)	0.23
term_limits	.915411	(.1314)	-0.62
ppi	1.68802	(1.0708)	0.83
legacy	.044143***	(.03913)	-3.52
democracy	.869296	(.1490)	-0.82
cdiv	1.59188**	(.3432)	2.16
lngdppc	.781924**	(.0878)	-2.19
reg_lac	1.69453**	(.4173)	2.14
reg_eca	1.25018	(.2705)	1.03
reg_mena	1.12228	(.3271)	0.40
reg_ssa	1.26049	(.3771)	0.77
reg_sa	.937428	(.3040)	-0.20
reg_eap	1.00027	(.3028)	0.00
betwars	1.70629***	(.2608)	3.50
aftwars	1.73262***	(.3280)	2.90
Observations	9869		
Constitutional Sustems Failures	689 529		

* $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Dummies for lagged variables are included in the model but not reported. Results based on imputed data.

In Table 2.2 an extended model is reported by incorporating proxies of geographical, cultural and historical variables alleged to have influenced institutional performance in the long run. The country´s percentage of arable land (***arabland***) is the unique geographical proxy posing a significant statistical risk for the failure of constitutions; nonetheless, the risk is very low, hardly reaching one-tenth of a percentage point. Although land abundance for agriculture has been associated to poverty and institutional instability, whether the potential for farming may shape constitutional performance in such ways as those described by Acemoglu *et al.* (2001, 2002) or Engerman and Sokoloff (1997, 2002) is still an unanswered question. In the case of variables proxying for culture, the results show significant statistical coefficients for ***ethnic*** and ***gendist***. Higher values of ***ethnic*** lead to frequent constitutional failures, as was also the case for ***cdiv*** in Table 2.1[53]. For the case of ***gendist***, results show that increased ethnic dissimilarity with the genetic serial founder is associated with a reduced risk of constitutional failure. Therefore, if it is assumed that little ethnic diversity is found in places with elevated genetic dissimilarity respect the African serial founder, and viceversa; then, is reasonable to think that genetic differences may create cultural barriers to transmitting certain social and political practices between ethnically diverse individuals, leading to the potential failure of institutions, and among they political constitutions. Eventually, cultural barriers can be circumvented if differences are negotiated through long established institutions, such as state maturity. For instance, Chandra *et al.* (2002) have argued that long statehood has play an important role in serving as a source of predictable behavior because of the coactive power of states in forcing parts to honor their commitments. Well, when an index of state antiquity is interacted with ethnic diversity, the results correspond to predictions, as can be seen in the coefficient for the variable ***state_ethnic***, mature states reduce the risk of constitutional collapse; unfortunately, it is not statistically significant. Regarding the variables proxying historical episodes, both the antiquity of a state (***statehist***) and the transitioning from a communist to a free market economy (***transition***) increase the risk of constitutional failure. In the first case, as expected, mature states are prone to have political constitutions at early stages, and therefore, experiencing frequent constitutional disruptions as they gain antiquity. While in the second case, the coefficient of ***transition*** reflects that institutional restructuring toward a democracy and free markets will require, sooner or later, the writing of a new constitution. It is interesting to note that the qualitative findings previously reported for Table 2.1 remain unchanged in Table 2.

[53] ***ethnic*** and ***cdiv*** are two closely correlated measures of ethnic diversity. However, ***ethnic*** has gained a major diffusion among economist than ***cdiv,*** that is the reason I included it in the estimation reported in Table 2.2, see Alesina *et al.* (2003).

Table 2.2. Determinants of Constitutional Replacement (Extended Model)

Variable	Hazard ratio	Standard error	t-statistics
Gdiffusion	.030435*	(.0565)	-1.88
Cdiffusion	2.33025*	(1.084)	1.82
domconfd1	1.17206	(.2583)	0.72
Gdppcgcrisis	1.11065	(.2274)	0.51
Demchg	1.17407	(.2959)	0.64
Autchg	1.4432	(.3625)	1.46
extra_exit	1.74834***	(.3074)	3.18
intra_exit	1.21134	(.1953)	1.19
Interim	2.81937***	(.5633)	5.19
Reinstated	1.0013	(.1885)	0.01
Inclusiveness	.340594***	(.1155)	-3.18
democ_prom	.891642	(.2080)	-0.49
occ_const	1.10739	(.2412)	0.47
amend_rate	.69255	(.419)	-0.61
Amendsq	1.14557	(.6776)	0.23
jud_review	1.04808	(.1913)	0.26
review_democ	1.06145	(.2364)	0.27
Scope	.213149*	(.1669)	-1.97
Detail	.652571	(.7479)	-0.37
single_exec	.991033	(.1374)	-0.06
term_limits	.946273	(.1412)	-0.37
Ppi	1.32229	(.8255)	0.45
Legacy	.046121***	(.0402)	-3.53
Democracy	.894036	(.1525)	-0.66
Lngdppc	.824232*	(.0918)	-1.74
Landlock	1.0793	(.1346)	0.61
Tropicar	1.42857	(.3351)	1.52
Distcr	.99997	(.0001)	-0.24
Arabland	1.00936**	(.0048)	1.97
Gendist	.946632**	(.0239)	-2.17
Ethnic	6.68809**	(6.3855)	1.99
state_ethnic	.177055	(.2168)	-1.41
Statehist	5.23812**	(3.739)	2.32
leg_british	1.0124	(.2577)	0.05
leg_french	1.14966	(.2027)	0.79
Transition	1.90609**	(.6261)	1.96
reg_lac	3.8518*	(2.041)	2.55
reg_eca	.899059	(.2614)	-0.37
reg_mena	1.23433	(.3427)	0.76
reg_ssa	1.06669	(.3704)	0.19
reg_sa	1.18628	(.398)	0.51
reg_eap	1.51128	(.5018)	1.24
Betwars	1.62349***	(.2434)	3.23
Aftwars	1.63291***	(.305)	2.63
Observations	9869		
Constitutional	689		
Failures	529		

* $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Dummies for lagged variables are included in the model but not reported. Results based on imputed data.

2.5. Conclusion

The endurance of political constitutions has been largely addressed as a problem of the optimum constitutional design. Notwithstanding, many scholars have repeatedly questioned the excessive attention to design issues of constitutions given the cultural, historical and contextual factors embedded in the writing of constitutions, but also more importantly, in the performance of constitutional texts over time (Elster 2000; Lutz 2006; Simeon 2009; Tushnet 2008). Altogether, the more general literature studying the institutional determinants of economic development has been paying increasing interest to the role of geographical endowments, culture and historical contingency as key factors shaping the performance of institutional performance in the very long run. In this work, an empirical strategy is devised aiming to amalgamate both kinds of literature and consequently to help us understand how these long term determinants of institutional performance might have shaped the performance of such important and iconic institutions as are political constitutions.

The empirical work carried out here extended the epidemiological or duration model made by Elkins *et al.* (2009) who focused on whether issues of constitutional design put at risk the endurance of constitutions. In contrast, this work centered on how long-term factors might affect the survivorship of constitutions by incorporating variables proxying for geographical endowments, cultural traits and historical episodes. The findings suggest that constitutions endure thanks to appropriate design, but also to the cultural and historical contexts where they emerge. Constitutions in culturally homogenous societies live longer than in those more heterogeneous, while countries with early states are prone to have constitutional failures, as well as those economies transitioning from centralized to market economies. Variables proxying for geography did not pose any significant risk to the endurance of constitutions. This work is a modest attempt in identifying potential channels through which geography, culture, and history might affect the endurance of constitutions; further research is required to deepen upon the channels of causation linking long-term factors with the constitutional performance of countries.

Chapter 3

An Empirical Approach to Inequality and Constitutional Endurance in nineteenth-century Latin America

3.1. Introduction

A growing literature on Latin America economic history is converging on the idea that the highly persistent economic inequality affecting the region has deep institutional roots[54] (Acemoglu *et al.* 2001, 2009; Dell 2010; Engerman and Sokoloff 1997, 2002; Lange *et al.* 2006). In is believed that institutionalized inequality in Latin America since colonial times has had perdurable effects in the shaping of modern institutions there (Dell 2010; Engerman and Sokoloff 2000; Nunn 2009a). Moreover, for some influential works of this literature, the exclusionary nature of many Latin American´s institutions in the past has been instrumental not only for denying access to civil and social rights, public goods provision, and legal equality to majorities, but also for paving the way towards social and political instability, and ultimately, their own demise (Dye 2006; Engerman and Sokoloff 1997, 2002, 2005; Mariscal and Sokoloff 2000). Although a great effort has been made in identifying labor coercion, political exclusion, and social discrimination as major institutional channels used by the Latin American elites for depriving the mass from basic social and economic entitlements at early stages of the colonization period in the Americas, little is known about the endurance of exclusionary

[54] The assertion that Latin America is more unequal since colonization has not been questioned in the literature (Williamson 2010). Notwithstanding, there is a debate on determining when the especially high levels inequality emerged in the region. While some scholars date the high inequality at the end of the XIX century (Arroyo-Abad 2008; Dobado and García 2010; Williamson 2010), others situate their origins as early as the colonial period (Engerman and Sokoloff 1997, 2002; Frankema 2008; Lange *et al.* 2006).

institutions (Acemoglu *et al.* 2009; Dell 2010; Engerman and Sokoloff 1997, 2002; Frankema 2008; Lange *et al.* 2006; Livi-Bacci 2006; Nunn 2009a). Answering questions such as, whether unequally designed institutions disappear rapidly or slowly, or what prevents the rapid demise of unequal institutions can be helpful for understanding the viability of inegalitarian institutions in Latin America. More specifically, a better comprehension of the forces behind the persistence of inegalitarian institutions would allow us to make some educated guesses about whether the precariousness of Latin American constitutions is associated to their exclusionary nature.

For many scholars, durable constitutions are desirable legal frameworks because they have been traditionally associated to consensual constitutional design and predictable social exchange, both elements key for political stability and economic development (Elkins *et al.* 2009; Elster 2000; Persson and Tabellini 2003; Ordeshook 1992). Nonetheless, very little is known about what makes political constitutions endure. For the specific case of the nineteenth-century Latin American constitutions, some credit the precarious institutional heritage of the region and the history of violent political confrontation as sources of its frequent constitutional failures (Curvale and Przeworski 2005; North *et al.* 2000; Safford 1985, 1992). In contrast, some scholars have pointed towards Latin American constitutional texts of the XIX century as major sources of institutional exclusion, which in turn led to their premature death. In this respect, Gargarella (2005a, 2005b) has abounded on the legal mechanisms stated in these constitutional texts for discouraging, restricting or explicitly prohibiting access to citizenship, vote, and schooling, among other civil, social and political rights. Engerman and Sokoloff (2005) have made similar claims, though they focus on the differential extension of franchise in Latin America and the United States as a source of institutional discrimination at the time. Furthermore, Dye (2006) has also suggested that the repressive nature of Latin American constitutions in the XIX century had two major goals: facilitating political retaliation and preventing mass revolt. Besides presenting a rich comparative analysis explaining the origins and intentions of several constitutional provisions for discriminating by gender, social status, political responsibilities and more, none of these works presents any systematic statistical evidence linking the repressive nature of the constitutions to their endurance.

In light of the previous considerations, the aim of this work is to elaborate a novel empirical analysis examining the potential effects of institutionalized inequality on the endurance of the XIX century constitutions of the Americas. Building on the above cited literature which has evaluated the presence of statements granting civil, cultural, economic, political and social rights, as well as the commitment to provision for them in Latin American constitutions, this work assembles a database and builds indices of individuals' rights from a sample of one hundred constitutions. These variables, along with others proxying for the structure of the constitution and the state, in addition to

environmental factors conditioning the performance of constitutions, are then analyzed with a *duration model*. Logically, I would expect that very restrictive constitutions would have had short life spans, while more democratic constitutions should survive for longer.

Overall, the findings do not reveal that restrictions in individual or collective rights put the performance of the XIX century constitutions in the Americas at risk at significant statistical levels. While some variables proxying for the presence of civil, legal or social rights reduced the risk of constitutional failure, they were sensitive to model specification. This was the case for setting the minimum age limit to becoming a citizen; although raising the age limits increased the probability of constitutional failure, the coefficients did not remain consistently significant in all models. By contrast, constitutions under democratic regimes endured longer than those in autocracies, while constitutions designed on inclusive or plural contexts did not endure for long. Moreover, reinstated constitutions reduced the risk of constitutional replacement. Regarding external or environmental factors explaining constitutional endurance in nineteenth century Latin America, more coups increased the likelihood of constitutional failure, while countries with a prolonged colonization period had more failed constitutions than those with an early independence. Thus, colonial legacy mattered for the constitutional endurance of nineteenth-century Americas. In perspective, the findings contradict previous work sustaining that the inegalitarian design of Latin American constitutions has been the main factor behind their recurrent failure (Dye 2006; Engerman and Sokoloff 2005; Gargarella 2005a, 2005b). Instead, the results vindicate the views of those who consider the tumultuous politics of the region and its historical legacy as relevant for explaining the performance of constitutions in the nineteenth century. The findings also reveal the importance of constitutional design even in stages where constitutionalism only had a very incipient tradition (Schor 2006).

This work advances existing literature in several ways. In the first place, it goes beyond previous empirical studies on constitutional endurance because it checks for the potential impact of legal inequality on the longevity of constitutions (Elkins *et al.* 2009; Hammons 1999; Negretto 2008). Second, by focusing on the constitutional history of the Americas, this chapter analyses a key institutional channel through which the alleged persistent inequality of the region may have contributed towards political instability with consequent negative effects on economic development (Dye 2006; Engerman and Sokoloff 2005; Schor 2006). Finally, this chapter makes a modest contribution to the literature on institutional persistence given that it also tests for the potential effects of cultural traits, history, and geographical endowments as determinants of constitutional endurance in the long run (Acemoglu *et al.* 2001, 2002; Engerman and Sokoloff 2000; Nunn 2009b; Tabellini 2008a, 2008b).

The chapter has five sections. The second is a succinct review of the literature on the institutionalization of inequality in the Americas. The third one presents the empirical model, the data, and the variables. The Results are reported in the fourth. The fifth section concludes. The chapter also contains three **Appendices**.

3.2. The Literature: Institutional inequality

Institutions can be designed to serve as social coordination mechanisms or as "means for gaining benefits from social interaction" (Knight 1992, p. 83). In the second case, institutions emerge in response to the relative forces of groups in conflict (Bardhan 2005, Knight 1992). A wide array of historical evidence shows that prolonged confrontations between powerful groups and the masses have been the "norm" in a vast majority of countries, leading to the emergence of what Eggertsson (2005) calls *imperfect institutions* that impinge or retard economic growth in the long-term[55]. For the case of the Americas, the literature on the comparative institutional development of the region has cited the marked contrast between the North and the South of the continent in terms of individual liberties. While the North emerged with institutions exalting social equality and political liberty, institutions based on the restrictions of individual rights and social discrimination flourished in the South. Engerman and Sokoloff (1997, 2002, and 2005) have elaborated extensively on the role that Latin American elites have played in the institutionalization of inequality through the manipulation of institutions and policies in education and taxation. Weak spending in public schools to finance the education of poor classes is explained by the fact that this would have caused more fiscal pressure on the wealthy elite who preferred to pay private schools to educate their children (Mariscal and Sokoloff 2000). Moreover, the same authors claim that low investment in schooling for the poorest was consistent with the elite's desires of enabling further extensive restrictions in rights to access citizenship and suffrage. In fact, most of the constitutions in the nascent republics reflected civil and political restrictions of the masses (Dye 2006; Gargarella 2005a, 2005b; Gros-Espiell 2002). Even though many scholars do not subscribe to the idea that unequal institutions are explained by wealth differences, some believe that the institutions of XIX century Latin America were created according to elite desires, whether landowners, the military, or politicians (Acemoglu *et al.* 2009; Dye 2006; Gargarella 2005a; Schor 2006). An inevitable question regarding this subject is then: Which institutions were designed by Latin American elites?

[55] Recent research suggests that past institutional practices could persist for very long periods, even after they are derogated and their use strictly forbidden by law. Acemoglu and Robinson (2006b), Eggertsson (2005), Robinson (2008), and Wright (1999), as well as other works cited in this chapter, highlight the silent but pervasive impact of former institutional practices, even during times of active institutional change.

It is known that political inequality due to slavery has been linked to a range of poor socioeconomic indicators in large parts of the American region. For instance, Nunn (2009a) found a negative correlation between the presence of slavery for U.S. states and countries of the West Indies and modern GDP levels[56]. Moreover, when data on slavery is associated to indices of land inequality in the U.S. for 1860, estimates reveal that intensive slavery increased the inequality in land property. According to Nunn, it could imply that slavery makes economic inequality persist over time, but he found no evidence of the alleged deleterious impact of land inequality on U.S. economic growth. Dell (2010) went further in the quest of specific channels through which slavery effects would have persisted over time. Focusing on data about the *mita*, a forced labor system instituted by the Spanish crown in Bolivia and Peru between 1573 and 1812, she finds evidence linking the negative impact of the *mita* on the current levels of education, provision of roads, and access to agricultural markets in regions where it was once enforced. Although Dell does not provide a dynamic account about the persistence of *mita* in the long-term, her research is supported by sound historical accounts of the evolution of inequalities in the access to land tenure, public goods, literacy, and agricultural markets by those people who have historically lived in former *mita* districts[57].

The literature also indicates that other restrictions in political participation have triggered the economic inequality in Latin America since colonial times. Evidence provided by Acemoglu *et al.* (2009) on the relative impact of political and economic inequality in XIX century Cundinamarca, a region of Colombia, highlights political inequality as a major force driving institutional emergence. They demonstrate that Cundinamarcan localities with high levels of political concentration[58] in the nineteenth century are also underdeveloped today; in contrast, those localities with high levels of wealth inequality became more developed. Although their findings are at odds with Engerman and Sokoloff's predictions, they reaffirm the idea that institutions driven by highly concentrated political power lead to more unequal societies. Acemoglu and Robinson (2006b) develop a formal model about how elites could build persistent informal institutions linked to customs, habits or traditions that ensure their privileges in the shadow of institutional changes.

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[56] In a previous work on the impact of the slave trade in Africa's long run development, Nunn (2008) also found evidence of the negative impact of slavery on Africa's prospects of economic development.

[57] In a related work, Garcia (2005) presents empirical evidence on the persistence of colonial slavery institutions in Colombia. In his statistical analysis, the *encomienda*, a tribute paid by indians to Spaniards in either labor or goods, is identified as an institutional practice, which has been strongly associated to increases in land inequality and mortality rates in areas where the number of tributary Indians resided. In sum, the *encomienda* had detrimental effects on the socioeconomic performance of Colombian localities where slavery was intense.

[58] Political concentration was measured by an *Index of Political Concentration* built by the authors and computed "as the negative of the number of different individuals in power as mayors" in Cundinamarca and its periphery between 1875 and 1895 (Acemoglu *et al.*2009).

Arguably, a notable omission of the previously described works is that they analyze the consequences of institutional inequality on socio-economic variables but do not take into account whether such inequality has affected the very endurance of institutions. Consequently, verifying if the persistence of an institution is partially explained by its design deserves to be studied. In the context of the institutionalization of inequality in Latin America, some scholars have mentioned the constitutional texts of the nineteenth century as clear examples of exclusionary institutions (Dye 2006; Engerman and Sokoloff 2005; Gargarella 2005a; Schor 2006). But none of them have devised an empirical strategy collecting data from the constitutions and linking the presence or not of statements calling for civil rights, political freedom and economic liberties with constitutional endurance. Moreover, no previous work has shed light on whether long-term factors such as culture, history and natural endowments may have shaped the persistence of these constitutions over time, an aspect recently studied by the literature on institutional persistence but ignored for the case of constitutions of the Americas (for reviews see Nunn 2009b, and Woolcock *et al.* 2010). As shall be seen below, I endeavor such a task in this chapter.

3.2.1. Institutionalizing inequality through constitutional design in nineteenth-century Americas

The Americas have a long tradition writing constitutions. Most were written in the turbulent XIX century after the revolutionary wars. Many perished rapidly, but little is known about the causes leading the high rate of constitutional mortality at the time. Some scholars attribute the exclusionary nature of constitutions as the main cause of their short lifespan. For example, Engerman and Sokoloff (2005) point out that while the relatively equal distribution of endowments led to more open suffrage and civil liberties in North America, the rich and powerful Latin American elites influenced constitutional design, aiming towards restricting the rights of the masses. In the same vein, Gargarella (2005) undertakes a comparative legal analysis of a sample of Latin American constitutions, and concludes that they laid the legal basis of the current political inequality in the region[59]. Schor (2006) gives a similar opinion based on the poor entrenchment of constitutionalism in the Latin American region. Furthermore, scholars believe that the constitutional provisions allowing the governments to declare *states of siege* in situations of "emergency" were really aimed towards the control of explosive social and political unrest (Dye 2006; Gargarella 2005a). Although the elite feared both tyranny and popular revolts, it appears that the former was considered less pernicious than a generalized social disturbance[60] (Dye 2006). In general, three broad

[59] The period studied ranges from 1789 to 1860, and the constitutions under analysis belong to the following countries: Argentina, Colombia, Chile, Ecuador, Mexico, Peru, United States, and Venezuela. My sample is much wider as explained in the empirical section but the results do not change fundamentally when the sample is reduced to this group of countries.

[60] See also Safford (1985, 1992) and North *et al.* (2000) for accounts highlighting the prominence of elites in the shaping of political institutions of the nascent American Republics.

constitutional sections are explored in the literature as legal channels restricting the rights of the masses in XIX century Latin America: acquiring citizenship, access to suffrage, and dispositions regarding free education for children.

Citizenship

Becoming a citizen was probably one of the most important incentives behind popular participation in revolutionary wars. Acquiring citizenship not only represented a better legal and social status, but also opened the opportunity to suffrage in the XIX century. Surprisingly, after the revolutionary wars, most of the constitutional texts in Latin America did not concede citizenship to the masses. According to Gargarella (2005), acquiring citizenship was severely restricted to those who accomplished the "conventional" requirements of being a national, having reached a certain age and being male, but also earning a certain amount of money or owning property, being literate, or having a *known* profession. In many constitutions, domestic servants, non-Catholics or soldiers were excluded from citizenship[61]. The intensity of restrictions varied across countries and time periods, but in the most restrictive constitutions, the impediments to citizenship were accompanied with extensive regulations of potential causes for its suspension or revocation (Gargarella 2005a). In fact, criminal convictions, being declared a debtor, illiteracy or a reputation for immoral behavior, among other dispositions, led to citizenship suspension in several constitutions. Even those optimistic approaches studying the nature of political citizenship in XIX century Latin America acknowledge that elites presumed "an ideal citizen," which was more elevated than conventional individuals were (Sabato 2001). Notwithstanding, violence was not the first reaction by the masses against constitutional exclusion; some minorities behaved strategically to circumvent restrictions, though with limited success. For example, Irurozqui (2006) reports that Indians in Bolivia became citizens as they paid taxes or enrolled in the military; similar strategies are also documented for Venezuela and Peru[62] (Hébrard 2002; Méndez 2006).

Suffrage

A fundamental political right is the capacity to elect public servants. The history of suffrage is plagued by revolutions aiming at free and universal suffrage (Acemoglu and Robinson 2006a; Przeworski 2008). Although little is known about the rate of political participation in Latin American countries in the XIX century, some authors report turn out levels below 2% among those allowed to vote (Sabato 2001; Safford 1985). The figure is far behind the electoral participation rates registered for Canada and the U.S. during the same period (Engerman and Sokoloff 2005). This marked contrast between North and South America has been attributed to several restrictions in law and electoral

[61] Gargarella (2005) points to conservative constitutions as the strictest in the allocation of individual rights.

[62] Sabato (2001) reviews the literature on political citizenship in Latin America based on the New Latin American Historiography.

practices carried out by the political establishment, which in turn, represented the interests of Latin American elites (Dye 2006; Engerman and Sokoloff 2005; Sabato 2001; Safford 1985). Some argued that elites impeded voting by vast majorities in the region because the poor lacked the education or "enlightenment" to elect public officials (Sabato 2001; Safford 1985). However, a more fundamental reason would have been the potential redistribution of income caused by the high taxes aimed at funding the pro-poor policies (Acemoglu and Robinson 2006a, 2006b; Engerman and Sokoloff 2005; Mariscal and Sokoloff 2000; Meltzer and Richards 1981). Constitutional provisions acted as general frameworks for severely restricting the political participation of the poor in Latin America. Based on requirements of citizenship, literacy, income or wealth-based thresholds, and other restrictions, constitutional provisions on suffrage denied the right to vote to the masses of many countries in the region[63] (Engerman and Sokoloff 2005; Gargarella 2005a; Mariscal and Sokoloff 2000). Other common requirements for suffrage were to be a "neighbor" (*vecino* in Spanish), to practice the Catholic religion, and/or be male; this last restriction was also maintained in Canada and the U.S. at that time. During the XIX century, restrictions on voting changed among constitutional texts in Argentina, Canada, Chile, the U.S., and Uruguay. Extensions of suffrage in these countries were made at different paces but in a sustained manner. But this phenomenon did not spread to other countries in the region until the next century. Curiously, when Safford (1985) documents historical episodes where the elite was under threat to extent suffrage, this pressure came from other reduced political groups, who aimed to compete for political power; but not from the masses, as would be expected. Many agree that limitations in suffrage are inextricably related to the precarious provision of public goods. This consideration leads to the next point.

Education

At the beginning of the XIX century, education was provided by decentralized systems in the Americas. Mariscal and Sokoloff (2000) report that, apart from other factors, relative income levels for some Latin American countries, Canada and the U.S. were equivalent at the time. These similarities would tend to predict similar results in schooling along the period for those countries. Unexpectedly, Canada and the U.S. drove their economic development with growing rates of schooling, while their counterparts in Latin America advanced at a slow, even accidental pace. Mariscal and Sokoloff associate the poor performance in schooling to the high levels of economic inequality pervasive in the region and the private school system, which was in charge of educating the elites. According to Newland (1991), the low levels of investment in schooling could have been caused by the reluctance of Latin American governments to put pressure on the wealthy

[63] The literature cites Argentina, Chile, Costa Rica, and Uruguay as those Latin American countries with fewer restrictions on voting in the region. This did not avoid low levels of political participation in electoral processes lived during the XIX century in those countries. Electoral practices have been cited as possible reasons (Acemoglu and Robinson 2006a; Engerman and Sokoloff 2005; Sabato 2001; Safford 1985)

to finance public schools. Moreover, as the system of schools in Latin America was decentralized at the beginning of the century, governments lacked the capacity to coordinate resources and policies effectively, so it is believed that these limitations led to the centralization of the educational system in the majority of Latin American countries. However, centralization did not avoid the fact that public schools only attended to a fraction of those children at school age by the end of the XIX century. The paradox of this account is that soon after independence consolidated in Latin America, many countries issued legal instruments proposing universal primary education. Reimers (2006) argues that this duality of high aspirations in schooling but poor performance in materializing it could be illustrated by the prejudices of the elites, who provided only very basic instruction to the *mestizo* and lower classes to limit them to *domestic* occupations.

Nevertheless restrictions went beyond access to citizenship, voting and education. Many governments adopted the Catholic Church as the state´s official religion and sometimes explicitly banned the public practice of any other cult[64] (Bethell 1985). Moreover, while a growing number of constitutional texts forbade slavery along the nineteenth century, few texts enshrined the right to work, or elaborated statements on basic workers' rights, such as minimum wage, safe working conditions, or the right to rest[65] (Gros-Espiell 2002). Similarly, the multiculturalism and human sacrifice of indigenous populations in Latin American countries did not receive clear recognition or vindication (Gros-Espiell 2002). Regarding the state's responsibility toward society, most Latin American constitutions in the XIX century omitted statements providing for social security, health services, or housing[66] (Marquardt 2010). The reader may think that it is unfair to make a comparative study about the presence or not in the constitutions of civil, cultural or social rights when such a rights where *rarely* solicited for the masses in the XIX century. However, I am analyzing the determinants of the endurance of nineteenth-century constitutions in the Americas. So, if the early introduction of the rights in question effectively reduced the risk of constitutional failure, as suspected, then the statistical study carried out below will be able to account for them.

3.2.2. On the endurance of constitutions

Constitutions do not necessarily endure because they are the unique effective way for restricting the rights of those seeking for their change or because they limit unwise decisions by politicians (Elster 2000). A growing literature in social science has shown

[64] The principle of religious tolerance permeated in many constitutions as the XIX century advanced.
[65] The first labor laws made in Latin America were written at the end of the XIX century, but most of them attended to specific sectors of the economy. According to Carnes (2009), the resistance to broaden the benefits of labor laws to the rest of the workers is reflective of the asymmetric employment relations prevalent in the labor market of many Latin American countries at that time.
[66] Marquardt (2010) argues that the first constitutional wave providing for multiple social rights in Latin America started with the Mexican constitution of the 1917.

us that constitutions matter for development. For instance, Person and Tabellini (2003) find that parliamentary systems tend to have more expansive fiscal policies in comparison with presidential systems (both systems are clearly constitutional aspects). From a broader context, Holcombe *et al.* (2006) employ aggregate indexes of constitutional quality based on constitutional statements regarding the legal structure and property rights, freedom to exchange with foreigners, and regulations, as central elements of a good constitutional design for fostering economic exchange. They report a significant correlation between constitutional quality and economic growth for a cross-section of countries analyzed from 1980 to 2000. In other contexts, the potential impact of constitutions in development has been traced back by North and Weingast (1989), who, through studying the *Glorious Revolution* of XVII century England, describe how the parliament committed the English crown to honor its public debts in the long-run by restraining the king through constitutional means. So, when constitutions persist, social coordination is guaranteed as a direct consequence of their predictability. According to Ordeshook (1992), constitutional design is successful when its provisions are embedded in individuals' social conventions; implying that constitutions tend to be stable and durable as they became self-enforced (Weingast 2005, 2006). Under this perspective, constitutions are coordination mechanisms crafted by two fundamental principles. One is governed by people's fear of political disorder, and thus, potential violence; the other is governed by social conventions as coordinating artifacts of individuals' expectations (Weingast 2006). Therefore, studying the structure of constitutions is essential for determine what are those elements of design critical for their persistence.

The lifespan a constitution is also a function of the environmental factors surrounding its enforcement. Therefore, economic, political or social changes are critical for a country, among other things, because they may put at risk its constitutional stability at risk (Elkins *et al.* 2009). Similarly, the cultural heritage, the historical legacy, or the natural endowments a country has may impact affect its institutional evolution, affecting it, and, by extension, constitution endurance (Acemoglu *et al.* 2001, 2002; Engerman and Sokoloff 1997; Easterly and Levine 2003; Rodrik *et al.*2004). Moreover, a large literature about Latin American history tells us that the precarious constitutional dynamics of the region appear to be better explained by the pervasive political instability that followed after the revolutionary wars. For example, Safford (1985) constantly refers to political confrontation among the members of Latin America elites as the main cause of constitutional failure. Furthermore, Safford disregards constitutions as sources of institutionalization during the period, though he acknowledges that they cannot be omitted as statements of political and social aspirations written by the elite. In the same way, Przeworski and Curvale (2005) claimed that constitutions in XIX century Latin America were "merely piece of papers" because they did not have a real impact on politics. Alternatively, they prefer to study *political behavior* as the main source of "institutionality" during the turbulent XIX century. Dye (2006) argues that, even though

prominent conservatives and liberals in Latin America feared popular unrest, the dynamics of political competition rested on the problem of creating a credible commitment among the political classes to honor its compromise of access to power through constitutional means. Thus, he dismisses revolutions as a potential explanation of the long history of constitutional failures in Latin America; instead, he focuses on the recurrent inability of the elite to reach a credible commitment to obeying constitutional provisions[67]. Thus, it is important to acknowledge the potential impact of other factors, beyond constitutional design, on the performance of the XIX century constitutions in the Americas.

In empirical terms, studies on constitutional design have considered the length of constitutions, their amendability, and the potential impact of exogenous factors as determinants of constitutional survival. For example, Berkowitz and Clay (2004) studied the determinants of constitutional stability and durability in ten states of the U.S. with different legal traditions: civil and common law. Although few details are provided about aspects of constitutional design and their impact on the durability of constitutions, the authors report that civil law constitutions were more unstable than those with common law origins. Rasch and Congleton (2006) analyzed the role of amendments on the stability and durability of constitutions for a sample of constitutions enforced in OECD countries. Overall, they found that a moderate stringency in the constitutional amendments process reduced amendments, leading to more durable constitutions. Other empirical studies based on the methodology of *duration models* provide us with a more comprehensive approach on the importance of constitutional design on the durability of constitutions. For example, Hammons (1999) found that the length of the constitution matters, suggesting that wordy constitutions are more specific, and thus, less prone to controversies regarding how they should be interpreted. However, the most comprehensive work on the subject has been recently made by Elkins *et al.* (2009). In their extensive study of constitutional texts around the world, they found that the possibility of amendments, the inclusiveness in the design of constitutions, the detail in constitutional statements, and clear limits on the constitutional periods of the executive, reduce the risk of constitutional failure. By contrast, transitions to autocratic or democratic regimes, interim constitutions, and a greater diffusion of constitutional reform shorten the lifespan of constitutions in significant ways[68]. This work is different from those cited above, not only because the focus are the lifespans of the nineteenth-century Latin American constitutions, but also because it addresses whether the concession (or not) of certain civil, political, economical, religious and educational rights might have been a cause of the premature death of many constitutional texts in XIX century Latin America.

