Initial Conditions and the Evolution of Institutions
Evidence from the American States

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Chapters 3 and 4

May 14, 2009

Book Project Under Revision for Princeton University Press.

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Chapter 3: Initial Conditions and State Politics

In this chapter, we investigate the relationship between initial conditions and a number of measures of political competition within the American states. Our goals are twofold. The first goal is to introduce a set of initial conditions that are employed throughout the book. The second goal is to use these initial conditions to document that political competition within states has been persistent over the nineteenth and the twentieth century. These findings set the stage for the next chapter, which describes how initial conditions shaped state elites in the antebellum period and how these elites influenced that the subsequent evolution of state political competition.

Because the remainder of this chapter is a broad overview of 150 years of American state political history, it is useful to address likely critiques by political historians. The first critique is that everyone already knows that initial conditions shaped political competition. Certainly, one piece of the story is well known to political historians. A large literature examines the North-South split in politics that occurred around the time of the American Civil War.[1] The effect of other initial conditions on the evolution of state legislatures and state political competition has received virtually no attention. Therefore, some of our results are likely to be new to many political historians.

A second critique is that quantitative measures of state political competition do not actually measure political competition.[2] Political competition is inherently difficult to measure. By using a variety of common measures of political competition and showing

[1] There are many, many studies and they range in their approach. We will mention just a few. The seminal example of Southern state political history is V.O. Key's (1949) Southern Politics in State and Nation. An important example of the study of sectional state politics is Michael Holt's (1983) The Political Crisis of the 1850s. At the national level, an important example would be Keith Poole and Howard Rosenthal's Congress: A Political-Economic History of Roll Call Voting (1997).

[2] See Holbrook and Van Dunk (1993) and the discussion of the Ranney index.

that patterns are broadly similar across measures, we hope to convince readers that the measures capture important aspects of state political competition.

A third critique is that state political competition at any time is not determined by initial conditions, but by culture, religion, class, race or other aspects of the composition of the populace.[3] We agree that these aspects are important. Because they are shaped by initial conditions, understanding the effects of initial conditions on political competition remains of interest.

Initial Conditions

The literature on cross-country growth and institutions suggests a number of initial conditions that may be relevant for the evolution of political institutions in the United States. The previous chapter discussed the legal initial conditions. Three other types of initial conditions are often used, including measures of the suitability for agriculture, the ability to move goods to other markets, and natural resource endowments. A fourth type of initial condition, political culture, is widely used in the political science literature in the United States context. All of these initial conditions could have effects on politics.

Suitability for agriculture is important, because it is indicative of the number of people who could potentially be supported and the extent to which surplus might be available for trade. Historically, it also is associated with differences in organizational form, with rich agricultural areas tending to be worked by individuals under the control of the landlord. Engerman and Sokoloff (1997) argue that suitability for agriculture in

[3] See Baum (1984), Benson (1961), Bourke and Debats (1995), Formisano (1983), Kleppner (1970), Kruman (1983), Levine (1977), and Maizlish (1983). See the discussion in see McCormick (1988) and Formisano (1999) on the ethno-cultural view of politics and the earlier literature on the elite and class-based politics. See also Patterson and Caldeira (1984) and King (1989), who relate the Ranney index to state level characteristics such education, income, population and other variables.

the 18th and 19th centuries influenced the emergence of slavery in the Americas and that slavery has had a persistent influence on the quality of political institutions. Suitability for agriculture may also be related to the disease environment because warmer wetter climates were often both agriculturally rich and rich in diseases. Acemoglu, Johnson and Robinson (2001) argue that differences in the disease environment affecting early settlers produced differences in the quality of political institutions and that these difference have persisted for centuries.

The question is how to capture suitability for agriculture. Studies often use latitude or distance from the equator to crudely control for suitability for agriculture. Latitude captures the fact that little is grown in very northerly regions and much more is, or can be, grown closer to the equator. Latitude is crude in the sense that suitability for agriculture depends on a number of factors, including temperature, precipitation, and soil quality.[4] Nothing grows in the Sahara for lack of rain, despite its location near the equator. Some studies control for precipitation and soil quality in addition to temperature or latitude.

In the United States context, detailed measures of precipitation and temperature and soil are available. Soil quality has changed over time in part because of the activity of farmers.[5] In contrast, temperature and precipitation are much less affected by human activity and are therefore better initial conditions. Monthly average temperature and precipitation is available for every state for the period 1895 to 2000.

The descriptive statistics in Table 3.1 show that both temperature and precipitation vary widely across the 48 states. Average state temperature ranged from 39

[4] For an overview of the historic determinants of suitability for agriculture and how they are quantified, see Motamed et al (2009).
[5] See Lal (1999).

to 71 degrees, and average monthly precipitation ranged from 0.7 to 4.7 inches. Figure 3.1 illustrates the relationship between temperature and precipitation. For temperatures up to 60 degrees, the correlation between precipitation and temperature is low. The states above 60 degrees have high levels of precipitation and are all located in the South.

Given the primacy of the Civil War as an explanation for the subsequent evolution of political competition, one might argue that membership in the Confederacy should be used instead of temperature. There are at least two reasons not to use the Confederacy as the primary measure. Membership in the Confederacy was endogenous. Political leaders in individual states made a variety of choices along the path leading up to the war that determined whether they would be a member of the Confederacy or the Union. Had a different set of historical contingencies occurred, Missouri, Arkansas, Kentucky, Tennessee, West Virginia, Virginia, and Maryland might have ended up on a different side of the war. Or a political compromise may have been reached that avoided the war altogether. Further, using the Confederacy misses important variation within the North and the South in suitability for agriculture and in their political trajectories. Nevertheless, it is worth noting that temperature is correlated (0.75) with membership in the Confederacy.

Political scientists are interested in political culture as a determinant of outcomes. The most widely used measure was constructed by Daniel Elazar.[6] Elazar (1966) calls his variable "political culture," since he is interested in using it to explain differences in state political systems. Because his classification is based on the ethnicity and religion of

[6] Other competing classifications exist. However, as Lieske (1993) noted, only Elazar's classification has been widely used empirically. Although Elazar's classification was constructed to explain mid-twentieth century political behavior, Berman (1988) showed that Elazar's classification has explanatory power for the Progressive Era.

settlers, it can be interpreted as measuring culture more broadly. Elazar offers a detailed eight-category classification, but these can be thought of as variants on three political cultures – moralistic, individualistic, and traditionalistic. He describes them as follows:

> Since individualistic political culture emphasizes the centrality of private concerns, it places a premium on limiting community intervention – whether governmental or nongovernmental – into private activities to the minimum necessary to keep the marketplace in proper working order. … In the moralistic political culture, individualism is tempered by a general commitment to utilizing communal – preferably nongovernmental, but governmental if necessary – power to intervene into the sphere of "private" activities when it is considered necessary to do so for the public good or the well-being of the community. … Traditionalistic political culture is rooted in an ambivalent attitude toward the marketplace coupled with a paternalistic and elitist conception of the commonwealth. It reflects an older, precommercial attitude that accepts a substantially hierarchical society as part of the ordered nature of things, authorizing and expecting those at the top of the social structure to take a special and dominant role in government.[7]

Despite the possible importance of political culture, two factors preclude its use. Like membership in the Confederacy, political culture may be endogenous. In a different historical contingency in which different groups initially populated different areas and different migration streams followed, one might have had different political cultures arise. But even if culture were exogenous, Sharkansky's (1969) translation of Elazar's measure of political culture onto a numerical scale is highly correlated (0.85) with temperature. Figure 3.2 shows the relationship between the temperature and political culture, which is approximately linear. The linearity makes it difficult to disentangle the effects of temperature and political culture. Given that only one measure can be used, temperature is used, because it is arguably more exogenous. The effect of temperature on political competition can be thought of as capturing both suitability for large-scale agriculture and the associated political culture.

[7] Elazar (1984), pp. 94-99.

Access to water transportation is commonly used as a proxy for the extent to which internal and external trade will emerge. Prior to the invention and spread of railroads, water transportation was cheaper than land transportation. Adam Smith wrote:

> As by means of water carriage a more extensive market is opened to every sort of industry than what land carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers that industry of every kind begins to subdivide and improve itself, and it is frequently not till a long time after that those improvements extend themselves to the inland part of the country.[8]

Access to water transportation was likely to affect the composition of economic activity.

Access is often measured in one of two ways – as the share of counties that have access to water transportation or as the distance to water transportation. Our focus is on distance, because distance was probably what entered into the decisions of individual producers. The question is distance to what. An obvious starting point is the shortest distance to an ocean or to the Great Lakes. Because only a small fraction of land in the United States is within 50 miles of an ocean or a Great Lake, navigable rivers play an important role. For each county, the lowest distance to a river, ocean, or Great Lake is computed. This is averaged over all counties in the state to get the state minimum distance.[9] Table 3.1 shows that distance to water transportation varied widely, from a low of 11 kilometers to a high of 1005 kilometers. Table 3.2 provides the correlations among precipitation, temperature, civil law, and distance to water transportation. Distance to water transportation is negatively correlated (-0.77) with precipitation. Wetter states are located closer to rivers, lakes, and oceans. Figure 3.3 shows the relationship between precipitation and distance to water transportation.

[8] Smith (1914), p. 16.

[9] Our measure is from Rappaport and Sachs (2003), who base their distance measure on Fogel's (1964) classification of navigable rivers in 1890. Since navigability of rivers did not change appreciably after the mid-nineteenth century, virtually all of these rivers would have been considered navigable in 1850.

Within the larger literature on initial conditions, a substantial sub-literature exists that examines the effect of natural resources on a variety of outcomes.[10] Natural resources are ignored for reasons of endogeneity and timing. Although the deposition of minerals and oil thousands of years ago was exogenous, their discovery and development depended on endogenous factors such as increases in population and the development of uses for the natural resources. With respect to timing, oil and mineral discoveries would not happen until the second half of the nineteenth century and often later. At the time of major discoveries, patterns of state political competition had been established.[11]

The remainder of the chapter explores the effect of four initial conditions – precipitation, temperature, distance to water transportation, and initial legal system – on state-level political competition.

State Political Competition

Political competition is of interest for both theoretical and empirical reasons. Theoretically, political competition leads to greater redistribution.[12] Empirically, in the United States, greater inter-party political competition is associated with higher state income and growth, lower state taxes, more business-friendly labor regulation, a larger share of manufacturing, higher quality governors, and higher voter turnout.[13]

Political competition is commonly measured by examining the division of seats between the parties in the state legislature. The division of seats is an imperfect measure

[10] A line of research on natural resources and growth began with Sachs and Warner (1995, 1997). A related line of research on natural resources and political outcomes began with Ross (2001). Haber and Menaldo (2009) find that the results linking natural resources to non-democratic regimes do not hold up in time series. Mitchener and McLean (2003) find a positive relationship between share of the workforce in mining in 1880 and income per worker in the United States.

[11] Goldberg et al (2008) find that natural resources discoveries tend to preserve existing American state political structures.

[12] See Lindbeck and Weibull (1987), Stromberg (2004), and Roemer (2001).

[13] See Besley, Persson, Sturm (2006), and Holbrook and Van Dunk (1993).

of political competition for a number of reasons, most obviously because legislators do not always vote along party lines. As one goes back further, the problem is compounded by the fact that a greater number of distinct groups existed. In the nineteenth century, groups such as the Jackson Democrats, Anti-Lecompton Democrats, Union Conservatives, and Progressive Republicans can be interpreted either as factions within parties or as actual third parties.

The Ranney index quantifies the extent to which one party dominates a state legislature. Some versions of the Ranney index also include the party affiliation of the governor. For simplicity, we use an additive version of the Ranney index that excludes the governor:

Ranney index = 100 – (abs[(% Democrats in upper house) +

(% Democrats in lower house) – 100])

The political environment is most competitive when the Democrats have 50 percent of the seats in both chambers. In this case, the Ranney index equals 100. Similarly, the political environment is least competitive when the Democrats or some other party holds 100-percent of the seats in each chamber. In this case, the Ranney index equals 0.

Although data to compute the Ranney index is available as far back as the 1830s, these data are available for a larger number of states and years after the Civil War. Table 3.3 presents summary statistics for the Ranney Index. During the period 1866-2000, Illinois and Arkansas hade the highest and lowest average values of the Ranney index at 82 and 11. The average values for the North and the South were 60 and 24.[14]

[14] One criticism of this version of the Ranney index is that it ignores whether legislative houses are controlled by different parties. An alternative Ranney index can be computed that accounts for whether or not the two state legislative houses are divided: Ranney^{ALT} = 100 - abs[percent Democrats in the upper house - 50+ percent Democrats in the lower house – 50]

Figure 3.4 illustrates the striking difference in the evolution of the average Ranney index in the North and the South. Between 1866 and 1958, the average state Ranney index in the North ranged between 32 and 68 and averaged 55. Between 1960 and 2000, it increased to 76 and fluctuated in a narrower band. Following the Civil War, the average Ranney index in the South fell as Southern state legislatures came to be dominated by the Democratic Party. Although there were a few temporary upward spikes in the 1870s and 1890s, the Ranney index continued to fall and then hovered near zero from the 1900s through the 1950s. After 1960, the average Ranney index in the South began to grow rapidly. By the end of the twentieth century, the average Ranney index in the North and the South had converged.

An alternative measure of political competition is citizen voting. Voters tend to make their choices along party lines for low profile "down-ballot officers" such as the Attorney General and Secretary of State.[15] Vote shares substantially greater than 50 percent for one party indicate weak political competition. The data on citizen voting are available beginning in 1876. We use an index that is similar in construction to the Ranney index:

> Citizen Voting = 100 – (2*abs[(votes for Democratic candidates in broad elections) – 50]).

The possible values range from a low of 0 to a high of 100. During the period 1876-2000, Indiana and Mississippi had the highest and lowest values of competition at 93 and 43. The average values for the North and the South were 86 and 63.

The correlation between our Ranney index and this alternative Ranney index is 0.97. So the two indices tell similar stories.

[15] See Ansolabehere and Snyder (2002).

Figure 3.5 illustrates the evolution of citizen political competition in the North and the South. The values of citizen voting imply that 20 percent or more of the citizens in an average Southern state were voting Republican from 1880 through the 1950s. Republic voters' low numbers and lack of concentration meant that the state legislatures had very few Republicans.

A comparison of Figures 3.4 and 3.5 reveals other notable differences between the evolution of the Ranney index and citizen political competition. First, citizen voting exhibited higher levels of political competition. Second, although both measures of political competition fell in the South after the Civil War, citizen political competition in the South converged to Northern levels around 1970. Convergence for the Ranney index took nearly three decades longer.

To better understand political competition in state legislatures, we examine the number of seats in the state legislature and the degree to which the legislature is professionalized. The number of seats is relevant for political competition, because of the number of votes that must be acquired to pass contested legislation. A 55 percent – 45 percent division of seats in a small chamber may mean the difference of only a few votes. In a larger chamber, this division can represent a significantly larger number of votes. Further, Gilligan and Matsusaka (1995) show that during 1960-1990, state government expenditures were positively related to the number of seats in the legislature. They suggest the reason for the relationship was logrolling.

Table 3.3 presents summary statistics on the number of seats in the state legislature. During the period 1866- 2000, New Hampshire and Delaware had largest and smallest number of seats in a state legislature at 408 and 51. Despite the conventional

wisdom regarding the South's dislike of government, Southern states had slightly larger state legislatures (158 seats on average) than Northern states (149 seats). In contrast to the Ranney index, the number of seats in each state legislature rarely changed during 1866-2000.

Legislative professionalism may also affect political competition, in part because of its effects on who chooses to become a politician. The Squire index of legislative professionalism compares the averages for pay, staff size and number of days in session of state legislators with their counterparts in the United States Congress. "In essence, the measure shows how closely a legislature approximates these characteristics of Congress on a scale where 1.0 represents perfect resemblance and 0.0 represents no resemblance."[16] When the Squire index is close to 0, state legislatures meet infrequently and have small staffs. Massachusetts and Wyoming had the highest and lowest average values for legislative professionalism at 0.42 and 0.05. The average values for the North and the South were 0.17 and 0.13.

Table 3.4 shows the correlations among the four measures. The Ranney index is strongly correlated (0.88) with citizen political competition. The Ranney index's correlation with legislative professionalism is positive, but more modest (0.30). Its correlation with the number of seats in legislatures is nearly zero (-0.06).

State Political Competition and Initial Conditions

This section examines the extent to which initial conditions have had a persistent effect on state-level political competition. Before proceeding, it is worth discussing the likely effects of initial conditions on political outcomes. International evidence shows

[16] Squire (2006), p.4

that countries having more tropical climates, whether defined by latitude, disease environment, or other variables, have weaker political institutions.[17] Although these papers do not explicitly measure political competition, the weakness of political institutions may well derive in part from lower levels of political competition. In the United States, any effect of temperature and rainfall on political competition is undoubtedly confounded with the effect of the American Civil War. Confederate states had both high temperature and high rainfall. Following the war and especially after Reconstruction, virtually all politicians in the South were Democrats. One-party monopoly is likely to have weakened political institutions.

Temperature and rainfall will almost certainly be negatively related to state-level political competition. Figure 3.6 shows the relationship between state temperature and the average value of each state's Ranney index over the period 1900-2000. Figure 3.7 shows the analogous picture for precipitation. The Ranney index was lower in states with higher temperature and rainfall.