[67] See Safford (1992) for a condensed review of approaches explaining the source of political disorder in post-revolutionary Latin America.
[68] See also Negretto (2008) who use the same methodology but employ a sample of contemporary Latin American constitutions.

3.3. The Empirical model

The dependent variable under study is the time that a constitutional system lasts before it is replaced by a new one. Concerns regarding the distribution of residuals arise when time residuals are nonsymmetrical. In those cases, linear models are unhelpful due to their restrictive assumption of normality in the distribution of the disturbances. Fortunately, a more flexible statistical procedure is provided by *duration models*, which allows for the modeling of residuals with parametric estimations, or alternatively, employs semi-parametric models if the residuals' distribution is unknown (Box-Steffensmeier and Jones 2004, Cleves *et al.* 2008). Since I do not know how the probabilities of constitutional failure evolved in XIX century Americas, a semi-parametric Cox model will be employed. This method does not assume a specific distribution of the residuals. Additionally, Cox models are more flexible analyzing data with multiple observations per subject; a critical aspect of the sample of constitutions studied here. Previous work by Elkins *et al.* (2009), Hammons (1999) and Negretto (2008) successfully employed duration models in the analysis of constitutional life spans for specific contexts and subjects.

A plethora of methodological issues arise when the endurance of constitutions is explained by a set of covariates. However, four of them are critical in this work. The first one is the very nature and meaning of the "duration of constitutions," which, in the case of the data built for this study, is measured in years. This implies that a longer time span per constitution translates into fewer constitutional replacements over time. A second issue regards the impact of the covariates. In the estimated models, there are time varying and time constant covariates, which can reduce or prolong the life of constitutions. For example, it is believed that constitutional statements restricting the access to citizenship and voting will reduce the duration of constitutions, while, by contrast, statements calling for religious freedom would extend its durability. Thus, whatever the case, the incidence of the covariates will be assessed in terms of the increase or decrease in the risk of constitutional failure. Consequently, a key aspect of *duration models* is the notion of *hazard rate*, which measures the rate that constitutions fail in a given timeframe. For the Cox model, positive coefficients imply increasing hazard rates of constitutional failure as a function of a covariate, and vice versa. Increased hazard involves frequent constitutional replacements, and consequentially, constitutional instability. A third concern is the treatment of those explanatory variables having lagged effects. Some scholars have reported constitutional instability in the aftermath of critical economic, political or social events[69] (Elkins *et al.* 2009; Elster 1995b; Negretto 2008). In that case, the potential delayed effects of

[69] Due to the scarceness or unreliability of economic or social indicators for the XIX century Americas, the analysis of crises in the chapter is limited to the political sphere.

constitutional replacements around the world are captured by lagging their impact for a year. In the case of coups, political regime transitions, and similar the variables are also lagged one year[70]. The final issue regards missing data. The models reported here are based on imputed datasets; thus a multiple imputation procedure is followed to fill in the missing values[71].

3.3.1. The Data and variables

The data specifically collected for this work deserve a few lines here. The sample chosen for the empirical analysis consists of one hundred constitutions corresponding to 18 countries of the Americas[72]. The period under study ranges from 1789 to 1900. During those years, the first great wave of constitutionalism in the region started with the U.S. constitution in 1789 and following independence from Spain and Portugal. To obtain accurate data on the civil, economic, political and social rights conceded to individuals in those constitutional texts, I elaborated a questionnaire based on a survey developed for the *Comparative Constitutions Project* (Elkins *et al.* 2008)[73].

The dependent variable is the time a constitution endures. To measure this I employ the procedure proposed by Elkins *et al.* (2009) which assumes that a new *constitutional system* starts and finishes when a constitutional text is promulgated and derogated respectively. As a constitution may be reinstated after its premature derogation, then the new cycle is treated as a *new* constitutional system. In fact, from the 100 American constitutions analyzed, 102 constitutional systems are counted. On the other hand, the reform or amendment of a constitution does not imply computing a *new* constitutional system[74]. Thus, reforms of the constitutions are part of the same *system*[75]. A total of 81 constitutional failures were counted, while eighteen constitutions were censored at the upper limit of the study in 1900; none of them have been left censored[76].

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[70] This is not the case for the variables ***intra_exit*** and ***extra_exit***.

[71] Of course, this procedure is an imperfect substitute of the real data. However, relying on list-wise deletion, the method employed by most statistical packages, would have caused more harm than good, given that the bias provoked by deleting a large fraction of the sample is usually larger than that introduced by an adequate imputation method (Allison 2009). While there are several options for imputing missing data, a multiple imputation process was the best choice for this work because of the time-series cross-section nature of the data under scrutiny (Honaker and King 2010). See **Appendix 3B** for details on the imputation process.

[72] Although constitutional endurance in Latin America is the main objective in this work, the U.S. constitution is included in the empirical analysis to gain a comparative perspective between the constitutional evolution of North and South America. Insights from this approach could help us understand the contrasting paths of development followed in the Americas.

[73] A copy of the questionnaire is provided in **Appendix 3C**.

[74] Constitutional reforms were also surveyed in building the database of civil, cultural and social rights specially made for this study in case the reforms affected those issues.

[75] This approach is helpful for verifying whether constitutional amendments prolong the life spans of constitutions as argued by Elkins *et al.* (2009) and Rasch and Congleton (2006).

[76] Despite the fact that Gargarella (2005) suggests that the legal foundations of inequality were constitutionalized from 1812 to 1860, the time frame here has been widened with the purpose of enlarging the sample of both, countries and constitutions. This allowed the inclusion of countries as Guatemala,

Three groups of explanatory variables have been assembled to estimate the empirical models below. The first group of variables derives from the review of one hundred new constitutions promulgated in the Americas during the XIX century. This data explores aspects related to the design of constitutions, such as provisions regarding voting, access to citizenship, and other civil and social rights stated in the constitutions. The second group deals with issues of constitutional design as determinants of constitutional endurance worldwide. The final group of variables assesses whether proxies for culture, geography, or history could have affected the durability of constitutions in XIX century America[77].

The data coming from the survey allowed the detection and measuring of a wide array of rights conceded to individuals in the constitutions of XIX century Americas. For instance, by measuring the minimum age required to become a citizen (***citznshpage)*** one can verify if delaying access to citizenship increased the probability of constitutional failure[78]. In relation to the claim that many constitutions in the XIX century Americas stated property or schooling as prerequisites to access citizenship (***citznshprt***), thus paving this the way towards excluding large groups, it is expected that their presence should shorten constitutional life-spans (Engerman and Sokoloff 2005; Gargarella 2005a). In the same vein, the minimum number of requirements set up to become a citizen (***citznmin***), such as gender, nationality, civil status, literacy and property, among others, are counted for each constitutional text to verify if more requirements are associated with frequent constitutional failures. Additionally, by enumerating the number of ways the citizenship could be suspended (***citsus)***, or the ways it can be revoked (***citrev***) is expected that more restrictive constitutional texts endure less[79]. Following Engerman and Sokoloff (2005), Gargarella (2005), and others claims about the restrictions in suffrage as a common practice of Latin Americans elites to deny the vote to the masses until the mid of the XX century, two key variables on voting are built. The first one is a binary variable stating if the constitution stipulates a universal claim to adult suffrage (***voteun***). I expect that constitutions calling for adult universal suffrage have longer lives than those silent on the subject. The second variable counts the number of requisites stated in the constitution to access the vote (***votefctv***). In addition to socioeconomic restrictions and age limits, voting could also be restricted to males, to

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Honduras and Nicaragua, whose states were created after 1845. Canada is excluded from the study because, technically, its *British North America Act* of 1867 lacked of constitutional status.

[77] **Appendix 3A** describes the variables and their sources in detail, as well as presents some basic statistics for them before and after the imputation process.

[78] Gargarella (2005) believes that through retarding the age to gain citizenship, many Latin Americans were denied the right to vote or, even, access to political power, given that becoming a citizen was a basic prerequisite to gain access to suffrage.

[79] In many Latin American constitutions, the judicial interdiction, being declared as debtor or have had precedents of indecent behavior were, among others motives, explicitly stated as causes for the temporary suspension of citizenship. Similarly, the acquisition of citizenship in another country, being legally accused of fraud, or being member of a religion group, were common causes for the revoking of citizenship, in some cases, indefinitely.

those married, or those registered in the electoral office, or residing in the district, among other provisions. Constitutions with fewer restrictions on voting should be less prone to failure.

Attending to the evidence presented by Engerman and Sokoloff (1997, 2002), and Mariscal and Sokoloff (2000) on the exclusionary role of Latin American elites in providing education to the majorities in the XIX century, a binary variable is built to check whether those constitutions allowing for universal primary education (***educate***) last longer than those obviating the issue. Furthermore, as the same scholars have pointed to the compulsory and free nature of schooling in North America as crucial for the relative equality of that region, an additional dichotomous variable is built for verifying if constitutions granting free education (***edfree***) have sensibly reduced the probability of their replacement. Regarding other civic and social rights, a binary variable is included in the analysis for determining if constitutions stating provisions about the responsibility of the state towards society (***restate***) tend to endure for long. Moreover I include a dichotomous variable indicating whether the constitution stipulates restrictions on the rights of specific groups (***rightres***), such as ethnic or racial minorities, peasants, or domestic servants. Another crucial aspect of individuals' lives relates to their religious beliefs; freedom in religious practice cannot be taken for granted, even today. A dummy variable indicating if the constitution allows for freedom of religion (***freerel***) is introduced in the analysis under the assumption that freedom in religious practice reduces the hazard of constitutional failure. In addition to civil, political, and educative rights, economic rights also play a crucial role in the social structure of countries. For this reason, a couple of dummies are included indicating whether constitutional statements allowing for the right to start a new business (***business***), or the right to choose an occupation (***occupate***) affect the comparative survival of constitutions.

Even though detecting for the presence or not of certain rights in constitutional texts maybe helpful to determine if they affected the endurance of constitutions in the XIX century Americas, it is important to go deeper and study whether the quality of certain civil and social rights might have affected the survival of constitutions. This issue is addressed here by building indices intended to quantify how committed the constitutions under study were in providing basic *civil*, *cultural* and *social* rights. For doing that, the methodology developed by Ben-Bassat and Dahan (2008) comparing the commitment of constitutions towards key social rights is adopted[80]. They state the

[80] Ben-Bassat and Dahan (2008) goal is determine whether the legal origins, or religious preferences, among other economic and political forces, are behind the adoption of commitments to provide social security, education, health, housing, and the protection of workers' rights in constitutional texts. A key finding in their cross-country comparison of recent constitutions is that countries with the French civil law or socialist legal heritage have a higher constitutional commitment providing for social rights than those having the British common law as legal framework.

following criteria for evaluating the degree of constitutional commitment in providing for social rights, such as social security, education, health, housing, and the protection of workers´ rights:

Table 3.2. The Criteria for Evaluating the Constitutional Commitment to a specific Social Right

Item	Rank
The right is *absent* from the constitution	0
There is a *general statement* or ambivalent commitment to provide for the right.	1
There is *weak commitment* to provide the right when the constitution provisions the right without specificities about it.	2
There is a *strong commitment* to provide the right when the constitution provisions the rights specifying its qualities and potential beneficiaries.	3

These criteria imply that when the constitution, for instance, "guarantees", "promotes" or "provides" a right, it is making a *general statement* for providing it, which is ranked with 1. By contrast, when the constitution states that "every person is entitled to", or "the state is committed to", or similar, then the constitution is making a *weak commitment* to provide the right, which is ranked with 2. But when the constitution provides that "the state should guarantee no discrimination of", or that "primary and secondary education are compulsory and free", or related statements, then the constitution is making a *strong commitment* in providing the right, which is ranked with a maximum of 3. Finally, when the right is absent from the constitution, the rank is 0. While the absence of a right from the constitution does not imply its inexistence in legal or practical terms, it is clear that countries with written constitutional traditions valuing civil and social rights would prefer to give them a constitutional status. After ranking for the constitutional commitment to provide for social security, education, health, housing, and the protection of workers´ rights, a summary index of social rights (***indxsrights***) can be estimated[81]. Table 3.2 presents the values for this summary index for the constitutions in force during the 1850s, 1900s, and 2000s, respectively. The data comes from the review undertaken and from the paper by Ben-Bassat and Dahan (2008). As can be seen, the constitutional commitment for social rights in the Americas has increased over time, which is compatible with claims pointing to the twentieth century as the era of the ascend and consolidation of social constitutionalism in the Americas (Marquardt 2010). But the main concern here is determining whether the early adoption of social rights commitments in the constitutional texts of the nineteenth century Americas reduced the probability of their failure during that century.

[81] Tables A3 and A4 of **Appendix 3A** report the basic statistics for the components of the index of social rights obtained from the American constitutional texts of the beginning of XX and XXI centuries, respectively.

Table 3.3. Comparison of the Indices of Constitutional Commitment to Social Rights for different periods in the Americas

Country	Index of social rights in the 1850s	Index of social rights in the 1900s	Index of social rights in the 2000s
Argentina	0,6	0,6	0,98
Bolivia	0,4	0,6	1,12
Brazil	0,6	0,4	2,13
Chile	0,4	0,8	1,15
Colombia	0,2	0,6	1,5
Dominican Republic	0,8	0,4	1,43
Ecuador	0,2	0,8	1,66
El Salvador	0,2	0,8	1,25
Mexico	0,2	0,4	1,97
Nicaragua	0,2	0,8	2,25
Paraguay	0,2	0,6	1,71
United States	0,4	0,0	0
Uruguay	0,2	0,4	1,58
Average	**0,344**	**0,55**	**1,441**

Source: Own calculations based on data from Ben-Bassat and Dahan (2008) and the survey made for this analysis.

An index about the commitment of the constitutions with regards to the protection of civil and cultural rights (***indxcrights***) was also built, to check provisions regarding the rights associated to the equality of individual before the law (***equallaw***), the right to freedom of religion (***freedrel***), and the constitutional commitment to support the integration of ethnicities (***ethnicinteg***). Table 3.3 reports the results for the constitutions of the Americas in force at 1900.

Table 3.3. Indices of Constitutional Commitment to Civil and Cultural Rights for the Constitutions of the Americas at the beginning of twentieth-century

Country	*equallaw*	*freedrel*	*ethnicinteg*	Index of civil and cultural rights (*indxcrights*)
Argentina	3	1	0	1,33
Bolivia	1	1	0	0,67
Brazil	1	3	0	1,33
Colombia	0	1	0	0,33
Costa Rica	1	1	0	0,67
Chile	3	0	0	1
Dominican Republic	1	1	0	0,67
Ecuador	2	1	2	1,67
El Salvador	1	1	0	0,67
Guatemala	1	1	0	0,67
Honduras	1	2	0	1
Mexico	0	0	0	0
Nicaragua	1	1	0	0,67
Paraguay	0	1	1	0,67
Peru	2	0	0	0,67
United States	1	3	0	1,33
Uruguay	2	0	0	0,67
Venezuela	2	1	0	1
Average	1,28	1,06	0,17	0,83

Source: Own calculations based on data from the questionnaire.

The variables measuring features of constitutional design and their incidence on the survival of constitutions come from the epidemiological (or duration analysis) model estimated by Elkins *et al.* (2009)[82]. And the preliminary evidence shows that reinstated (***reinstated***) constitutions are prone to failure (Elkins *et al.* 2009). With regard to the plural origins of the constitutions and their potential longevity, the evidence suggests that a more inclusive constitutional process (***inclusiveness***) prolongs the life of constitutions, as well as those promulgated in democracies (***democ_pro***). When constitutions state provisions facilitating constitutional amendments (***amend_rate***), or that any court may review the constitutionality of laws (***jud_review***), then the risk of constitutional replacement declines in the event of political or legal controversies. Nevertheless, excessive amendments of the constitutions (***amendsq***) deprive them of longer lives. On the other hand, constitutions providing for several issues (***scope***) in combination with detailed (***detail***) specification of each topic in the body of constitutional texts appear to improve survival prospects because comprehensive constitutions reduce the potential for political or legal controversies[83]. In relation to executive power, constitutions calling for a single executive (***sinlge_exec***) and clear

[82] Those variables are presented here with a brief description of the findings reported by Elkins and associates.

[83] Nonetheless, Hammons (1999) found evidence of the contrary for the case of the constitutions of the US states.

term limits for the head for state (***term_limits***), reduce the risks of political conflicts. In the case of parliamentary powers, more powerful parliaments (***ppi***) might favor the endurance of constitutions, but when the parliament´s extra-limits its competences and enters into conflict with the executive, this may be the cause of constitutional disruption. Regarding the impact of the duration of a previous constitution (***legacy***) on the life span of a new one, the endurance of the successive constitutions appear to be *path dependent*; thus the longer-lasting a constitution to the higher the probability of survival of its replacement. The structure of the state also plays a role in the endurance of constitutions; democracies (***democracy)*** tend to have durable constitutions. On the other hand, the expectation is that less diverse societies prolong the survival of constitutions –proxying cultural diversity by their genetic diversity in comparison to our African ancestors (***gendist***). A final consideration on the structure of the state has to do with the historical particularities of states in Latin America. According to Gargarella (2005), those Latin American constitutions calling for a *state of siege* under an emergency (severe political disorder, guerrilla attacks, coups, etc.) appear to have survived longer than their counterparts not contemplating it. He believes that the presence of powerful executives explain why many constitutions did not fail in XIX century Latin America despite the recurrence of severe political crises[84]. Thus, a dummy variable stating if *states of siege* are declared by the executive or not (**emergapp**) would help us to determine if constitutional statements extended the survival of constitutions as Gargarella presumes[85].

Beyond design issues, constitutions are also exposed to what Elkins *et al.* (2009) call "precipitating factors", or those factors that may lead to constitutional failure due to instability in the social and political environment where constitutions are enforced. Unfortunately, the unavailability or precariousness of the data for the XIX century Latin America only allows us to check for a small set of variables here. A key issue would be to know in which ways the new constitutions written around the world (***gdiffusion***) affected the survival of the constitutions in force. According to the preliminary evidence by Elkins *et al.* (2009), an increase in the writing of new constitutions put at risk those already in existence. Moreover, they also report the risk of contagious constitutional replacement when a country has close neighbors drafting new constitutions (***cdiffusion***). I will check if this also the case for XIX century Americas. Another critical factor is verifying if changes in the political system, toward an autocracy (***autchg***) or a democracy (***demchg***), affected the endurance of the constitutions. Even though, either becoming an autocracy or democracy put the survival of constitutions at risk,

[84] Of course, the author admits that the cost of using this constitutional provision was less individual freedom and bitter political retaliation among the political rivals.

[85] The data for ***democracy*** comes from the Polity IV Project (2007), while ***gendist*** was built with data from the CIA Factbook (2008) and following the procedures described in Ramachandran *et al.* (2005) and Ashraf and Galor (2010). Finally, the data for **emergapp** proceed from the questionnaire elaborated for this work. See *The Data* section for details.

autocracies appear to be more deadly for constitutions in force than democracies. Similarly, the succession in power of the head of government is a matter of concern for the durability of constitutions given that when leaders step aside through constitutional means (***intra_exit***), the lifespan of constitutions is longer than in those cases where leaders lose power by ways not prescribed in the constitutions (***extra_exit***). Additionally, the number of coups per year (***coups***) that occurred in a country is included in the analysis as an alternative measure proxying for the intensity of political instability in the XIX century Americas.

A final group of variables is assembled following the influential literature on the alleged impact of culture, history and geography in shaping institutions. Cultural diversity is proxied here through three related variables, that measure the probability that two individuals randomly selected from a sample belongs to the same ethnic (***ethnic***), linguistic (***langfrac***), or religious group (***relfrac***), respectively. These indices, developed by Alesina *et al.* (2003), have been found to affect development if different ways. Some studies report the deleterious effect of ethnic diversity on the quality of government, the provision of public goods, and the vitality of social capital (Alesina and La Ferrara 2000; Alesina *et al.* (2003); Easterly and Levine 1997; Mauro 1995). The evidence for the linguistic and religious fractionalization is less clear (Alesina and La Ferrara 2005). Nevertheless, it is expected that rising levels cultural fractionalization increase the probability of constitutional replacement[86]. With respect to the potential impact of history on the endurance of the XIX century constitutions of the Americas, the longevity of a state (***statehist***) is included here based on the assumption that mature states have better state bureaucracies which can facilitate institutional change (Bockstette *et al.* 2002). In other words, a prolonged state antiquity may also facilitate the replacement of constitutions because of the expectation that mature states are able to adopt new constitutions in response to structural changes through time. This variable is complemented with the period a country has been a colony (***colperiod***) and the logarithm of soldiers and priests´ mortality during colonial times in the Americas (***lrmort***); both variables intend to assess the incidence of the colonial past on the constitutional viability of the countries under study. In relation to the latter variable (***lrmort***), obtained from Acemoglu *et al.* (2001), it is argued that countries with high mortality rates would have inherited poor quality institutions. Thus, higher mortality may be associated to growing hazard rates of constitutional failure. I control for colonial experience (***colperiod***) because of the possibility that institutions established by the colonizers project their shadow on future institutional/constitutional equilibria.

[86] Another variable proxying for cultural homogeneity is ***gendist***, introduced at the beginning of this section.

Finally, several geographical variables are included to verify whether they are associated to the endurance of constitutions. The list starts with a binary variable describing if a country is landlocked (***landlock***) since the geographical isolation of some countries is associated to scarce sociopolitical exchange, economic backwardness but also, political stability (Gallup and Sachs 1999). The expectation is that isolated countries may have a low risk of constitutional failure. In the same vein, those American countries far from coastlines or navigable rivers (***distcr***) would have also experience prolonged constitutional stability in comparison to those geographically accessible. The absolute latitude or country's distance from the equator (***latitude_cia***) is an alternative variable for controlling for the claimed beneficial effects of higher latitudes in the settlement of egalitarian or protective institutions in the past (Acemoglu *et al.* 2001; Engerman and Sokoloff 1997, 2002). Given the previously described Engerman-Sokoloff insight on the impact of endowments in the institutionalization of inequality in Latin America, an attempt is made to verify if resource endowments proxying for income inequality may have influenced the performance of the XIX century constitutions in the Americas. A first candidate for doing this exercise is the logarithm of the ratio of land suitable for growing wheat relative to the land suitable for growing sugarcane (***lwheatsugar***), introduced by Easterly (2007) as a proxy for wealth equality. Wealth inequality in countries with extensive areas for growing wheat was low, and henceforth, their constitutions could have endured for longer. Contrastingly, the reverse would have occurred in countries with plenty of land for growing sugarcane. Another candidate variable proxying for income inequality is the country´s percentage of land located in the tropics (***tropicar***). This variable also appears to capture natural endowments and weather conditions pointed out by Engerman and Sokoloff (1997, 2002) and Acemoglu *et al.* (2001, 2002), respectively, as pre-conditions for the setting of extractive versus protective institutions in colonized countries. Countries in the tropics of Cancer and Capricorn might have suffered from a history of failed constitutions compared to their counterparts outside the tropics[87].

3.3.2. The Results

The results are presented in four subsections. The first one focuses on the incidence of the constitutional design and the structure of the state on the endurance of the constitutional texts of nineteenth century Americas. This part also takes into account the contagious effects of political issues on the performance of constitutions. The second section analyses whether providing civil, cultural, educational and political rights in the constitutions affected their probability of failure. The fourth subsection reports on the potential effects of culture, history and geography on the survival of constitutions. The final part presents a general model incorporating those variables, which are statistically

[87] The data for ***tropicar*** and ***distcr*** come from Gallup and Sachs (1999), while the database of the Development Research Institute (2005) provided the data for ***landlock***. The data for ***lwheatsugar*** is obtained from Easterly (2007). Finally, the data for ***latitude_cia*** proceeds from the CIA Factbook (2009).

robust in previous models. The results are reported with the original Cox estimates. Thus, positive coefficients increase the hazard of constitutional failure, while negative values imply the contrary. All models estimated are clustered by country to minimize the risk of deflated standard errors. The Efron estimation method was used to account for ties in the data[88].

Before going deeper into the statistical analysis, many of the findings presented below are captured in Figures 3.1 and 3.2. Figure 3.1 presents the hazard rate function of constitutional replacement for XIX century America[89]. The function describes a decreasing hazard rate as constitutions mature[90]. This suggests that ageing made constitutions less vulnerable to failure. Nonetheless, Figure 3.2 tells us that about a half of the constitutional systems under study lived seven years or less, which is a very young age for the decease of a constitutional text. As a way of comparison, in the already mentioned work by Elkins *et al.* (2009), they computed a median age of nineteenth years old for a worldwide sample of constitutions in force between 1789 and 2005. This finding, confirms, the tumultuous political past of Latin American countries. The crucial question for my purpose is whether this poor constitutional persistence is explained by the systematic denial of basic individual rights to the vast majorities of Latin Americans during the XIX century just as Engerman and Sokoloff (1997, 2002), and Gargarella (2005a, 2005b) maintain. The rest of the chapter attempts to answer this challenging question.

[88] Twenty-three ties were accounted for in the data. This number of ties is handled by the Efron's method without a significant loss of accuracy (Cleves *et al.* 2008).
[89] An easy way to interpret the hazard rate here is "given that the constitution has lasted a certain age, then what is the chance that it will be replaced the following year".
[90] The decline in hazard slows down a bit for constitutions older than twenty-two years old.

Figure 3.1. The Hazard rate of Constitutional Replacement in Nineteenth-century Americas

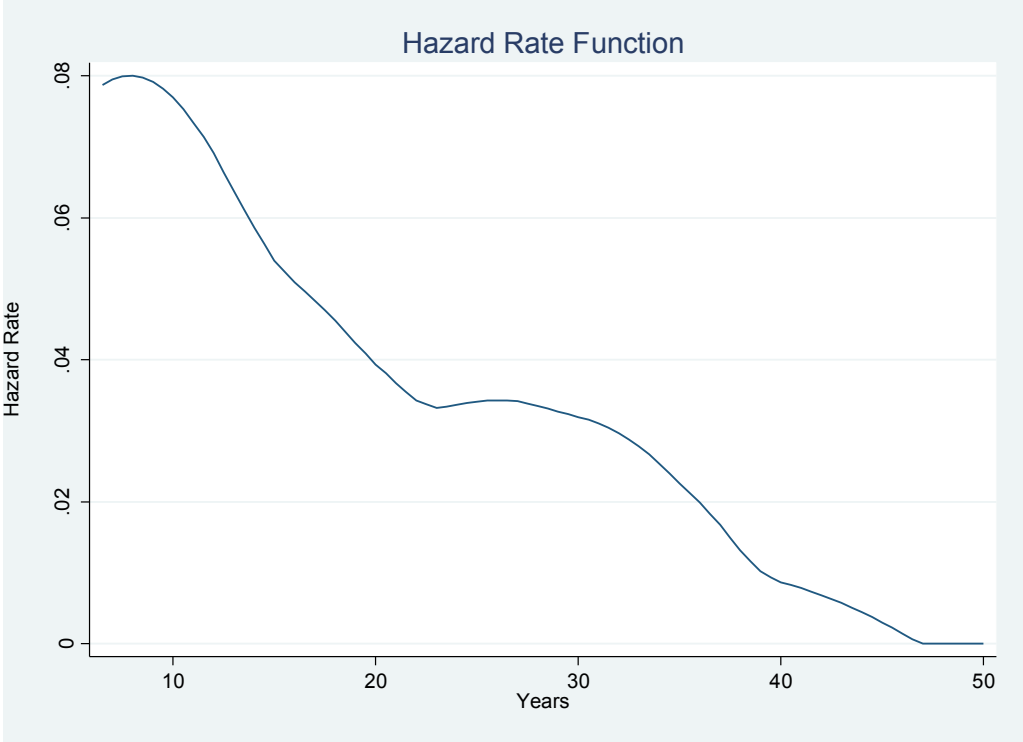
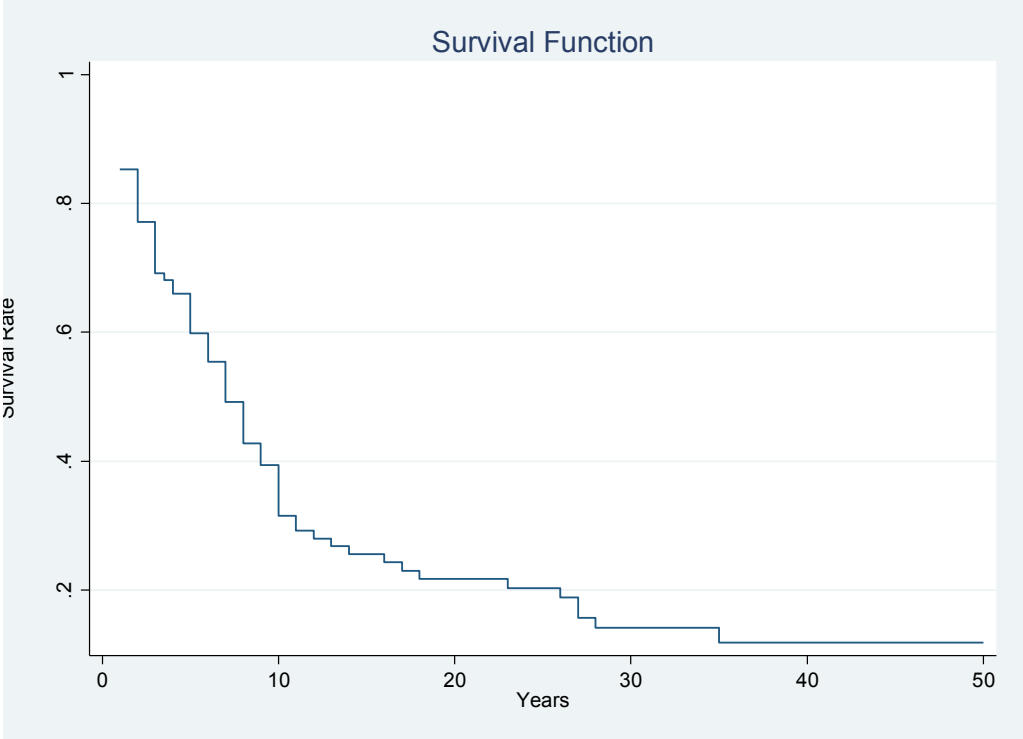


Figure 3.2. The Survival function of Constitutional Replacement in Nineteenth-century Americas



3.3.2.1. Controlling for the structure of the constitution, the state and political crises

Results reported in Table 3.4 include those variables considered to be essential in the structural design of a constitution and the functioning of a state, according to the study of Elkins *et al.* (2009)[91]. The evidence reveals that the existence of reinstated constitutions (***reinstated***), a prolonged constitutional past (***legacy***), the existence of a democratic regime (***democracy***), and high levels of cultural homogeneity (***gendist***) significantly reduce the risk of constitutional failure in nineteenth century Americas, which is in line with the findings of Elkins *et al.* (2009) for a worldwide sample of constitutions[92]. Even though the promulgation of a constitution in democracy (***democ_prom***) increases the probability of constitutional replacement, models 3 and 4, that risk is not statistically relevant when both variables are interacted (***democ_prom****democracy***), as shown in model 5[93].

On the other hand, those structural factors associated to modern constitutionalism have not seemed to have played a role for the survival of the nineteenth century constitutions of the Americas. Key design features, such as the inclusiveness of the constitutional making process, the possibility of amendment, or the number of issues covered in the constitutions, as well as explicit provisions on the term limits for the head of the state, found to be statistical significant in the study of Elkins *et al.* (2009), did not matter at all for the survival of more distant American constitutions[94]. These findings suggest that other design features, or factors external to the structure of the constitution, may explain better the pattern of constitutional replacement in nineteenth century Americas.

[91] The estimations reported in the following tables are based on the five datasets imputed. For details of the imputation process see the **Appendix 3B**.

[92] Taking into account the different paths of development followed by the North and the South of the Americas, the empirical analysis was also done excluding the United States, in case this country was driving the estimations. The results remained essentially the same.

[93] The United States was the longest and most stable democracy in the region at the time, but Bolivia, Chile, Colombia, Costa Rica, Guatemala, and Peru, also experienced democratic periods along the XIX century. The presence of democracy in Honduras and El Salvador vanished rapidly. This account relies on data from Marshall and Jaggers (2009).

[94] Although it is important to note that the sign of the coefficients are in line with the theoretical predictions, as can be seen in Table 3.4.

Table 3.4. The Structure of the Constitution and the State as Determinants of the Constitutional Replacement in Nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
reinstated	-1.519**	-1.534**	-1.506**	-1.669***	-1.669**
	(0.719)	(0.733)	(0.670)	(0.643)	(0.641)
inclusiveness	-0.626	-0.597	-0.676	-0.173	-0.176
	(0.705)	(0.716)	(0.728)	(0.696)	(0.702)
democ_prom	0.181	0.183	1.390***	1.468***	1.492***
	(0.232)	(0.233)	(0.321)	(0.341)	(0.426)
amend_rate	-2.338	-2.359	-2.488	-1.277	-1.277
	(1.852)	(1.878)	(1.945)	(1.975)	(1.977)
amendsq	2.370	2.410	2.613	1.695	1.695
	(1.854)	(1.908)	(1.972)	(1.946)	(1.947)
jud_review	-0.115	-0.105	-0.186	-0.198	-0.198
	(0.366)	(0.370)	(0.382)	(0.379)	(0.379)
review_democ	-0.959	-0.908	-0.720	-0.939	-0.941
	(0.996)	(1.013)	(0.996)	(0.965)	(0.971)
scope	-2.529	-2.422	-1.160	-0.721	-0.699
	(2.582)	(2.634)	(2.413)	(2.193)	(2.154)
detail	-5.866	-6.054	-7.416	-10.74	-10.73
	(6.616)	(6.686)	(7.254)	(5.984)	(5.969)
single_exec	-0.295	-0.306	-0.325	-0.416	-0.422
	(0.616)	(0.631)	(0.664)	(0.642)	(0.651)
term_limits	-0.326	-0.312	-0.191	-0.220	-0.213
	(0.499)	(0.494)	(0.497)	(0.472)	(0.488)
ppi	-2.535	-2.553	-3.179	-3.770*	-3.812
	(1.670)	(1.686)	(1.965)	(2.109)	(2.164)
legacy	-11.69***	-11.35***	-9.451***	-11.30***	-11.32**
	(3.741)	(3.775)	(3.458)	(3.608)	(3.537)
emergapp		-0.134	-0.0718	-0.0521	-0.0529
		(0.336)	(0.412)	(0.449)	(0.448)
democracy			-1.686***	-1.800***	-1.697*
			(0.281)	(0.299)	(0.857)
gendist				-0.150**	-0.150*
				(0.0750)	(0.0755)
democ_prom*democracy					-0.137
					(1.059)
Observations	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Results based on imputed data.

Before turning to them, Table 3.5 presents the result of introducing proxies for political crises. The idea is to verify whether the unstable political life attributed to Latin America significantly influenced constitutional survival. I also check if the diffusion of constitutional reforms in the region, or around the world, may have conditioned the replacement of American constitutions. As shown, only the existence of coups (***coups***) posed a significant risk to constitutional failure. This finding is compatible with historical accounts pointing at *coups d'état* as the preferred way used by many military leaders in nineteenth-century Latin America to grab power, and then reform the state by way of new constitutional texts (Dye 2006; Gargarella 2005a; Safford 1985).

Table 3.5. Political Crises as determinants of the Constitutional Replacement in Nineteenth-century Americas

Variable	Model 1	Model 2	Model 3
Gdiffusion	-2.435	-4.219	-4.659
	(5.040)	(5.047)	(5.052)
cdiffusion	2.921	3.608	3.703
	(2.509)	(2.445)	(2.439)
demchg	0.0818	-0.0807	-0.0357
	(0.794)	(0.737)	(0.746)
autchg	0.0443		
	(1.074)		
coups		0.750***	0.546*
		(0.257)	(0.330)
intra_exit			0.315
			(0.357)
extra_exit			0.448
			(0.373)
Observations	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Lagged variables are included in the model but not reported. Results based on imputed data.

3.3.2.2. Controlling for civil and social rights

The results displayed in Table 3.6 unveil whether the indicators aimed to capture restrictions on acquiring citizenship and the right to vote affected the survival of constitutions in the XIX century Americas. In general, the positive coefficients shown by the variables dealing with citizenship provisions suggest that increased restrictions to become a citizen implied an elevated risk of constitutional failure in nineteenth-century

Americas[95]. Specifically, the variable measuring the minimum age to access citizenship (***citznshpage***) is statistically significant. This finding is consistent with Gargarella´s claims pointing to the high age limits to become a citizen as one of the implicit barriers created by Latin Americans elite to deny voting rights to many in the region[96]. Unfortunately, much of the demographic data for the XIX century Latin America is inexistent or unreliable to make educated guesses about how many individuals where affected. Regarding the impact of provisions linked to suffrage on the durability of constitutions, the models 6 and 7 of Table 3.6 tell us that constitutions calling for adult universal vote (***voteun***) reduce the hazard of constitutional failure at a significant statistical level. On the other hand, constitutions stating too many (minimum) requirements for allowing vote (***votefctv***), besides the minimum age limit, experienced an increase in the possibility of constitutional replacement.

Table 3.6. Access to Citizenship and Suffrage as determinants of the Constitutional Replacement in Nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
citznshpage	0.0368**						
	(0.017)						
citznshprt		0.368					
		(0.277)					
citznmin			0.154				
			(0.102)				
citsus				-0.0397			
				(0.077)			
citrev					0.0871		
					(0.088)		
voteun						-0.407*	
						(0.213)	
votefctv							0.109**
							(0.056)
Observations	1181	1181	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Results based on imputed data.

Table 3.7 presents nine models controlling for the constitutional provision of a variety of civil and social rights. Note that those variables verify the constitutional statements on the social responsibility of the state (***resstate***), the right to freedom of

[95] Excluding ***citsus***.

[96] The minimum age to become a citizen was eighteen years old for most of the constitutional texts at the end of the XIX century. But during the century some constitutions were far beyond and stated a minimum age of twenty-five years old to access citizenship.

religion (***freerel***), the right to start a business (***bussines***), or to have an occupation (***occupate***), or the right to access schooling (***educate***), even at no cost (***edfree***), have negative coefficients. This result confirms the beneficial impact of including social issues in the endurance of the nineteenth-century constitutions of the Americas. Nevertheless, only the responsibility of the state towards the people (***resstate***) is statistically significant. Besides that, it can also be seen that constitutional statements calling for rights restrictions (***rightres***) increase the possibility of constitutional replacement, though not at significant levels. Therefore, based on the evidence presented in Tables 6 and 7, the impression is that the alleged claims about the negative consequences of the legal and social inequality on the endurance of the XIX century Americas constitutions are not supported by this study, so far.

Table 3.7. Access to Civil and Social Rights as determinants of the Constitutional Replacement in Nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
resstate	-0.389*							-0.359	-0.358
	(0.223)							(0.265)	(0.274)
rightres		0.255						0.224	0.193
		(0.277)						(0.215)	(0.209)
freerel			-0.492					-0.433	-0.403
			(0.344)					(0.333)	(0.342)
busines				-0.281				0.267	0.223
				(0.224)				(0.558)	(0.540)
occupate					-0.350			-0.507	-0.485
					(0.304)			(0.549)	(0.552)
educate						-0.235		-0.248	
						(0.190)		(0.299)	
edfree							-0.310		-0.247
							(0.225)		(0.295)
Observations	1181	1181	1181	1181	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Results based on imputed data.

Acknowledging that merely accounting for the presence or absence of a right is insufficient for making the appropriate measurement of a qualitative variable, it is time to evaluate whether the indices measuring commitment to civil, cultural, social rights are correlated to the endurance of constitutions. In Table 3.8 the indices about the constitutional commitment in providing social security (***socsec***), education (***education***) and workers' rights (***workersrght***) are included in the analysis. What

emerges is that nineteenth-century American constitutions stating explicit and comprehensive provisions for granting those rights endured longer than their counterparts not contemplating them. Specifically, the coefficients of models 1 and 3 are significant at the conventional levels, but only workers' rights remain significant in model 5. When the summary index of social rights is included (***indxsrights***) it is also significant and with the expected negative sign in the coefficient. At odds with Engerman and Sokoloff´s prediction, growing constitutional commitment in providing education to the masses did not appear to enhance the prospects of constitutional endurance (model 3 of Table 3.8). Probably, this can be explained by the fact that many constitutions stated the right to education in the XIX century America without specifying about funding and whether it was obligatory or not[97].

Table 3.8. The Index of Social Rights as determinant of the Constitutional Replacement in Nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
socsec	-0.389***			-0.240	
	(0.147)			(0.164)	
education		-0.117		-0.0516	
		(0.129)		(0.150)	
workersrght			-0.464**	-0.443*	
			(0.217)	(0.237)	
indxsrights					-0.575**
					(0.234)
Observations	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Results based on imputed data.

Now I proceed to check if civil and cultural commitments in the Americas´ constitutions of the XIX century also mattered for the persistence of constitutions. In Table 3.9 models from 1 to 4 assess for the degree of commitment stated by the constitutions in provisioning for equality before the law (***equallaw***), the freedom of religion (***freedrel***), and the responsibility of the state in calling for the integration of ethnic groups (***ethnicinteg***). Even though, the three coefficients are negative, showing that an increased constitutional commitment to these rights reduces the risk of constitutional failure, only the estimate for the freedom of religion is significant. This finding tells us that constitutions which enshrine freedom of cult or religion endured longer than those lacking of similar provisions. Adding the index of civil and cultural rights (***indxcrights***) in model 5 of Table 3.9, clearly tells us that its statistical significance is essentially driven for the variable proxying for freedom of religion.

[97] See Reimer (2006) for more on this regard.

Table 3.9. The index of Civil and Cultural Rights as determinant of the Constitutional Replacement in Nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
equallaw	-0.0808			-0.0924	
	(0.108)			(0.113)	
freedrel		-0.535**		-0.512**	
		(0.247)		(0.259)	
ethniciteg			-0.356	-0.182	
			(0.270)	(0.250)	
indxcrights					-0.723**
					(0.302)
Observations	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Results based on imputed data.

3.3.2.3. Controlling for culture, history, and geography

Table 3.10 brings into the analysis a group of variables proxying for cultural traits, historical episodes and resource endowments that may have influenced the durability of American constitutions in the XIX century. Models 1 to 3 show the estimations for ethnic diversity (***ethnic***), religious fractionalization (***relfrac***), and language fractionalization (***langfrac***), respectively. Additionally in equations 1 and 2, the variables proxying for constitutional provisions calling for freedom of religion (***freedrel***) and for the integration of ethnic groups (***ethniciteg***) are included with their respective interactions for detecting whether the impact of cultural diversity is affected by statements accounting for it. As expected, rising ethnic diversity increased the possibilities of constitutional failure in nineteenth-century Americas, though the effect is statistically insignificant. Interestingly, the negative coefficients of language and religious fractionalization tell us the contrary, but they also lack statistical significance. With regard to the variables proxying for historical episodes, models 4 to 7 in Table 3.10 report that countries having mature states (***statehist***), or those with a colonial past marked by a high mortality rate of bishops and soldiers (***lrmort***) are associated with an elevated hazard of constitutional failure, but at insignificant levels. Contrastingly, long periods of colonization (***colperiod***) led to a significant risk of constitutional replacement. This finding is consistent with previous work reporting the negative impacts caused by the *medieval* institutional legacy left by the Portuguese and Spanish colonialism in the subsequent development of the Americas (Dye 2006; Grier 1999; Lange *et al.* 2006; North *et al.* 2000). Now, it appears that Model 7 contradicts this fact but the presence of the antiquity of a state (***statehist***) in the specification hides the fact

that the colonization of the Americas also involved the foundation of states[98]. Models 8 and 9 of Table 3.10 include the proxies of geography selected for this work; only the percentage of a country´s land in the tropics (***tropicar***) is statistically significant, implying that constitutions made in the tropics tend to fail more than those located in template zones of the Americas. But remember that the inclusion of this variable, as well that logarithm of the ratio of land suitable for growing wheat relative to the land suitable for growing sugar cane (***lwheatsugar***), must be considered as proxies of income inequality. The aim here is verify whether the insight by Engerman and Sokoloff (1997, 2002) on how the alleged unequal wealth endowments in the Americas affected their contrasting path of institutional performance may have affected the endurance of the XIX century constitutions in the region. As can be seen, it appears that countries with large scale plantations and abundant indigenous labor at the time of colonization, also appeared to have frequent constitutional replacements, probably due to the high inequality induced by the abundance of resource endowments located in the tropics, as suspected by Engerman and Sokoloff[99]. Finally, Model 10 suggests that countries with a heritage of prolonged colonization and an abundance of tropical lands (and therefore historically unequal in wealth) are associated with frequent constitutional failures in the XIX century America.

[98] In statistical terms, the pair wise correlation of ***colperiod*** and ***statehist*** is 0.483 which still significant at the level of 0.1%. Therefore, the collinearity of both variables in Model 7 is substantial.
[99] This does not pretend to be an empirical verification of the Engerman and Sokoloff´s hypothesis but a modest test of their claims. For a more comprehensive study see Easterly (2007).

Table 3.10. Culture, history, and geography as determinants of the constitutional performance in nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
ethnic	0.919									
	(0.561)									
ethnicinteg	-0.310									
	(1.292)									
ethnic*ethnicinteg	-0.0913									
	(2.297)									
relfrac		-0.782								-0.473
		(1.747)								(3.203)
freedrel		-0.157								-0.113
		(0.339)								(0.508)
relfrac*freedrel		-1.046								-1.821
		(0.853)								(2.564)
langfrac			-1.117							
			(1.051)							
statehist				4.412			15.96**			
				(6.081)			(7.249)			
Lrmort					0.934		2.278**			0.0891
					(0.683)		(1.144)			(1.190)
colperiod						1.754**	0.938			3.254**
						(0.869)	(1.027)			(1.551)
landlock								0.117	0.327	0.377
								(0.644)	(0.537)	(0.455)
latitude_cia								0.0039	0.004	-0.0047
								(0.009)	(0.0114)	(0.0101)
Distcr								-0.0003	-0.0006	0.0021
								(0.002)	(0.0015)	(0.00151)
lwheatsugar								-1.618		
								(1.158)		
tropicar									1.159**	0.942***
									(0.526)	(0.363)
Observations	1181	1181	1181	1181	1181	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Results based on imputed data.

3.3.2.4. Controlling for relevant variables

As an additional robustness check, I now present the results of regression of with those variables previously found to be key determinants of the constitutional endurance of the nineteenth-century Americas. From a broad perspective, the results shown in Table 3.11 confirm that the binary variables indicating if the constitution is reinstated (***reinstated***), or if the political regime is democratic or not (***democracy***), are robust: they improve constitutional survival at statistically significant levels. On the other hand, the positive and systematically significant coefficient for the number of coups per year (***coups***) also reveals the increase in the risk of constitutional failure as this type of political crisis happened. Constitutions promulgated in democracy (***democ_prom***) increase the risk of constitutional failure but this variable loses its statistical significance when the period a country has been colonized (***colperiod***) is introduced in the analysis. Moreover, when the interaction of both variables (***democ_prom*colperiod***) is included, results suggest that a prolonged period of colonization is attenuated by the promulgation of constitutions in democracy, though it lacks of statistical significance, as can be seen in Models from 7 to 9.

In relation to the variables measuring constitutional commitments in providing rights civil, political and social rights, the minimum age to become a citizen (***citznshpage***) is the only variable which remains statistically significant in most of the models of Table 3.11[100]. This finding confirms the expectation of an increased risk in constitutional failure due to the restricted access to suffrage. The results suggest that the absence of constitutionally enshrined civil and social rights or their restriction did not contribute towards constitutional failure. Alternatively, models from 7 to 9 report that extended colonization periods (***colperiod***) were more deadly for constitutions. This tends to support the argument advanced by some scholars whereby the enormous institutional disruption created by the states´ disorganization in Latin America shortly after the Spanish defeat might be explained by the poor experience of the elites of those countries in governing themselves, which was at odd with the prolonged self-government tradition instituted in pre-independent United States (Prados de la Escosura 2009, North *et al.* 2000). Finally, I do not find the variables proxying for wealth inequality (***lwheatsugar*** and ***tropicar***) to be statistically significant although their positive coefficient indicates that they effectively increase the risk of constitutional failure (see models 8 and 9). Thus, there is no clear indication that a growing inequality shortened the life spans of Americans constitutions in the XIX century, although, allowance must be made for the possibility that this is due to measurement error because of the use of resource endowments as a proxy.

[100] The other variables proxying for civil and social rights show the expected sign but stay statistically insignificant in most of the specifications.

Table 3.11. Controlling for several determinants of the constitutional performance in nineteenth-century Americas

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
reinstated	-1.983***	-2.001***	-1.704***	-1.944***	-2.173***	-2.178***	-2.127***	-2.090***	-1.947***
	(0.505)	(0.507)	(0.536)	(0.491)	(0.493)	(0.490)	(0.509)	(0.565)	(0.638)
democ_prom	1.070***	1.043***	1.068***	1.055***	1.047***	0.895**	7.227	5.965	5.944
	(0.314)	(0.313)	(0.366)	(0.360)	(0.290)	(0.365)	(7.384)	(7.328)	(6.911)
democracy	-1.874***	-1.859***	-1.875***	-1.830***	-1.775***	-1.651***	-1.663***	-1.653***	-1.604***
	(0.329)	(0.328)	(0.346)	(0.349)	(0.294)	(0.262)	(0.261)	(0.249)	(0.230)
gendist	-0.0583	-0.0394	-0.0374	-0.0277	-0.0317	-0.0770	0.0923	0.129	0.14
	(0.0581)	(0.0719)	(0.0510)	(0.0631)	(0.0719)	(0.0643)	(0.0783)	(0.0962)	(0.091)
coups	0.908***	0.907***	0.887***	0.900***	0.876***	0.888***	0.827***	0.826***	0.829***
	(0.273)	(0.274)	(0.262)	(0.270)	(0.276)	(0.272)	(0.240)	(0.244)	(0.244)
citznshpage	0.0363	0.0402*	0.0400*	0.0418*	0.0367*	0.0197	0.0353	0.0441	0.0396
	(0.0220)	(0.0232)	(0.0218)	(0.0212)	(0.0213)	(0.0276)	(0.0313)	(0.0353)	(0.0322)
voteun	-0.299	-0.267	-0.244	-0.170	-0.310	-0.276	-0.161	-0.0677	-0.0387
	(0.288)	(0.291)	(0.308)	(0.301)	(0.283)	(0.381)	(0.376)	(0.419)	(0.393)
votefctv	0.0506	0.0672	0.0443	0.0517	0.00838	0.0641	0.0808	0.0665	0.0338
	(0.0732)	(0.0759)	(0.0713)	(0.0770)	(0.0761)	(0.0924)	(0.0807)	(0.0786)	(0.0819)
socsec		-0.542							
		(0.409)							
workersrght			-0.318*						
			(0.189)						
indxsrights				-0.507**		-0.315	-0.531	-0.587	-0.655
				(0.228)		(0.327)	(0.389)	(0.441)	(0.441)
indxcrights					-0.587				
					(0.421)				
relfrac						-1.874	-2.186	-2.288	-1.734
						(2.019)	(1.676)	(1.970)	(2.077)
freedrel						0.115	-0.0089	-0.0471	-0.0370
						(0.395)	(0.543)	(0.574)	(0.561)
relfrac*freedrel						-1.239	-1.019	-1.000	-1.205
						(1.361)	(1.990)	(2.140)	(2.161)
colperiod							2.493**	2.237**	2.370**
							(1.131)	(1.052)	(0.951)
democ_prom*colperiod							-2.154	-1.748	-1.746
							(2.360)	(2.343)	(2.209)
lwheatsugar								-1.339	
								(1.429)	
tropicar									0.869
									(0.604)
Observations	1181	1181	1181	1181	1181	1181	1181	1181	1181

Standard errors in parenthesis. * $p < .1$, ** $p < .05$, *** $p < .01$, means statistical significance at 1, 5 and 10 percent, respectively. Lagged variables are included in the models but not reported. Results based on imputed data.

3.4. Conclusion

A very influential literature in economic and legal history has pointed to the institutionalization of inequality in XIX century Latina America as well as the expectation that this inequality may have a bearing on the endurance of formal

institutions. Focusing on the literature dedicated to understanding the different ways that elites may have influenced constitutional design in Latin America, an empirical strategy was devised to collect data from one hundred constitutions enforced in the region during the nineteenth century. The objective was to determine whether the alleged institutionalization of inequality explains the longevity of constitutions in the region. The analysis is carried out with a *duration model*, where a longer lifespan for constitutions, or alternatively, low hazard rates of failure, are associated to constitutional success. The findings presented here do not support the argument that restrictions on acquiring citizenship or voting correlate significantly to constitutional failure, as maintained by some scholars. On other hand, constitutions which enshrine fewer restrictions to suffrage and grant free schooling have low hazard rates of failure. However, these last findings are conditional on model specification.

More robust evidence emerges for the idea that political confrontation among the elite, when measured by coups, explain the precarious constitutional performance of XIX century Latin America. On the other hand, countries with longer periods as colonies were likely to endure frequent constitutional replacement; a finding associated to the low quality of institutions inherited from Portugal and Spain.

In general, my findings cannot be considered a definitive rejection of the insights pointing towards institutionalized inequality as a source of constitutional failure in Latin America. The results only tell us that rights´ restrictions on individuals in XIX century Latin American do not appear to be an ultimate cause of constitutional failure. The results presented here suggest that constitutions appeared to be *merely piece of papers* in the convulsive Americas of the nineteenth century. Nonetheless, allowance must be made for the possibility that institutionalized inequality may have shaped the path of other formal institutions, or the informal ones in the countries of the region. Arguably, future research should explore this issue as well as elaborate further on the connection between, democracy, coups, colonial history and constitutional endurance.

Chapter 4

Inequality and Informal Institutions: An Empirical Study

4.1. Introduction

A growing literature in the field of economic development and political science has revealed the erosive impact of growing income inequality on the quality of formal institutions, such as property rights protection, the prevalence of law and order, or the level of political participation (Anderson and Beramendi 2005; Easterly 2001, 2007; Engerman and Sokoloff 1997, 2000, 2002; Stolt 2006; among others). Similarly, other contributions have reported the deleterious effect of high inequality on key social attitudes or activities, like generalized trust, or participation in networks of civic engagement (Alesina and La Ferrara 2000, 2002; Bjørnskov 2006). To date, nobody has explored the potential negative impact of income inequality on the performance of informal institutions. This is a potentially serious omission since, as attested by a voluminous literature, when informal institutions are proxied by conventions, moral rules, and social norms, they appear to contribute significantly to the process of economic development (Allen 2001; Ellickson 1991; Fafchamps 2004; Greif 2006; Ostrom 1990).

The goal of this chapter is to devise an empirical strategy aimed at determining whether income inequality affects the quality of informal institutions. I base the empirical section of this chapter on a novel measure of informal institutions proposed by Tabellini (2008a), which employs data from the World Values Survey (2009) for specific questions related to cultural transmission from parents to children and the trusting attitudes of individuals toward other people. For my measure of income inequality I use a dataset issued by WIDER (2005). In order to address the issue of reverse causality between informal institutions and income inequality, I instrument the

latter with the country´s fraction of land in the tropics, a variable that, in my opinion, captures a great deal of the endowment effect requirements proposed by the influential papers of Engerman and Sokoloff (1997, 2000). To isolate the effect of inequality from other confounding effects, I also control for several factors, including geographical conditions, historical episodes, social heterogeneity characteristics, religious preferences, and some contemporary economic, demographic and political variables.

In general, I find that higher income inequality significantly reduces the quality of informal institutions. Robustness checks reveal that, as reported by Bjørnskov (2006), economies in transition are prone to experiment important distortions as a consequence of re-accommodating their informal institutions to market transactions. I also find that geography does not directly affect the quality of informal institutions through other channels besides income inequality. My estimations by way of Ordinary Least Squares or Two Stage Least Squares discard any significant impact of geographical variables on informal institutions. This finding is compatible with work by Acemoglu *et al.* (2001, 2002), Easterly (2007), Easterly and Levine (2003), and Rodrik *et al.* (2004), all of which analyze the impact of geography on modern economic development, and find that geography does not necessarily predetermine development as argued by Gallup and Sachs (1999).

Neither British nor French legal systems nor state maturity seem to have a statistically significant impact on informal institutional quality. On the other hand, I find that ethnic diversity tends to be negatively and statistically significantly associated with informal institutions but this relationship is reversed in mature states. Moreover, my estimates suggest that in countries where Protestantism is dominant, the quality of informal institutions is high. In contrast, Judaism, Islamism and Hinduism are negatively associated to my index of informal institutions at significant levels. Finally, I find a strong positive association between income levels and informal institutions, but no significant effects from the size of the population, the rate of urbanization, the level of political liberties, or the degree of openness of a country.

As expected, my estimates show that formal institutions are far more sensitive to variations in the intensity of income inequality than informal ones, thus confirming the slow-changing nature of the latter (Mantzavinos 2001; North 1990, Roland 2004). Regarding the exclusion restriction, my instrument was validated by the Basman, Sargan and Wooldridge tests for the over-identification restriction, as well as the Stock-Yogo test for detecting a weak instrument.

The rest of the chapter proceeds as follows. Section 2 presents a condensed review of the literature on the effects of income inequality on formal and informal institutions. Section 3 presents my empirical strategy and core results. Section 4 reports robustness checks. Finally, Section 5 concludes and presents some directions for further research.

4.2. Inequality and institutions: The Literature

Most of the literature that has discussed the link between income inequality and institutions has focused on formal institutions, which, according to North (1990) are the rules, laws, property rights, and constitutional constraints that are consciously designated and enforced by the state. I am unaware of work relating income inequality with informal institutional quality.

4.2.1. Formal institutions

A well-researched area in political science has made significant advancements on the connections between income inequality and democracy as well as civic or political participation. While some initial empirical studies found a positive causal relationship from democratization to income equality (see Gradstein and Milanovic 2000), more recent evidence has shown that causality goes the other way around (Savoia *et al.* 2004). In this vein, several studies have suggested that that rising levels of income inequality often lead to democratization because of individuals' demand for ambitious progressive redistributive policies (Boix 2000; Gradstein and Milanovic 2000). Relatedly, works by Anderson and Beramendi (2005), and Stolt (2006) report that, at certain levels, economic inequality reduces political engagement in either rich or poor countries, implying that individuals may perceive political participation as ineffective in diminishing inequality[101].

In economics, studies of the erosive impact of inequality on institutions gained momentum as economists sought for channels through which inequality may distort long-run economic growth. At least four theoretical mechanisms have been suggested to explain how inequality affects growth namely, *human capital investments*, *market imperfections and financial constraints*, *social conflict*, and *imperfect institutions*[102]. The institutional mechanism comprehends two different channels. The first one, which I call the *institutional environment channel,* maintains that high inequality undermines the functioning of political, legal and property rights because people perceive that these rights are inaccessible to them. This pushes individuals to structure their economic activities in the shadow of the law, even at the risk of being expropriated by corrupt government functionaries or criminal networks[103]. The second channel, known as the *political economy channel*, emphasizes that inequality retards economic growth because the reigning elites capture economic and political power and implement regressive

[101] Anderson and Beramendi (2005) studied eighteen democracies belonging to the OECD, while Stolt (2006) is a cross-section study combining data coming from surveys conducted on individual and national indicators of income and political engagement.

[102] See Amarante and de Melo (2004) for a review of the empirical and theoretical literature on inequality and economic growth.

[103] Contributions associated to this line of research are Knack and Keefer (2002), Chong and Calderón (2000), and Chong and Gradstein (2004).

redistributive policies[104]. The *political economy channel* assumes that economic policy is embedded in political decisions where the powerful aspire to preserve the *status quo* even at the costs of inefficient economic policies.

Famously, the link between inequality, elites and formal institutional quality has been brought to light by several contributions which have studied the differential development of North and South America. Engerman and Sokoloff (1997, 2000, 2002) and later Sokoloff and Zolt (2007), have argued that the geographic and weather conditions of North America during the colonization period favored small farming activities which led to modest scale economies. In addition, the low labor/land ratio in United States and Canada allowed migrants to acquire land rapidly in comparison to native populations of South America: there the land was relatively scarce and labor abundant, while the plantation system facilitated extensive agriculture with significant scale economies. These differences in endowments and geographical conditions accommodated a dominant class in Spanish America who shaped institutions to protect its privileges and prevent the access of the broad mass of the population to a wide array of civil rights and public goods. In contrast, the less unequal North America built their institutions based on equality in civil, political and social rights for the vast majority. Sokoloff and Engerman (2000) conjecture that "these differences across societies in the distribution of political power may have contributed to persistence in the relative degrees of inequality through the effects of institutional development". In a empirical study, Easterly (2007) has provided empirical support to the Engerman-Sokoloff´s hypothesis by using the ratio of the land suitable for growing wheat relative to the land suitable for growing sugar as an instrument of non-tropical endowments to avoid potential reverse causality between income inequality and indicators of development. He shows that countries relatively rich in lands suitable for growing wheat experienced low levels of income inequality, and consequently, higher rates of economic growth in the long run. Alternatively, countries endowed with abundant land for sugar plantations endured high levels of inequality and poor growth.

In a slightly different approach, Acemoglu *et al.* (2001) have also suggested that geographic constraints played a major role in the setting of exploitative or protective institutions in the Americas. In North America, low native population densities and the absence of tropical diseases led to mass European settlement and, eventually, demands for property right protection to secure land holdings. Conversely, in the South the presence of tropical diseases meant that settler mortality was high leading to limited settlement by Europeans. This together with a high native population density at the time of colonization triggered the establishment of exploitative activities and, eventually,

[104] For those accustomed to the widely popular efficiency-equity trade-off from the economic growth literature this claim is a temerity. But a growing, though inconclusive, empirical evidence reveals that increases in inequality reduce economic growth (for a amenable review of these works see Helpman 2004, especially chapter 6).

poor quality institutions. This situation facilitated the emergence of powerful political elites which persistently protected the *status quo* by denying political rights to the masses. Nonetheless, in other papers Acemoglu *et al.* (2005, 2009) have argued that the economic inequality created by resource endowments or geography is not a precondition for political inequality, as a matter of fact, they argue that the causation appear to be in the opposite direction.

Furthermore, recent theories about elites and their pernicious effects on economic efficiency go against the notion that political and economic transactions will tend to policies and institutions that minimize costs to achieve the highest welfare in society, irrespective of the groups in power (see Olson 2001 and Acemoglu 2003 for critiques of such a "political Coase theorem"). In fact, a plethora of models have been advanced to understand how inequality is detrimental to the security of property rights. For instance, Glaeser *et al.* (2003) develop a model where inequality encourages subversion in two different ways. First, the poor redistribute from the rich appealing to violence, political process or social conflict. A second way allows for redistribution from the poor to the rich by means of corrupting legal, political and regulatory system in favor of the powerful. They illustrate their insights comparing the US during the Gilded Age and Russia in the 1990s as main examples of how under similar situations two countries could follow divergent path of development. Sonin (2003) proposes a dynamic model to understand how inequality and institutions interact under both low and high bias in the political system. He argues that if elites are able to contract private protection and incur in rent seeking behavior, they will not support (or even be against), the public protection of property rights.

4.2.2. Informal institutions

Despite North's (1990) emphasis on the importance of both formal and informal institutions for economic development, most of research linking institutions to economic growth has focused on the role of formal institutions. But informal institutions do matter as several historical examples point out. Informal institutions where important for the emergence of trade and financial activities between distant Maghribis communities in the Mediterranean during medieval times (Greif 2006), or because they contributed to the successful management of *open fields* in pre-industrial England (Allen 2001). Moreover, some studies have elaborated on the contemporary economic significance of informal institutions. For instance, in many African countries a vast amount of daily business transactions are carried out through social norms given the huge cost of formalizing contracts (Fafchamps 2004). A sizeable literature in the field of environmental economics reports that *the tragedy of the commons* can be mitigated in small communities through the enforcement of informal constraints and sanctions (Ellickson 1991, Ostrom 1990). From a macro perspective, Dobler (2009), Knowles and Weatherstone (2006), and Williamson (2009) have also found a robust

relationship between the quality of informal institutions and economic prosperity worldwide.