In the international context, legal origin has been found to be negatively related to property rights and to a large number of outcome variables such as entry, regulation, and the quality of government, and investor protection.[18] Thus, legal origin may be negatively related to state-level political competition. Figure 3.8 shows the relationship between legal origin and the Ranney index. The average level of political competition in the civil-law states was lower than in the common-law states, although the difference is not significant. The most striking thing about the figure is that common-law states were relatively tightly grouped, while the inter-quartile range for the civil-law states was very

[17] See Acemoglu, Johnson and Robinson (2001), Easterly and Levine (2003), Sachs (2003).
[18] See Levine (2005) and the survey by La Porta et al. (2008).

wide. Civil-law states include states on both extremes. Illinois and Arkansas had the highest and lowest values of the Ranney index

Access to water transportation has received somewhat less attention in the international context. Easterly and Levine (2003) show that being landlocked relates negatively to the quality of political institutions, although the effect was not always significant. To the extent that access to water transportation is a proxy for trade, the demands imposed on the political and legal systems by trade and competition with other locations for trade may lead to stronger political institutions.

Thus, access to water transportation may be positively related to state-level political competition. Since our measure is distance to water transportation, the sign should be negative. The correlation in Figure 3.9 between distance to water transportation and the Ranney index is slightly positive and generally weak. For states located close to water transportation – states with value from -1 to 0 – the Ranney index is varies widely. In a regression framework with controls for temperature and precipitation, distance to water transportation has the expected (negative) relationship to political competition.

To understand how initial conditions influence political competition, we begin by estimating the relationship between initial conditions and political competition for a particular baseline decade. Although any decade could act as the baseline, the most natural choices are the either the first or the last decade. The last decade was chosen, because it facilitates comparison across regressions that span 1900-2000 and 1870-2000. To examine the variation over time using the panel data, political competition was regressed on state fixed effects and initial conditions interacted with a decadal indicator

variable. The coefficients on the decadal interaction terms show how political competition in the 1930s differed from the 1990s as a function of initial conditions. Standard errors for the decadal interaction test whether these differences are significant.

Table 3.5 examines the relationships between initial conditions and the Ranney index over the period 1900-2000. The first row presents the relationship between initial conditions and the Ranney index in the decade 1990-2000. The Ranney index was negatively and significantly related to precipitation and distance to water transportation. Neither temperature nor civil law had an effect on the Ranney. The remaining rows in Table 3.5 present the results of a regression with state fixed effects and initial conditions interacted with decades. Three of the initial conditions – precipitation, civil law, and distance to water transportation – exhibit almost no variation across decades that reaches the level of statistical significance. Summing the decadal coefficient and the base year coefficient for precipitation and distance to water transportation gives uniformly negative coefficients. For civil law, the effects are more variable. Summing the base year and decadal coefficients yields effects ranging from -9.3 to 4.8. Overall, the effects of these three initial conditions were extremely persistent over time.

Temperature had a negative and significant effect on political competition in nearly every decade. The two exceptions were the 1900s and the 1920s, which were not significantly different than the 1990s. Even in these years, the sum of the baseline and decadal coefficients yield a negative net effect of temperature. Thus, the effect of temperature was always negative, although the magnitude varied from -1.0 to -13.9. The variation in the magnitude of the negative coefficients captures the divergence and then convergence of the Ranney index in the North and the South over the twentieth century.

Table 3.6 examines the effect on initial conditions on the Ranney index, but considers a smaller number of states over a longer period, 1870-2000. The results for precipitation and civil law are very similar to what were found for the full panel over the twentieth century. The effect of precipitation was uniformly negative and rarely significantly different than the base period. The effect of civil law varied but was rarely significantly different than the very small value in the base year. The one exception was the 1870s. The very high value in this decade reflects the temporarily high values of political competition in southern civil-law states during Reconstruction.

Probably because of the removal of eleven western states from the sample, the results for temperature and water transportation are noticeably different. The negative net effects of temperature are somewhat smaller in magnitude. In the full sample the net effect of temperature ranged from -1.0 to -13.9, while in the smaller sample over the same period it ranged from -1.8 to -10.1. And the negative net effects of transportation are much larger. The net effect of distance to water transportation ranged from -3.0 to -12.8 in the full sample, while in the smaller sample over the same period, it ranged from -9.0 to -38.4.

Table 3.7 examines the effect of initial conditions on citizen voting for 1920 to 2000. The effects of initial conditions on citizen voting exhibited more variation in sign and significance than they did for the Ranney index. For example, the net effects of precipitation citizen voting were positive in the 1910s and 1920s and negative thereafter. The net effect of water transportation on citizen voting varied from -6.4 to 6.3. Both had been uniformly negative for the Ranney. The net effect of civil was negative in all but one period, but ranged from -13.3 to 0.90. The range is similar to what we observed

under the Ranney. The negative effect of temperature was large through the 1940s and then fell to close to zero for the remaining decades. The negative effects persisted much longer for the Ranney. Table 3.8 examines the effect of initial conditions on citizen political competition for the period 1880 to 2000. The effect of initial conditions on citizen political competition is less stable for this period as well.

The persistent effect of initial conditions on the Ranney index and the more variable effect of initial conditions on citizen voting is striking. We interpret the difference as suggesting that changes in underlying voting behavior are not, in and of themselves, sufficient to change political outcomes. Some of the effect arises from natural clustering of homogeneous individuals into districts. A district that had been 90 percent Democrats might fall to 52 percent Democrats, but still elect a Democrat to the state legislature. The other factor is that districts are often changed by the legislature or other political officials to maintain homogeneity of the districts. Thus, changes in citizen voting may exhibit less persistence than the Ranney index.

Tables 3.9 and 3.10 explore the effects of initial conditions on the size of state legislatures and their professionalism. Unlike the two measures of political competition, we did not have strong priors regarding the effects of initial conditions on size and professionalism. In Table 3.9, the size of the state legislature is positively related to precipitation and negatively related to temperature in 1990-2000. The panel estimates indicate that over the twentieth century these relationships have been persistent. Moreover, the magnitudes of the effects have been approximately constant.[19] In Table 3.10, professionalism is negatively related to precipitation and distance to water transportation in 1990-2000. Precipitation may capture something about agriculture, with

[19] The results are similar over the period 1880-2000. See Table 3.3A.

more agricultural states having less professional legislatures. To the extent that distance from water transportation is related to trade, states with less trade have less professional legislatures. The panel estimates indicate that over the twentieth century these relationships have been persistent. The magnitudes of the negative effects have varied over time as various states have enacted reforms to make their legislatures more professional. The main conclusion to be drawn from these two tables is that the effects of initial conditions on the size of the state legislature and their professionalism tend to be highly persistent.

The State Constitution

State constitutions establish the framework for state government. Both constitutions and state government are likely to be influenced by initial conditions. The effect or non-effect of initial conditions on constitutions informs our understanding of the persistence of state government more broadly. State constitutions have undergone much more change on average than the U.S. Constitution, which includes a relatively small number of amendments. State constitutions not only have been subject to many more amendments – tens and in some cases hundreds – over their lifetimes. In many cases, they have also been completely rewritten during constitutional conventions.[20]

We examine the effects of initial conditions on various dimensions of state constitutions, including their initial length, length in 1990, the number of constitutions the state has had per 100 years, the amendment rate for the current constitution, and the amount of particularistic content in the constitution. Particularistic content refers to the composition of state constitutions. State constitutions include two types of provisions – framework provisions and statutory laws. Framework legislation covers governmental

[20] See Friedman (1988) and Lutz (1994).

principles, processes and institutions. Unlike framework legislation, statutory laws are not observed in the federal constitution and are simply laws that have been upgraded to constitutional status. Hammons (1999) calls statutory laws particularistic legislation. He offers some examples of particularistic provisions: "All telephone and telegraph lines, operated for hire, shall each respectively, receive and transmit each other's messages without delay or discrimination, and make physical connections with each others lines, under such rules and regulations as shall be prescribed." Oklahoma, Article 9, Section 5, 1907. "The people hereby enact limitations on marine net fishing in Florida waters to protect saltwater finfish, shellfish, and other marine animals from unnecessary killing, overfishing, and waste." Florida, Article 10, Section 16, 1968.

Table 3.11 presents summary statistics on state constitutions. Along every dimension there is enormous variation across states. The longest initial constitution was nearly 60 times the length of the shortest one. By 1990, the longest current constitution was still nearly 30 times the length of the shortest one. The number of constitutions per 100 years ranged from 0.16 to 2.11; the amendment rate for the current constitution ranged from 0.25 to 8.07; and particularistic content ranged from 4 percent of the constitution to 73 percent.

Table 3.12 shows the relationship between initial conditions and state constitutions. All five specifications control for the year in which the first constitution was written. Later states tended to borrow heavily from the constitutions of earlier states, often expanding on these provisions and adding wholly new provisions. Thus, the length of constitutions tended to increase over time. The length of the initial constitution is related to temperature and the distance to water transportation. The positive effect of

temperature on length may reflect the southern distrust of government and consequent attempts to constrain state government through the state constitution. It is less clear why a greater distance to water transportation resulted in a longer constitution.

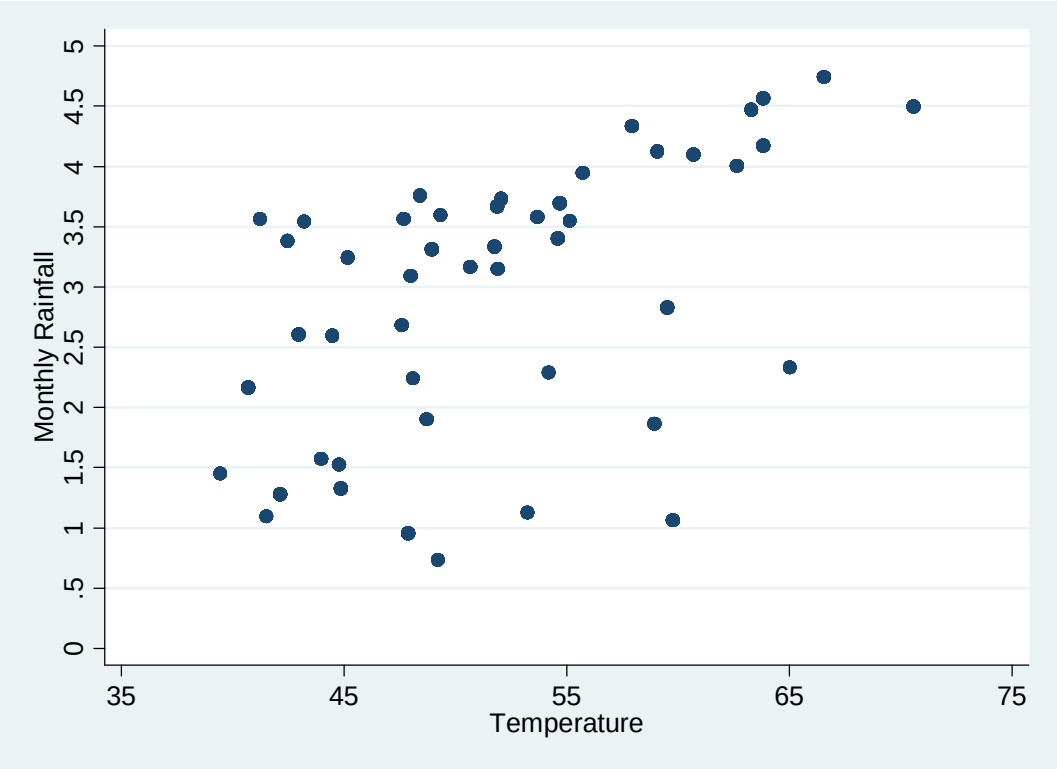
The most striking thing about the remaining columns is the persistent effect of the length of the initial constitution on the current length, the amendment rate, and the amount of particularistic content. Initial conditions do not have any explanatory power for the length of the constitution in 1990 or for particularistic content. Duration is negatively related to precipitation and civil, because most Confederate states, including the five southern civil-law states, wrote new constitutions during the Civil War and again after the Civil War. The amendment rate is positively related to temperature. This may also be a legacy of the Civil War, or it may reflect ongoing efforts in the South to constrain state government.

Conclusion

The main findings from this chapter were of persistence. Initial conditions had persistent effects on the Ranney index of competition in state legislatures. In the case of precipitation, distance to water access and civil law, the effects were relatively constant. In contrast, the magnitude of the negative effect of temperature of the Ranney index varied over time. The variation in magnitude is consistent with the divergence of northern and southern states following Reconstruction and the subsequent convergence beginning in the 1960s. The effects of initial conditions on other dimensions of state legislatures such as the number of seats and their level of professionalism were both persistent and constant. State constitutions exhibited a strongly persistent relationship between initial conditions and outcomes.

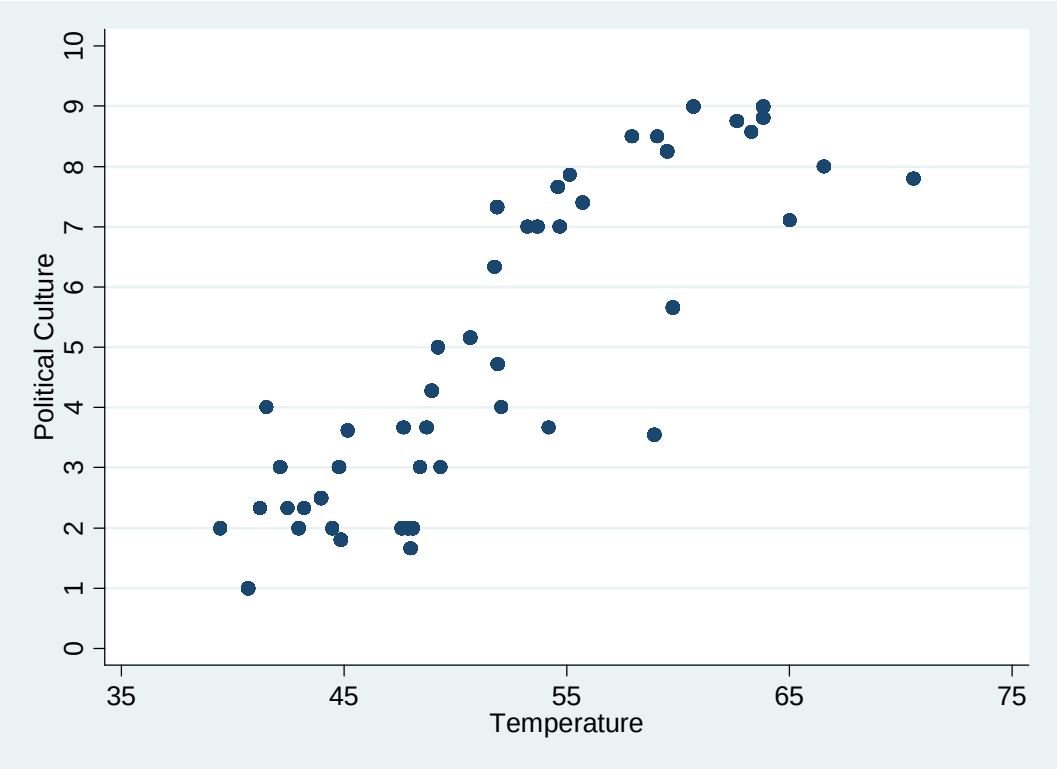
The place where we see much less persistence is outside of government. Voter behavior was less closely tied to initial conditions and the effects of initial conditions on voter behavior were more variable. In light of this, the degree of institutional persistence exhibited by legislatures and constitutions is quite striking. In the next chapter we show the composition of elites prior to the Civil War can explain these patterns.

Figure 3.1: Temperature and Monthly Rainfall



Sources: See Table 3.1.

Figure 3.2: Temperature and Political Culture

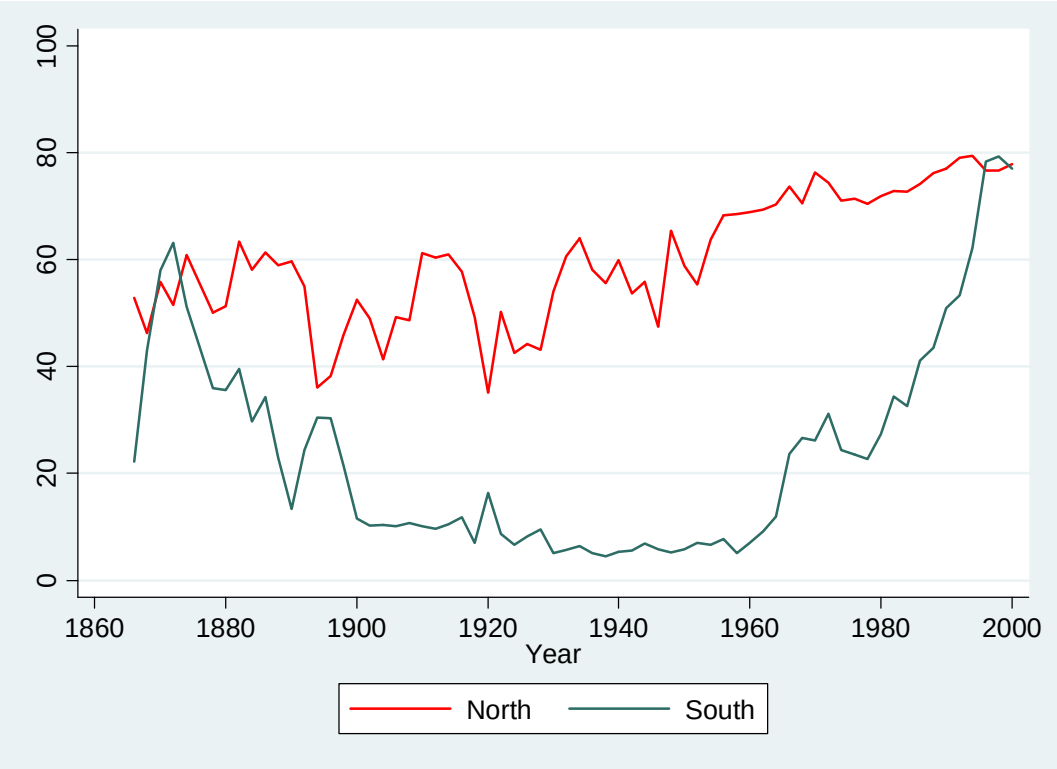


Sources: See Table 3.1 and Sharkansky (1969).