According to Douglass North (1990), most of the daily transactions carried out by individuals are structured by an overwhelming set of "codes of conduct, norms of behavior, and conventions", which he calls *informal constraints*[105]. These constraints are socially transmitted from one generation to another as a constitutive part of culture[106]. Mantzavinos (2001) has gone beyond North's intuition by developing a more elaborated theoretical approach towards informal institutions. He defines informal institutions following their enforceability, and identifies *conventions*, *moral rules* and *social norms* as their main manifestations. People follow *conventions* because it is in their interest to coordinate activities or efforts in order to achieve some ends. Sanctions are not required to enforce conventions because the reputational or practical costs of omitting them maybe considerable[107] (Sugden 1989). Contrastingly, *moral rules* are an emotional pattern of action through which individuals learn to control themselves strategically (Fehr and Schmidt 2006). It is important to note that the prominent difference between *conventions* and *moral rules* lies in their enforcement, while the former rests on self-interest for maintaining social coordination, the latter appeal to the volition of individuals. *Social norms* are customary social arrangements created by humans based on the belief about how people ought to behave in certain situations[108] (Fehr and Fischbacher 2004; Young 2007). Deviant behaviors from prescribed social norms in groups are penalized by the collective action of their members, and on occasion, their enforcement may imply substantial individual costs in order to maintain cooperation.

There is a scarcity of works studying inequality and informal institutions. However, some findings in micro social studies show that most economic exchange relies on values such as honesty, trust, reliability, and fairness[109] (Zak 2008). Indeed, many studies in experimental economics and field experiments carried out in small-scale societies reveal that when individuals play Dictator, Ultimatum, Trust and Public Goods games they do not pursue economic efficiency, as predicted by conventional economics,

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[105] In my discussion there is not a significant difference between *informal institutions* or *informal constraints*, so both terms will be used interchangeably.

[106] Regarding the natural origins of morality see de Waal (2006) for an amenable introduction to the subject.

[107] It does not mean that some people will not commit errors implementing conventions. Moreover, at the early stages of the emergence of a convention, many people would not be eager or apt to follow it, however, as the convention is imitated and assimilated by others its use will be generalized and, therefore the rate of mistakes following it must decline. Sugden´s evolutionary approach suggests that deviant behavior from a convention is essentially random and motivated, in first instance, by error (Sugden 1989).

[108] Social norms are not a homogeneous or defined group of social arrangements. See Elster (1989) for an arbitrary list of them.

[109] Even though inequality and fairness are different concepts they are strongly related in both theoretical and empirical terms because inequality adverse individuals also tend to favor fair economic outcomes (Fehr and Schmidt 2006).

but rather aim for relatively "fair" distributions[110] (Henrich *et al.* 2004, 2010). Furthermore, when players consider that their counterparts are sharing "too little" with them in some plays they opt out of the game, even though defecting may leave all players with nothing. By extension, unfair arrangements may also destroy wealth in large-scale societies.

These experimental games are useful for eliciting the presence of informal institutions because they account for the intrinsic motivations of individuals, as well as the social sanctions capacity of small-scale societies[111]. For instance, Dictator Games provide a measure of generalized altruism independent of strategic or reputational interests, while Ultimatum games measure the willingness to share, which may demonstrate altruism, although it also can be associated with the loss incurred when rejecting a proposal. In the same vein, Trust games account for the "trustworthiness" of each player.

While much of this experimental evidence is obtained from small number settings, this does not imply that informal institutions are unique to small societies. In related works, Knight (1992) and Bardhan (2000) have made contributions disentangling the distributional effects of institutions in large societies. Sadly, they do not pay attention to the potential negative effects of inequality on informal institutions. On the empirical side, Bjørnskov (2006) has undertaken a cross section study addressing the potential effects of income inequality on the levels of generalized trust for a sample of countries worldwide. As suspected, he finds a strong negative statistical correlation between inequality and trust.

From a broader perspective, a consolidated literature in economic development has demonstrated the negative impact of social heterogeneity proxies on the quality of formal or informal institutions, and ultimately, on economic progress (Alesina and La Ferrara 2000; Alesina *et al.* 1999, 2003; Easterly 2007; Easterly and Levine 1997; Mauro 1995). Ethnic, linguistic, and religious diversity, along racial division, and income inequality are frequently used in the literature as proxies of social heterogeneity which is negatively associated to measures of government quality (Alesina *et al.* 1999,

[110] In Dictator Games, a player is allocated a sum of money, and she decides how much share between herself and another player. Ultimatum games are similar to Dictator games, except that the acceptance or not of the offer made by the proposer depends on the final decision made by the responder, a rejection leave both players with nothing. The aim of Trust games is determine the willingness of the two players involved in the game of respond kindness with kindness at the expense of minor individual benefits. In Public Goods games players are endowed with a budget, which they can share for investing in a public account or a private one. An increasing collective investment maximizes the benefits, but "rational players" will reap as much they can from the profits of the public investment by funding as little as they can on it. In repeated games with punishment "rational players" are dissuaded from free riding on others investments. For more details on these games and the way they are carried out in laboratory or the field see Henrich *et al.* (2004)

[111] For more details on the advantages of games to measuring informal institutions see Henrich *et al.* 2004 and 2010.

2003; Alesina and Zhuravskaya 2011; La Porta *et al.* 1999), or indicators of the prevalence of political liberties in a given country (Easterly 2001, 2007). Other studies done for the USA by Alesina and La Ferrara (2000, 2002) show that ethnically diverse jurisdictions in that country have significant levels of spending which are moreover associated with high deficits or insurmountable public debts, but little of the funds pay for public goods such as education and roads. Furthermore, the participation of Americans in social activities is inversely related to the level of income inequality in many US cities, this pattern does not change substantially when the eagerness for social participation is, moreover, regressed on proxies of racial fragmentation or ethnic diversity (Alesina and La Ferrara 2000). These findings are suggestive of the potential erosion caused by income inequality, another social heterogeneity variable, on the performance of informal institutions.

My work here could be described as a sequel of the already mentioned paper by Easterly published in 2007, which focuses on the impact of inequality on formal institutions. Although it is undeniable that it was source of inspiration, my effort goes far beyond showing the negative impact of inequality on informal institutions. I include new sets of variables controlling for the role of historical episodes as proxied by the antiquity of a state, legal heritage, and the effects of moving from a centralized to a market economy, on the quality of informal institutions. In addition, I address the potential effects of contemporary economic, demographic and political variables on the performance of informal institutions, as well as the influence of the religious adherence of individuals. Moreover, I also compare the deleterious impact of inequality on formal *and* informal institutions. Further beyond Bjørnskov (2006), another close precedent for this work, I employ a more comprehensive measure of social capability than generalized trust. My index of informal institutions, in addition to trust, also includes three items proxying for the strength of social ties, and the intergenerational transmission of values, as we shall see in the next section.

4.3. Data and empirical strategy

The purpose of the rest of the chapter is to devise an empirical strategy aimed to verify how income inequality affects the quality of informal institutions. My approach is inspired by the Engerman-Sokoloff theoretical framework on the negative impact of endowments on inequality, and thereby, the quality of formal institutions in the long run. Here I also presume a negative incidence of endowments on the emergence, evolution and change of conventions, social norms and moral rules through their impact on income inequality[112].

[112] Works by Acemoglu *et al.* (2001, 2002); Easterly (2001, 2007); Knack and Keefer (2002); and Glaeser *et al.* (2003) have deployed similar empirical strategies to understand how persistently high inequality could be the cause of underdevelopment via formal institutional stagnation in developing countries.

4.3.1. Data on informal institutions and inequalities

Measuring institutional quality is a difficult enterprise, but this task becomes even more arduous when social institutions such as conventions, moral rules and norms are heavily influenced by incommensurable cultural traits. Fortunately, some scholars have made important contributions linking culture to institutional quality or economic performance. For instance, Licht *et al.* (2007) and Tabellini (2008a) have proposed two recent innovative ways to measure the impact of culture on law and governance, and economic development, respectively. The data and methodology employed by Tabellini are probably more familiar for economists given his previous efforts for quantifying the impact of some social and political indicators on economic growth, taxation and voting preferences (Persson and Tabellini 2003). Tabellini´s index comprises four different categories: *Respect*, *Control*, *Obedience*, and *Trust*, which are quantified by way of responses given to questions formulated in the World Values Survey (WVS)[113]. He proposes these categories as proxies of culture because they are strongly associated to cultural traits identified in the development literature. Knowles and Weatherston (2006) used Tabellini´s index as a proxy of informal institutions in a cross section study and found that it is statistically significant as a determinant of long run economic growth. More recently, Dobler (2009) and Williamson (2009) used the same indicator to disentangle the separated contributions of both formal and informal constitutions in the level of income of rich and poor countries.

As mentioned above, informal institutions are embodied in each society's culture. Moreover, institutions are carriers of values, belief and social preferences. This precedent suggests that Tabellini´s index of culture is a good proxy of informal institutions because it incorporates, at the same time, cultural traits transmitted intergenerationally from parents to children (*Respect* and *Obedience*), and elements of generalized *trust* which are crucial to understand how trustworthy other people are perceived among the members of a given community. Additionally, the index also includes the variable *Control*, aimed to capture the autonomy of individuals in society, a cultural trait which is frequently mentioned as a crucial for the economic success of the West given that it motivates entrepreneurship and innovation in society (see Kuran 2004; Landes 2006; and Temin 1997; among others). Thus, Tabellini´s methodology is followed here to construct my index of informal institutions; the maximum sample

[113] The Trust category is built on the percentage of affirmative answers given to the question: *Generally speaking, would you say that most people can be trusted or that you can´t be too careful in dealing with people?* While Control comes from the percentage of people who gave a high scale to the question: *Some people feel they have completely free choice and control over their lives, and other people feel that what they do has no real effect on what happens to them. Please use the scale how much freedom of choice and control you feel you have over the way your life turns out?* Items Respect and Obedience were built based on the question: *Here is a list of qualities which children can be encouraged to learn at home. Which, if any, do you consider to be especially important?* Options range from Good manners to Obedience; the index in this category considers the percentage of people who answered favorably to Respect and Obedience as important qualities in children's learning.

employed in this study includes 72 countries from the WVS data for the period 1990-2005; the index ranges from 47.27 points attributed to Israel, which is the country with the lowest level of informal institutional quality in the sample, to the highest value of 100.86, obtained by Sweden.

Apart from the informal institutions, other relevant variables used in the empirical section of this work are shown in Table 4.1 along with some descriptive statistics. The data on income inequality come from the World Income Inequality Database (WIID) elaborated by UNU-WIDER in 2005. I average the Ginis of income inequality for each country, covering a sixty-year period, from 1944 to 2003[114]. The ***Gini of Income*** was constructed with 982 Ginis for a maximum sample of 72 countries; it also shows a great variability across countries but a small standard deviation over time[115]. Zimbabwe gets the highest Gini of the sample (65.38) while Czech Republic obtained the lowest one (23.17) [116].

Table 4.1. Descriptive Statistics of Relevant Variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
Informal Institutions	72	78.28	8.88	47.27	100.86
Formal Institutions	67	4.08	1.28	1.31	6
Gini of Income	72	37.12	8.53	23.17	65.38
Middle Income Share	68	48.13	6.16	26.41	55.76
Tropical Area	72	0.21	0.37	0	1
Latitude	71	30.64	26.08	-41.47	60.17
Ethnic Diversity	72	0.36	0.23	0	0.93
Language Diversity	70	0.32	0.26	0	0.92
Religious Diversity	71	0.42	0.23	0	0.86
State History	72	0.71	0.18	0.36	0.99
Transition Economies	71	0.30	0.40	0	1
GDP per capita	71	13672.46	12202.74	239.80	44819.69
Trade Openness	71	81.34	34.64	26.49	161.94
Polity Index	71	5.90	5.34	-7	10

Note: **Appendix 4A** describes in detail all the data and their sources.

4.3.2. Empirical model

I propose to estimate the following model:

[114] Averaging on this long period minimizes the undesirable effects caused by the methodological changes experienced by the WIID data over time. See Li *et al.* (1998) for more about the flaws of the current databases on income inequality.

[115] I also constructed a second measure of income inequality, which covers the same period, but it consists of the average share of income accrued by those people belonging to deciles ranging from 3 and 8 of a country income distribution. Estimates with ***Middle Income Share*** are reported in **Appendix 4C**. The results estimates with ***Middle Income Share*** are very similar to those found with ***Gini of Income***.

[116] The criteria followed to construct both measures are the following: income Gini´s and deciles of income are preferred over expenditure Gini´s, net income over gross income estimates and household income over personal income. All deciles of income and Ginis selected come from national surveys. Contrary to the suggestion of Li *et al* (1998), I do not correct for the potential underestimation of expenditure Gini´s in order to use less favored data in my estimations. I also do not correct for differences between net and gross income. In the event of more than one observation to choose from each country in the same period, I choose the observation with the highest quality, - if they were equivalent then I take an average of them.

$$Informal\ Institutions_i = \alpha + \beta X + \delta ineq_i + \varepsilon_i \qquad (1)$$

Where $Informal\ Institutions_i$ is the index of informal institution in country i, X is a vector of variables endogenous to informal institutions but not correlated with the disturbance, ε_i; while $ineq_i$ is proxied by the ***Gini of Income***. Unfortunately, there is the risk of a two way causal relationship between ***Gini of Income*** and ***Informal Institutions***, since the initial disparate distribution of wealth could be reinforced over time by a set of institutions originally shaped by those belonging to the wealthy elite. To address the potential for reverse causality in (1) I will use an instrumental variable approach where the percentage of a country's land in the tropics, ***Tropical Area***, is the preferred instrument. In my opinion, ***Tropical Area*** is a good instrument for income inequality since it goes to the heart of Engerman and Sokoloff's (1997, 2002) argument of the impact of resource endowments on the persisting patterns of income inequality in the Americas. In fact, some basic statistics in my data appear to corroborate this prediction; ***Tropical Area*** is highly correlated with ***Gini of Income*** but poorly correlated with ***Informal Institutions*** at high levels of statistical significance[117]. Beyond that, the instrumental variables approach will not only be helpful for determining whether my instrument is highly correlated with income inequality but exogenous to informal institutions, but it also provides an opportunity to verify the growing consensus pointing to geographic variables as forces affecting economic institutions in the long run[118].

Several questions emerge with regard to the appropriateness of ***Tropical Area*** as an instrument. One of them is its relative advantages in comparison with other alternative instruments. Alternative proxies of resource endowments include the mortality rates of military personnel and bishops in former colonies, the population density in 1500, and the land suitable for growing wheat relative to the land suitable for growing sugarcane (***Land Suitability***). Unfortunately, the first two proxies, though successfully employed by Acemoglu *et al.* (2001, 2002) to show that high mortality rates and abundant native populations dissuaded the colonizers of the New World in establishing good quality institutions in former colonies, are only available for a limited number of countries and so would seriously compromise my sample size[119]. In the case

[117] See the pairwise correlations coefficients in **Appendix 4A**.

[118] Work by Acemoglu *et al.* (2001, 2002), Easterly (2007), Easterly and Levine (2003), La Porta *et al.* (1999) and Rodrik *et al.* (2004) employs a variety of geographical or resource endowment variables seeking for channels through which geography may have shaped economic development. In sum, they conclude that geographical factors appear to affect development through formal institutions, but hardliners of the geographical approach like Sachs and Gallup (1999) maintain that geography still plays a prominent role in the economic development of poor countries. This literature has not paid close attention on how geography may have influenced informal institutions.

[119] Interestingly, when I regressed the data of settler mortality on ***Tropical Area*** for 59 former colonies the coefficient is positive (1.67) and significant at the highest level, with a robust t-statistics of 5.59 and R-squared of 0.29. Recall that Acemoglu *et al.* (2001) believe that the establishment of exploitative institutions in environmental hostile regions created important inequalities in political rights, which in

of ***Land Suitability***, originally employed by Easterly (2007) to verify the alleged impact of income inequality on the quality of formal institutions, it only captures the agricultural aspect of resource endowments and ignores factors related to labor abundance and the physical environment of the tropics. I will return to this variable when I test for the overidentification restriction below. Another concern regarding ***Tropical Area*** is to know whether economic inequality from the past influences contemporary figures of inequality. Even though empirical studies on the evolution of income inequality before the middle of nineteenth century are not conclusive on the persistence of high inequality at that time, most of them find that economic inequality within modern countries is consistently stable[120] (Bourguignon and Morrison 2002; Lindert 2000). Furthermore, the intergenerational transmission of inequality appears to be a phenomenon common to both rich and poor societies[121]. As a result, I purport that the current high levels of economic inequality in former colonies can be partly attributed to the institutionalization of inequality, via informal institutions[122].

Based on the previous discussion, the second equation to be estimated will be:

$$ineq_i = \mu + \pi X + \gamma Tropical\ Area_i + u_i \qquad (2)$$

Where $ineq_i$ is the level of income inequality in the country i; X is a vector of variables exogenous to $ineq_i$; while $Tropical\ Area_i$ is the land´s percentage of a country i in the tropics. u_i, is the error term. As shown below, throughout the empirical section of the chapter I pay close attention to the statistical strength and validity of my instrument and provide details about the exclusion restriction in **Appendix 4B**.

4.4. Results

Now I proceed to test the robustness of my hypothesis that rising income inequality induces lower quality informal institutions. Five sets of variables have been assembled for controlling the robustness of the impact of inequality on informal institutions. A first

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turn caused the emergence of the widespread economic inequality that pervaded in much of the former colonies.

[120] Li *et al.* (1998) and Atkinson and Brandolini (2004) have found similar results in within-country income distributions when they use measures of relative inequality for the period after the Second World War. But that is not the case for inequality between countries, which has been widening, at least, since the XIX century.

[121] See Piketty (2000) for a review on the theories of persistent inequality.

[122] For a quick proof on the inter-temporal link between income inequality and ***Tropical Area***, and from past inequality to current inequality, I regress the data on the share of family farms in agricultural land for several decades of the XIX and XX centuries on ***Tropical Area***. Then, I use the same variable to predict current income inequality, measured by Gini of Income. My estimations confirm a strong positive correlation between contemporary inequality and that experienced in the past. It is important to note that even while the share of family farms is statistically significant for the whole period under the study (1858-1998), it is less robust after 1928, given the less prominent role of agriculture in modern economies. The data on the share of family farms in agricultural land comes from Vanhanen (2005). Results are not reported here, but they can be provided under request from the authors.

set of variables account for the possible regional specific effects. A second group account for an independent role for geography in shaping the quality of informal institutions. A third set proxy for some historical episodes and their possible influence on informal institutions. The fourth group of variables control for social heterogeneity issues as determinants of informal institutions. The final set accounts for the role played by religious affiliations on the quality of informal institutions. Finally, it is important to clarify that I calibrate the impact of inequality on informal institutions while controlling for each of these groups of variables separately, due to the tendency of TSLS standard errors to grow excessively when too many exogenous regressors are correlated (Wooldridge 2002). This procedure minimizes the negative effects of multicollinearity when a large sample is not at hand.

4.4.1. Controlling for region-specific effects

Table 4.2 reports the estimates of the impact of inequality on informal institutions. Estimations reveal that ***Gini of Income*** is negatively and statistically significantly associated with informal institutions. Consistent with econometric theory, my two stage least squares (TSLS) estimates show that the economic impact of inequality is higher compared to the ordinary least square (OLS) estimates (Greene 2008). I control for regional dummies in order to allow for the possibility that the results are driven by factors specific to regions. With the exemption of equation 5, where ***Gini of Income*** is marginally insignificant at the 10 per cent level, inequality is still negatively associated to informal institutions in every region of the world. For the TSLS estimations, the high F-statistics obtained in the first stage regressions is well above 10, which is the critical value usually suggested to avoid the risk of using a weak instrument (Murray 2006).

Table 4.2. Informal Institutions and Inequality by Regional Dummies

Dependent variable:	OLS	IV	IV	IV	IV	IV	IV
Informal Institutions	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cons	90.86***	96.69***	97.23***	106.5***	103.1***	96.17***	110.6***
	(3.450)	(6.267)	(6.328)	(8.238)	(17.20)	(5.908)	(13.42)
Gini of Income	-0.339***	-0.496***	-0.516***	-0.806***	-0.636	-0.456***	-0.945**
	(0.0823)	(0.158)	(0.162)	(0.226)	(0.388)	(0.153)	(0.415)
reg_eapsa			1.129				3.062
			(2.817)				(3.963)
reg_nalac				10.02***			12.54**
				(2.815)			(6.312)
reg_ecawe					-2.532		
					(5.023)		
reg_menassa						-5.711	1.195
						(3.521)	(6.322)
Number of obs.	72	72	72	72	72	72	72
F-stat for first-stage on excluded instrument		28.25	20.43	37.24	22.69	16.86	23.66
R-adjusted Squared	0.0931						

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***. I built four regional dummies to avoid the risk of classifying countries according to its per capita income. Therefore, on the basis of World Bank's regional classification I have the variables: ***reg_eapsa*** for countries in East asia and South Pacific; ***reg_nalac*** for countries in North America and Latin America; ***reg_ecawe*** for countries in Europe and Central Asia; and ***reg_menassa*** for countries in the Middle East and Africa.

4.4.2. Controlling for geographic variables

The results reported in Table 4.3 control for geographical variables. Overall, income inequality is negatively correlated with informal institutions at significant levels. Following those studies claiming the importance of geography as a crucial determinant of development through institutional means, I included two variables, ***Lanlocked countries***, and ***Distance to Coast*** to test whether physical isolation affects informal institutions[123] (Acemoglu *et al.* 2001, 2002; Engerman and Sokoloff 1997, 2002; and Gallup and Sachs 1999). As can be seen, only the first is statistically significant, suggesting that isolated countries appear to have low quality informal institutions[124]. For the OLS estimation I test my instrument ***Tropical Area*** and ***Latitude*** (absolute latitude in degrees from the equator), while for the TSLS I only test ***Latitude*** for obvious reasons. Coefficients reported in columns 3, 4, and 8 clearly indicate the absence of any systematic statistically significant impact of these geographic variables on informal institutions. My results are consistent with the evidence found in works by Acemoglu *et al.* (2002), Easterly and Levine (2003), La Porta *et al.* (1999) and Rodrik *et al.* (2004) who, using a wide array of geographic variables, conclude that geographic

[123] Even though this literature emphasizes the effects of climate, endowments or geography in the creation of formal institutions, many scholars have argued that these factors affected the emergence and design of informal institutions as well (Berkowitz and Clay 2011; Durante 2010; and Fenske 2010).
[124] This significance disappears in a more general model, as we shall see below.

factors appear to impact development variables through formal institutional channels. Lastly in this section, specifications 5 and 9 are more general models corroborating my previous findings. I must highlight that for TSLS equations F-statistic for first stage are well above the critical value of 10.

Table 4.3. Impact of Inequality on Informal Institutions: Controlling for Geographic variables

Dependent variable:	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV
Informal Institutions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cons	92.03***	90.85***	88.38***	95.22***	93.49***	97.39***	97.03***	112.3***	110.7***
	(3.509)	(3.520)	(3.960)	(5.423)	(5.690)	(6.035)	(6.297)	(14.18)	(13.50)
Gini of Income	-0.349***	-0.331***	-0.254**	-0.421***	-0.333**	-0.492***	-0.503***	-0.813**	-0.774**
	(0.0800)	(0.0879)	(0.110)	(0.106)	(0.135)	(0.145)	(0.159)	(0.324)	(0.308)
Lanlocked countries	-4.198**				-3.663*	-4.346**			-4.028*
	(1.986)				(2.175)	(2.003)			(2.391)
Distance to Coast		-0.000830			-0.000112		-0.000143		0.00168
		(0.00209)			(0.00217)		(0.00175)		(0.00196)
Tropical Area			-3.270		-3.717				
			(2.812)		(2.715)				
Latitude				-0.0421	-0.0422			-0.123*	-0.107
				(0.0509)	(0.0518)			(0.0725)	(0.0723)
Number of obs.	72	71	72	71	70	72	71	71	70
F-stat for first-stage on excluded instrument						15.50	15.57	25.32	14.13
R-adjusted Squared	0.116	0.0814	0.0926	0.0897	0.0940				

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively.
Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

4.4.3. Controlling for historical episodes

In this section I employ variables proxying for key historical episodes on the performance of informal institutions. I report the results in Table 4.4 although little is known about the effects of key historical episodes on the performance of informal institutions, Leeson (2005) has speculated about whether British or French-imposed colonial institutions could have affected those *social signals* that previously facilitated social exchange between ethnic groups in Africa. Eggertsson (2005) has elaborated a fascinating account on the economic and social conflicts created in XIX century Iceland by the forceful legal transplantation imposed by the Danish rule. With this background, I include some proxies of historical episodes to control for the possibility that they may have influenced the nature of informal institutions in the empirical analysis. The first variable is ***State History***, which is an index of state antiquity, firstly introduced by Bockstette *et al.* (2002). The aim here is verify if the longevity of the state, determines the quality of the informal ones. Another manifestation of a historical legacy is the type of legal framework prevailing in a given country, in relation to this I test whether the heritage of the British common law (***Common Law***), or the French civil law (***Civil Law)*** affect the quality of the informal ones (see La Porta *et al.* 2008, for the usefulness of considering legal origin in institutional analysis). Interestingly, neither state antiquity

nor the legal heritage of a country appear to be systematically associated to ***Informal Institutions***. A ground-shifting historical episode of the XX century was the sudden emergence and demise of Socialist countries. It is believed that the transition from a centralized planned economy to a market economy may have caused major social disarray because individuals were asked to act more selfishly (Mcmillan 2002; Pejovich 2003). Indeed, the transition from planned to market economies (***Transition Economies***) is associated with major setbacks in the quality of informal institutions; equations 4, 5, 9, and 10 clearly show that the adoption of capitalism system may have distorted the functioning of old norms, conventions and moral rules that previously organized social exchange. This is consistent with previous evidence. For the specific case of Russia´s transition in the 1990´s, Chong and Gradstein (2000) associate the economic reforms to growing inequality and mounting social burden, which in turn may have deteriorated the performance of public institutions and increased people´s perception of corruption in government. In a similar account, McMillan (2002) believes that the transition from heavily centralized and regulated economies in New Zealand and India during the 1980s brought with it growing inequality and declines in institutional quality. Overall, after controlling for historical variables, ***Gini of Income*** remains statistically significant.

Table 4.4. Impact of Inequality on Informal Institution: Controlling for Historical variables

Dependent variable:	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV	IV
Informal Institutions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Cons	76.95***	90.61***	91.55***	99.82***	89.85***	81.84***	96.37***	98.72***	112.6***	106.6***
	(5.023)	(3.525)	(3.396)	(4.265)	(8.977)	(8.446)	(6.728)	(6.737)	(10.11)	(19.93)
Gini of Income	-0.325***	-0.324***	-0.368***	-0.518***	-0.291***	-0.452***	-0.482***	-0.577***	-0.839***	-0.683*
	(0.0766)	(0.0855)	(0.0931)	(0.0901)	(0.0991)	(0.151)	(0.179)	(0.185)	(0.245)	(0.374)
State History	18.74***				9.506	18.52***				4.571
	(6.299)				(8.153)	(6.333)				(10.63)
Common Law		-1.639			-7.906*		-0.959			-5.784
		(3.768)			(4.298)		(4.001)			(4.766)
Civil Law			1.104		-8.101***			2.831		-4.216
			(2.029)		(2.492)			(2.251)		(4.106)
Transition Economies				-7.509***	-10.24***				-10.06***	-11.71***
				(1.871)	(3.236)				(2.784)	(3.727)
Number of obs.	72	72	72	71	71	72	72	72	71	71
F-stat for first-stage on excluded instrument						15.00	14.43	24.19	19.57	13.61
R-adjusted Squared	0.223	0.0853	0.0828	0.210	0.308					

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

4.4.4. Controlling for social heterogeneity

A growing literature has been dedicated to the study of the effects of social heterogeneity on economic development. Ethnicity, language and religious fractionalization have been shown to have a negative impact on key development

indicators. I suspect that social heterogeneity defined in these terms, could also negatively affect the quality of informal institutions. The indices of ethnic, language and religious fractionalization used here are from Alesina *et al.* (2003); each one of these indexes account for the probability that two randomly selected individuals belong to different groups. In Tables 4.5a and 4.5b, I check whether my results are robust to the inclusion of variables for these measures of fractionalization. In line with Easterly's (2007) finding that ethnic diversity tends to be negatively associated with formal institutional quality, my results show the detrimental effects of increasing ethnic diversity on the quality of informal institutions. When I interact ethnic diversity and state antiquity (***Ethnic Diversity_state***), the interaction term is positive and statistically significant, something which is also in line with the intuition that state maturity can manage ethnic animosities between groups (Easterly 2003). Neither Language diversity nor religion fractionalization pose a major risk to the viability of informal institutions. This last finding is compatible with work studying the impact of religious fractionalization on economic development and civil war (Alesina *et al.* 2003; and Montalvo and Reynal-Querol 2005). It could be that greater religious diversity increases competition -instead of confrontation- among religions and as a result it enhances the quality of social links and associations created by religious organizations (McCleary and Barro 2006; Rossi and Zaclicever n.a.).

Table 4.5a. Impact of Inequality on Informal Institutions: Controlling for Social Heterogeneity (OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
Cons	93.89***	91.47***	93.35***	89.67***	92.06***	87.90***
	(3.712)	(3.462)	(3.679)	(4.502)	(4.423)	(4.454)
Gini of Income	-0.547***	-0.262***	-0.313***	-0.339***	-0.456***	-0.272***
	(0.106)	(0.0900)	(0.0829)	(0.0879)	(0.0961)	(0.0929)
Ethnic Diversity		-9.796**				-38.30***
		(4.419)				(10.97)
Language Diversity			-10.41***		-8.713**	
			(3.638)		(4.140)	
Religious Diversity				3.067	5.865	9.051**
				(4.465)	(4.340)	(4.472)
Ethnic Diversity_state						42.77***
						(15.04)
Genetic Distance	0.528***				0.408***	
	(0.134)				(0.118)	
Number of obs.	72	72	70	71	70	71
R-adjusted Squared	0.217	0.138	0.170	0.0903	0.252	0.226

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

Table 4.5b. Impact of Inequality on Informal Institutions: Controlling for Social Heterogeneity (TSLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cons	106.5***	95.46***	96.33***	96.05***	102.1***	96.25***	93.00***
	(8.539)	(6.099)	(5.527)	(7.090)	(9.657)	(5.833)	(6.564)
Gini of Income	-0.943***	-0.382**	-0.396***	-0.504***	-0.778***	-0.418***	-0.419**
	(0.268)	(0.171)	(0.138)	(0.165)	(0.289)	(0.162)	(0.165)
Ethnic Diversity		-8.438*				-29.32***	-37.28***
		(4.758)				(10.58)	(10.77)
Language Diversity			-10.22***		-5.931		
			(3.711)		(5.671)		
Religious Diversity				2.508	3.921		8.379**
				(4.467)	(5.408)		(4.239)
Ethnic Diversity_state						32.90**	44.04***
						(14.39)	(14.11)
Genetic Distance	0.760***				0.616***		
	(0.216)				(0.227)		
Number of obs.	72	72	70	71	70	72	71
F-stat for first-stage on excluded instrument	28.63	14.22	11.91	14.46	12.18	12.28	9.06

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

In my estimations, I also employ ***Genetic Distance***, an additional measure of cultural diversity; higher values for this variable implies large cultural homogenous groups, while lower values suggest more culturally diverse groups in society. As can be seen in equations 1 and 5 of each table, the presence of a large cultural homogeneous group is positively associated with informal institutional quality. As mentioned, it appears that cultural homogeneity in groups facilitates the diffusion of technological and institutional innovations between people (Spolaore and Wacziarg 2009).

After all the checks in this section, I still find very strong and significant coefficients for ***Gini of Income***. Regarding the strength of the instrument, F-statistic values are well over 12 in Table 4.5b with the exemption of equation 7, which is driven by the multicollinearity between ***Ethnic Diversity*** and ***Ethnic Diversity_state***.

4.4.5. Controlling for religious affiliation

Since Max Weber suggested protestant ethic as a main determinant of western European economic success, many economists have studied whether religiosity affects individual behavior. This issue has recently been put under scrutiny in the literature of economic growth after McCleary and Barro (2006) and Guiso *et al.* (2003) -appealing to new data and modern econometric techniques- claimed robust correlations between religious beliefs and the economic performance of some countries. McCleary and Barro´s hypothesis is that some religious beliefs favor economic growth because they

help people to maintain or reinforce specific human values, such as thrift, work ethic, honesty, and openness to strangers (McCleary and Barro 2006). These human values appear to be essential for the effectiveness of social norms, conventions and moral rules. Henceforth, it is reasonable to think that religious beliefs may affect the performance of informal institutions. Here, I trace the potential impact of religious beliefs on informal institutions by appealing to specific religious affiliations. Guiso *et al.* (2003) follows this strategy distinguishing across religious denominations in order to find how they are associated to "good" economic attitudes that lead toward economic development. I subscribe to this approach in the present section.

The data on religious affiliation comes from McCleary and Barro (2006), who cited Barrett as the original source of the database created in 1982, but lately renewed and complemented by Barret, Kurian, and Johnson[125]. I collected data for six major religions denominations: Catholics, Protestants, Judaists, Islamists, Hindus and Buddhists; these denominations are correspondingly represented in Table 4.6a and Table 4.6b, where I have reported the results regarding the impact of religion adherences on my workhorse model accounting for income inequality as a major determinant of ***Informal Institutions***.

Table 4.6a. Impact of Inequality on Informal Institutions: Controlling for Religious Affiliation (OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
cons	90.74***	85.38***	91.25***	91.05***	91.17***	90.55***
	(3.503)	(3.075)	(3.480)	(3.367)	(3.490)	(3.577)
Gini of Income	-0.359***	-0.263***	-0.335***	-0.310***	-0.343***	-0.334***
	(0.0810)	(0.0778)	(0.0833)	(0.0811)	(0.0830)	(0.0840)
Catholics	2.575					
	(2.114)					
Protestants		22.17***				
		(3.303)				
Judaists			-36.02***			
			(1.425)			
Islamism				-8.220***		
				(2.921)		
Hinduism					-11.41***	
					(1.518)	
Buddism						4.435*
						(2.524)
Number of obs.	72	72	72	72	72	72
R-adjusted Squared	0.0922	0.421	0.251	0.160	0.0964	0.0832

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

[125] As figures on religious adherence or affiliation show little variation over time, I average the sample of two periods, 1970 and 2000. I also estimated my models using data only from the 1970 period but there is no significant change in the estimations reported in Tables 4.6a and 4.6b.

Table 4.6b. Impact of Inequality on Informal Institutions: Controlling for Religious Affiliation (TSLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
cons	97.94***	88.76***	99.36***	99.04***	95.88***	96.96***
	(6.101)	(6.109)	(6.006)	(6.084)	(6.124)	(6.120)
Gini of Income	-0.560***	-0.353**	-0.553***	-0.528***	-0.470***	-0.506***
	(0.154)	(0.158)	(0.154)	(0.155)	(0.154)	(0.154)
Catholics	3.344					
	(2.123)					
Protestants		21.76***				
		(3.411)				
Judaists			-35.84***			
			(1.451)			
Islamism				-7.611**		
				(3.124)		
Hinduism					-11.71***	
					(1.605)	
Buddism						3.279
						(2.656)
Number of obs.	72	72	72	72	72	72
F-stat for first-stage on excluded instrument	16.49	14.54	16.03	14.51	14.74	16.51

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

The statistics reported in both tables reveal that Protestantism has a significant positive effect on the quality of informal institutions. Though the coefficient of catholic religion has a positive sign, it is not significant in any of my OLS or TSLS estimation at all. These findings are similar to those presented by Guiso *et al.* (2003) who claimed that Protestantism, help to develop attitudes, such as unwillingness to break the law, equality in incentives, respect of private property, and favoring of competition, among others, attitudes conducive toward cooperation and, ultimately, economic growth. For the same study they also found that Judaists, Hindus and Muslim followers show lower adherence to pro-growth attitudes[126]. Similarly, all my estimations including the proxies of these religions are inversely associated, at significant statistical levels, to ***Informal Institutions***. Interestingly, Judaism has the stronger negative impact of the three religions (for the OLS estimation with ***Gini of Income*** the beta is -0.32). An interesting finding in my estimations is the drop in inequality coefficients when ***Protestants*** is included, suggesting that Protestants may be negatively associated with

[126] In a related work, When La Porta *et al.* (1999) studied the determinants of the quality of government; Protestant countries had a far better performance in governance than Catholic and Muslim countries.

inequality[127]. Summarizing, after checking for religion adherence my measures of inequality still significant in OLS or TSLS estimations and do not show any sign of weakness on the excluded instrument.

4.4.6. Controlling for contemporary demographic, economic and political variables

So far, I have controlled for variables reflecting the role of geography, historical events, and time constant social heterogeneity or religious preferences. But informal institutions may also may be shaped by more contemporary forces. In Tables 4.7a and 4.7b, I report whether variables proxying for demographic, economic, and political issues may affect their quality. As expected, the GDP per-capita appears with a significant coefficient in OLS estimations (columns 1 and 7), suggesting a robust positive correlation between income levels and informal institutions. Although the coefficients for ***Gini of Income*** drop substantially when ***GDP per capita*** is included, they are still significant in spite of the well-known collinearity that associates both variables (Bjørnskov 2006; Easterly 2007). In contrast, the rate of growth of the GDP per capita, ***GDP Growth***, is not statistically significantly associated with informal institutions. My proxy for openness, ***Trade Openness***, suggests the erosive impact of globalizing forces on informal institutions but the result is not statistically robust. Regarding the anticipated negative impact of the size of population on informal institutions, ***Population*** is not statistically significant in either OLS or TSLS estimations[128]. Meanwhile, a growing urbanization rate, proxied by ***Urbanization***, appears to be positively correlated with informal institutions at statistically significant levels. Nonetheless, the loss of significance by ***Urbanization*** in specification 7 of Table 4.7a reveals that it is probably capturing the effects of GDP per capita[129]. Finally, the variable ***Polity Index***, or the average of the polity IV index, which measures political liberties, show that the alleged beneficial effects of increasing democratization on informal institutions is not robust when checking for other variables, implying that the causality may be the other way around. Overall, even when checking for contemporary variables, the deleterious effect of inequality on informal institutions remains meaningful at statistically significant levels.

[127] As a matter of fact, when ***Gini of Income*** is regressed on ***Protestants*** the coefficient is negative, though it is not statistically significant. This result is not shown in Tables 4.6**.**

[128] On the detrimental effects of the growing size of groups on the quality of social norms see the pioneering works by Ostrom (1990) and Ellickson (1991).

[129] There is no concluding evidence on the causality linking income per-capita and the rate of urbanization of a country. There is clear evidence that after certain levels of income, the richer a country becomes its urbanization rate increase (World Bank 2002).

Table 4.7a. Impact of Inequality on Informal Institutions: Controlling for Contemporary Demographic, Economic and Political variables (OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cons	77.50***	92.59***	93.91***	91.00***	79.62***	86.35***	74.46***
	(3.293)	(4.351)	(5.477)	(6.673)	(4.913)	(3.934)	(10.45)
Gini of Income	-0.137*	-0.361***	-0.373***	-0.338***	-0.347***	-0.297***	-0.149*
	(0.0733)	(0.0899)	(0.0959)	(0.0874)	(0.0773)	(0.0851)	(0.0762)
GDP per capita	0.0435***						0.0438***
	(0.0071)						(0.0065)
GDP Growth		-0.300					0.617*
		(0.393)					(0.365)
Trade Openness			-0.0260				-0.0155
			(0.0291)				(0.0299)
Population				-0.0168			0.0572
				(0.666)			(0.721)
Urbanization					0.183***		0.0424
					(0.0645)		(0.0701)
Polity Index						0.520***	-0.0623
						(0.185)	(0.155)
Number of obs.	71	71	71	72	70	71	68
R-adjusted Squared	0.407	0.0892	0.0841	0.0800	0.221	0.185	0.372

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

Table 4.7b. Impact of Inequality on Informal Institutions: Controlling for Contemporary Demographic, Economic and Political variables (TSLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
cons	98.76***	102.7***	95.43***	78.87***	90.38***	80.42***
	(7.279)	(8.726)	(7.856)	(5.496)	(5.992)	(12.79)
Gini of Income	-0.517***	-0.570***	-0.514***	-0.327***	-0.401***	-0.367**
	(0.163)	(0.183)	(0.168)	(0.114)	(0.148)	(0.145)
GDP Growth	-0.424					0.311
	(0.426)					(0.437)
Trade Openness		-0.0473				-0.0255
		(0.0321)				(0.0384)
Population			0.196			0.182
			(0.672)			(0.798)
Urbanization				0.183***		0.146**
				(0.0633)		(0.0677)
Polity Index					0.492***	0.267
					(0.171)	(0.178)
Number of obs.	71	71	72	70	71	68
F-stat for first-stage on excluded instrument	16.90	22.11	13.85	23.38	14.62	10.23

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

4.4.7. Controlling for relevant variables

In this section I control for the effect of inequality on informal institutions by recurring to those variables which has proven to be statistically significant in the previous sections. As can be seen in tables 4.8a and 4.8b, the negative effect of inequality on informal institutions remains statistically significant. Now, ***Transition Economies*** appears systematically significant in every specification of the TSLS estimations, except when the fraction of adherents to Protestantism (***prot***) is included, which is not a surprise given that most of countries in transition have very few followers of that religion. The OLS estimates the same variable appears insignificant for every model, this may be caused by the collinearity introduced by ***GDP per capita***, which inflates the variances of the models and prevents the identification of the *real* effects caused by those variables experiencing collinearity[130]. On the other hand, the statistical significance of ***GDP per capita*** in Table 4.8a should be taken with care because of its reverse causality with informal institutions[131] (Knowles and Weatherstone 2006; Williamson 2009).

[130] As can be seem from the mean VIF reported at the bottom of Table 4.8a, all of them confirm the risk of collinearity because they exceed the unity, the rule of thumb suggested in the literature (Baum 2006). However, none of the regressors' VIF exceeded 10 (not shown in Table 4.8a), which suggests a critical problem with collinearity. But it does not mean that the collinearity adversely affects my OLS estimations when ***Gini of Income*** and ***GDP per capita*** are simultaneously put into the models.

[131] Clearly, this problem can be avoided by instrumenting ***GDP per capita***. Nonetheless, the jury is still out with regards to the exogeneity of the instruments proposed to date (regarding the controversies on this issue see Rodrik *et al.* (2003) and Sachs (2003)). This situation is aggravated by the lack of consensus about the appropriate procedures for dealing with two or more endogenous variables in TSLS estimations (Angrist and Pischke 2009; especially chapter 4).

Table 4.8a. Impact of Inequality on Informal Institutions: Controlling for Relevant variables (OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cons	83.78***	82.42***	81.91***	83.68***	85.03***	84.16***	81.28***	84.82***	84.75***
	(7.152)	(6.706)	(6.471)	(7.162)	(7.830)	(7.210)	(6.982)	(7.679)	(7.924)
Gini of Income	-0.253**	-0.253**	-0.293**	-0.242*	-0.244*	-0.275**	-0.270**	-0.257**	-0.252*
	(0.119)	(0.123)	(0.118)	(0.122)	(0.126)	(0.124)	(0.121)	(0.125)	(0.126)
GDP per capita	0.409***	0.410***	0.425***	0.421***	0.434***	0.201*	0.380***	0.383***	0.415***
	(0.108)	(0.129)	(0.113)	(0.109)	(0.119)	(0.102)	(0.0974)	(0.125)	(0.110)
Latitude	-0.0568	-0.0486	0.0116	-0.0573	-0.0721	-0.0445	-0.0419	-0.0481	-0.0580
	(0.0447)	(0.0455)	(0.0598)	(0.0447)	(0.0565)	(0.0338)	(0.0391)	(0.0478)	(0.0453)
Urbanization	0.0149	0.0144	-0.0433	0.00747	-0.0143	0.0357	0.0745	0.00906	0.000687
	(0.0808)	(0.0842)	(0.102)	(0.0809)	(0.106)	(0.0711)	(0.0512)	(0.0823)	(0.0848)
Transition Economies	-0.473	-0.513	-0.148	-0.0365	1.127	-0.502	-1.374	-0.818	-0.259
	(2.952)	(3.444)	(2.947)	(3.021)	(4.060)	(2.724)	(2.610)	(3.391)	(3.106)
Lanlocked countries		-1.418	0.170	-1.054	-0.893	-1.245	-0.975	-1.100	-1.152
		(1.471)	(1.477)	(1.294)	(1.350)	(1.532)	(1.191)	(1.320)	(1.333)
Ethnic Diversity	-1.958			-1.735	-12.40	-2.146	-0.752	-1.374	-1.776
	(3.679)			(3.624)	(17.11)	(3.656)	(3.521)	(3.597)	(3.690)
Religious Diversity		1.705							
		(3.498)							
Genetic Distance			0.437						
			(0.294)						
Ethnic Diversity_state					15.62				
					(23.88)				
Protestants						14.94***			
						(4.415)			
Judaists							-44.35***		
							(1.989)		
Islamism								-2.064	
								(3.367)	
Hinduism									-4.556
									(4.248)
Number of obs.	68	68	68	68	68	68	68	68	68
R-adjusted Squared	0.384	0.376	0.424	0.376	0.376	0.475	0.639	0.369	0.368
Mean Variance Inflation Factor (VIF)	2.12	2.36	2.43	2.09	3.91	2.15	1.97	2.23	2.00

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

Table 4.8b. Impact of Inequality on Informal Institutions: Controlling for Relevant variables (TSLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cons	94.38***	90.00***	108.4***	94.65***	97.29***	90.51***	94.78***	106.4***	96.04***
	(14.63)	(14.13)	(19.26)	(14.67)	(15.74)	(12.60)	(14.78)	(12.32)	(15.43)
Gini of Income	-0.582*	-0.591**	-1.030**	-0.594*	-0.638*	-0.466	-0.679**	-0.825***	-0.599*
	(0.341)	(0.278)	(0.405)	(0.343)	(0.347)	(0.303)	(0.341)	(0.281)	(0.347)
Latitude	-0.0224	-0.000642	-0.0000832	-0.0244	-0.0398	-0.0372	-0.0260	-0.0509	-0.0255
	(0.0676)	(0.0612)	(0.0907)	(0.0683)	(0.0755)	(0.0418)	(0.0652)	(0.0608)	(0.0688)
Urbanization	0.150**	0.157**	0.0873	0.153**	0.140*	0.0971	0.208***	0.120*	0.138**
	(0.0634)	(0.0650)	(0.0945)	(0.0634)	(0.0812)	(0.0634)	(0.0477)	(0.0714)	(0.0682)
Transition Economies	-6.754**	-7.987***	-9.122***	-7.026***	-6.525**	-3.561	-8.194***	-8.902***	-7.231***
	(2.657)	(2.209)	(2.399)	(2.681)	(3.188)	(2.953)	(2.455)	(2.442)	(2.771)
Lanlocked countries		-0.552	3.107	0.884	1.101	-0.443	0.918	0.712	0.664
		(1.761)	(2.520)	(1.637)	(1.693)	(1.614)	(1.717)	(1.974)	(1.628)
Ethnic Diversity	-3.422			-3.498	-11.04	-2.553	-1.653	-0.0612	-3.568
	(5.023)			(4.994)	(17.06)	(4.392)	(4.866)	(4.675)	(5.033)
Religious Diversity		6.839**							
		(2.968)							
Genetic Distance			0.544						
			(0.342)						
Ethnic Diversity_state					11.35				
					(23.40)				
Protestants						17.46***			
						(4.464)			
Judaists							-46.04***		
							(2.063)		
Islamism								-5.753*	
								(3.294)	
Hinduism									-7.865*
									(4.464)
Number of obs.	68	68	68	68	68	68	68	68	68
F-stat for first-stage on excluded instrument	13.71	12.28	11.43	11.69	11.16	15.49	11.66	10.84	10.21

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

4.4.8. On the differential impact of inequality on formal and informal institutions

In view of the robustness of the negative effect of inequality on informal institutions and given the complimentarity with the previous work by Easterly (2007) on the deleterious effects of inequality on formal institutions, I proceed to estimate the differential impact of inequality on both types of institutions. In the first column and third column of Table 4.9 ***Informal Institutions*** are the dependent variable, while for computing the second and fourth column I have averaged the index of "Law and Order" published by *Political Risk Services* (2007) from 1984 to 2007 as my measure of

Formal Institutions[132]. The first Beta estimation of Table 4.9 tells us that a one standard deviation increase in the ***Gini of Income*** (8.53 points), reduces informal institutional quality by 0.33 standard deviations[133]. In contrast, the Beta estimates for formal institutions (displayed in column 2 of Table 4.9) reveal that a one standard deviation increase in the ***Gini of Income*** reduces the index of formal institutional by approximately 0.56 standard deviations. Clearly, the negative impact of inequality is felt stronger by formal institutions than the informal ones, even in more comprehensive specifications as revealed in equations 3 and 4 of the same table. It could be that this reduced effect of inequality on informal institutions is due to the *natural* resilience of informal institutions to contemporary social changes, in comparison to the formal ones, (Bardhan 2000, North 1990, Roland 2004). Alternatively, the relatively higher sensitivity of formal institutions to inequality may be due to the effect of inequality on people´s perceptions about the fairness of the prevailing formal institutional arrangements (Chong and Gradstein 2000; Glaeser *et al.* 2003).

Table 4.9. The Different Impact of Inequality on Formal and Informal Institutions (OLS estimations)

Dependent variable:	***Informal Institutions*** (1)	***Formal Institutions*** (2)	***Informal Institutions*** (3)	***Formal Institutions*** (4)
Cons	90.86***	7.15***	84.27***	5.581***
	(3.450)	(0.508)	(5.131)	(0.642)
Gini of Income	-0.339***	-0.082***	-0.331***	-0.081***
	(0.0823)	(0.013)	(0.0989)	(0.0135)
Lanlocked countries			-0.750	0.385*
			(1.625)	(0.215)
Transition Economies			-3.082	-0.554***
			(2.059)	(0.199)
Ethnic Diversity			-2.977	-0.769
			(3.507)	(0.490)
Urbanization			0.0990	0.0254***
			(0.0639)	(0.00592)
Protestants			17.75***	1.653***
			(4.242)	(0.367)
Number of obs.	72	67	69	64
R-adjusted Squared	0.106	0.31	0.470	0.665
Beta coefficient for ***Gini of Income***	-0.325	-0.558	-.318	-.553

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

[132] This indicator of formal institution is different from the used by Easterly (2007), but it has been frequently employed as a proxy of formal institutions by Acemoglu *et al.* (2001, 2002), and Rodrik *et al.* (2004), among others.

[133] When quantities are expressed in indices lacking a natural scale (such as years of schooling, prices, etc.) it is convenient to use beta coefficients, which tell us how many standard deviations of the dependent variable would change given a standard deviation change in an independent variable. Beta coefficients should not be confused with the βs of the conventional regression model (Baum, 2006). Here, I follow the "convention" of reporting the results with the coefficients of the regression models, beta coefficients are commented on in the text when they are relevant.

4.5. Conclusion

In my analysis of the effect of inequality on informal institutions I have found a sizeable amount of evidence suggesting a significant negative impact of income inequality on the quality of conventions, social norms, and moral rules, or informal institutions. My findings corroborate the Engerman-Sokoloff hypothesis maintaining that endowments inequality from the past, measured in my study by a country´s amount of land in the tropics, led to the emergence of low quality informal institutions.

My findings are consistent with those studies suggesting that geography only affects modern economic development indirectly; in our case endowments of tropical land affect informal institutions exclusively through economic inequality. This evidence is compatible with a growing literature assigning a minor role to land endowments, climatic conditions, or the abundance of natural resources in modern economic performance. When checking for the incidence of major historical episodes on the quality of informal institutions, I find that economies in transition experienced a drastic reduction on the quality of their informal institutions – a reduction which was also aggravated by an increase in economic inequality. This finding helps explain the poor economic performance of former communist countries or even the erratic behavior of Latin American economies after major reforms in the 1990s. I find no evidence that the legal origins or the antiquity of a state determine the quality of informal institutions.

My analysis accounts for social fragmentation variables, measured by ethnic, language and religious fractionalization, and I find a strongly negative impact of ethnic fragmentation on informal institutions. Nonetheless, the deleterious effect of ethnic diversity is reduced in mature states. Although religious fractionalization has no appreciable effect on informal institutions, adherence for six major religions (Catholicism, Protestantism, Judaism, Islamism, Hinduism, and Buddhism) does. My findings suggest that Judaism, Islamism and Hinduism are negatively associated with informal institutions. In contrast, Protestantism seems to have a positive influence on the quality of informal institutions. Finally, I assess the comparative impact of inequality on formal and informal institutions. According to my estimates, inequality has a greater negative effect on formal compared to informal institutions. This finding could be due to the relative resilience of informal institutions, but moreover to the relative ease in modifying and enforcing formal ones (Bardhan 2000; Mantzavinos 2001; North 1990; Roland 2004)

In order to avoid potential reverse causality from informal institutions to inequality, I instrumented inequality with the country´s fraction of land in the tropics. In almost all of my estimations the F-statistics for the first stage regressions figured well above the critical value of 10, suggesting a low risk of using a weak instrument. Moreover, I perform successfully the Stock and Yogo (2005) test for weak instrument and the overidentification test by using two alternative instruments. The p-values computed in

every case did not lead us to accept the null hypothesis of using a weak instrument or to reject the null hypothesis of exogeneity for my instrument.

It would be extremely ambitious to suggest that my results are conclusive. Arguably however, these findings open new avenues for further research well beyond the simple assertion that “institutions matter”. Further steps are necessary to unbundle which specific mechanisms are activated by inequality in social interactions. A better understanding of these mechanisms and their channels would lead us to identify specific conventions, social norms and moral rules susceptible to be driven by an unequal distribution of income.

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Appendices

Appendix 2A

List of variables and descriptive statistics

Category	Variable	Description	Source
Crises	***gdiffusion***	Fraction of countries with new constitutions around the world in the prior year.	Own calculations based on data from the Comparative Constitutional Project.
	cdiffusion	Fraction of countries belonging to the same geographical region with new constitutions in the prior year.	Own calculations based on data from the Comparative Constitutional Project.
	domconfd1	Dummy variable coded one if Banks´ conflict index is equal to or greater than 10,000.	Banks (2006).
	gdppcgcrisis	Dummy variable coded one if GDP per capita decrease more than ten percent annually.	Maddison (2003) and World Development Indicators (2008).
	demchg	Dummy variable coded one if a democratic transition occurred.	Polity IV Project (2007).
	autchg	Dummy variable coded one if an authoritarian transition occurred.	Polity IV Project (2007).
	extra_exit	Dummy variable coded one if the executive lost power by ways not prescribed in the constitution.	Goemans *et al*. (2009)
	intra_exit	Dummy variable coded one if the executive lost power by ways prescribed in the constitution.	Goemans *et al*. (2009)
Structure of the Constitution	***interim***	Dummy variable coded one if the constitution is interim.	Elkins *et al*. (2009)
	reinstated	Dummy variable coded one if the constitution is reinstated.	Elkins *et al*. (2009)
	inclusiveness	Additive index indicating the inclusiveness of constitution making process and constitutional provisions. Re-scaled between 0 and 1.	Elkins *et al*. (2009)
	democ_prom	Dummy variable coded one if the state was democratic when the constitution was promulgated.	Elkins *et al*. (2009)
	occ_const	Dummy variable coded one if constitution is written during or within two years of foreign military occupation.	Elkins *et al*. (2009)
	amend_rate	Predicted probability of the promulgation of a constitutional amendment.	Elkins *et al*. (2009)
	amendsq	Squared values of ***amend_rate***.	Own calculations based on data from Elkins *et al*. (2009)
	jud_review	Dummy variable coded one if any court can review the constitutionality of laws.	Elkins *et al*. (2009)
	review_democ	Interaction between the ***jud_review*** and ***democracy*** variables.	Elkins *et al*. (2009)
	scope	Percent of selected issues covered in the constitution.	Elkins *et al*. (2009)
	Detail	Words per issue covered in the constitution. Re-scaled between 0 and 1.	Elkins *et al*. (2009)
	single_exec	Dummy variable coded one if the constitution calls for a single executive.	Elkins *et al*. (2009)
	term_limits	Dummy variable coded one if there are term limits placed on the head of state.	Elkins *et al*. (2009)
	Ppi	De jure Fish and Kroening´s Parliamentary Power Index.	Elkins *et al*. (2009)
	legacy	Average life span of previous constitutions. Re-scaled between 0 and 1.	Elkins *et al*. (2009)
Structure of the State	***democracy***	Dummy variable coded one if the country is a democracy.	Polity IV Project (2007).
	Cdiv	Index of cultural diversity.	Fearon (2003).
	gdppc	PIB per capita expressed in 1990 international Geary-Khamis dollars.	Maddison (2003) and World Development Indicators (2008).
Geographical factors	***landlock***	Dummy variable coded one if a country is landlocked.	Development Research Institute (2005).
	tropicar	A country´s percentage of land located in the tropics	Gallup and Sachs (1999).
	distcr	Distance in kilometers to the nearest coastlines or navigable rivers.	Gallup and Sachs (1999).
	arabland	The percentage of arable land available in a country.	World Development Indicators (2008).
Cultural factors	***gendist***	A proxy of genetic distance indicating that people living more distant from Africa is increasingly different from the African serial founder.	Own calculations based on data from the CIA Factbook (2009) and following the procedures described in Ramachandran *et al*. (2005) and Ashraf and Galor (2008).
	ethnic	Index of ethnic fractionalization.	Alesina *et al*. (2003)
	state_ethnic	Interaction between the ***statehist*** and ***ethnic*** variables.	Own calculations.
Historical factors	***statehist***	Index of state antiquity.	Bockstette *et al*. (2002)
	leg_british	Dummy variable coded one if the country has a common law origin.	Development Research Institute (2005).
	leg_french	Dummy variable coded one if the country has a civil law origin.	Development Research Institute (2005).
	transition	Dummy variable coded one if the country transited from a socialist to a market economy.	Development Research Institute (2005).
Regions	***reg_lac***	Dummy variable coded one if the country is from Latin America.	Development Research Institute (2005).
	reg_eca	Dummy variable coded one if the country is from Eastern Europe or central Asia.	Development Research Institute (2005).
	reg_mena	Dummy variable coded one if the country is from the	Development Research Institute

Category	Variable	Description	Source
		Middle East or North Africa.	(2005).
	reg_ssa	Dummy variable coded one if the country is from Sub-Saharan Africa.	Development Research Institute (2005).
	reg_sa	Dummy variable coded one if the country is from South Asia.	Development Research Institute (2005).
	reg_eap	Dummy variable coded one if the country is East Asia and Oceania.	Development Research Institute (2005).
Periods	***betwars***	Dummy variable coded one for constitutions enforced between 1914 and 1945.	Own calculations based on data from the Comparative Constitutional Project.
	aftwars	Dummy variable coded one for constitutions enforced between 1946 and 2006.	Own calculations based on data from the Comparative Constitutional Project.
Lagged variables	***domconfd2***	Lagged variable of ***domconfd1***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Own Calculations.
	gdppcgcrisislag	Lagged variable of ***gdppcgcrisis***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Own Calculations.
	demchglag	Lagged variable of ***demchg***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Own Calculations.
	autchglag	Lagged variable of ***autchg***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Own Calculations.
Additional variables used in alternative models and the imputation process	***yst_cs***	Thousands of years since a country started its agricultural transition.	Putterman (2008).
	latabs_cia	Absolute latitude of a country.	CIA Factbook (2009).
	relfrac	Index of religious fractionalization.	Alesina *et al*. (2003)
	langfrac	Index of language fractionalization.	Alesina *et al*. (2003)
	leg_socialist	Dummy variable coded one if the country has a socialist legal framework.	Development Research Institute (2005).
	leg_german	Dummy variable coded one if the country has a Germanic legal framework.	Development Research Institute (2005).
	leg_scandi	Dummy variable coded one if the country has a Scandinavian legal origin.	Development Research Institute (2005).
	coups	Number of coups occurred per year in a given country.	Banks (2006).
	gdppcgrw	Annual rate of growth.	Maddison (2003) and World Development Indicators (2008).

Original Data						Imputed Data (five datasets)				
Variable	***Obs***	***Mean***	***Std. Dev.***	***Min***	***Max***	***Obs***	***Mean***	***Std. Dev.***	***Min***	***Max***
gdiffusion	10841	0,031	0,026	0	0,16	54245	0,031	0,026	0	0,16
cdiffusion	7175	0,054	0,072	0	1	54245	0,052	0,068	0	1
domconfd1	6721	0,090	0,286	0	1	54245	0,117	0,321	0	1
gdppcgcrisis	7328	0,034	0,180	0	1	54245	0,056	0,229	0	1
demchg	10139	0,029	0,169	0	1	54245	0,033	0,179	0	1
autchg	10139	0,019	0,137	0	1	54245	0,023	0,148	0	1
extra_exit	9176	0,053	0,225	0	1	54245	0,063	0,242	0	1
intra_exit	9176	0,200	0,400	0	1	54245	0,213	0,409	0	1
interim	10849	0,022	0,146	0	1	54245	0,022	0,146	0	1
reinstated	10849	0,071	0,258	0	1	54245	0,071	0,258	0	1
inclusiveness	5826	0,370	0,210	0	1	54245	0,353	0,201	0	1
democ_prom	10849	0,339	0,473	0	1	54245	0,339	0,473	0	1
occ_const	10849	0,069	0,254	0	1	54245	0,069	0,254	0	1
amend_rate	6971	0,406	0,380	0	1	54245	0,366	0,342	0	1
amendsq	6971	0,309	0,365	0	1	54245	0,273	0,324	0	1
jud_review	8923	0,509	0,500	0	1	54245	0,479	0,500	0	1
review_democ	8544	0,257	0,437	0	1	54245	0,236	0,425	0	1
scope	8922	0,496	0,107	0,13	0,79	54245	0,492	0,105	0,01	0,80
detail	8871	0,108	0,093	0,01	0,62	54245	0,103	0,088	0,00	0,62
single_exec	8295	0,486	0,500	0	1	54245	0,511	0,500	0	1
term_limits	8824	0,593	0,491	0	1	54245	0,597	0,490	0	1
ppi	8922	0,355	0,120	0,05	0,67	54245	0,359	0,117	0,02	0,75
legacy	10849	0,087	0,086	0,01	1	54245	0,087	0,086	0,01	1
democracy	10330	0,431	0,495	0	1	54245	0,426	0,494	0	1
cdiv	10644	0,260	0,212	0	0,73	54245	0,259	0,210	0	0,73
gdppc	7385	3929,24	4178,70	201,84	28129,2	54245	3356,46	3895,75	87,04	44055,59
landlock	10849	0,166	0,372	0	1	54245	0,166	0,372	0	1
tropicar	10849	0,446	0,473	0	1	54245	0,446	0,473	0	1
distcr	10849	273	394,5	7,95	2385,58	54245	2730,007	394,485	7,95	2385,58
arabland	10780	16,020	13,026	0,07	61,53	54245	16,000	12,994	0,07	61,53
gendist	10849	11,803	8,487	0	26,86	54245	11,803	8,486	0	26,86
ethnic	10849	0,401	0,254	0	0,93	54245	0,401	0,254	0	0,93
state_ethnic	10849	0,282	0,177	0	0,67	54245	0,282	0,177	0	0,67
statehist	10849	0,752	0,179	0,13	1	54245	0,752	0,179	0,13	1
leg_british	10849	0,175	0,380	0	1	54245	0,175	0,380	0	1
leg_french	10849	0,594	0,491	0	1	54245	0,594	0,491	0	1
transition	10849	0,092	0,289	0	1	54245	0,092	0,289	0	1
reg_lac	10849	0,330	0,470	0	1	54245	0,330	0,470	0	1
reg_eca	10849	0,102	0,302	0	1	54245	0,102	0,302	0	1
reg_mena	10849	0,085	0,279	0	1	54245	0,085	0,279	0	1
reg_ssa	10849	0,145	0,352	0	1	54245	0,145	0,352	0	1

Original Data						Imputed Data (five datasets)				
Variable	***Obs***	***Mean***	***Std. Dev.***	***Min***	***Max***	***Obs***	***Mean***	***Std. Dev.***	***Min***	***Max***
reg_sa	10849	0,029	0,167	0	1	54245	0,029	0,167	0	1
reg_eap	10849	0,082	0,275	0	1	54245	0,082	0,275	0	1
reg_we	10849	0,193	0,395	0	1	54245	0,193	0,395	0	1
reg_na	10849	0,033	0,180	0	1	54245	0,033	0,180	0	1
betwars	10849	0,160	0,367	0	1	54245	0,160	0,367	0	1
aftwars	10849	0,575	0,494	0	1	54245	0,575	0,494	0	1
domconfd2	6503	0,083	0,277	0	1	54245	0,107	0,309	0	1
gdppcgcrisislag	7389	0,032	0,177	0	1	54245	0,050	0,219	0	1
demchglag	10043	0,028	0,166	0	1	54245	0,033	0,179	0	1
autchglag	10043	0,019	0,137	0	1	54245	0,022	0,146	0	1
yst_cs	10786	4742	2262	400	10500	54245	4745	2256	400	10500
latabs_cia	10849	29,095	17,169	0,22	64,15	54245	29,095	17,168	0,22	64,15
relfrac	10821	0,385	0,219	0	0,86	54245	0,385	0,219	0	0,86
langfrac	10333	0,316	0,272	0	0,92	54245	0,310	0,267	0	0,92
leg_social~t	10849	0,128	0,335	0	1	54245	0,128	0,335	0	1
leg_german	10849	0,055	0,228	0	1	54245	0,055	0,228	0	1
leg_scandi	10849	0,048	0,213	0	1	54245	0,048	0,213	0	1
coups	9476	0,062	0,269	0	3	54245	0,073	0,293	0	3
coupslag	9229	0,049	0,232	0	3	54245	0,060	0,257	0	3
gdppcgrw	7328	0,017	0,062	-0,58	0,66	54245	0,015	0,062	-0,58	0,66

Appendix 2B

Procedures for Imputing the Missing data

This Appendix provides some details about how the missing data was handled in this work. As mentioned in the main text of the chapter, the scarcity of covariates and information for some constitutional systems force us to implement a strategy to deal with missing data. Much of the missing data is found in time--varying covariates of the early constitutions, but the intensity of missingness depends on the source of each variable, below ***Table 2B1*** reports the variables with missing data.