Figure 3.3 Distance to Water Transportation and Monthly Rainfall

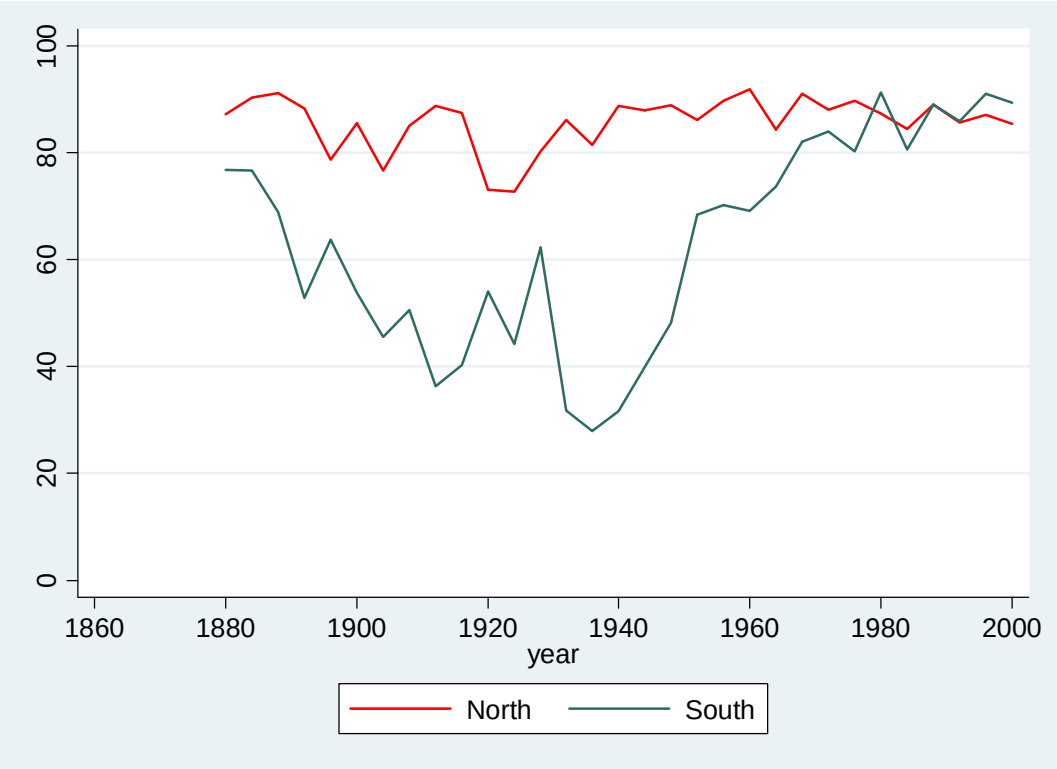
Sources: See Table 3.1.

Figure 3.4: Evolution of the Ranney Index in the North and South



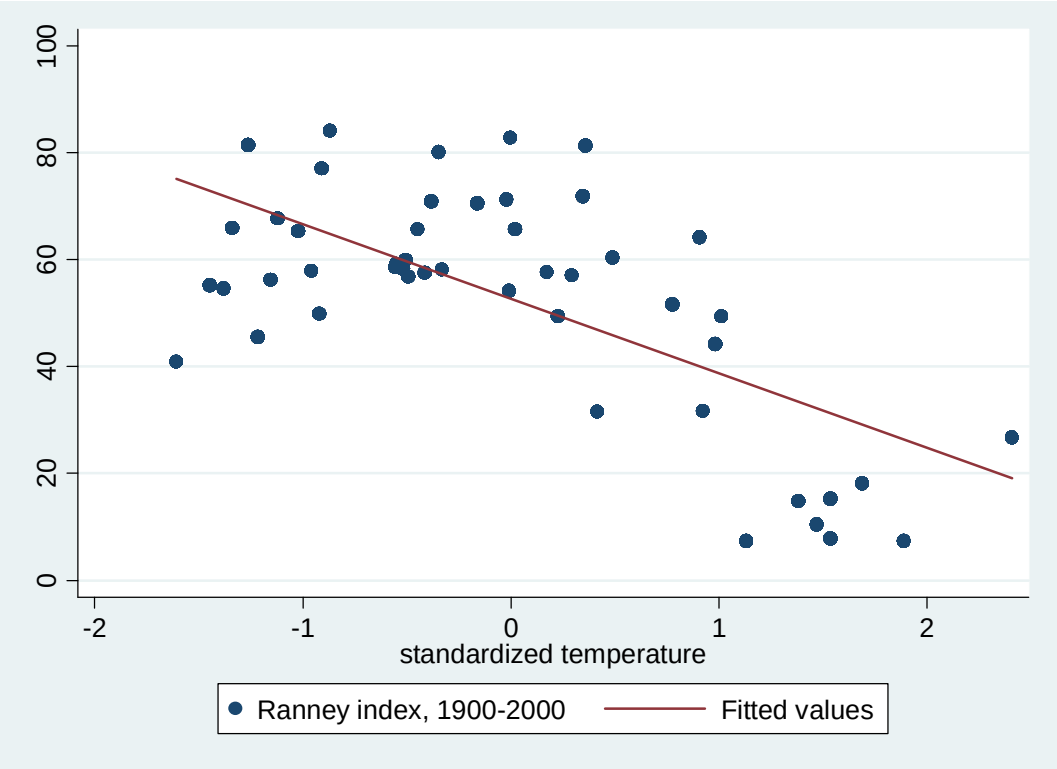
Sources: See Table 3.3. Nebraska is excluded, because it became unicameral in the 1930s.

Figure 3.5: Evolution of Citizen Political Competition in the North and South



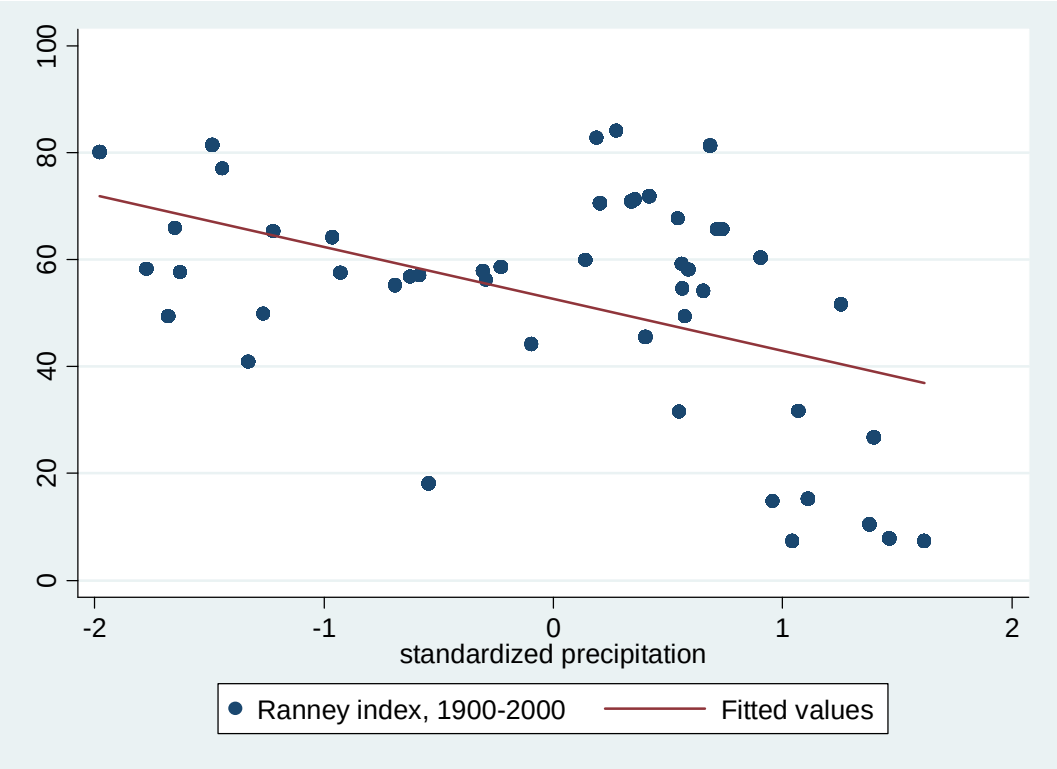
Sources: See Table 3.3.

Figure 3.6: Temperature and Political Competition, 1900-2000



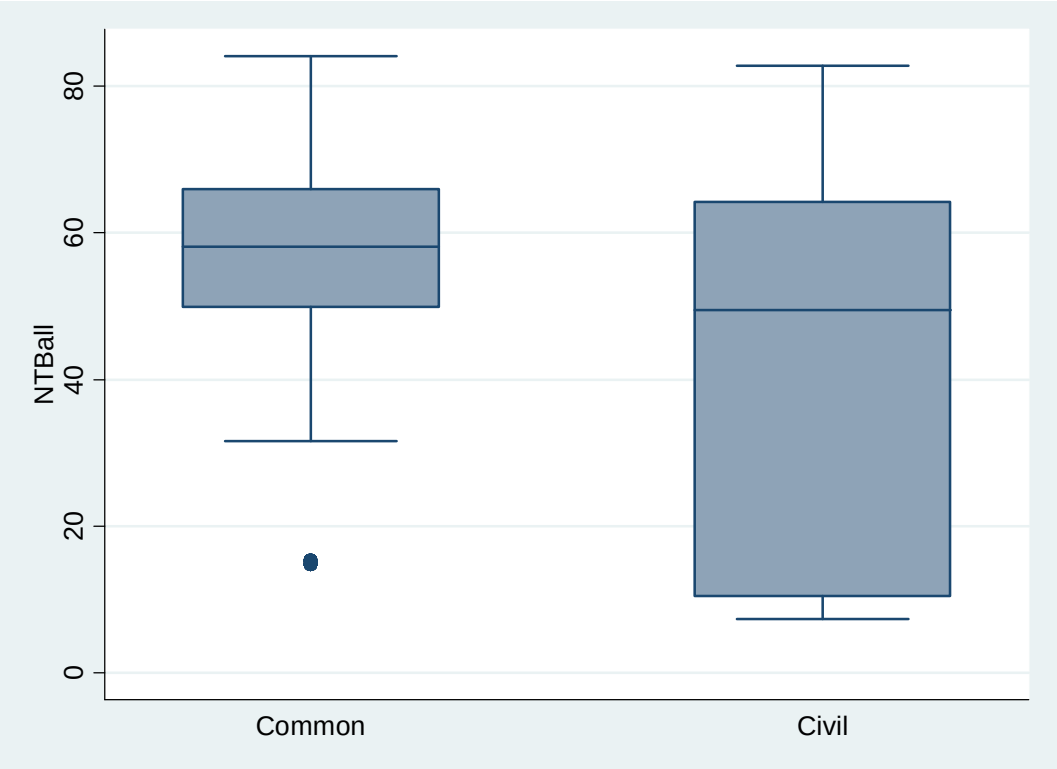
Sources: See Tables 3.1 and 3.3.

Figure 3.7: Precipitation and Political Competition, 1900-2000



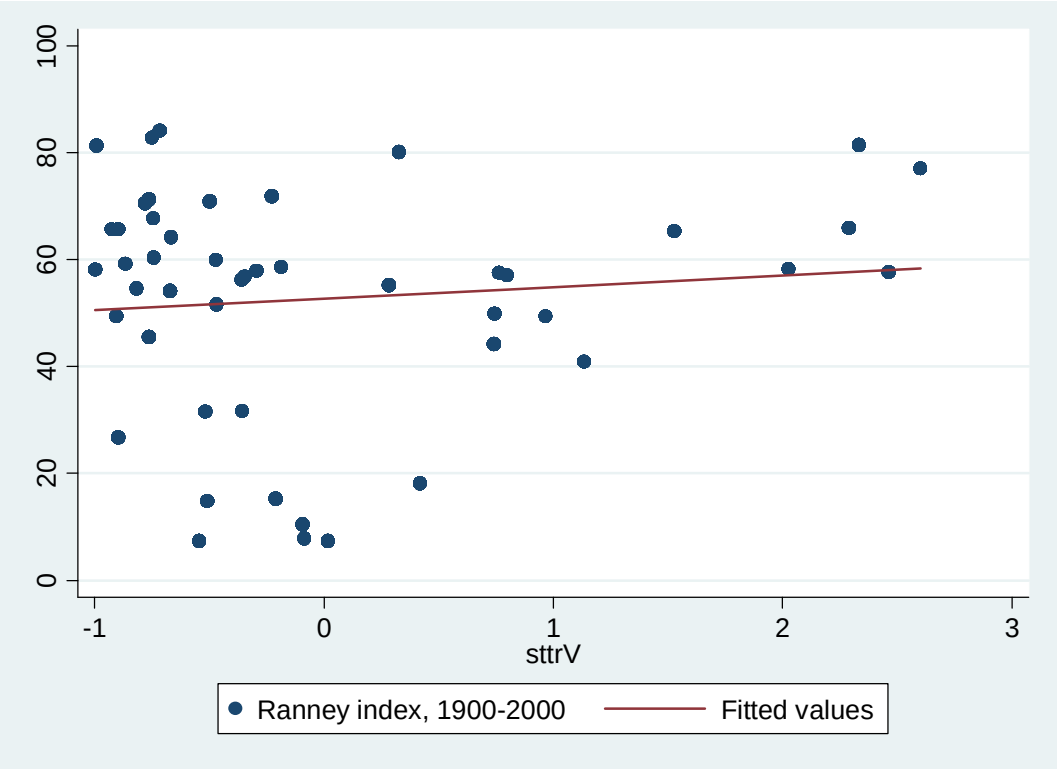
Sources: See Tables 3.1 and 3.3.

Figure 3.8: Legal Origin and Political Competition, 1900-2000



Sources: See Tables 3.1 and 3.3.

Figure 3.9: Water Transportation and Political Competition, 1900-2000



Sources: See Tables 3.1 and 3.3.

Table 3.1: Summary Statistics for Initial Conditions

	Precipitation (inches)	Temperature (Fahrenheit)	Civil	Access to Water (km)
Average	2.94	51.92	0.27	288.2
Standard Deviation	1.13	7.84	0.45	280.6
Maximum	4.74	70.59	1	1,004.5
Minimum	0.73	39.44	0	10.67

Sources:

Table 3.2: Correlations among Initial Conditions

	Precipitation	Temperature	Civil	Water
Precipitation	1.00			
Temperature	0.52	1.00		
Civil	0.13	0.54	1.00	
Water	-0.77	-0.25	-0.03	1.00

Table 3.3: Summary Statistics for Political Competition

	Ranney, 1866-2000	Citizen Voting, 1880-2000	Seats in State Legislature, 1866-2000	Legislative Professionalism, 1935-2003
Average	51.7	80.5	151.1	0.16
Average North	60.4	85.6	149.2	0.17
Average South	23.5	63.4	157.4	0.13
Maximum	82.1	92.9	408.2	0.05
Minimum	11.2	43.4	51.3	0.42

Sources:

Table 3.4: Correlations among Measures of Political Competition

	Ranney, 1866-2000	Citizen Voting, 1880-2000	Seats in State Legislature, 1866-2000	Legislative Professionalism, 1935-2003
Ranney, 1866-2000	1.00			
Citizen Voting, 1876-2000	0.88	1.00		
Seats in State Legislature	-0.06	-0.10	1.00	
Legislative Professionalism	0.30	0.20	0.16	1.00

Table 3.5: Initial Conditions and the Ranney Index, 1900-2000

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	-12.13*** (2.98)	-1.44 (2.32)	2.12 (5.32)	-10.66*** (3.15)
Fixed effects estimates (1990-2000 is the reference period) 47 states				
1900's	3.758 (6.307)	-1.876 (4.890)	-6.481 (9.230)	1.049 (5.447)
1910's	7.672 (5.216)	-10.21** (4.073)	-7.102 (7.666)	5.620 (4.497)
1920's	5.147 (4.991)	0.490 (3.894)	-11.40 (7.330)	7.705* (4.308)
1930's	2.382 (4.950)	-10.72*** (3.860)	-1.871 (7.265)	2.041 (4.271)
1940's	1.967 (4.927)	-12.42*** (3.842)	-0.638 (7.234)	1.089 (4.251)
1950's	-1.046 (4.881)	-9.798** (3.806)	-0.792 (7.167)	-0.528 (4.212)
1960's	-1.476 (4.770)	-7.721** (3.719)	-1.551 (7.004)	1.388 (4.118)
1970's	-0.0295 (4.494)	-10.78*** (3.504)	2.697 (6.599)	2.821 (3.877)
1980's	-2.230 (3.762)	-5.403* (2.933)	-0.0560 (5.524)	-2.083 (3.245)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Nebraska was dropped, because it has a unicameral legislature. Data is for even years, because legislatures are elected on a two or four year cycle. This model includes a first-order autoregressive error term (which is a two year lag since only even-years are included). The correlation (Durbin Watson statistic) coefficient for contemporary and two-year lagged errors is 0.67. The panel is reasonably balanced with years covered per state running from 46 to 50 (full coverage). The number of observations is 2,325.

Table 3.6: Initial Conditions and the Ranney Index, 1870-2000

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	-13.19*** (4.06)	-1.20 (3.25)	1.25 (6.15)	-9.00 (8.26)
Fixed effects estimates, (1990-2000 is the reference period) 36 states				
1870s	3.771 (7.119)	1.002 (5.741)	20.70** (9.663)	-22.00** (11.04)
1880s	-1.790 (5.885)	4.685 (4.637)	2.651 (8.065)	-29.09*** (9.126)
1890s	11.88** (5.720)	-6.783 (4.510)	8.213 (7.860)	-19.98** (8.902)
1900's	-3.698 (5.717)	-0.640 (4.508)	-9.814 (7.866)	-16.82* (8.914)
1910's	-0.176 (5.722)	-7.555* (4.520)	-10.46 (7.882)	-15.35* (9.004)
1920's	2.073 (5.709)	-0.475 (4.492)	-9.642 (7.872)	-9.735 (8.821)
1930's	-5.428 (5.706)	-7.752* (4.492)	-3.007 (7.847)	-15.55* (8.826)
1940's	-8.455 (5.693)	-6.944 (4.489)	0.619 (7.827)	-29.36*** (8.842)
1950's	-6.972 (5.652)	-7.467* (4.459)	0.186 (7.771)	-20.87** (8.796)
1960's	-6.561 (5.543)	-5.917 (4.374)	-0.114 (7.623)	-19.28** (8.643)
1970's	-1.451 (5.256)	-9.912** (4.148)	5.556 (7.228)	-15.09* (8.186)
1980's	-4.239 (4.447)	-5.393 (3.509)	-0.485 (6.115)	-9.086 (6.925)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Nebraska was dropped, because it has a unicameral legislature, and Arizona, Colorado, Idaho, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Washington and Wyoming were all dropped, because they have limited data for this period. Data is for even years, because legislatures are elected on a two or four year cycle. This model includes a first-order autoregressive error term (which is a two year lag since only even-years are included). The correlation (Durbin Watson statistic) coefficient for contemporary and two-year lagged errors is 0.65. The panel is reasonably balanced with years covered per state running from 60 to 64 (full coverage). The number of observations is 2,277.

Table 3.7: Initial Conditions and Citizen Political Competition, 1920-2000

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	-1.33 (1.60)	0.55 (1.35)	-0.87 (1.68)	2.42 (2.52)
Fixed effects estimates (1990-2000 is the reference period) 48 states				
1920's	1.846 (4.530)	-4.585 (3.515)	-11.17* (6.594)	3.815 (3.887)
1930's	-7.243* (3.877)	-16.05*** (3.000)	-6.502 (5.626)	-7.617** (3.315)
1940's	-8.846** (3.611)	-14.88*** (2.791)	-2.131 (5.231)	-8.813*** (3.081)
1950's	-4.534 (3.778)	-2.331 (2.923)	-3.872 (5.479)	-2.753 (3.228)
1960's	-7.639** (3.575)	0.00886 (2.762)	-9.090* (5.178)	-4.192 (3.050)
1970's	-3.361 (3.664)	-0.241 (2.831)	-2.713 (5.307)	-0.248 (3.126)
1980's	0.727 (3.157)	-0.468 (2.428)	1.741 (4.544)	-1.338 (2.672)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Citizen political competition is reported regularly during presidential elections and is otherwise sporadic. Thus, data is for the years of the presidential elections. The model includes a first-order autoregressive error term (which is a four year lag). The correlation (Durbin Watson statistic) coefficient for contemporary and two-year lagged errors is 0.43. All 48 states are included and the panel is well balanced since the number of observations per state ranges from 20 to 21 (complete coverage). There are 999 observations.

Table 3.8: Initial Conditions and Citizen Political Competition, 1880-2000

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1900-2000	-1.28 (1.57)	0.50 (1.42)	1.36 (2.92)	0.47 (1.70)
Fixed effects estimates (1990-2000 is the reference period) 38 states				
1880's	-6.984 (5.284)	-3.538 (4.163)	0.762 (7.480)	-9.101* (5.513)
1890's	-7.100 (4.496)	-4.981 (3.543)	-3.542 (6.354)	-14.06*** (4.685)
1900's	-7.395* (4.188)	-8.374** (3.296)	-10.61* (5.936)	-5.724 (4.369)
1910's	-7.355* (4.412)	-16.71*** (3.498)	-5.846 (6.334)	-10.45** (4.647)
1920's	0.587 (4.146)	-4.243 (3.255)	-9.512 (5.833)	-1.891 (4.299)
1930's	-8.881** (4.363)	-15.96*** (3.429)	-5.805 (6.153)	-12.55*** (4.535)
1940's	-10.96*** (4.167)	-15.60*** (3.276)	0.118 (5.880)	-13.43*** (4.332)
1950's	-5.490 (4.361)	-3.591 (3.430)	-2.436 (6.159)	-6.423 (4.538)
1960's	-7.909* (4.131)	-0.553 (3.248)	-7.641 (5.831)	-9.469** (4.295)
1970's	-3.014 (4.217)	-1.169 (3.316)	-1.745 (5.952)	-2.242 (4.384)
1980's	0.537 (3.620)	-1.059 (2.843)	2.731 (5.089)	-0.931 (3.746)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Citizen political competition is reported regularly during presidential elections and is otherwise sporadic. Thus, data is for the years of the presidential elections. The model includes a first-order autoregressive error term (which is a four year lag). The correlation (Durbin Watson statistic) coefficient for contemporary and two-year lagged errors is 0.44. The number of observations per state ranges from 28 to 30 (complete coverage). The excluded states are Arizona, Idaho, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Washington and Wyoming. There are 1,110 observations.

Table 3.9: Initial Conditions and Size of State Legislatures, 1900-2000

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	36.84*** (12.48)	-23.04* (13.18)	7.67 (16.28)	1.82 (8.24)
Fixed effects estimates (1990-2000 is the reference period) 42 states				
1900s	1.268 (7.443)	1.971 (5.619)	-14.88 (11.03)	-0.713 (6.408)
1910s	1.857 (6.465)	-1.387 (4.899)	-9.927 (9.595)	0.0276 (5.570)
1920's	2.359 (5.699)	-0.983 (4.320)	-10.85 (8.452)	0.745 (4.907)
1930's	1.561 (5.111)	-0.558 (3.876)	-11.23 (7.581)	-0.190 (4.400)
1940's	2.437 (4.584)	-1.047 (3.478)	-9.860 (6.801)	-0.751 (3.946)
1950's	0.670 (4.115)	-0.207 (3.123)	-6.431 (6.106)	-1.103 (3.542)
1960's	1.090 (3.607)	-0.823 (2.738)	-5.651 (5.354)	-1.674 (3.106)
1970's	0.637 (3.022)	-1.132 (2.295)	-2.575 (4.484)	-1.282 (2.599)
1980's	-0.0517 (2.199)	0.0495 (1.670)	-0.470 (3.263)	0.0115 (1.891)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Size of state legislatures is reported regularly during presidential elections and is otherwise sporadic. Thus, data is for the years of the presidential elections (every four years). The model includes a first-order autoregressive error term (which is a four year lag). The correlation (Durbin Watson statistic) coefficient for contemporary and four-year lagged errors is 0.89. There are 42 states included and the panel is well balanced since the number of observations per state ranges from 23 to 25 (complete coverage). There are 1039 observations.

Table 3.10: Initial Conditions and Legislative Professionalism, 1935-2003

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 2003	-0.080* (0.041)	0.009 (0.024)	0.045 (0.033)	-0.097*** (0.034)
Fixed effects estimates (2003 is the reference year) 48 states				
1945	-0.041* (0.024)	0.043** (0.018)	-0.066** (0.028)	-0.08 (0.021)
1954	-0.068** (0.029)	0.055** (0.022)	-0.069** (0.034)	-0.027 (0.025)
1960	-0.066** (0.031)	0.027 (0.023)	0.004 (0.036)	-0.050* (0.027)
1979	-0.098*** (0.031)	0.025 (0.023)	0.112*** (0.037)	-0.069** (0.027)
1986	-0.099*** (0.032)	0.004 (0.023)	0.159*** (0.037)	-0.087*** (0.028)
1996	-0.118*** (0.032)	0.029 (0.023)	0.090** (0.037)	-0.096*** (0.028)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. The model includes a first-order autoregressive error term, and the correlation (Durbin Watson statistic) coefficient for contemporary and lagged errors is 0.35. There are 48 states included and the panel is perfectly balanced. Because we have lagged errors, we drop the initial year 1935. There are 366 observations.

Table 3.11: Summary Statistics for State Constitutions

	Initial length	Length in 1990	Constitu-tions per 100 years	Amendment Rate	Particularistic Content
Average	11,356	28,780	0.78	1.41	0.31
Average North	12,668	24,645	0.90	1.10	0.27
Average South	6,941	42,688	0.36	2.47	0.41
Maximum	58,200	174,000	2.11	8.07	0.73
Minimum	1,065	6,600	0.16	0.25	0.04

Sources:

Table 3.12 State Constitutions and Initial Conditions

Dependent Variable	Log length of first constitution	Log length of constitution. in 1990	Duration of constitution, as of 1990	Annual amendment rate	Particularistic Content
Column	(1)	(2)	(3)	(4)	(5)
Precipitation	0.0163	0.0161	-0.112*	-0.240	-0.0322
	(0.0873)	(0.0686)	(0.0560)	(0.184)	(0.0334)
Temperature	0.243***	-0.0241	-0.0660	0.305**	0.0238
	(0.0888)	(0.0679)	(0.0596)	(0.139)	(0.0193)
Civil	0.140	0.00292	-0.145*	-0.293	0.0226
	(0.182)	(0.0954)	(0.0737)	(0.274)	(0.0377)
Water Transport	0.164*	-0.0506	-0.0242	-0.164	-0.0112
	(0.0861)	(0.0686)	(0.0404)	(0.143)	(0.0274)
First year of initial const.	0.0018	-0.00376***	-0.00391***	-0.000158	0.000291
	(0.0013)	(0.000871)	(0.00114)	(0.00181)	(0.000279)
Log length of first		1.239***	-0.0720	0.673**	0.173***
		(0.128)	(0.0967)	(0.286)	(0.0422)
Observations	48	48	48	48	48
R-squared	0.436	0.813	0.638	0.364	0.581

Notes: The standard errors are in parentheses and are robust. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Constant is estimated but not reported.

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Appendix

Table 3.1A: State Initial Conditions

State	Precipitation (inches)	Temperature (Fahrenheit)	Civil	Access to Water (km)	Culture
Alabama	4.47	63.32	1	260.1	8.57
Arizona	1.06	59.77	1	552.6	5.66
Arkansas	4.10	60.70	1	291.3	9.00
California	1.86	58.95	1	102.4	3.55
Colorado	1.33	44.86	0	1004.5	1.80
Connecticut	3.76	48.43	0	38.0	3.00
Delaware	3.70	54.70	0	12.0	7.00
Florida	4.50	70.59	1	38.2	7.80
Georgia	4.17	63.82	0	227.3	8.80
Idaho	1.57	43.98	0	707.8	2.50
Illinois	3.15	51.90	1	79.1	4.72
Indiana	3.33	51.77	1	75.3	6.33
Iowa	2.68	47.60	0	235.0	2.00
Kansas	2.29	54.20	0	506.7	3.66
Kentucky	3.94	55.73	0	81.1	7.40
Louisiana	4.74	66.57	1	136.1	8.00
Maine	3.56	41.23	0	60.7	2.33
Maryland	3.58	53.68	0	35.9	7.00
Massachusetts	3.56	47.66	0	46.8	3.66
Michigan	2.59	44.48	1	204.3	2.00
Minnesota	2.17	40.70	0	364.4	1.00
Mississippi	4.57	63.83	1	262.7	9.00
Missouri	3.40	54.59	1	222.7	7.66
Montana	1.28	42.12	0	930.5	3.00
Nebraska	1.90	48.70	0	496.6	3.66
Nevada	0.73	49.23	0	376.3	5.00
New Hampshire	3.54	43.22	0	80.2	2.33
New Jersey	3.73	52.07	0	30.0	4.00
New Mexico	1.12	53.25	1	965.9	7.00
New York	3.24	45.19	0	88.0	3.62
North Carolina	4.13	59.07	0	187.7	8.50
North Dakota	1.45	39.44	0	598.9	2.00
Ohio	3.16	50.66	0	70.7	5.16
Oklahoma	2.83	59.53	0	490.5	8.25
Oregon	2.24	48.09	0	190.9	2.00
Pennsylvania	3.32	48.93	0	148.5	4.28
Rhode Island	3.59	49.34	0	10.7	3.00
South Carolina	4.00	62.64	0	145.6	8.75
South Dakota	1.53	44.76	0	491.4	3.00
Tennessee	4.34	57.93	0	156.5	8.50
Texas	2.33	65.03	1	402.2	7.11
Utah	0.96	47.89	0	846.1	2.00
Vermont	3.38	42.48	0	75.2	2.33

Virginia	3.55	55.15	0	142.6	7.86
Washington	3.09	47.98	0	155.8	1.66
West Virginia	3.67	51.87	0	100.3	7.33
Wisconsin	2.61	42.96	0	186.9	2.00
Wyoming	1.10	41.53	0	918.5	4.00

Notes: Precipitation and temperature cover the period 1895-2000. The raw data is available online at: . http://www1.ncdc.noaa.gov/pub/data/cirs/, The variable South indicates that a state was a member of the Confederacy during the Civil War. The variable civil was described in Chapter 2. The data for water transportation is taken from Rappaport and Sachs (2003). A detailed description of this data is available on Rappaport's website, http://www.kc.frb.org/home/subwebnav.cfm?level=3&theID=10968&SubWeb=10782. The data for culture is taken from Sharkansky (1969).

Table 3.2A: Determinants of State Distance to water transportation (in kilometers)

State	Ocean	Lake	Navigable River	Access to Water Transportation
Alabama	260.1	998.9	301.1	260.1
Arizona	552.6	2283.6	1203.5	552.6
Arkansas	534.4	883.3	291.3	291.3
California	102.4	2820.0	1408.8	102.4
Colorado	1201.2	1547.7	1004.5	1004.5
Connecticut	38.0	376.3	88.5	38.0
Delaware	12.0	491.8	218.5	12.0
Florida	38.2	1389.2	557.7	38.2
Georgia	227.3	979.7	347.8	227.3
Idaho	707.8	2098.0	1203.0	707.8
Illinois	968.9	287.5	79.1	79.1
Indiana	787.2	255.8	75.3	75.3
Iowa	1309.5	482.8	235.0	235.0
Kansas	1020.7	969.2	506.7	506.7
Kentucky	636.0	465.7	81.1	81.1
Louisiana	136.1	1259.6	443.3	136.1
Maine	60.7	577.2	199.0	60.7
Maryland	35.9	478.9	220.9	35.9
Massachusetts	46.8	437.9	121.5	46.8
Michigan	894.1	204.3	276.8	204.3
Minnesota	1604.1	539.8	364.4	364.4
Mississippi	262.7	1025.8	322.4	262.7
Missouri	919.3	580.8	222.7	222.7
Montana	952.9	1703.3	930.5	930.5
Nebraska	1341.2	946.7	496.6	496.6
Nevada	376.3	2508.0	1335.5	376.3
New Hampshire	80.2	397.4	119.5	80.2
New Jersey	30.0	390.3	157.9	30.0
New Mexico	965.9	1789.2	1072.7	965.9
New York	237.0	180.9	88.0	88.0
North Carolina	187.7	700.8	273.2	187.7
North Dakota	1641.6	1000.9	598.9	598.9
Ohio	523.3	157.4	70.7	70.7
Oklahoma	680.6	1099.6	490.5	490.5
Oregon	190.9	2638.3	1358.1	190.9
Pennsylvania	204.5	258.8	148.5	148.5
Rhode Island	10.7	456.5	124.6	10.7
South Carolina	145.6	843.0	307.0	145.6
South Dakota	1611.5	903.0	491.4	491.4
Tennessee	541.6	661.7	156.5	156.5
Texas	402.2	1519.6	704.0	402.2
Utah	846.1	2013.7	1193.1	846.1
Vermont	192.3	318.8	75.2	75.2
Virginia	142.6	530.4	222.3	142.6
Washington	155.8	2531.9	1311.0	155.8
West Virginia	301.2	323.6	100.3	100.3
Wisconsin	1227.5	186.9	204.8	186.9
Wyoming	1258.1	1546.6	918.5	918.5

Table 3.3A: Initial Conditions and Size of State Legislatures, 1880-2000

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	35.71*** (12.60)	-22.35 (13.27)	-0.02 (8.78)	5.84 (17.03)
Fixed effects estimates (1990-2000 is the reference period) 39 states				
1880s	-0.576 (8.561)	5.688 (6.466)	-18.85 (12.70)	-0.0592 (7.699)
1890s	4.185 (7.608)	-0.435 (5.732)	-12.90 (11.28)	4.155 (6.749)
1900s	5.609 (6.809)	-1.749 (5.129)	-12.29 (10.11)	1.869 (6.019)
1910s	5.036 (6.141)	-3.985 (4.638)	-7.743 (9.140)	2.795 (5.412)
1920's	4.857 (5.586)	-2.897 (4.219)	-8.999 (8.320)	3.004 (4.908)
1930's	3.629 (5.117)	-2.025 (3.866)	-9.471 (7.627)	1.700 (4.485)
1940's	4.026 (4.660)	-2.051 (3.521)	-8.429 (6.952)	0.859 (4.077)
1950's	1.793 (4.212)	-0.783 (3.183)	-5.498 (6.287)	0.384 (3.680)
1960's	1.965 (3.703)	-1.151 (2.799)	-4.883 (5.531)	-0.382 (3.233)
1970's	0.900 (3.096)	-1.417 (2.340)	-2.672 (4.622)	-1.107 (2.697)
1980's	0.127 (2.245)	-0.0853 (1.697)	-0.430 (3.352)	0.193 (1.955)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Size of state legislatures is reported regularly during presidential elections and is otherwise sporadic. Thus, data is for the years of the presidential elections (every four years). The model includes a first-order autoregressive error term (which is a four year lag). The correlation (Durbin Watson statistic) coefficient for contemporary and four-year lagged errors is 0.90. There are 39 states included and the panel is well balanced since the number of observations per state ranges from 27 to 30 (complete coverage). There are 1137 observations.