Table 2B1. The variables with missing observations in the original sample

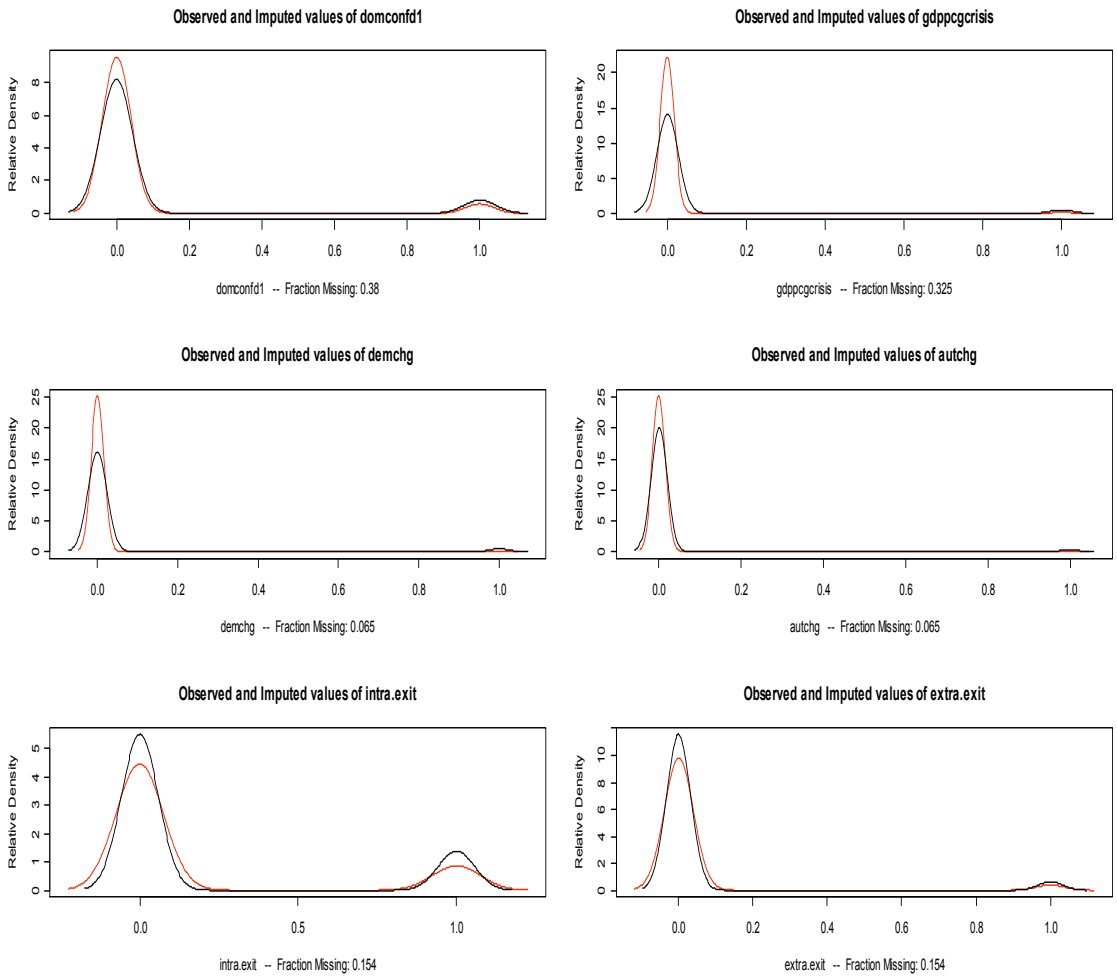
Variable	Missing	Total	Missing/Total
coups	1373	10849	.126555
domconfd1	4128	10849	.380496
gdppc	3464	10849	.319292
gdppcgcrisis	3521	10849	.324546
demchg	710	10849	.065444
autchg	710	10849	.065444
democracy	519	10849	.047839
intra_exit	1673	10849	.154208
extra_exit	1673	10849	.154208
cdiv	205	10849	.018896
arabland	69	10849	.00636
amend_rate	3878	10849	.357452
amendsq	3878	10849	.357452
jud_review	1926	10849	.177528
review_democ	2305	10849	.212462
scope	1927	10849	.17762
detail	1978	10849	.182321
single_exec	2554	10849	.235413
term_limits	2025	10849	.186653
ppi	1927	10849	.17762
inclusiven~s	5023	10849	.462992

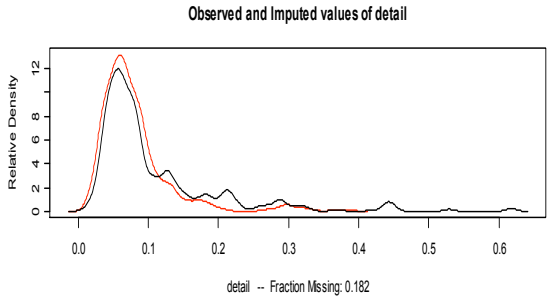
There are not many options at the time of imputing missing values with time series cross-section data, but *Amelia II* is a recent statistical package delivered by Honaker *et al.* (2009) designed to make multiple imputations under this format. The program allows multiple imputations of time-cross section data by assuming that values are Missing at Random (MAR), which implies that datasets imputed can be predicted from the observed data, but not from the information of missing observations. This approach is quite different from *listwise deletion,* used in most statistical packages, which rests on the Missing Completely at Random (MCAR) assumption, suggesting that missingness must be independent of observed or missing values. Though there is not a compelling reason for assuming a MAR pattern in my data, I lack of more sophisticated priors to model the pattern of missigness in the data analyzed here[134]. Moreover, MAR has become a standard for multiple imputation with desirable statistical properties (Honaker and King 2010). An additional constraint imposed by *Amelia* is the assumption of a multivariate normal distribution in both types of datasets, observed and imputed. This assumption is somewhat restrictive for duration variables, but this obstacle can be satisfactorily overtaken by applying some transformations to the data. As recommended, all the variables taking part of the econometric models reported in this work were used in the imputation process. In fact, seeking to inform the imputation process more comprehensively, additional variables were included in the dataset at the time of imputation (van Buuren and Groothuis-Oudshoorn 2011).

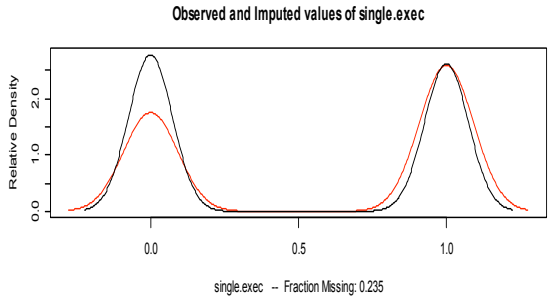
[134] For an introduction to concepts and modeling issues behind missing data and multiple imputations see Graham (2009), a more comprehensive analysis can be found in Schafer (1997).

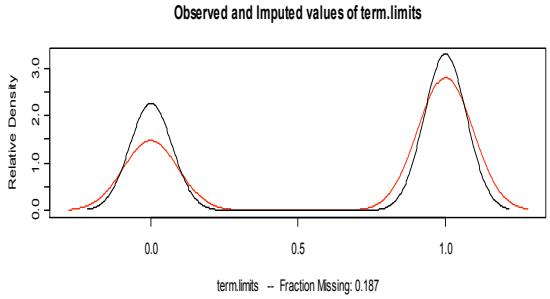
I set *Amelia* for generate five imputed datasets. In addition, these other settings were used in the imputation process: In order to keep ***amend_rate***, ***amendsq***, ***scope***, ***detail***, ***ppi***, and ***inclusiveness*** positive and between the ranges admitted by the original indicators I specified bounds between 0 and 1. The following variables required transformations to fit the data to the multivariate normal assumption: ***t1*** (the lifespan of constitutions in years, the dependent variable), ***distcr***, ***gendist***, ***legacy***, and ***gdppc*** were taken in logarithms; while ***arabland***, ***cdiv***, ***ethnic***, ***relfrac***, ***langfrac***, ***gdiffusion*** and ***cdiffusion*** re-expressed in square roots. ***coups*** accounted as an ordinal variable and all dummies treated as nominal data. The rest of the variables stayed untransformed. The imputations exclude priors regarding specific years, countries or variables. The polynomials estimated reach order three and the maximum re-sample top a thousand. After imputation, the multiple datasets were diagnosed with *Amelia* post-imputations commands. For instance, Figures below displays a set of histograms which each one shows smooth curves describing the pattern of the observed values (in black) and the "missing" values (in red) imputed by *Amelia*. In general, the imputed data behave quite close to the observed. More detailed diagnostics commands, such as ***overimputation*** and ***cstsPlot*** were also carried out with satisfactory results.

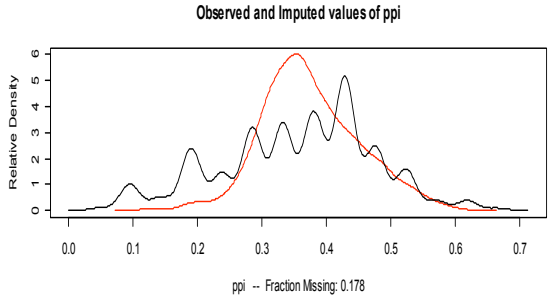
Figure 2B1. Plots of the relative frequencies of observed and missing data

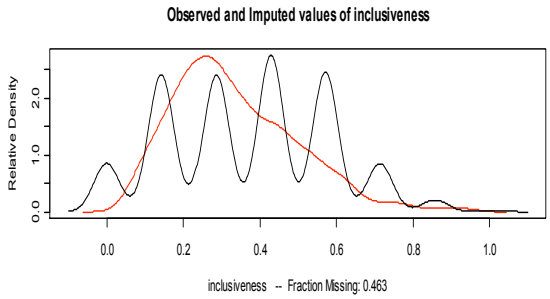


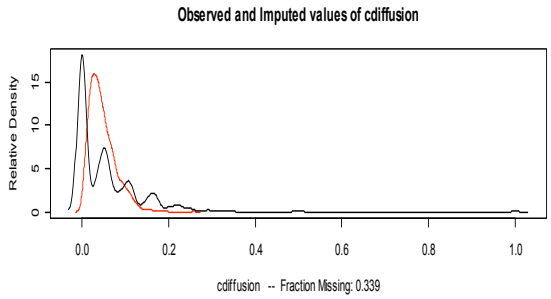

Observed and Imputed values of detail
Relative Density
detail -- Fraction Missing: 0.182

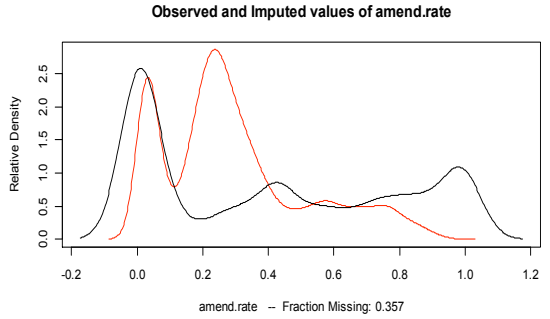

Observed and Imputed values of single.exec
Relative Density
single.exec -- Fraction Missing: 0.235

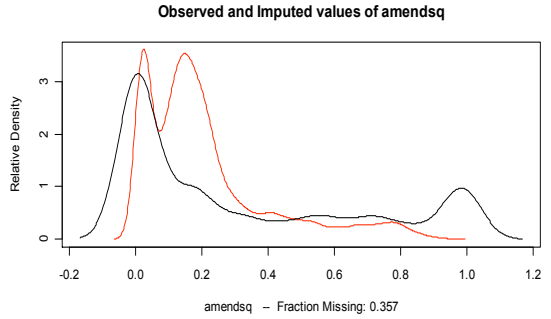

Observed and Imputed values of term.limits
Relative Density
term.limits -- Fraction Missing: 0.187

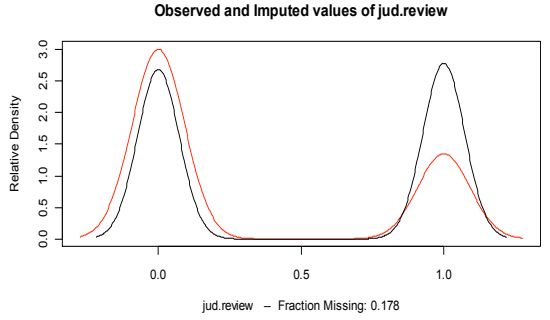

Observed and Imputed values of ppi
Relative Density
ppi -- Fraction Missing: 0.178

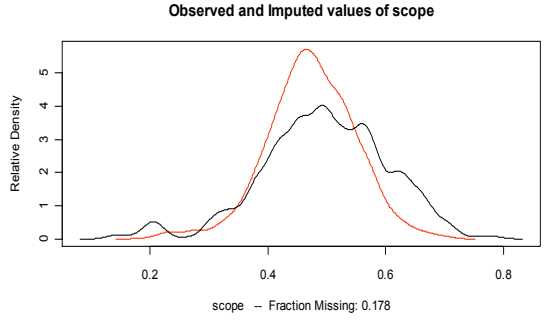

Observed and Imputed values of inclusiveness
Relative Density
inclusiveness -- Fraction Missing: 0.463


Observed and Imputed values of cdiffusion
Relative Density
cdiffusion -- Fraction Missing: 0.339


Observed and Imputed values of amend.rate
Relative Density
amend.rate -- Fraction Missing: 0.357


Observed and Imputed values of amendsq
Relative Density
amendsq -- Fraction Missing: 0.357


Observed and Imputed values of jud.review
Relative Density
jud.review -- Fraction Missing: 0.178


Observed and Imputed values of scope
Relative Density
scope -- Fraction Missing: 0.178

Appendix 2C

List of countries and constitutions under analysis

Country	Constitutions	Total
Afghanistan	1923 1931 1964 1973I 1977 1978I 1979I 1980I 1985 1987 1990 2001I 2004	13
Albania	1914 1920 1925 1928 1939 1943R 1946 1976 1991I 1998	10
Algeria	1962	1
Argentina	1816I 1819 1826 1853 1956R	5
Armenia	1995	1
Australia	1901	1
Austria	1920 1934 1945R	3
Azerbaijan	1991 1995	2
Bangladesh	1972* 1986R	2
Belarus (Byelorussia)	1994	1
Belgium	1831	1
Benin	1960* 1964* 1968 1970* 1979 1990	6
Bolivia	1826 1831 1834 1836 1839 1843 1851 1861 1868 1871 1878 1880 1938* 1945 1947 1961 1964R 1967	18
Bosnia-Herzegovina	1995	1
Botswana	1966	1
Brazil	1824 1891 1930I 1934 1937 1946 1967 1988	8
Bulgaria	1879* 1883R* 1938R 1947 1971 1991	6
Burkina Faso (Upper Volta)	1960* 1970* 1977* 1983 1988 1991	6
Burundi	1962* 1974* 1981* 1992 1998I 2004	6
Cambodia (Kampuchea)	1972 1976 1981 1989 1993	5
Cameroon	1961 1972	2
Canada	1867	1
Central African Republic	1964 1976 1979I 1981 1986 1994* 2004	7
Colombia	1830 1832 1843 1853 1858 1861I 1863 1886 1991	9
Congo	1961 1963 1969 1973* 1979 1991I 1992 2001	8
Congo, Democratic Republic Of (Zaire)	1960 1961I 1964 1967 1978 1997 2003 2005	8
Costa Rica	1844 1847 1848 1859 1869 1871 1917 1919R* 1949	9
Cote D'Ivoire	1960* 2000	2
Croatia	1991	1
Cuba	1933I 1934 1935 1940 1952 1959 1976	7
Cyprus	1960	1
Czech Republic	1993	1
Chad	1960 1962* 1978 1982I 1989* 1993I 1996	7
Chile	1818I 1822 1823* 1826I 1828 1833 1925 1980	8
China	1912I 1914 1916R 1923 1928 1947 1949 1954 1975 1978 1982	11
Denmark	1849 1866 1915 1953	4
Dominican Republic	1844 1854.1 1854.2 1858* 1865 1866 1868 1872 1874 1875 1877 1878 1879 1880 1881 1887 1896 1907 1908 1924 1927 1929.1 1929.2 1934 1942 1947 1955 1962 1963 1966 2002	31

Country	Constitutions																										Total
Ecuador	1830	1835	1843	1845	1851	1852	1861	1869	1878	1884	1897	1906	1929	1935R*	1939R	1945	1946	1967*	1972R*	1976R	1978	1984	1993	1996	1997	1998*	26
Egypt	1923	1930*	1935R*	1953I	1956	1958I	1962	1964I	1971																		9
El Salvador	1841	1859	1864	1871	1872	1880	1883	1886	1939	1945R	1950*	1962R	1983														13
Estonia	1919I	1920	1933	1937	1992																						5
Ethiopia	1931	1955	1974	1976	1987	1991I	1994																				7
Finland	1919	1999																									2
France	1791	1793	1795	1799	1802	1804	1814	1815	1830	1848	1852	1875	1940	1946	1958												15
Gabon	1960	1961	1975	1991																							4
Gambia	1970*	1996																									2
Georgia	1992R	1995																									2
German Democratic Republic	1949	1968																									2
German Federal Republic	1949																										1
Ghana	1957	1960*	1969*	1979*	1982I	1992																					6
Greece	1827	1844	1864	1925	1926	1927	1935R	1944R	1952	1968	1974R	1975															12
Guatemala	1851	1879	1944R	1945	1954I	1956*	1965	1982I	1985																		9
Guinea	1958	1982*	1990																								3
Guyana	1966	1970	1980																								3
Haiti	1805	1806	1807	1811	1816	1843	1844R	1846	1849	1859R	1867	1874	1876R	1879	1888	1889	1902	1935	1946.1	1946.2	1950	1957	1964	1983	1987		25
Honduras	1848	1865	1873	1874R	1880	1894	1904	1908R	1921	1924	1936	1957	1965	1982													14
Hungary	1919	1920	1946	1949																							4
Iceland	1944																										1
India	1949																										1
Indonesia	1945	1949	1950I	1955	1959R																						5
Iran (Persia)	1906	1979																									2
Ireland	1922	1937																									2
Israel	1948																										1
Italy/Sardinia	1848	1861	1943I	1947																							4
Jamaica	1962																										1
Japan	1889	1946																									2
Jordan	1946	1952																									2
Kazakhstan	1993I	1995																									2
Kenya	1963																										1
Korea, Republic Of	1948																										1
Kyrgyz Republic	1993																										1
Laos	1991																										1
Latvia	1919	1920I	1922	1940	1991R																						5
Lesotho	1966*	1983*	1993																								3
Liberia	1847*	1986																									2
Libya	1951	1969																									2
Lithuania	1918.1I	1918.2I	1919I	1920I	1922	1928	1938	1992																			8
Macedonia (Former Yugoslav Republic Of)	1991																										1

Country	Constitutions															Total
Madagascar (Malagasy)	1972I	1975	1992	1998												4
Malawi	1964	1966	1994													3
Malaysia	1957															1
Mali	1960*	1974	1992													3
Mauritania	1961	1978	1980	1985	1991											5
Mexico	1822	1824	1836*	1843	1846R	1856I	1857	1865I	1867R	1917						10
Moldova	1994															1
Mongolia	1924	1940	1960	1990I	1992											5
Morocco	1962	1970	1972													3
Mozambique	1975	1990	2004													3
Myanmar (Burma)	1962	1974*														2
Nepal	1948	1951I	1959*	1962	1990											5
Netherlands	1795	1798	1801	1805	1806	1815	1848									7
Nicaragua	1858	1893	1905	1911	1937	1939	1948	1950	1974*	1987						10
Niger	1960*	1989*	1992	1996	1999											5
Nigeria	1960	1963*	1975	1978*	1989	1993R	1999									7
Pakistan	1956*	1962	1969I	1973*	1985R*											5
Panama	1904	1946	1972													3
Papua New Guinea	1975															1
Paraguay	1813	1844	1870	1940	1967	1992										6
Peru	1826	1827R	1828	1834	1839	1855I	1856	1860	1867	1868R	1920	1933	1979	1993		14
Philippines	1973	1986														2
Poland	1919	1921	1935	1944I	1947	1952	1976	1992	1997							9
Portugal	1822*	1826*	1838R	1911*	1933*	1976										6
Romania	1923	1938*	1944R	1948	1952	1965	1991									7
Russia (Soviet Union)	1905	1918	1924	1936	1977	1993										6
Rwanda	1962	1978	1995	2003												4
Senegal	1963	2001														2
Serbia	1888	1894R	1901	1903												4
Sierra Leone	1961*	1968R	1978	1991*												4
Slovenia	1991															1
Somalia	1960*	1979														2
South Africa	1961	1983	1993	1996												4
Spain	1808	1812*	1820R*	1834	1836R	1837	1845	1861R	1869	1876	1931	1936I	1967	1978		14
Sri Lanka (Ceylon)	1972	1978														2
Sudan	1964R*	1971I	1973	1985I*	1998	2005I										6
Swaziland	1968	2005														2
Sweden	1809	1974														2
Switzerland	1798	1802	1803	1815	1848	1874	1999									7
Syria	1950*	1953	1954R	1958I	1961I	1964I*	1969I	1973								8
Tajikistan	1994															1
Thailand	1932	1946	1947	1949	1952R*	1959I	1960I	1968*	1972I	1974	1976	1977I	1978*	1983R	1991I	1997	16

Country	Constitutions																									Total
Togo	1960I	1961	1963*	1971	1979	1992																				6
Trinidad And Tobago	1962	1976																								2
Tunisia	1956I	1957I	1959																							3
Turkey/Ottoman Empire	1876*	1908R	1921	1924	1945	1961	1982																			7
Turkmenistan	1992																									1
Uganda	1962	1966	1967*	1981R	1995																					5
Ukraine	1996																									1
United States Of America	1789																									1
Uruguay	1830	1918*	1934	1952	1966	1985R																				6
Uzbekistan	1992																									1
Venezuela	1830	1857	1858	1864	1874	1881	1891	1893	1901	1904	1909	1914.1	1914.2	1922	1925	1928	1929	1931	1936	1945	1947	1948R	1953	1961	1999	25
Vietnam, Democratic Republic Of	1960	1980	1992																							3
Vietnam, Republic Of	1956*	1964I	1965I	1967																						4
Zambia	1964	1973	1991																							3
Zimbabwe (Rhodesia)	1965	1969	1979																							3

***Note**: I and R are for Interim and Reinstated constitutions, respectively. Constitutions marked with asterisk indicate that they were suspended.*

Appendix 3A

List of variables and descriptive statistics

Category	Variable	Description	Source
Structure of the Constitution and the State	***reinstated***	Dummy variable coded one if the constitution is reinstated.	Elkins *et al.* (2009)
	inclusiveness	Additive index indicating the inclusiveness of constitution making process and constitutional provisions. Re-scaled between 0 and 1.	Elkins *et al.* (2009)
	democ_prom	Dummy variable coded one if the state was democratic when the constitution was promulgated.	Elkins *et al.* (2009)
	amend_rate	Predicted probability of the promulgation of a constitutional amendment.	Elkins *et al.* (2009)
	amendsq	Squared values of ***amend_rate***.	Own calculations based on data from Elkins *et al.* (2009)
	jud_review	Dummy variable coded one if any court can review the constitutionality of laws.	Elkins *et al.* (2009)
	review_democ	Interaction between the ***jud_review*** and ***democracy*** variables.	Elkins *et al.* (2009)
	scope	Percent of selected issues covered in the constitution.	Elkins *et al.* (2009)
	detail	Words per issue covered in the constitution. Re-scaled between 0 and 1.	Elkins *et al.* (2009)
	single_exec	Dummy variable coded one if the constitution calls for a single executive.	Elkins *et al.* (2009)
	term_limits	Dummy variable coded one if there are term limits placed on the head of state.	Elkins *et al.* (2009)
	ppi	De jure Fish and Kroening´s Parliamentary Power Index.	Elkins *et al.* (2009)
	legacy	Average life span of previous constitutions. Re-scaled between 0 and 1.	Elkins *et al.* (2009)
	democracy	Dummy variable coded one if the country is a democracy.	Marshall and Jaggers (2009).
	gendist	A proxy of genetic distance indicating that people living more distant from Africa is increasingly different from the African serial founder.	Own calculations based on data from the CIA Factbook (2009) and following the procedures described in Ramachandran *et al.* (2005) and Ashraf and Galor (2010)
	emergapp	Binary variable indicating if a *state of emergency* is delegated to the government.	Questionnaire.
Crises	***gdiffusion***	Fraction of countries with new constitutions around the world in the prior year.	Own calculations based on data from the Comparative Constitutional Project.
	cdiffusion	Fraction of countries belonging to the same geographical region with new constitutions in the prior year.	Own calculations based on data from the Comparative Constitutional Project.
	demchg	Dummy variable coded one if a democratic transition occurred.	Marshall and Jaggers (2009).
	autchg	Dummy variable coded one if an authoritarian transition occurred.	Marshall and Jaggers (2009).
	coups	Number of coups occurred per year.	Banks (2006).
	extra_exit	Dummy variable coded one if the executive lost power by ways not prescribed in the constitution.	Goemans *et al.*(2009)
	intra_exit	Dummy variable coded one if the executive lost power by ways prescribed in the constitution.	Goemans *et al.*(2009)
Civil and Social Rights in the XIX century Constitutions of the Americas	***citznshpage***	Variable indicating the minimum age to become a citizen.	Questionnaire.
	citznshprt	Binary variable indicating if property or schooling is required to become a citizen.	Questionnaire.
	citznmin	The minimum number of requirements to obtain citizenship.	Questionnaire.
	citsus	The number of situations by which citizenship can be suspended.	Questionnaire.
	citrev	The number of situations by which citizenship can be suspended.	Questionnaire.
	voteun	Binary variable indicating if the constitution explicitly states a claim on the universality of adult suffrage.	Questionnaire.
	votefctv	Measures the effective number of requirements in place to vote.	Questionnaire.
	restate	Binary variable indicating if the constitution explicitly states provisions on the general responsibility of the state towards the people.	Questionnaire.
	rightres	Binary variable indicating if the constitution restricts the rights of specific groups. e.g. Domestic servants, religious groups, etc.	Questionnaire.

Category	Variable	Description	Source
	freerel	Binary variable indicating if the constitution allows freedom of religion.	Questionnaire.
	business	Binary variable indicating if the constitution provides rights to establish a business.	Questionnaire.
	occupate	Binary variable indicating if the constitution provides rights to choose an occupation.	Questionnaire.
	educate	Binary variable indicating if the constitution contains provisions regarding education.	Questionnaire.
	edfree	Binary variable indicating if the constitution mandates that education should be free.	Questionnaire.
	socsec	Quantitative variable measuring the constitutional commitment to provide social security. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	education	Quantitative variable measuring the constitutional commitment to provide schooling. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	health	Quantitative variable measuring the constitutional commitment to provide health services. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	housing	Quantitative variable measuring the constitutional commitment to provide housing. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	workersrght	Quantitative variable measuring the constitutional commitment to protect workers´ rights. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	equallaw	Quantitative variable measuring the constitutional commitment to provision for the equality of individuals before the law. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	freedrel	Quantitative variable measuring the constitutional commitment to provide for the freedom of religion. The intensity of the commitment is maximum when it reaches 3.	Questionnaire.
	ethnicinteg	Quantitative variable measuring the constitutional commitment supporting for the integration of ethnic minorities. The intensity of the commitment is maximum when it reaches 3	Questionnaire.
	indxsrights	Summary index of social rights. It ranges from 0 to 3.	Questionnaire.
	indxcrights	Summary index of civil and cultural rights. It ranges from 0 to 3.	Questionnaire.
Cultural factors	***ethnic***	Index of ethnic fractionalization.	Alesina *et al.*(2003)
	langfrac	Index of ethno-linguistic fractionalization.	Alesina *et al.*(2003)
	relfrac	Index of religious fractionalization.	Alesina *et al.*(2003)
Historical factors	***statehist***	Index of state antiquity.	Bockstette *et al.*(2002)
	lrmort	Logarithm of military and religious personnel mortality during the colonization period.	Acemoglu at al. (2001)
	colperiod	Period of previous colonization expressed in hundred years per country.	
Geographical factors	***landlock***	Dummy variable coded one if a country is landlocked.	Development Research Institute (2005).
	latitude_cia	Absolute latitude of a country.	CIA Factbook (2009).
	distcr	Distance in kilometers to the nearest coastlines or navigable rivers.	Gallup and Sachs (1999).
	tropicar	A country´s percentage of land located in the tropics	Gallup and Sachs (1999).
	lwheatsugar	Logarithm of the ratio of land suitable for growing wheat to land suitable for growing sugarcane.	Easterly (2007).
Lagged variables	***demchglag***	Lagged variable of ***demchg***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Own calculations.
	autchglag	Lagged variable of ***autchg***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Own calculations.
	coupslag	Lagged variable of ***coups***, this variable is not reported in the tables of results. See The variables´ section of the chapter.	Banks (2006).
Additional variables used in the imputation process	***occ_const***	Dummy variable coded one if constitution is written during or within two years of foreign military occupation.	Elkins *et al.*(2009)
	arabland	The percentage of arable land available in a country.	World Development Indicators (2008).
	state_ethnic	Interaction between the ***statehist*** and ***ethnic*** variables.	Own calculations.