Chapter 4: The Mechanism

In the previous chapter, we measured the character of state politics during the nineteenth and twentieth centuries. Our major finding is that the character of state legislatures has been remarkably persistent throughout the twentieth century and, for some measures, since the 1860s. In particular, two initial conditions, climate (precipitation and temperature) and access to water transportation are strongly associated with the subsequent evolution of state legislatures. How did these initial conditions influence politics?

In this chapter, we argue that the occupational composition of the state elite just prior to the Civil War influenced state politics until roughly 1980. A climate that was favorable to large-scale agriculture enabled a greater share of the state elite to derive their wealth from agriculture. Given the dominance of agriculture during most of the nineteenth century in the United States, it is not surprising that farmers were the largest group among the elite of many states. Greater access to water transportation enabled the elite to derive their wealth from commercial enterprises such as trade, manufacturing, banking, and insurance. Thus, states with a climate conducive to plantation farming and with limited access to water transportation tended to be inhabited by elites who were more homogeneous than elites in states with less favorable climates and better access to water transportation.

The hypothesized link between the composition of the elite and political competition is straightforward. In places where the state elite were more homogenous, typically because their wealth was derived from the same occupations, we expect to find less state political competition. With less political competition, institutions can be

designed to promote the interests of the dominant group within the state elite, at the expense of other groups both in and outside the elite. Thus, weak political competition will be associated with poorer quality state institutions on average.

In contrast, in places where the elite exhibit more occupational heterogeneity, we expect to find greater political competition. One reason is that elites with different occupations and different policy interests will tend to support different parties. This greater political competition will force the state to design institutions that promote the interests of a wider variety of occupations. On average, these institutions will be of higher quality. Because political institutions are persistent, the occupational composition of elites on the eve of the Civil War has a persistent influence on the subsequent evolution of political institutions.

Our approach builds on strands of the political science literature that have also emphasized the elite. Much of this work originated with Charles Beard's classic 1914 book, An Economic Interpretation of the Constitution of the United States, although the idea of elite power certainly predates Beard. Later, a related line, which focused on interest groups, emerged in writings such as V.O. Key's Politics, Parties, and Pressure Groups. Recent work by Acemoglu and Robinson (2006) builds on this older strand of political history that emphasizes the role of elites in politics.[1]

A possible alternative interpretation of our findings is that the Civil War and the subsequent North-South split has shaped the evolution of politics. Even though we measure elites just prior to the Civil War (1860), it is possible that elites in part caused the Civil War, which in turn shaped the evolution of politics. This would imply that it is the Civil War that drives the evolution of state politics and elites are irrelevant. In order

[1] See also Acemoglu and Robinson (2000, 2001 and 2008).

to check for the power of this counter-factual, we control for the potential effect of the Civil War. While the Civil War clearly influences politics, we still find that elites prior to the Civil War also have a strong and persistent effect.

The Elite

We define the elite as the top 1 percent of the wealth distribution of adult white males.[2] This group will likely overlap with and influence other types of elites, notably political elites. And measures of the top 1 percent of the economic elite will tend to correlate with measures of the top 0.5 percent and the top 2 percent. Thus, measure of the wealth held by and the occupational homogeneity of the top 1 percent of the wealth distribution can be thought of as proxies for the wealth held by and the occupational homogeneity of the actual elite.

The characteristics of the elite are measured in 1860. The wealth data for 1860 are the highest quality, perhaps for any period and certainly for the nineteenth century. The 1798 census of housing values covers the small number of extant states. The next available wealth data are contained in the Censuses of Population for 1850, 1860 and 1870. The 1850 Census asked only about real property. The 1860 Census inquired about both real and personal property. Thus, relative to the 1850 Census, it offered a more complete picture of wealth and covered a somewhat larger number of states. The 1870 Census also inquired about real and personal property. The chaos of the Civil War, however, surely affected the wealth and the composition of elites in the North and the South. From 1870, there is no national data at all until the early twentieth century, when wealthy individuals began to pay income and estate taxes.

[2] Adulthood is defined as beginning at age 21.

Thus, 1860 Census offers the best data for examining the elite. The data do have their drawbacks, and it is useful to mention some of them here. The measures of real and personal property include only assets and not liabilities. Thus, they are imperfect proxies for wealth. A small amount of wealth is excluded, because women, children, and non-whites are not included in the wealth distribution. Further, these wealth data are unverified, self-reported data, with all the attendant problems of such data. In addition, at present, the publicly available data for 1860 is a 1-percent sample of the population. The measures would be more accurate, and a few more states could be included, if a 100-percent sample were available. As it is, the data cover only 28 states. Finally, the measures of wealth and occupational homogeneity may have been influenced by the unusually large cotton harvest in 1859. The effect of on the occupational composition of the elite may not have been overly large, since in most states the occupational homogeneity of the top 1 percent and the next 1 percent are relatively similar. But wealth shares in the South may have been somewhat inflated, relative to what they might have been if the cotton harvest had been more typical.

The wealth distribution in 1860 was quite skewed. Thirty-four percent of men reported holding no real or personal property. These men tended to be young. Others held modest amounts of property. For example, 67 percent of men held $1000 or less in total property. They held just 4.8 percent of aggregate wealth. Figure 4.1 shows the cumulative wealth distribution for the United States for adult white males. It shows the part of the distribution from $1000 ($67^{th}$ percentile) to $100,000 ($99.8^{th}$ percentile). The distribution is quite flat up to the 90^{th} percentile. In fact, the top 90 percent of men held

only 27.4 percent of aggregate wealth. In contrast, the top 1 percent held 31.6 percent of the aggregate wealth.[3]

Figure 4.2 shows a map in which states are shaded based on the quartile into which the holdings of the top 1 percent fell. The elite in top quartile states held 30-45 percent of the state wealth, whereas the elite in bottom quartile states held 13-19 percent of the state wealth.

Our estimates of the share of the wealth held by the state economic elite are largely in line with Soltow's (1975) estimates. Soltow found that the top 1 percent in the North and the South each controlled 27 percent of the total assets and that the top 1 percent in the United States as a whole controlled 29 percent of the total assets. These numbers differ slightly from our estimate of 31.6 percent, because Soltow included the entire free male population over the age of 20. Recall that the sample used here includes the white male population ages 21 and older. Soltow's slightly larger base will tend to depress the wealth holdings of the elite, by adding more individuals with few or no assets. Unfortunately, Soltow does not report state-level measures, and so it is impossible to compare our state-level estimates with his.[4]

Our estimates are also consistent with the findings of studies of specific states and regions. For example, Pessen (1973) used tax records to construct wealth distributions for three cities – New York, Brooklyn, and Boston – during the 1840s. He finds that the top 1 percent of the wealth distributions in New York, Brooklyn, and Boston controlled

[3] In other contexts, the Gini index, the 90-10 ratio, and the 90-50 ratio may have also been used to measure wealth distributions. The problem in this context is that a very large fraction of white men report zero wealth. This makes it difficult to compute ratios and the Gini Index.

[4] Our sample is four times larger than Soltow's sample. Soltow, however, over sampled persons worth more than $100,000 at 40 times the rate of individuals below $100,000, so he has a larger, and possibly more accurate, sample of the very rich.

40 percent, 42 percent and 37 percent of the non-corporate wealth. Using the Bateman-Foust sample of rural households from the 1860 Census of Population for the northern-tier states, Atack and Bateman (1981) found a "much more equal distribution [of wealth] in the rural north," which would roughly correspond to the Civil North, than in other parts of the United States. Using tax records from townships in Massachusetts, Steckel and Moehling (2001) found that the top 1 percent held 27 percent of the total taxable wealth in 1860.[5]

In a later book, which examined the 1798 distribution of wealth and made comparisons with the 1860 distribution of wealth, Soltow (1989) concluded that "There is evidence that inequality [of wealth] within states remained stable during both the eighteenth and nineteen centuries."[6] This is useful, because it suggests that the wealth distribution is largely persistent and that the 1860 Census tells us something about wealth distribution for earlier periods.

What were the occupations of the elite? Occupations are systematically classified in the 1860 public-use microdata. The distribution of occupations for the state economic elites and the state economic median (the 40th to the 60th percentile) are shown in Table 4.1. Nearly half of the economic elite, 43.5 percent, were farmers, a category which includes ranchers and plantation owners. The next most common elite group at 28.8 percent was 'merchants, officials, and proprietors (n.e.c.)'. Other occupational groups

[5] Using estate tax records from the twentieth century, Kopczuk and Saez (2004) find that the top 1 percent of all households held 40 percent of total wealth. This declined sharply in the 1930s and 1940s to 22.5 percent of total wealth in 1949.
[6] Soltow (1989), p. 190

such as lawyers and judges (4.6 percent) and physicians and surgeons (2.7 percent) were much smaller. A catch-all group, 'other' was created for these smaller occupations.[7]

A Herfindahl-Hirschman index (HHI) was used to compute the occupational homogeneity of the state economic elite. The measure is the sum of the squares of the occupational shares of the state economic elite. An HHI of 1.0 would mean that all of the members of the economic elite shared the same profession. An HHI of 0.33 would mean that the members of the economic elite were evenly divided among i) farmers, ii) merchants, officials, and proprietors, and iii) other.

Figure 4.3 shows a map in which states are shaded based on the quartile into which their HHI fell. The elite in top quartile states – the least diverse states – had HHIs of 0.69-1.00, whereas the elite in bottom quartile states – the most diverse states – had HHIs of 0.34-0.37.

One question is the extent to which the occupational distributions of the median and the elite overlap. Table 4.1 showed the distribution of occupations for the state economic medians. At 36.6 percent of the total, farmers were by far the largest occupational group in the median. In contrast to the state economic elite, only 3.1 percent of the median were managers, officials and proprietors. Since the all-other category is comprised of many different occupations, it is difficult to know whether to combine or separate them into different occupational groups. To maintain comparability with the analysis of the elite, the previous three-category classification is retained. The correlation between the occupational homogeneity of the median and the occupational

[7] Later empirical results are robust to using alternate specifications.

homogeneity of the elite was -0.20.[8] The main point is that the occupational homogeneity of the elite is not picking up the occupational homogeneity of the median.

Figure 4.4 illustrates the weak correlation between the share of wealth of the state held by the elite and their occupational homogeneity. Occupational is contained on the horizontal axis and share of wealth is put on the vertical axis. For the rest of the book, both variables are standardized with zero mean and a unit variance. The fitted values of elite wealth are computed by regressing wealth shares on occupational homogeneity and a constant. The slope of the line containing fitted values is -0.04 (and statistically insignificant) implying that a one standard deviation in share of state wealth held by elite is essentially unassociated with the occupational homogeneity of the elite. This supports what we observed in Figures 4.2 and 4.3. For example, the states with top quartile of wealth shares included: Arkansas, Connecticut, Illinois, Louisiana, Massachusetts, New York, and Virginia. Despite having high wealth shares, they had very different levels of occupational homogeneity. Illinois and New York were in the lowest quartile for occupational homogeneity; Connecticut and Massachusetts were in the second lowest quartile; Louisiana and Virginia were in the second highest quartile; and Arkansas was in the highest quartile.

Figures 4.5-4.7 illustrate the relationships between state initial conditions and the two measures of the state elite. Occupational homogeneity of the elite is positively correlated with precipitation, temperature and water access. The wealth of the elite is positively correlated with precipitation and temperature, but is essentially uncorrelated

[8] If the nine main occupational groupings used by IPUMs are used to compute the HHI, then the correlation between the HHI of the elite and the median is much higher 0.56. Given the diffuseness of the other occupations, however, this amounts to a measure of the share of farmers. The correlation between the share of farmers in the median and the elite was 0.65.

with access to water transportation. The box plots in figure 4.7 show that both measures of elites are relatively uncorrelated with civil law origins.

The fact that climate would be positively correlated both with wealth and with occupational homogeneity is not entirely surprising. The South has long been recognized as having had both an unequal wealth distribution and a dominant planter class. (North and South are defined by membership in the Union or the Confederacy.) One can see this in Figures 4.2 and 4.3. Of the states in the lowest two quartiles of the wealth distribution, eleven were in the North and only three were in the South. Similarly, of the states in the lowest two quartiles of occupational homogeneity, all thirteen were in the North and just one was in the South.

That a state's access to water transportation is negatively related to its occupational homogeneity of the elite is not entirely obvious. The effect of water transportation on the elite and the median becomes evident, however, when one considers the location of the 20 largest cities in 1860.[9] Seven of the cities were ocean ports where rivers met the sea (Baltimore, Boston, Brooklyn, New York, Newark, Providence, and San Francisco); five of the cities were ports where rivers met the Great Lakes (Albany, Buffalo, Chicago, Detroit, Milwaukee, and Rochester); two of the cities were on the Mississippi River (St. Louis and New Orleans); three of the cities were on the Ohio (Cincinnati, Louisville, and Pittsburgh); two of the cities were on rivers that were close to the Atlantic (Philadelphia and Washington) and one city (Albany) was on a major river upstream from New York. These cities were located in states where a large share of the counties had access to water transportation. Further, much of the trade and small-scale

[9] This discussion relies heavily on Glaeser and Kohlhase (2003), which discusses water access of the major cities in 1900.

manufacturing that occurred in the United States occurred in, or was mediated by, these cities. Indeed, just four of these states, New York, Massachusetts, Pennsylvania, and Ohio, produced more than half of the value of manufactured products in the United States in 1860.[10]

Thus, access to water was correlated with trade and manufacturing occupations. This implies that access to water would tend to diversify the economic elite away from agricultural occupations and so lower the occupational homogeneity of the elite by increasing the share of the elite in the managers, officials, and proprietors (nec) category and in the all-other category. Trade and manufacturing could also plausibly increase the share of wealth held by the elite relative to its share in other locations.

The relationships between initial conditions and the two measures of the elite are explored further in the regressions in Table 4.2. As expected, both measures are positively related to climate. The occupational homogeneity of the elite continues to be negatively related to access to water transportation. Once controls are added for climate, the wealth share of the elite is positively related to access to water transportation.

Elite Influence on Politics

Although the framing of the analysis has focused on the elite, one question is whether this is the correct focus. Moreover, the evidence suggests that nineteenth century state legislators were wealthy and that some were members of the economic elite. Wooster's outstanding books (1969, 1975) on the Upper and Lower South provide detailed evidence on the wealth of state legislators in 1860. Table 4.3 shows that the median state legislator in the Upper and Lower South held substantially more assets than

[10] Pessen (1973), in his work on antebellum wealth in the Northeast, focused on New York, Brooklyn, Boston, and Philadelphia, because this is where the richest men lived.

the 90th percentile of the wealth distribution. With few exceptions, the median wealth of members of the state house fell between the 90th and the 95th percentile, and the median wealth of members of the state senate fell between the 95th and the 99th percentile. One reason why these men fell below the 99th percentile is that many were in their early forties and so had not yet finished accumulating assets. Some of these men would go on to be the economic elite or had fathers or brothers in the elite. Others would be cultivated by those in the elite, as one did not have to be in the legislature to have influence.

Unfortunately, other studies rarely offer the level of detail of Wooster's work or cover more than one city or state. In a review of the available historical evidence on the characteristics of officeholders, Pessen (1980) concluded:

> The resultant picture inevitably is not uniform. Humble county and town officials, for example, were less likely to be drawn from the highest levels of wealth and from the most prestigious occupations than were men who occupied more exalted state and federal positions. Alderman and councilmen usually did not match the mayor either in wealth or in family prestige. But the relatively slight social and economic differences found between men at different levels of government or between men nominated by the parties that dominated American politics from the 1830s to the 1850s were not differences between the North and the South. In the South as in the North, men similar in their dissimilarity to their constituencies held office and exercised behind the scenes influence. In contrast to the small farmers, indigents, laborers, artisans, clerks, and shopkeepers – the men of little or no property who constituted the great majority of the antebellum population – the men who held office and controlled the affairs of the major parties were everywhere lawyers, merchants, businessmen and relatively large property owners.[11]

So, while the less affluent could and did vote, the people they elected were wealthy.[12]

The selection was probably in part a reflection of pay. Many positions carried low pay, although in some cases significant prestige, and were only part time. Depending on the position, officeholders may have earned additional income from graft, investment opportunities, or other sources. But in the majority of cases, officeholder had to have family wealth or a primary occupation or that provided both flexibility and income. Most men of modest means simply did not meet these criteria.

[11] Pessen (1980), pp. 1137-8.
[12] See Watson (1997).

Much of what we know about compensation of officeholders comes from state legislators. In 1910, members of Congress made $7500.[13] In contrast, state legislators made between $100 and $1500 in salary and per diem. New York, at $1500, was an outlier. The median value was less than $200. State legislator's lower pay was in line with their workload. An average legislature met for 28 days, whereas Congress met for 210 days. In 1909, the average annual earnings for manufacturing workers were $512.[14] In most states, legislators would have needed considerable outside income to reach the earnings of manufacturing workers. Most other officials, with the exception of judges and the governor, probably made less than legislators.

How is the share of wealth held by the elite likely to affect politics? Engerman and Sokoloff (1997, 2000) argue that countries with greater historical inequality in the distribution of wealth have lower quality political institutions. Engerman and Sokoloff (1997) write:

> In this chapter we have highlighted the relevance of substantial differences in the degree of inequality in wealth, human capital, and political power in accounting for the variation in the records of growth. Moreover, we suggest that the roots of these disparities in the extent of inequality lay in differences in the initial factor endowments of the respective colonies. Of particular significance for generating extreme inequality were the suitability for the cultivation of sugar and other crops in which there were economies of production in the use of slaves, as well as the presence in some colonies of large concentrations of Native Americans. Both of these conditions encouraged the evolution of societies where relatively small elites of European descent could hold highly disproportionate shares of the wealth, human capital, and political power – and establish economic and political dominance over the mass of the population.[15]

Thus, they argue that elite dominance led to lower quality political institutions.

In Engerman and Sokoloff (2000), they describe how elite dominance led to lower quality political institutions:

[13] Squire and Hamm (2005), p. 72.
[14] Rees (1975), p. 32
[15] Engerman and Sokoloff (1997), pp. 289-290.

> Specifically, in those societies that began with extreme inequality, elites were better able to establish a legal framework that insured them disproportionate shares of political power, and to use that greater influence to establish rules, laws, and other government policies that advantaged members of the elite relative to nonmembers – contributing to persistence over time of the high degree of inequality (Kousser, 1974; Acemoglu and Robinson, 2000). In societies that began with greater equality or homogeneity among the population, however, efforts by elites to institutionalize an unequal distribution of political power were relatively unsuccessful, and the rules, laws and other governmental policies that came to be adopted, therefore, tended to provide more equal treatment and opportunities to members of the population.[16]

We take Engerman and Sokoloff's work to imply that states where the elite held a greater share of the wealth will have more limited political competition than states where the elite held a smaller share of the wealth. Engerman and Sokoloff might not agree, however, since their focus is on institutions and not political competition. One response is that more political competition is generally thought to lead to better institutions. To the extent that levels of political competition are unrelated or negatively related to institutional quality, their theory is not being directly tested.

How is the occupational homogeneity of the elite likely to affect politics? Our hypothesis is that occupational homogeneity leads to creation of political institutions that favor the dominant group. Conversely, occupational heterogeneity leads to creation of political institutions that are more equitable. Occupational homogeneity is expected to directly effect political competition, because homogeneous elites will tend to support a single party, whereas heterogeneous elites will tend to support different parties. The emphasis here should be on tendencies. In practice, there was unlikely to have been an exact mapping between occupation and political party.

Historical evidence suggests that elite occupations played a role in politics. In his study of revolutionary Philadelphia, Doerflinger (1986) writes:

> The destruction of traditional [British] political elites, the upsurge in popular political participation, and the emergence of divisive economic issues during the war had eroded the values

[16] Engerman and Sokoloff (2000), pp. 223-4.

> of mixed government and converted occupational groups into organized, articulate political factions … The recasting of political participation along occupational lines was remarked on by contemporaries and seemed to be a fundamental trait of modern republics. As James Madison observed in Federalist 10, "The most common and durable source of factions has been the various and unequal distribution of property … A landed interest, a manufacturing interest, a mercantile interest, a moneyed interest, with many lesser interests, grow up of necessity in civilized nations, and divide them into different classes, actuated by different sentiments and views."[17]

Both Dalzell (1987) and Pessen (1973) discuss the political activities of the elite merchants they study. These merchants on average tended to be Whigs. Goodman (1986) writes, "Central to any understanding of Rhode Island Politics in the Jacksonian era was polarization between the northern industrial towns, with Providence at the center, which favored the Whigs, and the rural towns in southern Rhode Island, which favored the Democrats and had dominated the state owing to an antiquated colonial charter that favored the landholders."[18] Thus, political competition within the elite ran along occupational lines in some times and places.[19]

While our focus is on the occupational diversity of the economic elite, it is worth noting that state legislators were themselves occupationally diverse. In the southern and border states in 1850, 57 percent of the legislators were farmers and 24 percent were lawyers.[20] The contrast with Massachusetts is quite striking. In Massachusetts in 1850, 24 percent of the legislators were farmers and 10 percent were lawyers.[21] The majority of the remaining seats were held by businessmen. The distributions for the southern and border states and for Massachusetts were essentially the same in 1860.

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[17] Doerflinger (1986), p. 276. See also Benson (1955, 1960, 1961), Campbell (1980), Wilentz (1982).
[18] Goodman (1986), p. 44.
[19] Formisano (1994) also writes on p. 474 "Economic and political elites at the local, regional, or national level were not always united and self-conscious about their goals, but on balance they were distinctively more conscious and cohesive in pursuit of their goals than artisans, workers, and laborers."
[20] Squire and Hamm (2005), p. 132. Their calculations based on Wooster (1969, 1975).
[21] Davis (1951), pp. 93-94.

Contemporary evidence also suggests that occupation and wealth or income play a role in party affiliation.[22] For example, Day and Hadley (2001) find important occupational differences among donors to Democratic and Republican political action committees devoted to the election of women. Further, Hout, Brooks and Manza (1995) find changes in the voting behavior of six occupational groups over the period 1948-1992. They find, for example, that managers' party affiliations remained relatively constant and Republican, while professionals' party affiliations shifted rapidly from Republican to Democratic over time.

How are the measures of the elite related to political competition? As a precursor to answering this question, it is useful to ask whether the relationships between initial conditions and political competition that were identified in Chapter 3 hold for the subsample of 28 states. Table 4.1A in the Appendix repeats the panel estimates during 1870-2000 for the 36 continental states for which the data is available (Table 3.6), and Table 4.1B reports the panel estimates for the 28 states for which measures of the elite are computed. All 28 states in the subsample are contained in the larger sample of 36. The relationships in the two samples are fairly similar for precipitation and temperature and reasonably similar for water access. Water access has a negative association with political competition in both cases. While the absolute magnitude of the coefficients on access to water transportation during 1990-2000 is weaker in the subsample of 28 states, the absolute value of the differential effects during the various decades is much stronger and more significant statistically in the sub-sample. While the sign of civil law oscillates in the larger sample, it is generally positive in the subsample of 28 states. However, in

[22] Although most of the emphasis in the voting literature has been on income to the exclusion of occupation, a few studies examine occupation.

both samples, civil law tends to be statistically insignificant. Overall, the impact of initial conditions on political competition is reasonably similar in the sample of 36 states and the subsample of 28 states.

Figures 4.8-4.14 plot the relationships between measures of the state elite and average political competition in the state legislature for twenty year intervals. In most periods, however, occupational homogeneity is noticeably negatively related to political competition. Consider Figure 4.8, which covers the period 1866-78. In Alabama, Mississippi, Vermont, Arkansas and South Carolina the occupational homogeneity of elites is more than one standard deviation above average. In these five states elites in 1860 are predominately wealthy farmers and, the level political competition in 1866-1878 is below average. In Illinois, Wisconsin, Michigan, Ohio and New York the occupational homogeneity of elites is almost one standard deviation below average; and, political competition is at least roughly one standard deviation above average. Figures 4.9-4.14 illustrate the strong negative association between occupational composition of elites in 1860 and political competition during subsequent periods.

Taken together, Figures 4.8-4.14 suggest the occupational composition of elites has had a persistent influence on politics during 1866-2000. This finding, if true, is surprising, since there have been many changes during this period that could affect state political institutions including the reconstruction following the Civil War, the rise of the populist and progressive movements, the expansion of the franchise to women, the great depression, and the civil rights movement. However this finding, consistent with Acemoglu and Robinsons' (2008) theory that elites can control political institutions over long time periods, containing potentially destabilizing political changes.

Surprisingly, elite wealth is only strongly negatively associated with political competition in 1960-78 and 1980-98. It is also that elite is weakly positively associated with political competition in in 1860-78 and 1880-98. Recall Engerman and Sokoloff argued that the relationship would be negative.

These general patterns are confirmed by the regressions in Table 4.4, Panel A. For every period, political competition was regressed on a constant and one of the measures of the state elite. The coefficient on occupational homogeneity was negative, large, and statistically significant in every period. In contrast, the coefficient on wealth was positive, small, and statistically significant in only two of the seven periods.

The conclusions to be drawn from the analysis so far are twofold. The association between occupational homogeneity and political competition always has the expected negative sign and is statistically significant in six of the seven periods: however, the association between wealth shares and political competition is negative and statistically significant in only two of the seven periods. Further, irrespective of sign, occupational homogeneity appears to be more strongly related to political competition than wealth share is. We have not yet addressed the issue of the causal impact of occupational homogeneity or wealth share on politics. This issue is considered in the next subsection.

Before moving to causality, however, it is worth considering the obvious question: Are the persistent negative association between political competition and occupational homogeneity of elites in 1860 just an artifact of the Civil War. One effect of the Civil War is that political competition was depressed for long periods in both the North and the South. Table 4.5 shows the average homogeneity of elites in 1860 was

0.42 in the North and 0.68; and, this difference in means is significant at the 1-percent level. Thus, if the importance of occupational homogeneity is solely coming from its ability to explain average differences between the North and South, and not from differences within the North and the South, controlling for the South in these regressions should render the coefficient on occupational homogeneity small and not statistically significant.

In Table 4.4, Panel B we regress political competition on elites controlling for the South. It is not surprising that the South almost always has a strong negative and statistically significant association with political competition during periods within 1866-2000. However, despite the persistent influence of the South, homogeneity of elites retains a negative association, which is statistically significant in six of the seven periods. This suggests that occupational composition of elites is not just picking up the effect of the Civil War.

Causality

To make a statement about causality, one needs an instrument for measures of the elite that plausibly satisfy the exclusion restriction. That is, the instruments plausibly have to have affected the composition or wealth of the elite 1860, but must not have continued to exert an independent influence on political competition.

The most obvious potential instruments are the initial conditions. Civil law is problematic for two reasons. There is no clear theoretical link between civil law and either measure of the elites. Moreover, civil law is poorly correlated with both measures of the elite. This leaves climate (precipitation and temperature) and access to transportation.

Climate arguably fails to satisfy the exclusion restriction, because of its continuing influence on politics over time. Both temperature and precipitation are strongly correlated with the South, which has had persistently lower political competition throughout the twentieth century. In addition, the climate variables are highly correlated with measures of the political culture of early settlers developed by Elazar (1984). Political scientists have shown that Elazar's culture variable is strongly associated with contemporary state politics. For example, Fitzgerald (1988) finds that states that have a moralistic political culture tend to have more intense political competition and also tend to use a civil service system than states that have either an individualistic or traditional political culture. And, Mead (2004) documents that states with a moralistic political culture tend to more effectively implement welfare policies. This leaves access to water transportation.

As discussed previously, the elite in 1860 was shaped by access to water transportation. This water transportation was used to conduct both internal and international trade. International trade is relatively easy to quantify, because the federal government kept records. It was roughly 6-7 percent of GNP both before and after the Civil War. Internal trade is more difficult to quantify. Some of this reflects a lack of records, and some of it reflects the interests of researchers. At least from the publication of North (1961), much of the academic debate has focused on the magnitudes of trade among three regions of the United States – the East, the South, and the West. Fishlow (1964) estimates that interregional trade rose "from $109 million in 1839 to $480 million in 1860; exports to other countries [rise] from $102 million to $316 million."[23] Unfortunately, these estimates ignore trade within each of the three regions. Taylor

[23] Fishlow (1964), p. 363.

(1951) provides some figures based on Andrews (1853) suggesting that total net domestic commerce was around $2.8 billion in the early 1850s.[24] Taylor notes the number is not entirely reliable, but if it is of the right order of magnitude then internal trade clearly dominated international trade.

If access to water transportation is largely facilitating internal trade, then the rise of the railroads and later highways and air transport was an important exogenous shock. [25] In particular, it is likely to have broken the link between water transportation and political competition, except as mediated by the elite. If this is holds, then access to water transportation satisfies the exclusion restriction and so is a suitable instrument.

How did the introduction of the railroads affect internal trade? Up to 1860, the effects of the railroad were primarily on East-West trade. Eastern goods had largely been shipped westward on carts, while Western goods had circulated east via New Orleans. In the period around 1860, use of rivers such as the Mississippi and its tributaries shifted markedly. Fishlow (1964) writes "Laments for the decline of New Orleans, as a site of western receipts did not blame declining southern appetites, but, properly, focused on the rapid construction of rail feeders that narrowed the economic hinterland of New Orleans. Nowhere was the shift more obvious than in the Ohio Valley. The proportion of flour flowing eastward or northward from Cincinnati increased from 3 percent in the early 1850s to 90 percent in 1860; similarly for pork, there was a shift from 7 percent to 42 percent."[26] The large and rapid effect of the railroad on water transportation along the Mississippi Valley water system is consistent with the patterns Figures 4.15 and 4.16.

[24] Taylor (1951), p. 174.
[25] We are indebted to one of our reviewers for raising this point.
[26] Fishlow (1964), p. 355.

They illustrate navigable waterways in 1860 and the expansion of the railroad from 1850 to 1860.

Although the East-West trade was transformed, the West-South trade and the East-South trade continued to be water based for longer. Figures 4.15 and 4.16 show the South had a low density of track. In addition, the tracks were of varying gauges. This limited usefulness of railroads for long-distance transport. In the mean time, advances in ocean technology kept coastal shipping competitive.

The railroad network continued its rapid growth beyond 1860. Figure 4.17 demonstrates that by 1890 coverage was extremely dense in many areas.[27] Fogel (1964) computed that in 1890 in the absence of the railroad, shipping agricultural commodities interregionally would have been substantially more expensive. "Since the actual 1890 cost of shipping the specified commodities was approximately $88,000,000, the absence of the railroad would have almost doubled the cost of shipping agricultural commodities interregionally. It is therefore quite easy to see why the great bulk of agricultural commodities was actually sent to the East by rail, with water transportation used only over a few favorable routes."[28]

What discussion has ignored thus far, however, is intra-regional trade. This is problematic, because all three regions experienced significant gains from railroads starting in the 1850s. Railroads opened up hinterlands that often had been previously served by roads. Here the drop in transportation costs was potentially large, although monopoly pricing may have reduced the benefits. More than half of the direct benefits of

[27] It is worth noting that access to water changed very little after 1850. Atack et al (2009), p. 13.
[28] Fogel (1964), p. 211.

the railroad calculated by Fishlow (1965) came from this category. Where the hinterlands were previously served by water transportation, the gains were generally smaller. In both cases, additional trade was generated. Some of the product was channeled to other regions, but some remained in the region. Thus, the focus on trade among the East, West, and South is likely to understate the importance of railroads for internal trade in 1860. Their importance only continued to grow.

One potential issue would be if water transportation and railroads were highly correlated. If states with high or low access to water transportation also had high or low access to railroads, then access to water transportation would capture later railroad development. If later railroad development had an influence on politics, the exclusion restriction would not hold. For 1860 the share of counties with access to water transportation was computed. And, the railroad miles per state was also computed at the end of 1860 and 1880. The correlation between water access and railroads in 1860 is 0.01 for 34 states; and the correlation between water in 1860 and railroads in 1880 is -0.07 for 40 states. Atack et al. (2009) find that for Midwestern counties, whether a county gained access to a railroad was strongly negatively related to whether the county had access to a navigable river and unrelated to whether a county had access to a great lake. They do find a positive relationship between railroad acquisition and access to canals. Unlike the effects of navigable rivers and lakes, this relationship is not robust to the introduction of state fixed effects. The decline in importance of water transportation is only reinforced with later introduction of road and air transport.

Another potential issue would be if access to water transportation, particularly the ocean, continued to be important for international trade. Almost by definition ocean

access remained important for international trade, since during the nineteenth century there was no other way to move the goods to countries outside of North America. The exclusion restriction could fail if international trade had a significant influence on political competition in the state legislature. Influence could arise through a variety of channels including: changes in the elite who were mediating this trade over time; effects on voting patterns of non-elite voters who worked in or were otherwise influenced by trade; or efforts of foreign companies to curry favor through campaign contributions and other channels. As a check on the validity of the exclusion restriction, we explicitly control for access to the ocean in some regression specifications. In particular, we allow access to the ocean to have a direct effect on politics. The control variable is never statistically significant, which suggests that the exclusion restriction holds.

In the regression results presented in Table 4.6, access to water transportation has a strong and statistically significant positive association with the occupational homogeneity of elites when there are no controls and when the climate variables are included. However, water transportation has a weak and insignificant association in the absence of the climate variables. And, after controlling for climate, the association of water transportation with elite wealth becomes negative (and contrary to what theory would predict!). Because of wealth's limited explanatory power and incorrect sign, we do not pursue causality for wealth.

One might be tempted to infer based on this that the measure of wealth in 1860 is poor or noisy. It is certainly imperfect for some of the reasons discussed previously. Interestingly, however, it does predict evolution of the income distribution. Sommeiller (2006) constructed data on state level income distributions for the period 1913-2003. The

regression results in Table 4.7 suggest that the measure of elite wealth does capture important aspects of the income distribution in the period after 1920. To the extent that the income distribution is correlated with the (unobserved) wealth distribution, it would capture aspects of the wealth distribution as well.

Columns (1) and (2) in Table 4.8 compare OLS estimates (already reported in Table 4.4) with 2SLS estimates of the impact of occupational homogeneity of elites on political competition. In the 2SLS estimates access to water transportation is used as an instrument. In all periods the two stage least squares estimated effects are more negative than the OLS estimates. For example, in 1900-1918, the coefficient on occupational homogeneity is roughly -19 in the OLS specification and almost -37 in the 2SLS specification. More generally, OLS estimates range from -9 to -23, while 2SLS estimates range from -15 to -39. Clearly, our instrumental variable methods are correcting for the endogeneity of elites in 1860.

In column (3) of Table 4.8, we control for a state's access to the ocean. It is striking that the magnitudes and significance of the effects of occupational homogeneity of elites are unaffected by inclusion or exclusion of access to the ocean. Further, the coefficients on access to the ocean were small and statistically insignificant. This provides some support for the validity of the exclusion restriction.