Original Data						Imputed Data (five datasets)				
Variable	***Obs***	***Mean***	***Std. Dev.***	***Min***	***Max***	***Obs***	***Mean***	***Std. Dev.***	***Min***	***Max***
gdiffusion	1231	0.031	0.025	0	0.152	6160	0.031	0.025	0	0.152
cdiffusion	1231	0.076	0.068	0	0.5	6160	0.076	0.068	0	0.5
coups	1192	0.112	0.325	0	2	6160	0.113	0.327	0	2
coupslag	1175	0.101	0.313	0	2	6160	0.107	0.323	0	2
demchg	1177	0.013	0.112	0	1	6160	0.015	0.121	0	1
demchglag	1168	0.013	0.113	0	1	6160	0.015	0.12	0	1
autchg	1177	0.007	0.082	0	1	6160	0.008	0.087	0	1
autchglag	1168	0.008	0.088	0	1	6160	0.01	0.099	0	1
extra_exit	576	0.096	0.294	0	1	6160	0.153	0.36	0	1
intra_exit	576	0.155	0.362	0	1	6160	0.169	0.375	0	1
reinstated	1232	0.066	0.248	0	1	6160	0.066	0.248	0	1
inclusivenesss	814	0.202	0.141	0	0.429	6160	0.185	0.148	0	0.429
democ_prom	1232	0.121	0.326	0	1	6160	0.121	0.326	0	1
occ_const	1232	0.026	0.159	0	1	6160	0.026	0.159	0	1
amend_rate	656	0.423	0.396	0	1	6160	0.393	0.348	0	1
amendsq	656	0.335	0.401	0	1	6160	0.309	0.349	0	1
jud_review	877	0.189	0.392	0	1	6160	0.2	0.4	0	1
review_democ	762	0.067	0.25	0	1	6160	0.105	0.307	0	1
scope	877	0.465	0.055	0.3	0.614	6160	0.464	0.054	0.3	0.658
detail	846	0.071	0.024	0.04	0.214	6160	0.072	0.029	0.003	0.214
single_exec	799	0.961	0.193	0	1	6160	0.959	0.198	0	1
term_limits	872	0.752	0.432	0	1	6160	0.787	0.409	0	1
ppi	877	0.398	0.079	0.238	0.524	6160	0.4	0.073	0.238	0.585
legacy	1232	0.062	0.058	0	0.406	6160	0.0621	0.0579	0.00606	0.406
democracy	1201	0.248	0.432	0	1	6160	0.251	0.434	0	1
gendist	1232	22.76	2.64	18.99	26.86	6160	22.76	2.639	18.99	26.86
citznshpage	892	17.05	8.297	0	25	6160	17.58	7.216	0	25
citznshprt	969	0.307	0.461	0	1	6160	0.256	0.436	0	1
citznmin	969	3.599	1.209	0	6	6160	3.315	1.446	0	6
citsus	762	4.315	1.33	0	8	6160	4.322	1.564	0	8
citrev	849	3.592	1.207	0	6	6160	3.310	1.418	0	6
voteun	1232	0.495	0.5	0	1	6160	0.495	0.500	0	1
votefctv	1013	4.353	1.597	1	8	6160	4.026	1.731	1	8
resstate	1200	0.492	0.5	0	1	6160	0.479	0.5	0	1
rightres	1206	0.361	0.48	0	1	6160	0.367	0.482	0	1
freerel	981	0.612	0.488	0	1	6160	0.616	0.486	0	1
busines	1067	0.741	0.438	0	1	6160	0.706	0.456	0	1
occupate	1206	0.537	0.499	0	1	6160	0.540	0.498	0	1
educate	1232	0.422	0.494	0	1	6160	0.422	0.494	0	1
edfree	1206	0.333	0.472	0	1	6160	0.331	0.47	0	1
emergapp	1031	0.127	0.333	0	1	6160	0.187	0.39	0	1
socsec	1232	0.06	0.238	0	1	6160	0.06	0.238	0	1
education	1232	1.26	0.834	0	3	6160	1.26	0.834	0	3

Original Data						Imputed Data (five datasets)				
Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
workersrght	1232	0.631	0.58	0	2	6160	0.631	0.58	0	2
indxsrights	1232	0.65	0.4	0	1.333	6160	0.65	0.4	0	1.333
equallaw	1232	1.48	0.909	0	3	6160	1.480	0.909	0	3
freedrel	1232	0.697	0.934	0	3	6160	0.697	0.934	0	3
ethnicinteg	1232	0.114	0.406	0	2	6160	0.114	0.406	0	2
indxcrights	1232	0.764	0.431	0	1.667	6160	0.764	0.431	0	1.667
landlock	1232	0.106	0.307	0	1	6160	0.106	0.307	0	1
latitude_cia	1232	-1.019	22.5	-34.88	38.88	6160	-1.019	22.49	-34.88	38.88
distcr	1232	201.3	130.6	29.73	454	6160	201.3	130.5	29.73	454.0
tropicar	1232	0.682	0.419	0	1	6160	0.682	0.419	0	1
lwheatsugar	1232	0.027	0.231	-0.331	0.577	6160	0.027	0.231	-0.331	0.577
arabland	1232	9.448	7.371	1.793	27.03	6160	9.448	7.368	1.793	27.03
ethnic	1232	0.436	0.182	0.169	0.74	6160	0.436	0.182	0.169	0.74
langfrac	1176	0.165	0.149	0.019	0.598	6160	0.163	0.146	0.019	0.598
relfrac	1232	0.324	0.199	0.135	0.824	6160	0.324	0.199	0.135	0.824
statehist	1232	0.792	0.038	0.674	0.834	6160	0.792	0.038	0.674	0.834
lrmort	1232	4.197	0.511	2.708	5.096	6160	4.197	0.511	2.708	5.096
colperiod	1232	2.728	0.493	1.45	3.29	6160	2.728	0.492	1.45	3.29

Table 3A1. Indices of Constitutional Commitment to Social Rights for the Constitutions of the Americas at the beginning of XXI century

Country	*socsec*	*education*	*health*	*housing*	*workersrght*	Index of social rights (*indxsrights*)
Argentina	0,43	1,67	0	2	0,8	0,98
Bolivia	0,86	2,33	1	0	1,4	1,12
Brazil	3	2,67	2	0	3	2,13
Chile	0,43	2,33	3	0	0	1,15
Colombia	0,43	2,67	3	1	0,4	1,5
Dominican Republic	1,57	3	0	2	0,6	1,43
Ecuador	1,29	3	3	1	0	1,66
El Salvador	0,43	2	1	0	2,8	1,25
Mexico	0,86	3	1	3	2	1,97
Nicaragua	1,86	3	2	3	1,4	2,25
Paraguay	0,43	2,33	1	3	1,8	1,71
United States	0	0	0	0	0	0
Uruguay	1,71	3	0	3	0,2	1,58
Average	**1,023**	**2,385**	**1,308**	**1,385**	**1,108**	**1,441**

Source: Own calculations based on data from Ben-Bassat and Dahan (2008).

Table 3A2. Indices of Constitutional Commitment to Social Rights for the Constitutions of the Americas at the beginning of XX century

Country	*socsec*	*education*	*health*	*housing*	*workersrght*	Index of social rights (*indxsrights*)
Argentina	0	2	0	0	1	0,6
Bolivia	0	2	0	0	1	0,6
Brazil	0	1	0	0	1	0,4
Chile	1	2	0	0	1	0,8
Colombia	0	2	0	0	1	0,6
Dominican Republic	0	2	0	0	0	0,4
Ecuador	0	3	0	0	1	0,8
El Salvador	0	2	0	0	2	0,8
Mexico	0	0	0	0	2	0,4
Nicaragua	0	2	0	0	2	0,8
Paraguay	0	2	0	0	1	0,6
United States	0	0	0	0	0	0,0
Uruguay	0	1	0	0	1	0,4
Average	**0,08**	**1,62**	**0**	**0**	**1,08**	**0,55**

Source: Own calculations based on data from the questionnaire made for this work.

Table 3A3. The constitutions analyzed and their sources

Country	Year when a new constitution is promulgated																New Constitutions until 1900
Argentina	1819	1826	1853														3
Bolivia	1826	1831	1834	1839	1843	1851	1861	1868	1871	1878	1880						11
Brazil	1824	1891															2
Chile	1822	1823	1828	1833													4
Colombia	1830	1832	1843	1853	1858	1863	1886										7
Costa Rica	1844	1847	1848	1859	1869	1871											6
Dominican Republic	1844	1854	1854	1858	1865	1866	1872	1874	1875	1877	1878	1879	1880	1881	1887	189(	16
Ecuador	1830	1835	1843	1845	1851	1852	1861	1869	1878	1884	1897						11
El Salvador	1841	1864	1871	1872	1880	1883	1886										7
Guatemala	1851	1879															2
Honduras	1848	1865	1873	1880	1894												5
Mexico	1822	1824	1836	1843	1857												5
Nicaragua	1858	1893															2
Paraguay	1844	1870															2
Peru	1826	1828	1834	1839	1856	1860	1867										7
United States of America	1789																1
Uruguay	1830																1
Venezuela	1830	1857	1858	1864	1874	1881	1891	1893									8

The source of the constitutions from Argentina, Bolivia, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Uruguay, and Venezuela is the *Portal de Constituciones Hispanoamericanas* by *cervantesvirtual* at http://www.cervantesvirtual.com/portal/constituciones/constituciones.shtml
Constitutions of Brazil come from CONSTITUCIONES IBEROAMERICANAS. BRASIL by Afonso da Silva, José, 2006. Available at: http://www.bibliojuridica.org/libros/libro.htm?l=1960
Constitutions of the Dominican Republic are available at: http://www.consultoria.gov.do/coleconstitucion.php
The source of the constitution of the United States of America is from *The Political Database of the Americas*, available at: http://pdba.georgetown.edu/Constitutions/constudies.html

Appendix 3B

Procedures for Imputing the Missing data

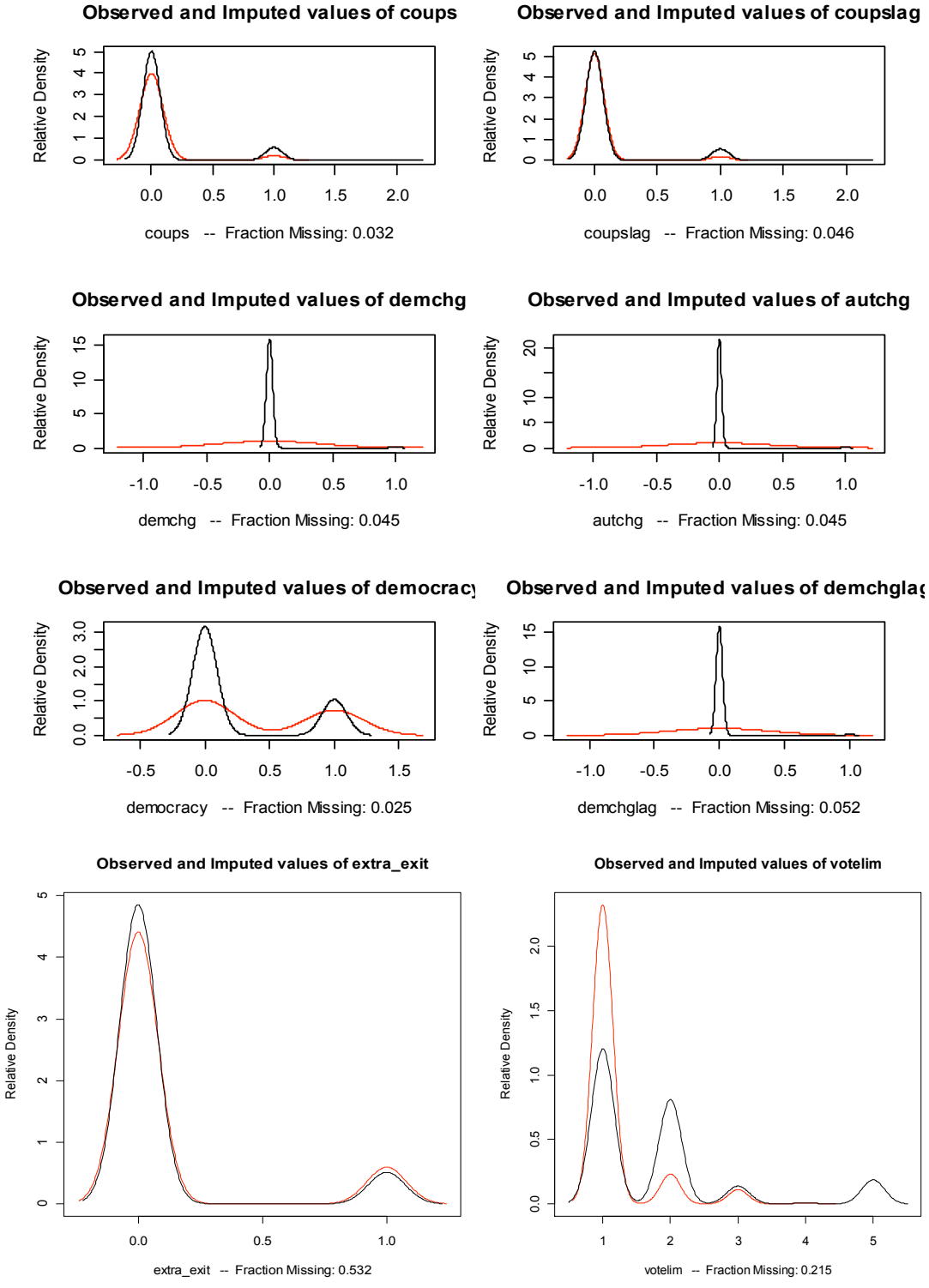
This Appendix provides some details about how the missing data was handled in this work. As mentioned in the main body of the chapter, the scarcity of covariates and information for some constitutional systems force us to implement a strategy to deal with missing data. Much of the missing data is found in time--varying covariates of the early constitutions, but the intensity of missingness depends on the source of each variable.

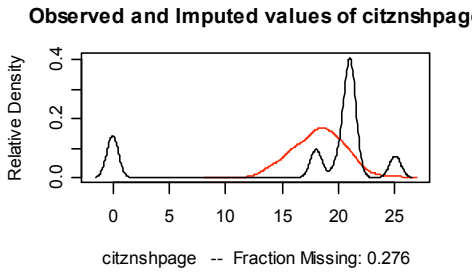
There are not many options at the time of imputing missing values with time series cross-section data, but *Amelia II* is a recent statistical package delivered by Honaker *et al.* (2009) designed to make multiple imputations under this format. The program allows multiple imputations of time-cross section data by assuming that values are Missing at Random (MAR), which implies that datasets imputed can be predicted from the observed data, but not from the information of missing observations. This approach is quite different from *listwise deletion,* used in most statistical packages, which rests on the Missing Completely at Random (MCAR) assumption, suggesting that missingness must be independent of observed or missing values. Though there is not a compelling reason for assuming a MAR pattern in my data, I lack of more sophisticated priors to model the pattern of missigness in the data analyzed here[135]. Moreover, MAR has become a standard for multiple imputation with desirable statistical properties (Honaker and King 2010; Graham 2009). An additional constraint imposed by *Amelia* is the assumption of a multivariate normal distribution in both types of datasets, observed and imputed. This assumption is somewhat restrictive for duration variables, but this obstacle can be satisfactorily overtaken by applying some transformations to the data. As recommended, all the variables taking part of the econometric models reported in this work were used in the imputation process. In fact, seeking to inform the imputation process more comprehensively, additional variables were included in the dataset at the time of imputation (Honaker *et al.* 2009).

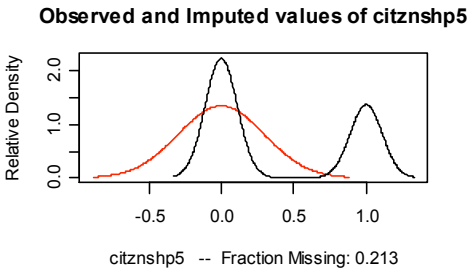
I set *Amelia* for generate five imputed datasets. The following settings were used in the imputation process: In order to keep ***amend_rate***, ***amendsq***, ***scope***, ***detail***, ***ppi***, and ***inclusiveness*** positive and between the ranges admitted by the original indicators I specified bounds between 0 and 1. The following variables required transformations to fit the data to the multivariate normal assumption: ***t1*** (the lifespan of constitutions in years, the dependent variable), ***distcr***, ***gendist***, ***legacy***, and ***gdppc*** were taken in logarithms; while ***arabland***, ***ethnic***, ***relfrac***, ***langfrac***, ***gdiffusion*** and ***cdiffusion*** re-expressed in square roots. ***coups*** accounted as an ordinal variable and all dummies treated as nominal data. The rest of the variables stayed untransformed. The imputations exclude priors regarding specific years, countries or variables. The polynomials estimated reach order three and the maximum re-sample top a thousand. After imputation, the multiple datasets were diagnosed with *Amelia* post-imputations commands. For instance, Figures below displays a set of histograms which each one shows smooth curves describing the pattern of the observed values (in black) and the "missing" values (in red) imputed by *Amelia*. In general, the imputed data behave quite close to the observed. More detailed diagnostics commands, such as ***overimputation*** and ***cstsPlot*** were also carried out with satisfactory results.

[135] For an introduction to concepts and modeling issues behind missing data and multiple imputations see Graham (2009), a more comprehensive analysis can be found in Schafer (1997).

Figure 3B1. Plots of the relative frequencies of observed and missing data




Observed and Imputed values of citznshpag
Relative Density
0.0
0.2
0.4
0
5
10
15
20
25
citznshpage -- Fraction Missing: 0.276


Observed and Imputed values of citznshp5
Relative Density
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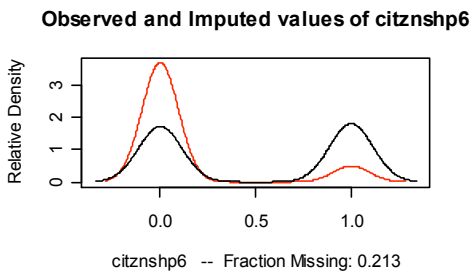
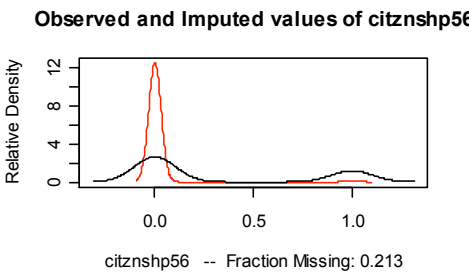
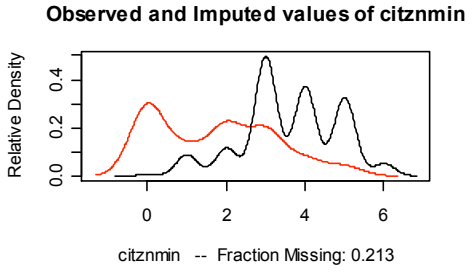
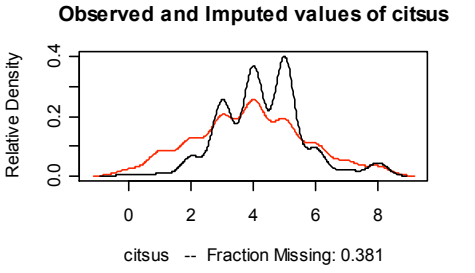
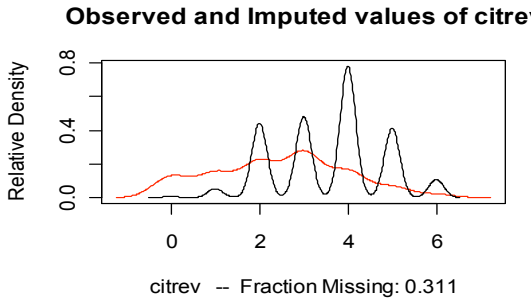
1.0
2.0
-0.5
0.0
0.5
1.0
citznshp5 -- Fraction Missing: 0.213


Observed and Imputed values of citznshp6
Relative Density
0
1
2
3
0.0
0.5
1.0
citznshp6 -- Fraction Missing: 0.213


Observed and Imputed values of citznshp5
Relative Density
0
4
8
12
0.0
0.5
1.0
citznshp56 -- Fraction Missing: 0.213


Observed and Imputed values of citznmin
Relative Density
0.0
0.2
0.4
0
2
4
6
citznmin -- Fraction Missing: 0.213


Observed and Imputed values of citsus
Relative Density
0.0
0.2
0.4
0
2
4
6
8
citsus -- Fraction Missing: 0.381


Observed and Imputed values of citrev
Relative Density
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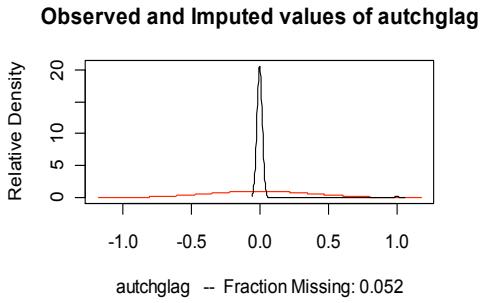
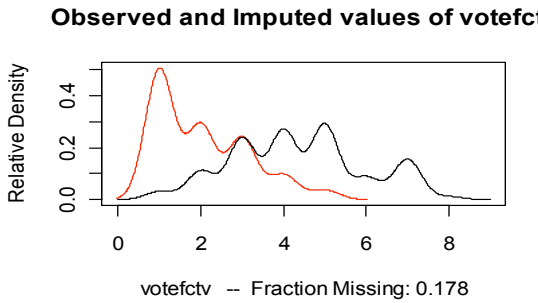
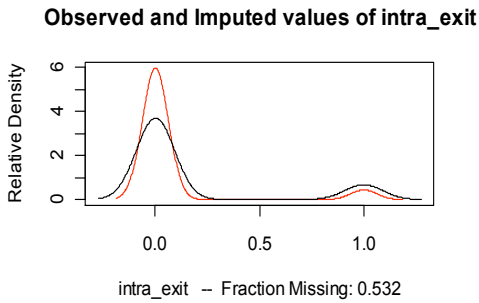
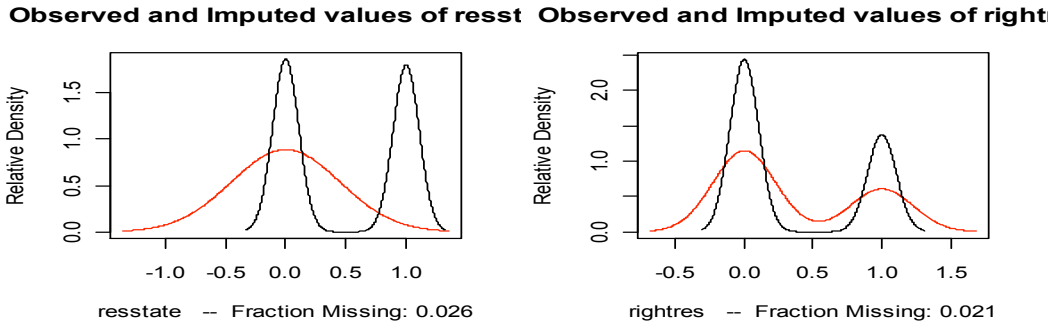
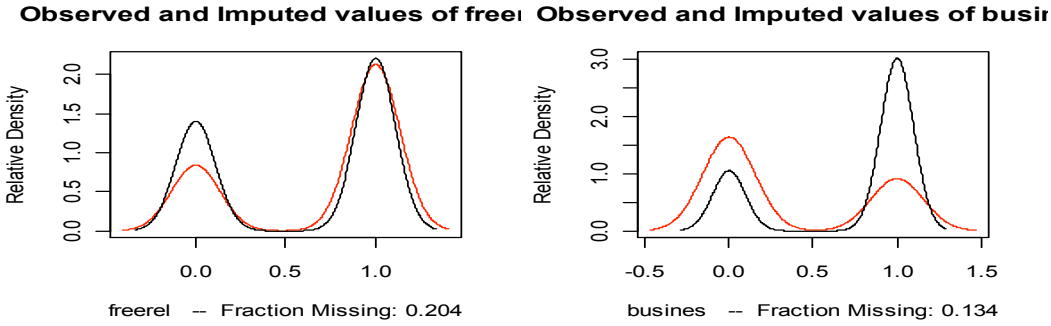
0.4
0.8
0
2
4
6
citrev -- Fraction Missing: 0.311

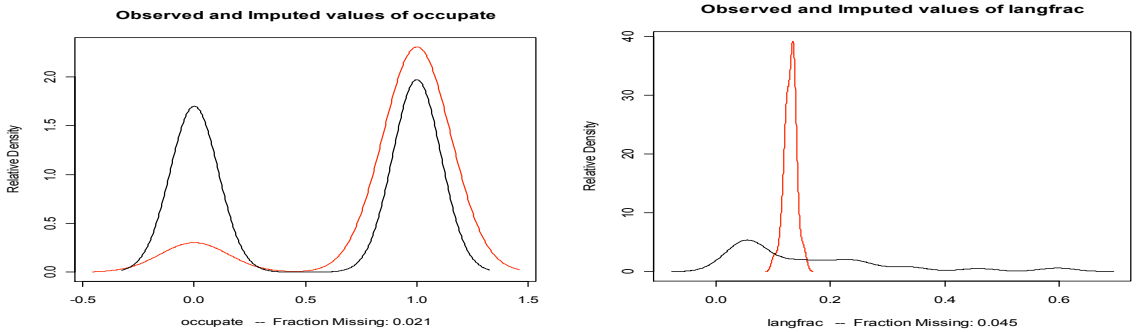

Observed and Imputed values of autchglag
Relative Density
0
5
10
20
-1.0
-0.5
0.0
0.5
1.0
autchglag -- Fraction Missing: 0.052

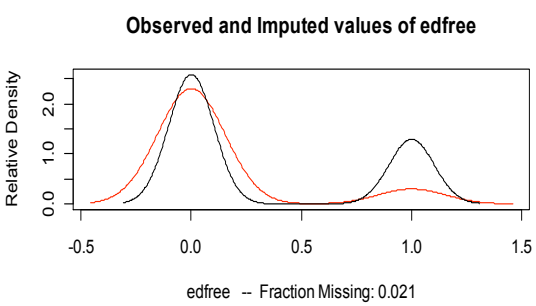

Observed and Imputed values of votefctv
Relative Density
0.0
0.2
0.4
0
2
4
6
8
votefctv -- Fraction Missing: 0.178

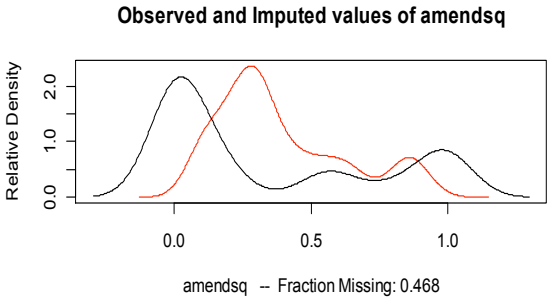

Observed and Imputed values of intra_exit
Relative Density
0
2
4
6
0.0
0.5
1.0
intra_exit -- Fraction Missing: 0.532

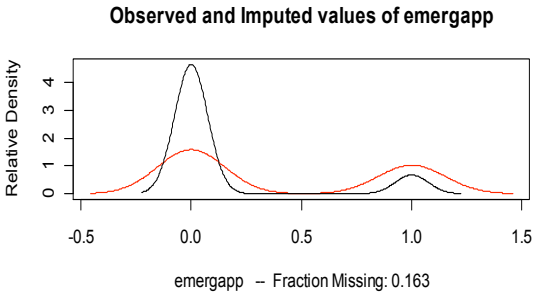

Observed and Imputed values of resst
Relative Density
0.0 0.5 1.0 1.5
-1.0 -0.5 0.0 0.5 1.0
resstate -- Fraction Missing: 0.026
Observed and Imputed values of right
Relative Density
0.0 1.0 2.0
-0.5 0.0 0.5 1.0 1.5
rightres -- Fraction Missing: 0.021


Observed and Imputed values of freel
Relative Density
0.0 0.5 1.0 1.5 2.0
0.0 0.5 1.0
freerel -- Fraction Missing: 0.204
Observed and Imputed values of busir
Relative Density
0.0 1.0 2.0 3.0
-0.5 0.0 0.5 1.0 1.5
busines -- Fraction Missing: 0.134


Observed and Imputed values of occupate
Relative Density
0.0 0.5 1.0 1.5 2.0
-0.5 0.0 0.5 1.0 1.5
occupate -- Fraction Missing: 0.021
Observed and Imputed values of langfrac
Relative Density
0 10 20 30 40
0.0 0.2 0.4 0.6
langfrac -- Fraction Missing: 0.045


Observed and Imputed values of edfree
Relative Density
0.0
1.0
2.0
-0.5
0.0
0.5
1.0
1.5
edfree -- Fraction Missing: 0.021


Observed and Imputed values of amendsq
Relative Density
0.0
1.0
2.0
0.0
0.5
1.0
amendsq -- Fraction Missing: 0.468


Observed and Imputed values of emergapp
Relative Density
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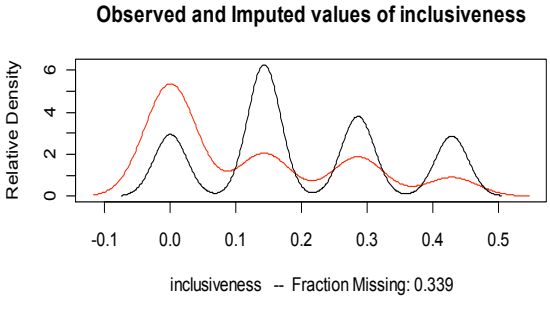
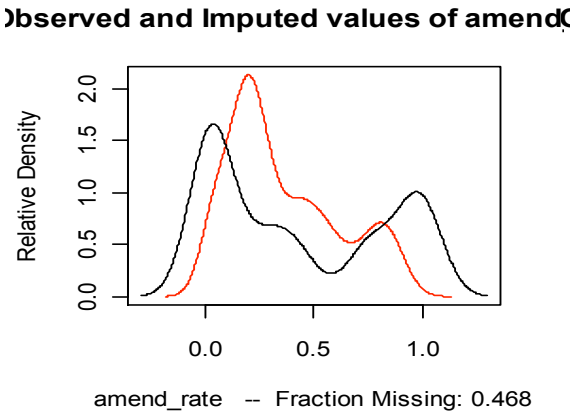
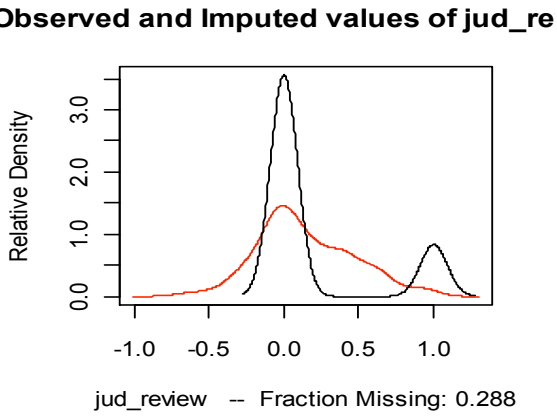
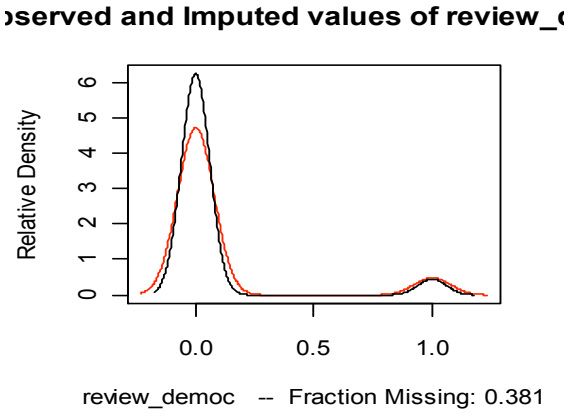
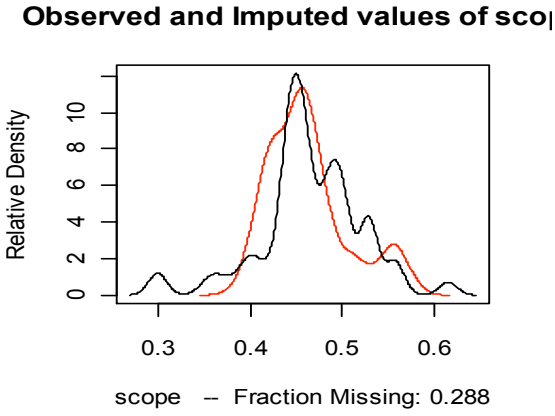
1
2
3
4
-0.5
0.0
0.5
1.0
1.5
emergapp -- Fraction Missing: 0.163

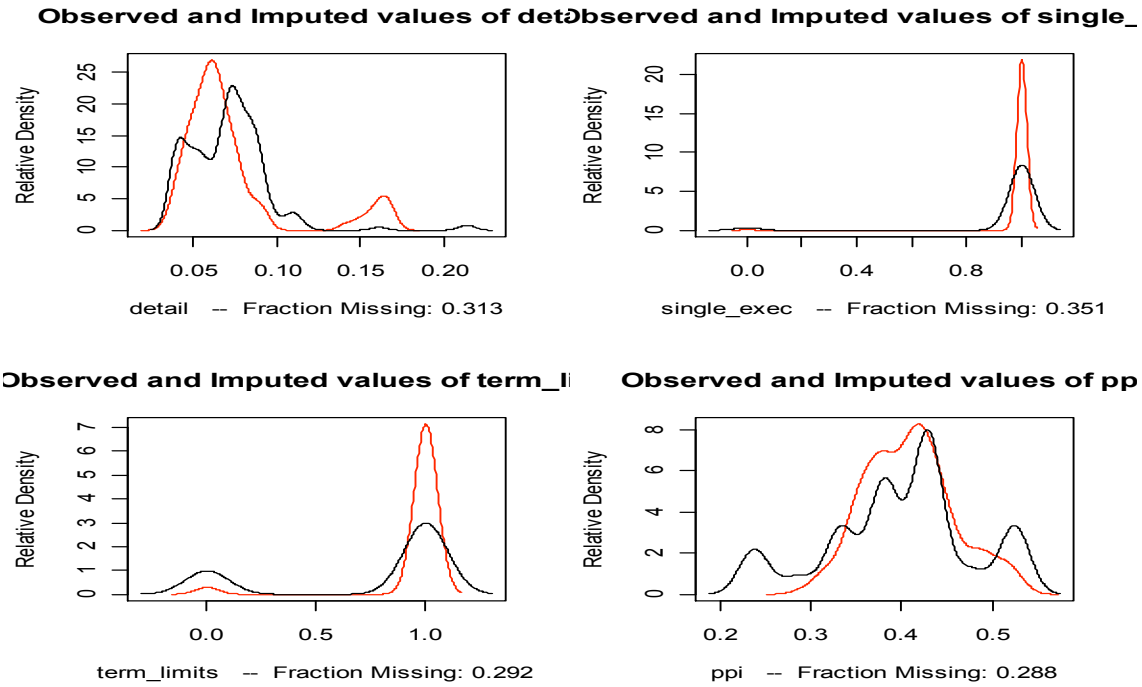

Observed and Imputed values of inclusiveness
Relative Density
0
2
4
6
-0.1
0.0
0.1
0.2
0.3
0.4
0.5
inclusiveness -- Fraction Missing: 0.339


Observed and Imputed values of amend
Relative Density
0.0
0.5
1.0
1.5
2.0
0.0
0.5
1.0
amend_rate -- Fraction Missing: 0.468


Observed and Imputed values of jud_re
Relative Density
0.0
1.0
2.0
3.0
-1.0
-0.5
0.0
0.5
1.0
jud_review -- Fraction Missing: 0.288


bserved and Imputed values of review_
Relative Density
0
1
2
3
4
5
6
0.0
0.5
1.0
review_democ -- Fraction Missing: 0.381


Observed and Imputed values of sco
Relative Density
0
2
4
6
8
10
0.3
0.4
0.5
0.6
scope -- Fraction Missing: 0.288


Observed and Imputed values of det
Relative Density
0 5 10 15 20 25
0.05 0.10 0.15 0.20
detail -- Fraction Missing: 0.313
Observed and Imputed values of single_
Relative Density
0 5 10 15 20
0.0 0.4 0.8
single_exec -- Fraction Missing: 0.351
Observed and Imputed values of term_l
Relative Density
0 1 2 3 4 5 6 7
0.0 0.5 1.0
term_limits -- Fraction Missing: 0.292
Observed and Imputed values of pp
Relative Density
0 2 4 6 8
0.2 0.3 0.4 0.5
ppi -- Fraction Missing: 0.288

Appendix 3C

Table 3C1. The criteria for ranking the constitutional commitment to social security

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees" or "promotes" social security, or "every person is entitled to social security"	1
Weak commitment: "Every person is entitled to a minimum standard of living", "basic income", "adequate income", or "to live in dignity"	2
Strong commitment: In addition to "Every person is entitled to adequate income", the constitution specifies the ingredients of what is adequate income in terms of food, housing, etc., or periodical adjustment mechanism.	3

Table 3C2. The criteria for ranking constitutional commitment to education

Item	Rank
The right is absent from the constitution	0
A general statement: "Every citizen is entitled to education"	1
Weak commitment: "Primary education is compulsory", or "primary education is free"	2
Strong commitment: "Primary and secondary education is compulsory and free"	3

Table 3C3. The criteria for ranking constitutional commitment to health

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees", or "promotes", or "every person is entitled to health services"	1
Weak commitment: "commitment to recovery and rehabilitation"	2
Strong commitment: "Health services are free and universal", or "every person has the right to access free health services"	3

Table 3C4. The criteria for ranking the constitutional commitment to housing

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees", or "promotes", "the right to housing"	1
Weak commitment: "commitment to adequate size", or "dignified housing"	2
Strong commitment: The state "provides a law implementing the universal right to housing", or describes "the quality of housing"	3

Table 3C5. The criteria for ranking the constitutional commitment to protect workers´ rights

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees", or "promotes" the right to choose an occupation with a minimum wage.	1
Weak commitment: The state "guarantees", or has the duty to provide "safe working conditions". In addition, the state "establishes" or regulates "the maximum work per day", the "payment of extra hours of work", and the right to "weekly rests" or "holidays", as well as "paid vacations"	2
Strong commitment: The state "guarantees" the periodical adjustments of (minimum) wages. The "constitutions specifies the number of weekly hours per day or week".	3

Table 3C6. The criteria for ranking the constitutional commitment to be equal before the law

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees" or "promotes" the "equal rights of men"	1
Weak commitment: "No person or groups should be discriminated because of its social, racial, ethnic, religious, or linguistic origins or situation"	2
Strong commitment: The state should "guarantees" that "No one is above the law under any circumstance"	3

Table 3C7. The criteria for ranking the constitutional commitment to the freedom of religion

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees" or "provides" the "freedom of religion"	1
Weak commitment: The state does not have an "official religion or church", or does not "grant special treatment to any religious group"	2
Strong commitment: The state is "secular", or explicitly "independent of any religious preference"	3

Table 3C8. The criteria for ranking the constitutional provision of granting the integration of ethnic communities

Item	Rank
The right is absent from the constitution	0
A general statement: The state "guarantees" or "promotes" the "national integration of ethnic communities"	1
Weak commitment: The state "guarantees", or "promotes" the "egalitarian access of the members of ethnic groups to the resources of the state"	2
Strong commitment: The state is "committed" to "provide" and "protect" for the ethnic communities of the nation, and "guarantees" for their livelihoods through protecting its habitats and cultures	3

Appendix 4A

Table 4A1.List of variables and their sources.