The results in columns 2 and 3 of Table 4.8 provide evidence that elites in 1860 have had a persistent influence on politics. However, a plausible alternative interpretation is that the Civil War, rather than elites, shaped state politics and elites are irrelevant. In order to check if elites in fact matter, we need to include a control for the Civil War. Since the confederacy of states that seceded from the Union during the Civil War is

endogenous, we use precipitation and temperature as proxies for the confederacy. Our results are contained in column (4) of Table 4.8. It is striking that the occupational homogeneity of the elite is still strongly negatively associated with political competition in all seven periods; moreover, this association is statistically significant through the end of the 1970s. Thus, even though the Civil War has had a lasting impact on state politics, elites as measured on the eve of the Civil War still matter.[29]

One thing to note in Table 4.8 is that, controlling for climate, the effects of occupational homogeneity of the elite on political competition are roughly constant over the eighty year period from 1880-1958 (column 4).[30] That the occupational composition of the elite has relatively a constant effect supports a story in which institutions form then persist. An alternative story was that dynamic changes in composition of elite translated into dynamic changes in institutions. One might ask why the effect of occupational homogeneity was relatively smaller and only marginally significant during 1866-1878. The likely answer is that the Civil War and Reconstruction had complex effects on state political systems in the North and the South. With passage of time and the end of Reconstruction in 1877, state political systems began to reach equilibrium. States would more or less continue along that trajectory until the political changes of 1960s and 1970s induced by the Civil Rights movement and the Vietnam War. It is striking that as late as 1960-78 a one standard deviation increase in homogeneity of elites in 1860 is associated with a 23 point drop in political competition (controlling for climate), which is the

[29] In regressions that are available upon request, the climate control has a strong negative association with political competition in most periods.

[30] In Appendix Table 4.3A, we show that this holds when we estimate for the effect of the occupational homogeneity of elites in a dynamic panel that includes state fixed effects and national period effect as well as differential time effects of climate and water access.

difference during 1960-78 between Alabama (2 points) and North Carolina (26 points), or Missouri (64 points) and Michigan (86 points).

Conclusion

In this chapter, we presented evidence that initial conditions influenced political competition primarily through the occupational homogeneity of the elite. That is, occupational homogeneity of the state elite in 1860 explains differences in political competition across states though the 1970s. Not surprisingly, the magnitude of the effect of occupational homogeneity and its explanatory power differs at different points in time. Strikingly, however, this relationship holds even when we control for other factors likely to explain the evolution of political competition including climate and access to ocean transportation. Before 1980, these additional variables are never significant. The relationship between the occupational homogeneity of the elite and political competition breaks down in 1980s and 1990s, almost certainly as a result of the changes that begin in the 1960s with the Civil Rights movement and the Vietnam War and continued in the 1970s.

The persistent effect of occupational homogeneity of the elite on political competition in state legislatures suggests that political institutions themselves have been remarkably persistent. One interpretation is initial institutions were put in place and then persisted, either because no one tried to change them or because they were difficult to change. A less benign interpretation, which is in line with Acemoglu and Johnson (2008), would be that elites actively and successfully resisted change.

Figure 4.1 Wealth Holdings in 1860

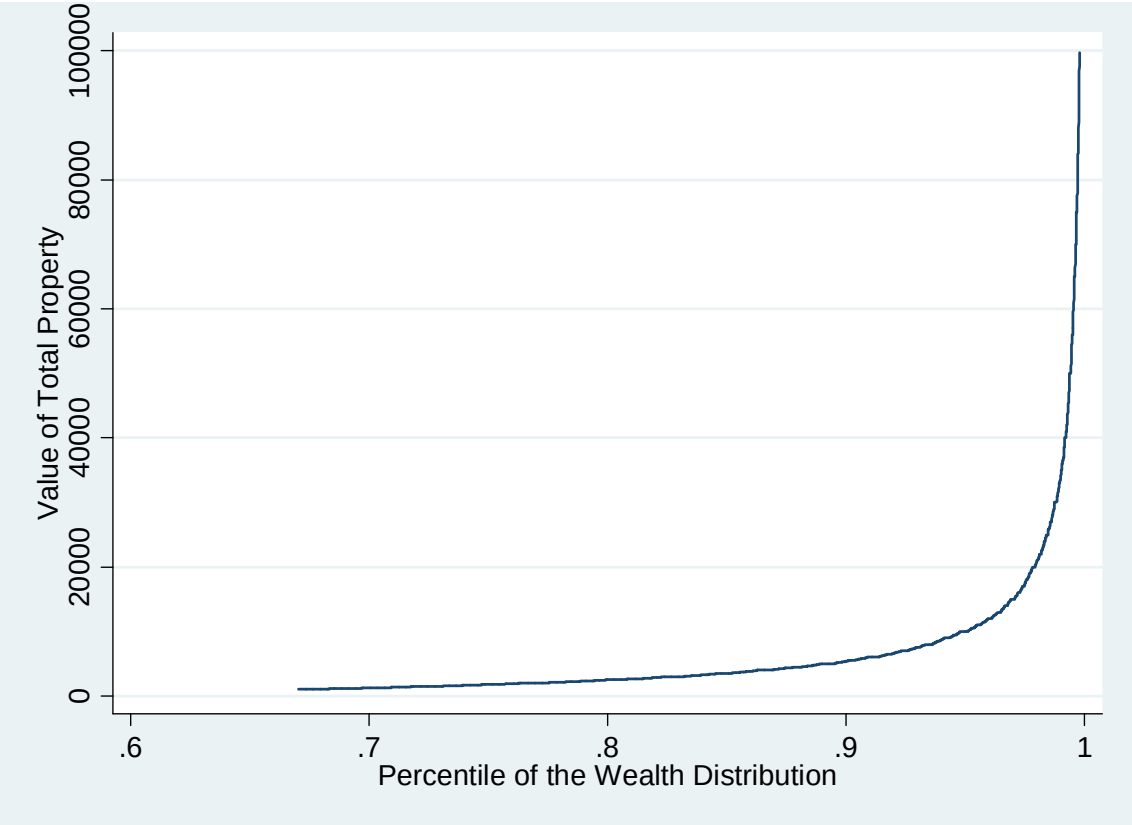
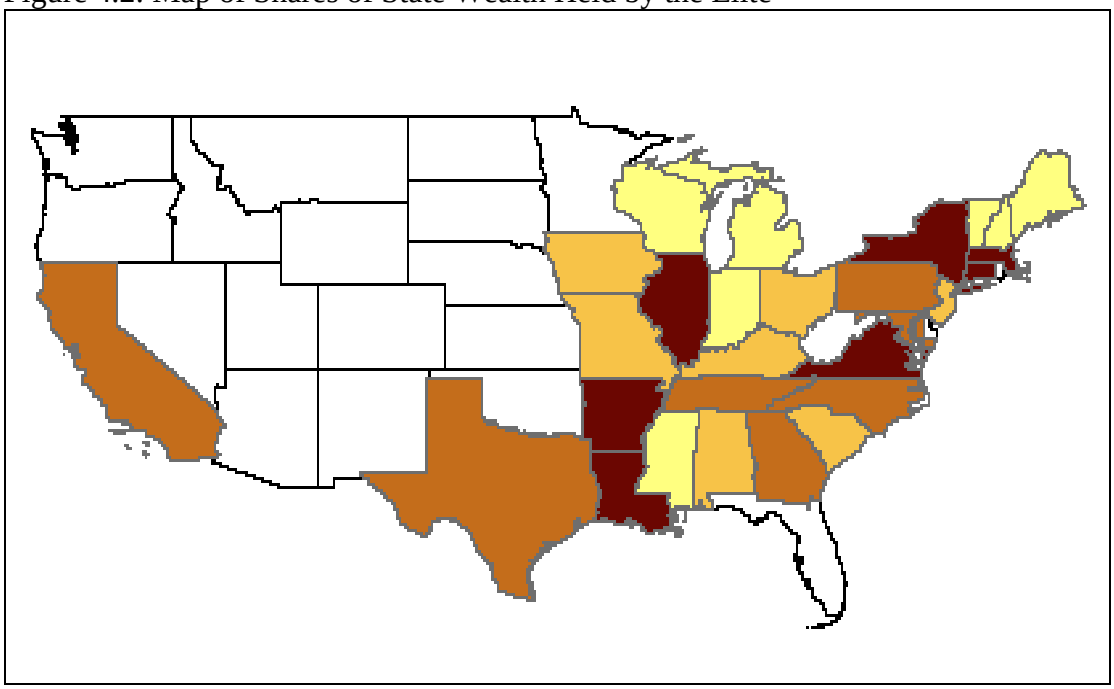
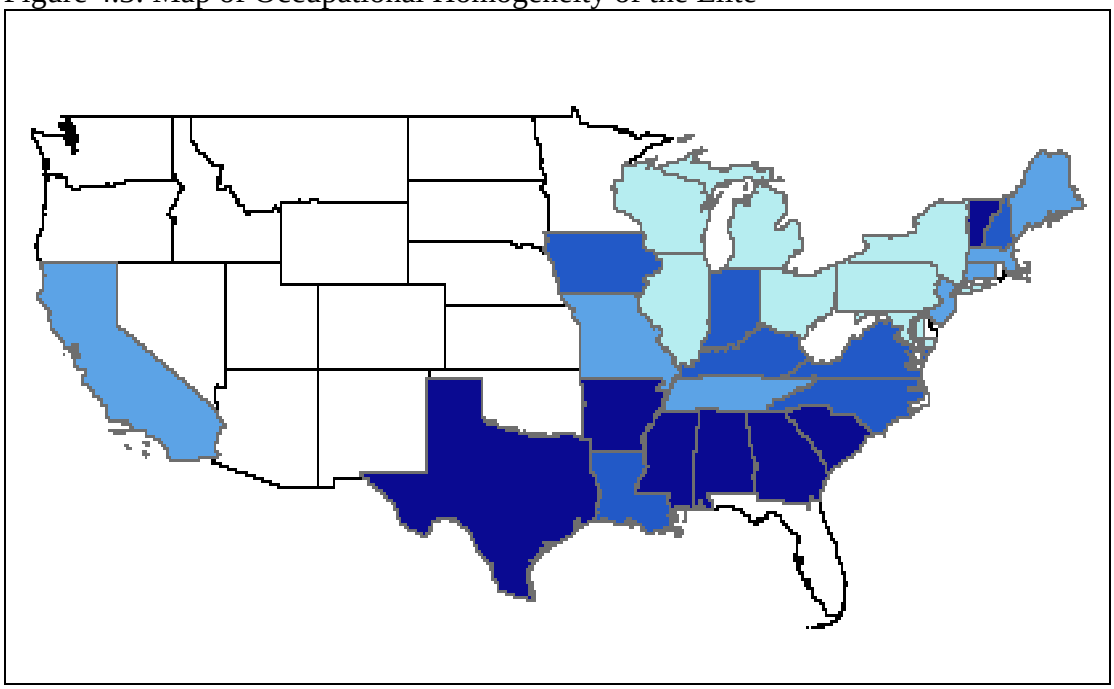


Figure 4.2: Map of Shares of State Wealth Held by the Elite



Notes: Darker shadings indicate higher wealth holdings by the elite.

Figure 4.3: Map of Occupational Homogeneity of the Elite



Notes: Darker shadings indicate greater occupational homogeneity of the elite.