Variable	Description	Source
Informal Institutions	The index of informal institutions built on response to questions asked in the World Values Surveys (WVS). Categories included in the index are suggested by Tabellini (2008). Details are given in Section 5.1.	Own calculations based on data from the World Values Survey.
Formal Institutions	Index measuring the prevalence of Law and Order in a given country. Higher values indicate better formal institutions.	Political Risk Services (2007)
Gini of Income	Average of Gini of income inequality by country 1944-2003.	UNU-WIDER Database, Version 2.0a. 2005.
Middle Income Share	Average share of income accrued by people belonging to deciles 3-8 of income distribution 1944-2003	
trustindex	The index is built on the percentage of affirmative answers given to the question: *Generally speaking, would you say that most people can be trusted or that you can´t be too careful in dealing with people?*	World Values Survey 2005 (2009).
controlindex	The index is built on the percentage of people who gave a high scale to the question formulated in the WVS as: *Some people feel they have completely free choice and control over their lives, and other people feel that what they do has no real effect on what happens to them. Please use the scale (Something missing here) how much freedom of choice and control you feel you have over the way your life turns out?*	
Obedience index and respectindex	Respect and Obedience were built based on the percentage of people who answered favorably to Respect and Obedience as important qualities in children learning to the question formulated in the WVS as: *Here is a list of qualities which children can be encouraged to learn at home. Which, if any, do you consider to be especially important?* The whole list is: a. Good manners; b. Independence; c. Hard work; d. Feeling of responsibility; e. Imagination; f. Tolerance and respect for other people; g. Thrift, saving money and things; h. Determination, perseverance; I. Religious faith; J. Unselfishness; K. Obedience. People surveyed could choose up to five options.	
reg_eapsa	Dummy variable for countries in East Asia and South Pacific	Author´s calculations following World Bank income classification appeared in World Development Indicators Database,World Bank (2010).
reg_nalac	Dummy variable for countries in North America and Latin America.	
reg_ecawe	Dummy variable for countries in Europe and Central Asia.	
reg_menassa	Dummy variable for countries in the Middle East and Africa.	
Tropical Area	Country's fraction of land in the tropics.	Gallup and Sachs (1999)
Distance to Coast	Distance in kilometers to the nearest coastlines or navigable rivers.	

Latitude	Absolute distance from the equator in degrees.	CIA Factbook (2009)
State History	Index of state antiquity.	Bockstette *et al.* (2002)
Lanlocked countries	Dummy variable describing if a country is ladlocked or not.	Development Research Institute database (2005)
Common Law	Dummy variable for indentifying countries with a common law framework.	
Civil Law	Dummy variable for indentifying countries with a civil law framework.	
Transition Economies	Dummy variable for countries in economic transition.	Easterly (2001)
commexporter	Dummy variable for countries whose main exports are commodities.	
Genetic Distance	A proxy of genetic distance indicating that people living at more distance from Africa is increasingly different from the African serial founder.	Own calculations based on data from the CIA Factbook (2009) and following the procedures described in Ramachandran *et al.* (2005), and Ashraf and Galor (2010)
Ethnic Diversity	Index of ethnic fractionalization.	Alesina *et al.* (2003)
Language Diversity	Index of language fractionalization**.**	
Religious Diversity	Index of religion fractionalization.	
Ethnic Diversity_state	Interaction between the ***State History*** and ***ethnic*** variables.	Own calculations.
Catholics, Protestants, Judaists Islamism, Hinduism buddies, othrel, and nonrel	Represent denominations or affiliations corresponding to the following religions Catholics, Protestants, Judaists, Islamists, Hindus and Buddhists; other religions and non religious are also included.	McCleary and Barro (2006)
GDP per capita	Gross Domestic Product per capita for year 2000, adjusted for PPP, U. S. dollars of 2005.	Penn World Tables 7.0 (2010)
GDP Growth	Average growth rates of per-capita income between 1991 and 2005.	
Population	Logarithm of the total population.	
Trade Openness	The average of the ratio of exports plus imports to GDP from 1990 to 2005.	World Bank (2010)
Urbanization	Urbanization rate in percentage points.	
Polity Index	Polity IV index measuring if a country is turning democratic (positive values) or autocratic (negative values). The index ranges from -10 to 10. I calculated an average with the indexes from 1996 to 2005.	Marshall *et al.* (2010)
Land Suitability	Logarithm of the ratio of land suitable for growing wheat to land suitable for growing sugarcane.	Easterly (2007)

***Figure 4A3*. The Gini of Income Inequality and the Country´s fraction of Land in the Tropics**

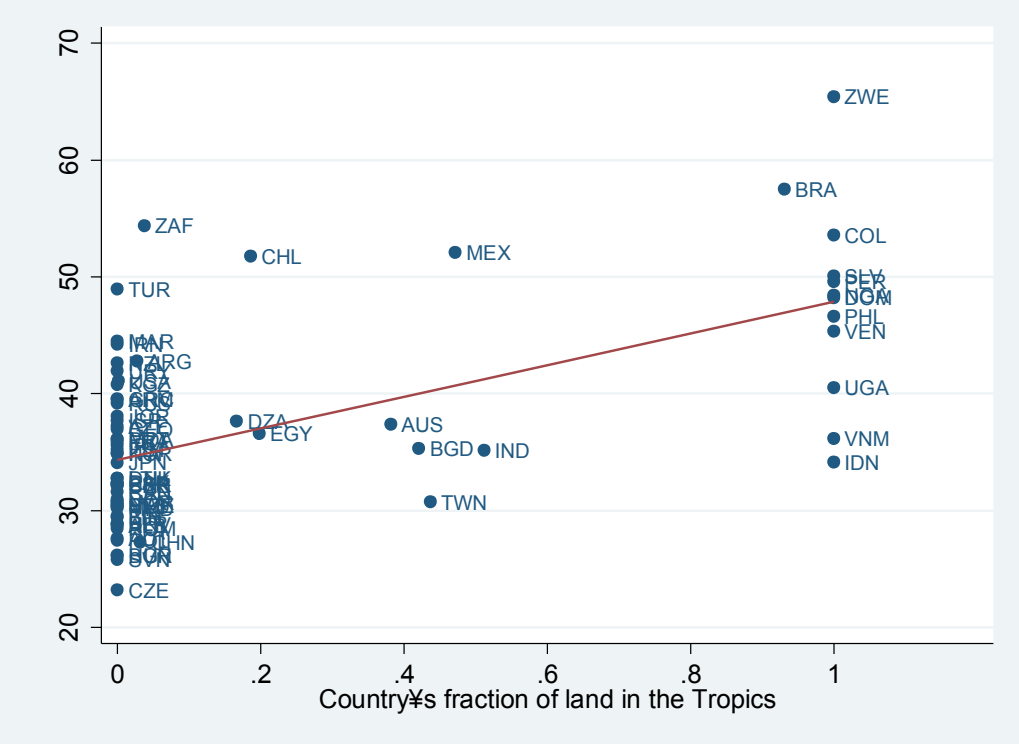


Figure 4A4. The Informal Institution Index and the Gini of Income Inequality

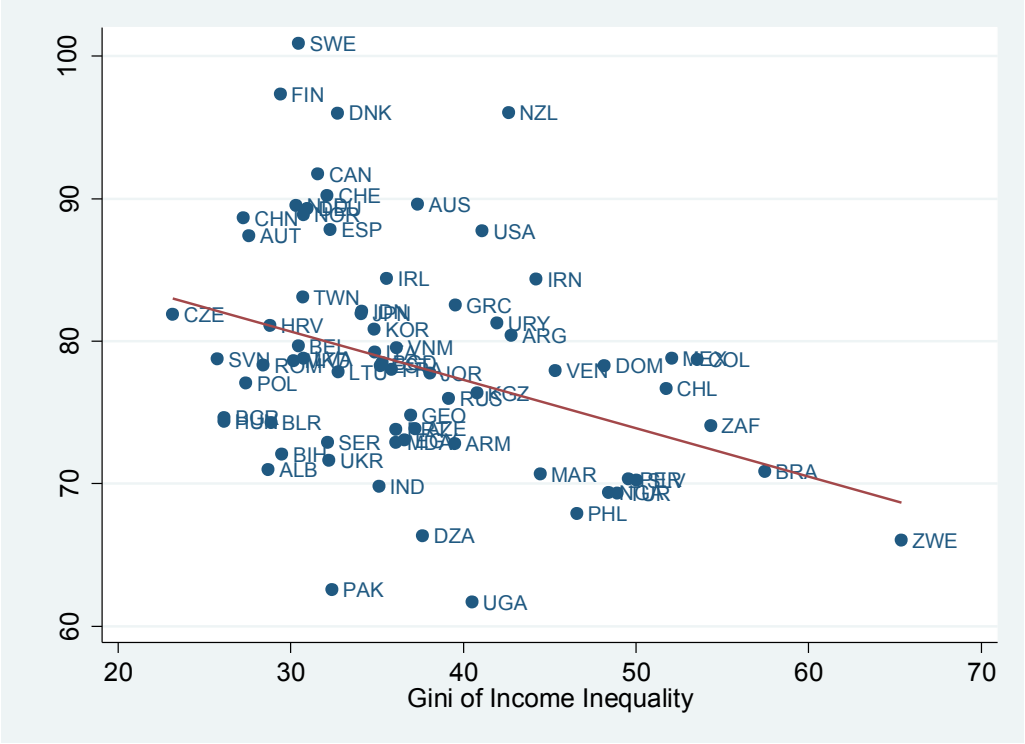


Table 4A2. ***Basic correlations***

	Informal Institutions	***Formal Institutions***	*Gini of Income*	***Middle Income Share***	*Tropical Area*	***Latitude***	*Genetic Distance*	***Ethnic Diversity***	*Language Diversity*	*Religious Diversity*	***State History***	***GDP per capita***	*GDP Growth*	*Trade Openness*	***Population***	*Urbanization*
Formal Institutions	0.653*															
Gini of Income	-0.325*	-0.558*														
Middle Income Share	0.411*	0.676*	-0.912*													
Tropical Area	-0.282	-0.577*	0.593*	-0.593*												
Latitude	0.129	0.399*	-0.625*	0.582*	-0.495*											
Genetic Distance	0.164	-0.156	0.479*	-0.359*	0.425*	-0.690*										
Ethnic Diversity	-0.324*	-0.402*	0.299	-0.410*	0.302*	-0.222	0.031									
Language Diversity	-0.326*	-0.203	0.073	-0.196	0.187	-0.058	-0.271	0.678*								
Religious Diversity	0.106	0.224	-0.089	0.008	-0.038	-0.109	-0.016	0.159	0.310*							
State History	0.385*	0.285	-0.037	0.144	-0.068	0.137	0.177	-0.283	-0.294	-0.248						
GDP per capita	0.6390*	0.8218*	-0.3376*	0.5498*	0.3791*	0.2662	0.0196	-0.4060*	-0.2520	0.0995	0.4676*					
GDP Growth	-0.0034	-0.0633	-0.1958	0.0471	-0.0495	0.0299	-0.0206	-0.1171	-0.0434	0.1202	-0.1695	-0.2052				
Trade Openness	0.0346	0.2796	-0.3503*	0.2906	-0.2100	0.4471*	-0.4211*	0.0384	0.1072	0.1004	-0.3250*	-0.0034	0.0958			
Population	-0.0720	-0.2757	0.2129	-0.2791	0.3102*	-0.1890	0.1851	0.0637	0.1199	0.0009	0.3169*	-0.1191	-0.0910	-0.5558*		
Urbanization	0.3641*	0.4468*	0.0262	0.1708	-0.2821	-0.0985	0.4080*	-0.1993	-0.3172*	-0.0368	0.3155*	0.5517*	-0.2396	0.0248	-0.2310	
Polity Index	0.3599*	0.4366*	-0.1708	0.3513*	-0.2132	0.0202	0.2200	-0.2619	-0.1962	0.0503	0.2719	0.6079*	-0.2623	-0.0782	-0.1990	0.5660*

Pairwise correlations The asterisk means significant at 1%.

Appendix 4B

The Exclusion Restriction

It is crucial that I check if my instrument (***Tropical Area***) is strong enough to reach robust conclusions on the relationship from the role of geographical-endowment hypothesis, and its impact on informal institutions through income inequality, which is the key insight driving this work. Econometric theory suggest that an instrument is flawed when it is correlated with the disturbance term in the equation of interest or when the instrument is weakly correlated with the endogenous variable, which potentially leads to biased estimates, even in large sample size. So at this stage, as suggested by Murray (2006) any instrument arrives on the scene with a dark cloud of invalidity hanging overhead. Therefore, in this section I will try to dissipate, as much as possible, the dark cloud that potentially threatens my instrument. In Section 4.3.2 of this chapter I have given arguments establishing the connection from natural resource endowments to income inequality in the past and present. This is reasonably corroborated by the high F-statistics reported in my first-stage TSLS estimations for ***Gini of Income*** and ***Tropical Area***. Henceforth, my task of demonstrating that ***Tropical Area*** is not a "weak" instrument has been partially accomplished. But additional work remains to be done. The task ahead is verifying that ***Tropical Area*** does not affect directly my informal institutions index (***Informal Institutions***) through other ways beyond inequality. As a basic check, in Table 4.3 I showed that ***Tropical Area*** is not an independent determinant of informal institutions, as shown by the OLS estimations. However, I must account for other omitted variables which are related to both informal institutions and ***Tropical Area***. Thus, in Table 4B1 a new proxy for endowments is included to check for omitted variable bias. It is ***Land Suitability***, which represents the logarithm of the ratio of land suitable for growing wheat relative to the land apt for growing sugarcane. As mentioned elsewhere in the chapter, this measure of endowments was introduced as an instrument of income inequality by Easterly (2007) under the allegation that it is minimal to endogenous changes in production techniques or commodities prices fluctuations. When this variable is added to the analysis in columns 1 and 2 of Table 4B1, it does not change my previous assertion; endowments affect informal institutions exclusively through economic inequality. As an additional test in the same table, I report the statistics assessing for the potential weakness of my instrument. In column 3, shows the equation with the lowest first stage F-statistics obtained throughout the whole robustness test section. To discard any risk of working with a weak instrument, I employ the more rigorous test by Stock and Yogo (2005), which provides us with a set of critical values to be outpaced by an instrument so as not to be considered weak. As can be seen at the bottom of column 3, the critical value for the Wald test is 16.38 at a 5% of significance, a figure slightly below the robust F-statistic of 16.88 calculated for ***Tropical Area***, so I can reject the null hypothesis of working with a weak instrument.

Table 4B1. OLS and TLS Estimation of the Impact of Inequality on Informal Institutions: Controlling for Endowment variables and Weak Instruments

Dependent variable:	OLS	IV	IV
Informal Institutions	(1)	(2)	(3)
cons	76.62***	109.4***	93.0***
	(1.484)	(15.12)	(6.564)
Land Suitability	8.367*	-9.897	
	(4.434)	(9.994)	
Gini of Income		-0.782**	-0.419**
		(0.351)	(0.165)
Ethnic Diversity			-37.28***
			(10.77)
Religious Diversity			8.379**
			(4.239)
Ethnic Diversity_state			44.04***
			(14.11)
Number of obs.	67	67	71
F-stat for first-stage on excluded instrument		19.17	9.06
R-adjusted Squared	0.021		
Partial R-square			0.29
Robust F-statistic for the instrument ***Tropical Area***			16.88
Stock and Yogo test for weak instruments , critical value of a Wald test for TSLS estimator at 5%			16.38

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

Finally, I can also investigate the validity of my instrument by recurring to the overidentification tests. I should recall that this kind of tests presume that a proposed instrument is truly exogenous when testing for the exogeneity of alternatives instruments. Even though the main advantage of this test is a direct verification of my exclusion restriction, it fails to reject the null hypothesis when all instruments are invalid, implying that the instruments are uncorrelated to the disturbance of my main specification (1). Therefore, results here should be taken with caution. The results of the overidentification test are reported in Table 4B2. I run the test using two alternative instruments, ***Land Suitability*** already mentioned, and ***commexporter***, a dummy variable identifying those countries whose main exports are commodities. Overall, p-values of Sargan, Basman and Wooldridge tests do not allow us to reject the null hypothesis of exogeneity in my instrument.

Table 4B2. Overidentification Tests

Dependent variable:	IV	IV
Informal Institutions	(1)	(2)
cons	95.53***	96.40***
	(6.002)	(6.061)
Gini of Income	-0.463***	-0.488***
	(0.152)	(0.155)
First Stage Estimation		
cons	37.00***	33.99***
	(1.844)	(0.854)
Tropical Area	10.22***	11.89***
	(3.673)	(2.716)
Land Suitability	-9.694*	
	(5.339)	
commexporter		4.107
		(2.693)
Number of obs.	67	72
F-stat for first-stage on excluded instrument	19.17	13.60
Sargan test (p-value)	0.3363	0.8849
Basmann test (p-value)	0.3440	0.8873
Wooldridge test (p-value)	0.3169	0.9005

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Wooldridge test is robust to heteroskedasticity. Details of the variables are given in **Appendix 4A**.

Appendix 4C

Tables in this section replicate the whole empirical study of this chapter, but this time using a different indicator of inequality, it consists of the average share of income accrued by those households belonging to deciles ranging from 3 and 8 (***Middle Income Share***) of a country income distribution.

Table 4C1. Informal Institutions and inequality by regional dummies

Dependent variable:	OLS	IV	IV	IV	IV	IV	IV
Informal Institutions	(1)	(2)	(3)	(4)	(5)	(6)	(7)
cons	49.49***	42.04***	40.19***	26.25*	39.72*	45.61***	22.42
	(5.530)	(10.59)	(11.21)	(14.07)	(21.37)	(10.54)	(25.15)
Middle Income Share	0.604***	0.759***	0.792***	1.061***	0.814*	0.707***	1.135**
	(0.121)	(0.226)	(0.236)	(0.289)	(0.493)	(0.221)	(0.487)
reg_eapsa			1.430				2.563
			(2.722)				(3.717)
reg_nalac				7.046***			7.718*
				(2.146)			(4.500)
reg_ecawe					-0.743		
					(4.483)		
reg_menassa						-6.100*	-1.716
						(3.670)	(5.830)
Number of obs.	68	68	68	68	68	68	68
F-stat for first-stage on excluded instrument		29.95	17.50	24.42	20.64	17.41	15.63
R-adjusted Squared	0.156						

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***. I built four regional dummies to avoid the risk of classifying countries according to its per capita income. Therefore, on the basis of World Bank's regional classification I have the variables: ***reg_eapsa*** for countries in East asia and South Pacific; ***reg_nalac*** for countries in North America and Latin America; ***reg_ecawe*** for countries in Europe and Central Asia; and ***reg_menassa*** for countries in the Middle East and Africa.

Table 4C2. Impact of inequality on informal institutions when controlling for geographical variables

Dependent variable:	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV
Informal Institutions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
cons	50.69***	49.63***	54.02***	44.93***	51.16***	43.12***	41.85***	27.23	28.00
	(5.512)	(6.100)	(7.413)	(6.006)	(8.814)	(9.825)	(10.75)	(18.60)	(18.60)
Middle Income Share	0.590***	0.602***	0.520***	0.730***	0.622***	0.747***	0.760***	1.132***	1.107***
	(0.120)	(0.129)	(0.149)	(0.144)	(0.183)	(0.213)	(0.228)	(0.425)	(0.422)
Lanlocked countries	-3.052				-2.639	-2.871			-2.170
	(2.188)				(2.356)	(2.103)			(2.432)
Distance to Coast		-0.000129			0.000496		0.000459		0.00222
		(0.00199)			(0.00212)		(0.00172)		(0.00201)
Tropical Area			-2.284		-2.999				
			(2.678)		(2.709)				
Latitude				-0.0481	-0.0499			-0.102	-0.0961
				(0.0426)	(0.0464)			(0.0650)	(0.0675)
Number of obs.	68	68	68	67	67	68	68	67	67
F-stat for first-stage on excluded instrument						15.93	17.72	20.36	11.52
R-adjusted Squared	0.160	0.143	0.149	0.158	0.141				

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

Table 4C3. Impact of inequality on informal institutions when controlling for historical variables

Dependent variable:	OLS	OLS	OLS	OLS	OLS	IV	IV	IV	IV	IV
Informal Institutions	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
cons	40.78***	50.93***	48.96***	45.03***	58.11***	34.04***	43.88***	39.50***	29.21**	42.66**
	(7.207)	(6.320)	(5.765)	(5.689)	(7.961)	(10.10)	(11.97)	(12.19)	(13.68)	(17.03)
Middle Income Share	0.535***	0.583***	0.613***	0.730***	0.463***	0.686***	0.728***	0.803***	1.066***	0.829*
	(0.121)	(0.134)	(0.118)	(0.130)	(0.150)	(0.229)	(0.249)	(0.249)	(0.299)	(0.439)
State History	16.67**				7.704	15.91**				3.644
	(6.858)				(8.594)	(7.126)				(10.68)
Common Law		-2.014			-8.306**		-1.661			-7.300*
		(3.684)			(4.043)		(3.800)			(4.058)
Civil Law			0.307		-8.276***			1.162		-6.110*
			(1.839)		(2.299)			(2.057)		(3.213)
Transition Economies				-5.950***	-10.01***				-7.309***	-10.82***
				(1.797)	(3.188)				(2.302)	(3.336)
Number of obs.	68	68	68	68	68	68	68	68	68	68
F-stat for first-stage on excluded instrument						15.31	15.49	22.14	15.78	10.67
R-adjusted Squared	0.250	0.151	0.143	0.223	0.324					

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

Table 4C4a. Impact of inequality on informal institutions when controlling for Social heterogeneity(OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)
cons	36.95***	57.04***	56.26***	47.45***	42.75***	56.90***	53.83***
	(7.977)	(6.949)	(6.044)	(5.715)	(6.387)	(6.708)	(6.158)
Middle Income Share	0.783***	0.498***	0.520***	0.603***	0.665***	0.510***	0.482***
	(0.154)	(0.134)	(0.128)	(0.124)	(0.135)	(0.131)	(0.125)
Ethnic Diversity		-7.008				-0.859	-34.03***
		(4.722)				(5.612)	(12.04)
Language Diversity			-8.639**		-7.378*	-8.185*	
			(3.942)		(4.408)	(4.791)	
Religious Diversity				5.113	7.354*		9.678**
				(4.108)	(4.336)		(4.259)
Ethnic Diversity_state							39.23**
							(15.68)
Genetic Distance	0.431***				0.346***		
	(0.124)				(0.102)		
Number of obs.	68	68	67	68	67	67	68
R-adjusted Squared	0.245	0.169	0.196	0.160	0.274	0.184	0.250

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

***Table 4C4b. Impact of inequality on informal institutions when controlling for Social heterogeneity*(TSLS estimations)**

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)
cons	15.05	49.16***	51.83***	40.21***	23.69	46.76***	45.06***
	(16.55)	(13.75)	(10.44)	(11.09)	(18.72)	(13.30)	(12.97)
Middle Income Share	1.212***	0.649**	0.610***	0.753***	1.026***	0.688***	0.653**
	(0.320)	(0.268)	(0.215)	(0.236)	(0.360)	(0.260)	(0.257)
Ethnic Diversity		-5.325				-24.54**	-32.12***
		(5.430)				(12.36)	(12.13)
Language Diversity			-8.230**		-4.498		
			(4.180)		(6.046)		
Religious Diversity				5.082	6.302		9.380**
				(4.044)	(4.917)		(4.026)
Ethnic Diversity_state						30.19*	39.28***
						(15.70)	(15.19)
Genetic Distance	0.564***				0.482***		
	(0.166)				(0.171)		
Number of obs.	68	68	67	68	67	68	68
F-stat for first-stage on excluded instrument	20.00	16.73	12.97	15.79	11.04	12.90	9.75

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

Table 4C5a. Impact of inequality on informal institutions when controlling for religious affiliation (OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
cons	48.58***	55.97***	48.47***	53.19***	50.11***	49.65***
	(5.495)	(5.020)	(5.446)	(5.267)	(5.513)	(5.634)
Middle Income Share	0.612***	0.415***	0.638***	0.549***	0.594***	0.599***
	(0.120)	(0.107)	(0.117)	(0.116)	(0.121)	(0.124)
Catholics	1.516					
	(2.194)					
Protestants		20.53***				
		(3.375)				
Judaists			-38.72***			
			(1.399)			
Islamism				-7.207**		
				(3.033)		
Hinduism					-8.364***	
					(1.331)	
Buddism						3.536
						(2.571)
Number of obs.	68	68	68	68	68	68
R-adjusted Squared	0.147	0.425	0.343	0.202	0.152	0.145

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

Table 4C5b. Impact of inequality on informal institutions when controlling for religious affiliation (TSLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
cons	39.32***	49.51***	38.07***	41.61***	43.32***	41.44***
	(10.05)	(10.92)	(10.41)	(10.61)	(10.59)	(10.30)
Middle Income Share	0.803***	0.552**	0.854***	0.787***	0.735***	0.770***
	(0.213)	(0.233)	(0.219)	(0.223)	(0.226)	(0.220)
Catholics	1.768					
	(2.189)					
Protestants		19.69***				
		(3.712)				
Judaists			-39.39***			
			(1.479)			
Islamism				-6.465**		
				(3.271)		
Hinduism					-7.734***	
					(1.409)	
Buddism						2.804
						(2.630)
Number of obs.	68	68	68	68	68	68
F-stat for first-stage on excluded instrument	14.89	18.44	17.90	17.34	21.97	17.26

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.

Table 4C6a. Impact of inequality on informal institutions when controlling for demographic, economic and contemporary political variables (OLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)	(7)
cons	66.19***	49.22***	49.28***	48.34***	43.67***	52.98***	62.38***
	(4.387)	(5.464)	(5.571)	(9.443)	(6.452)	(5.127)	(11.11)
Middle Income Share	0.131	0.602***	0.642***	0.610***	0.538***	0.478***	0.117
	(0.0989)	(0.125)	(0.131)	(0.121)	(0.111)	(0.117)	(0.119)
GDP per capita	0. 431***						0. 452***
	(0. 0733)						(0. 0727)
GDP Growth		0.141					0.714*
		(0.416)					(0.400)
Trade Openness			-0.0237				-0.00526
			(0.0248)				(0.0304)
Population				0.0869			0.113
				(0.668)			(0.754)
Urbanization					0.141**		0.0304
					(0.0665)		(0.0715)
Polity Index						0.424**	-0.0636
						(0.210)	(0.171)
Number of obs.	68	68	67	68	66	68	66
R-adjusted Squared	0.389	0.144	0.146	0.143	0.227	0.197	0.356

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**.

Table 4C6b. Impact of inequality on informal institutions when controlling for demographic, economic and contemporary political variables (TSLS estimations)

Dependent variable: ***Informal Institutions***	(1)	(2)	(3)	(4)	(5)	(6)
cons	41.75***	40.77***	37.37**	42.59***	45.93***	37.52**
	(10.36)	(11.02)	(16.31)	(9.073)	(10.61)	(14.93)
Middle Income Share	0.759***	0.838***	0.795***	0.563***	0.632***	0.586**
	(0.227)	(0.255)	(0.251)	(0.188)	(0.237)	(0.236)
GDP Growth	0.118					0.450
	(0.426)					(0.448)
Trade Openness		-0.0369				-0.0184
		(0.0280)				(0.0353)
Population			0.296			0.368
			(0.714)			(0.805)
Urbanization				0.140**		0.128*
				(0.0659)		(0.0670)
Polity Index					0.360*	0.196
					(0.217)	(0.218)
Number of obs.	68	67	68	66	68	66
F-stat for first-stage on excluded instrument	16.83	24.98	17.13	16.15	14.31	10.95

Notes: Robust standard errors in parenthesis. ***,**, * means significant at 1%, 5%, and 10% respectively. Details of the variables are given in **Appendix 4A**. The IV estimation is instrumented by ***Tropical Area***.