Figure 4.4: Occupational Homogeneity vs. Share of Wealth Held by the Elite

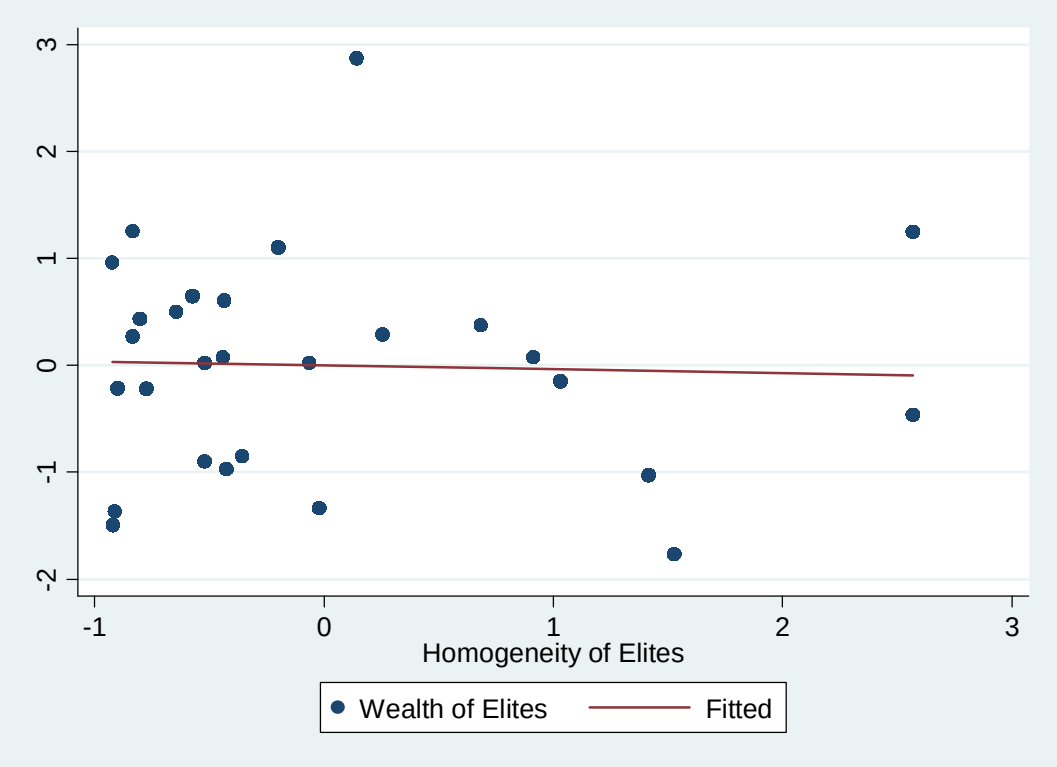


Figure 4.5A: Precipitation vs. Measures of the Elite

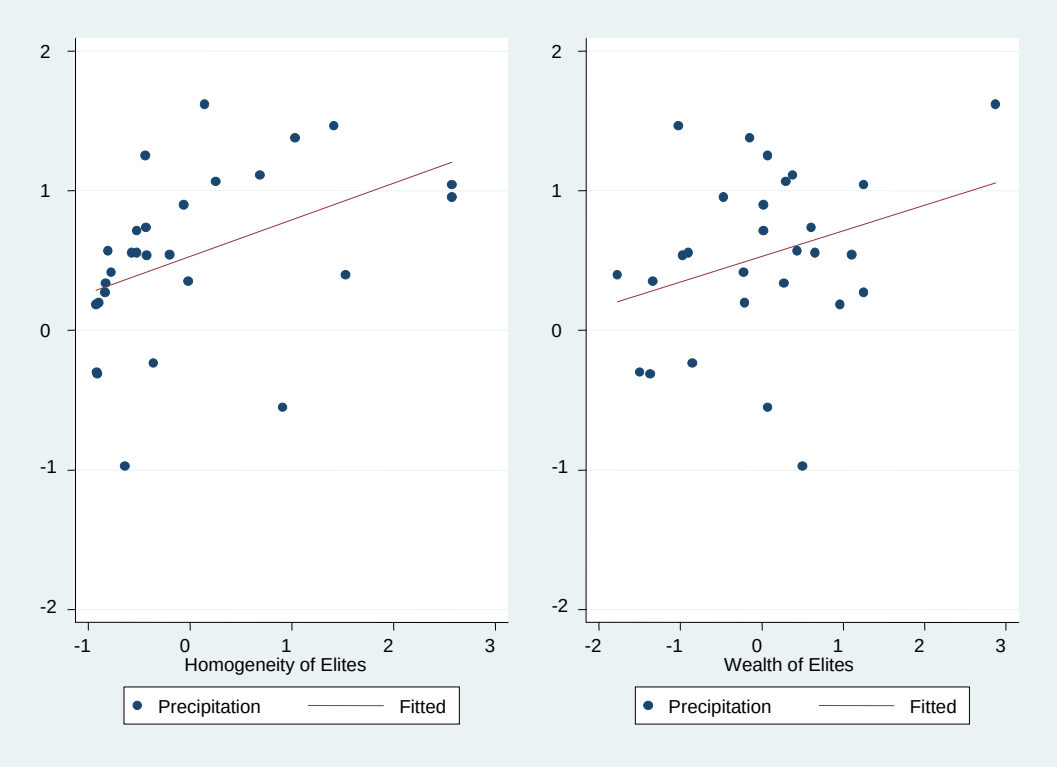


Figure 4.5B: Temperature vs. Measures of the Elite

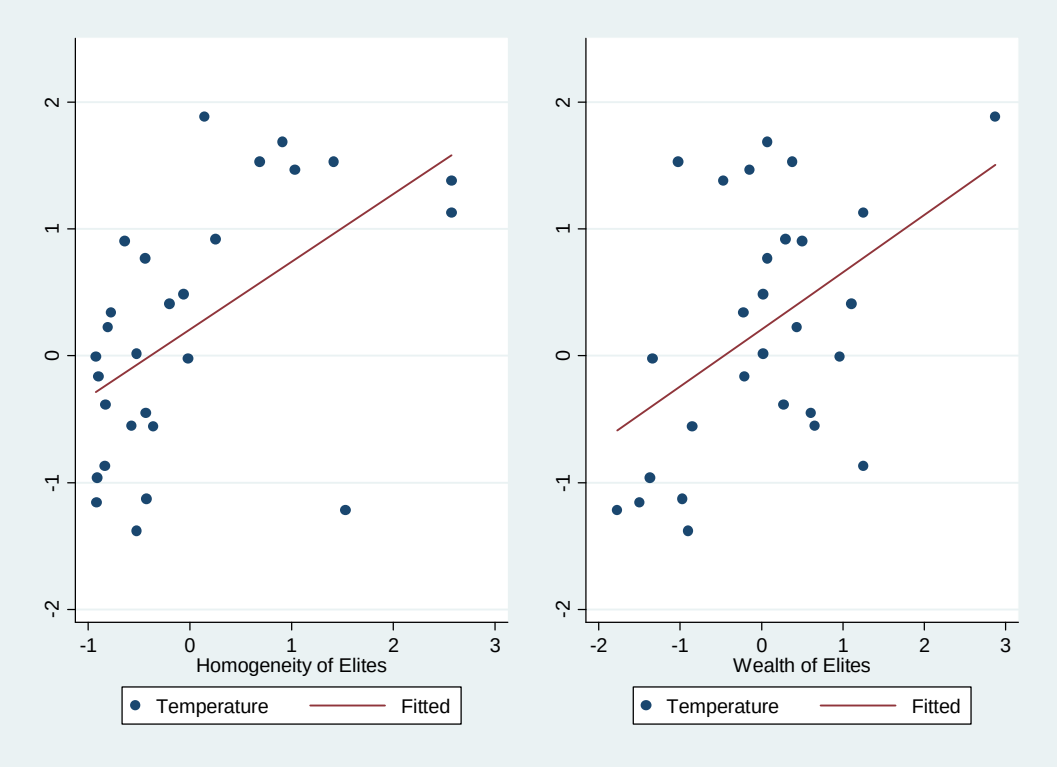


Figure 4.6: Water Transport vs. Measures of the Elite

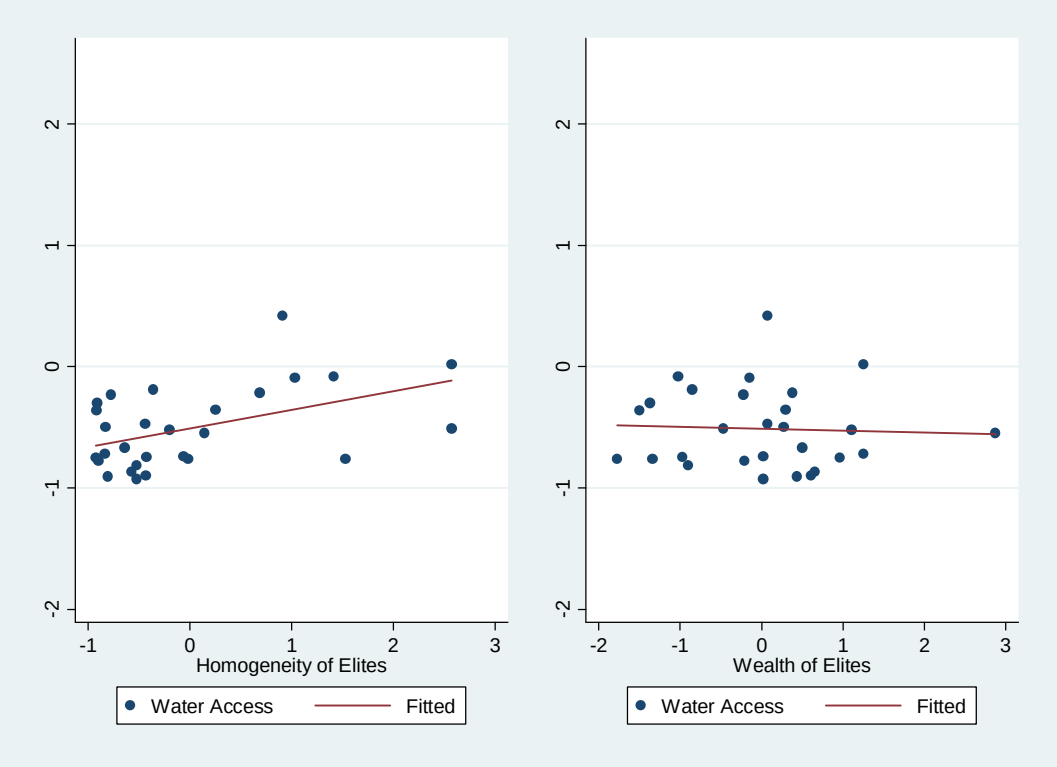
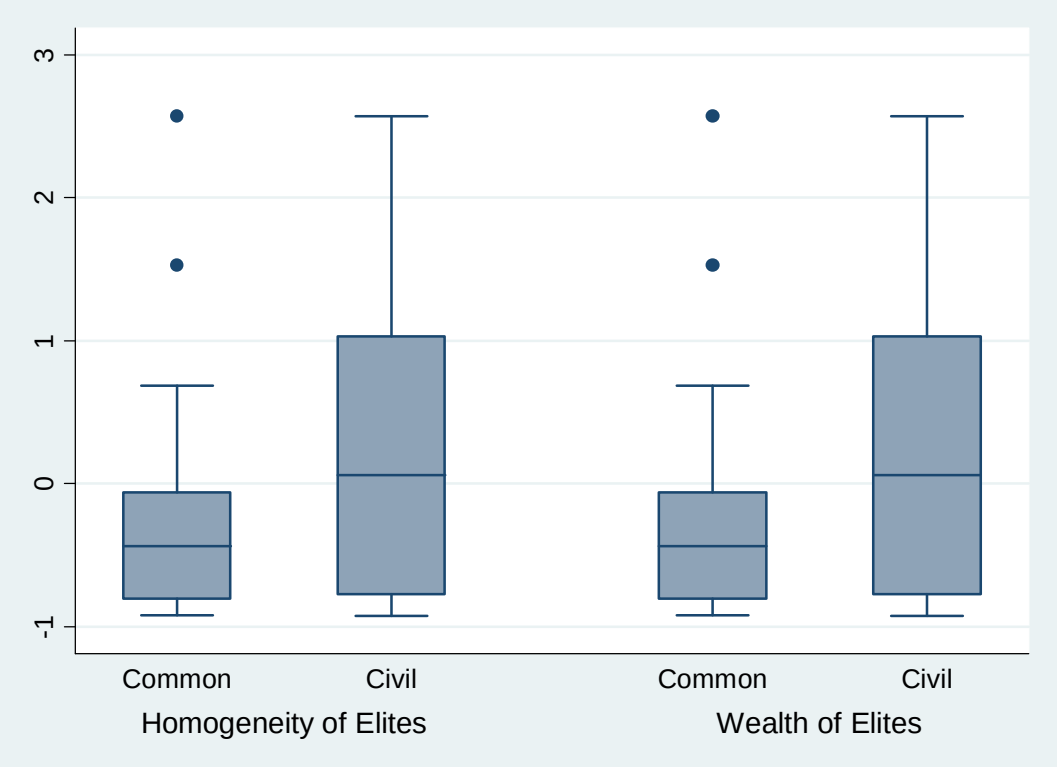


Figure 4.7: Measures of the Elite for Civil-Law and Common-Law States



Notes: The lower, middle and upper hinges in the shaded box depict the 25th percentile, median and 75th percentile of elites within each legal family

Figure 4.8: Political Competition 1866-1878 and Elites

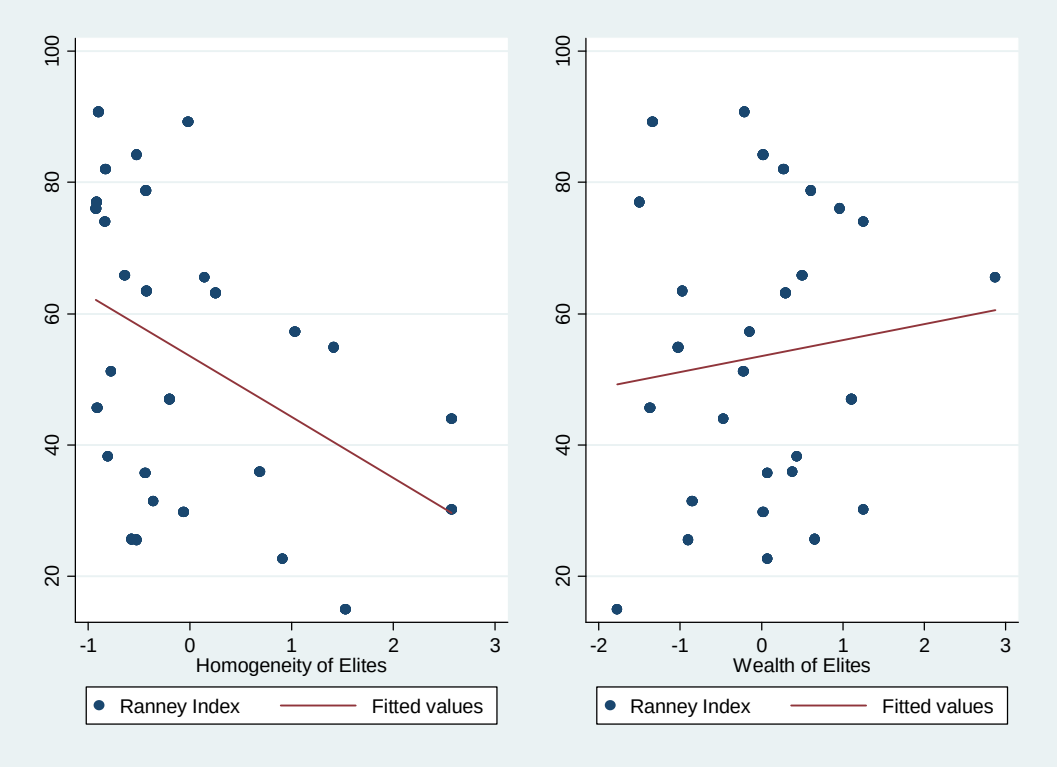


Figure 4.9: Political Competition 1880-1898 and Elites

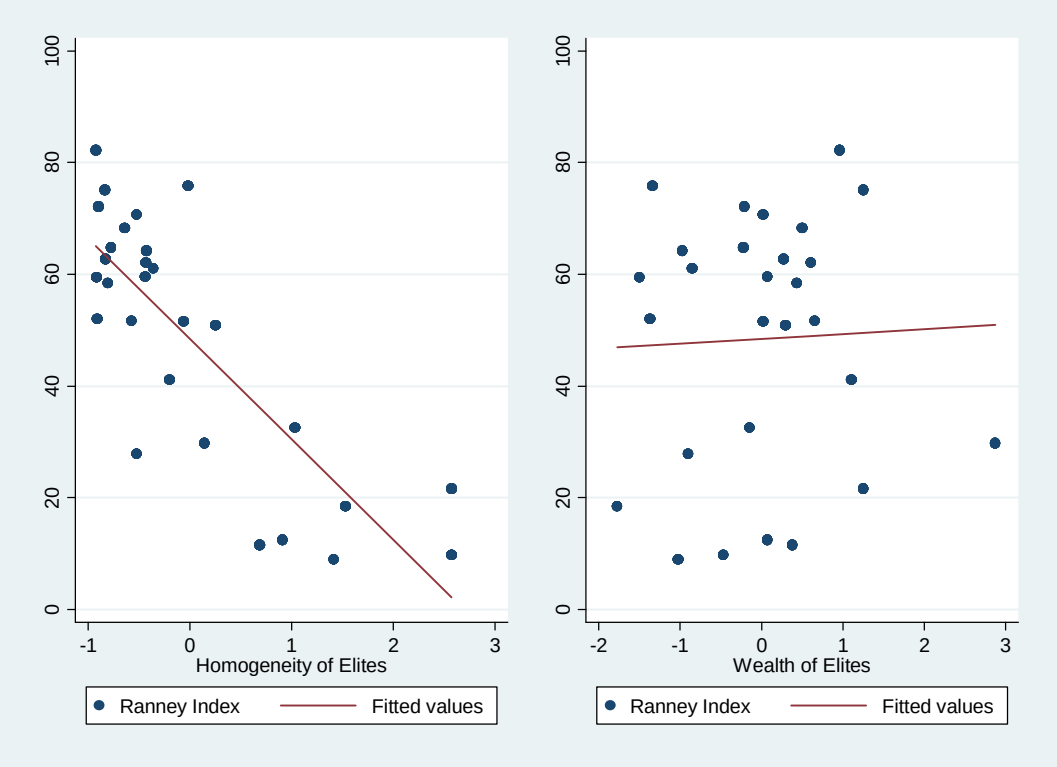


Figure 4.10: Political Competition 1900-1918

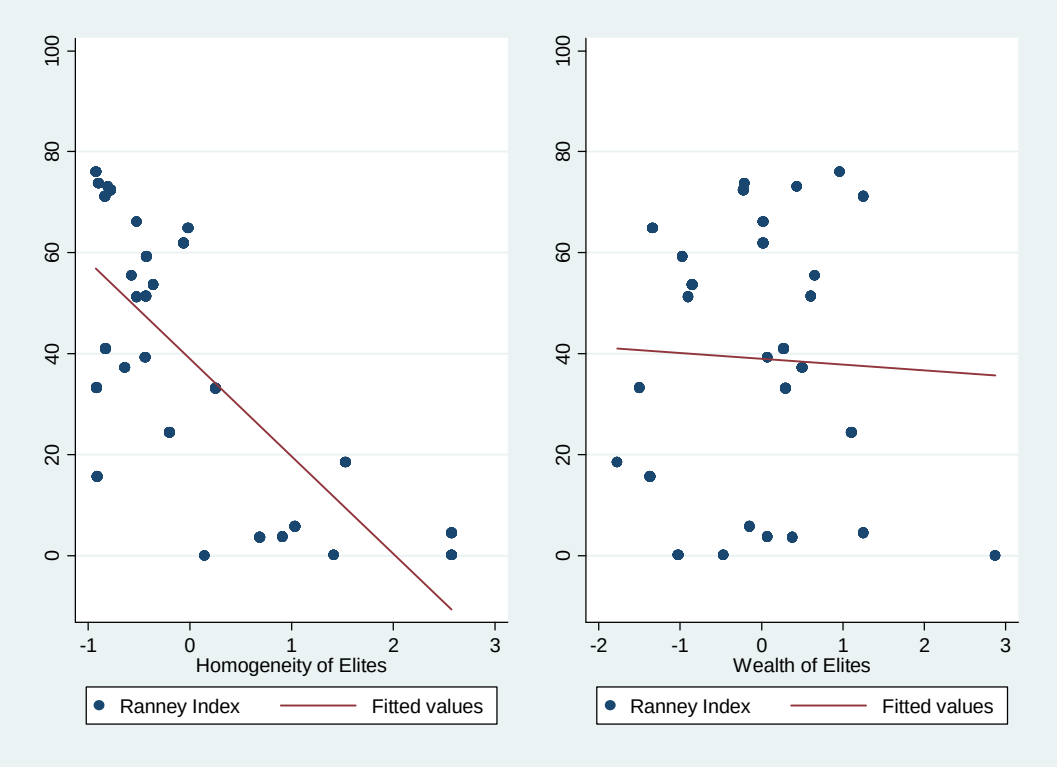


Figure 4.11: Political Competition 1920-1938

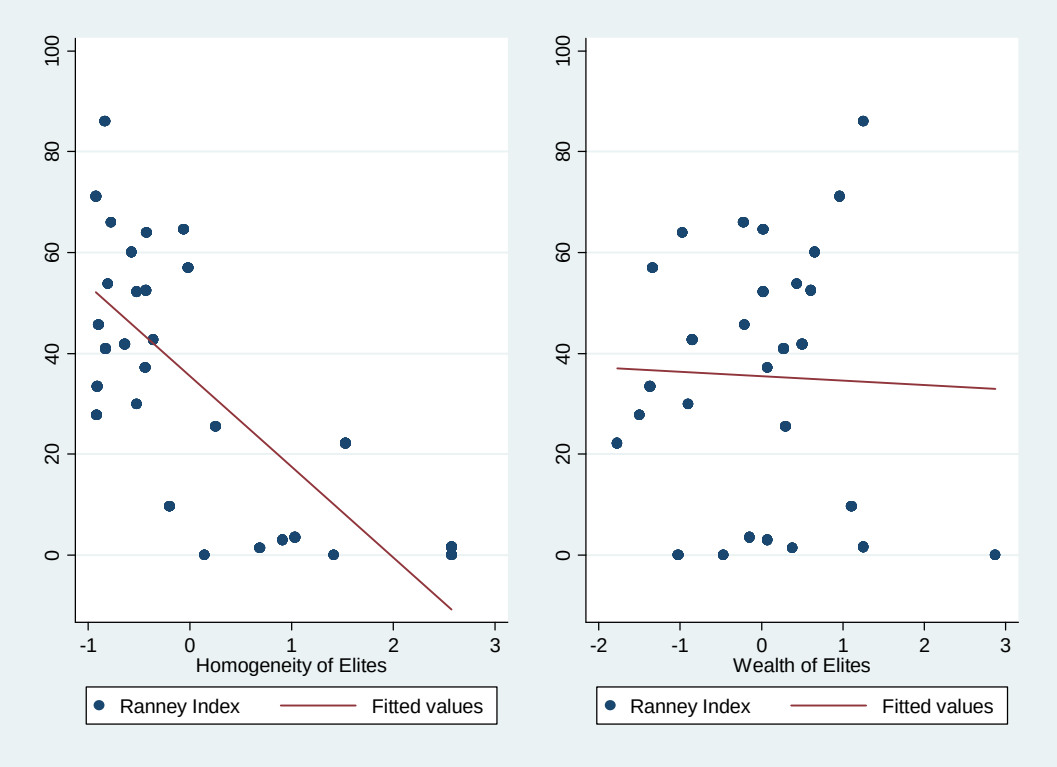


Figure 4.12: Political Competition 1940-1958

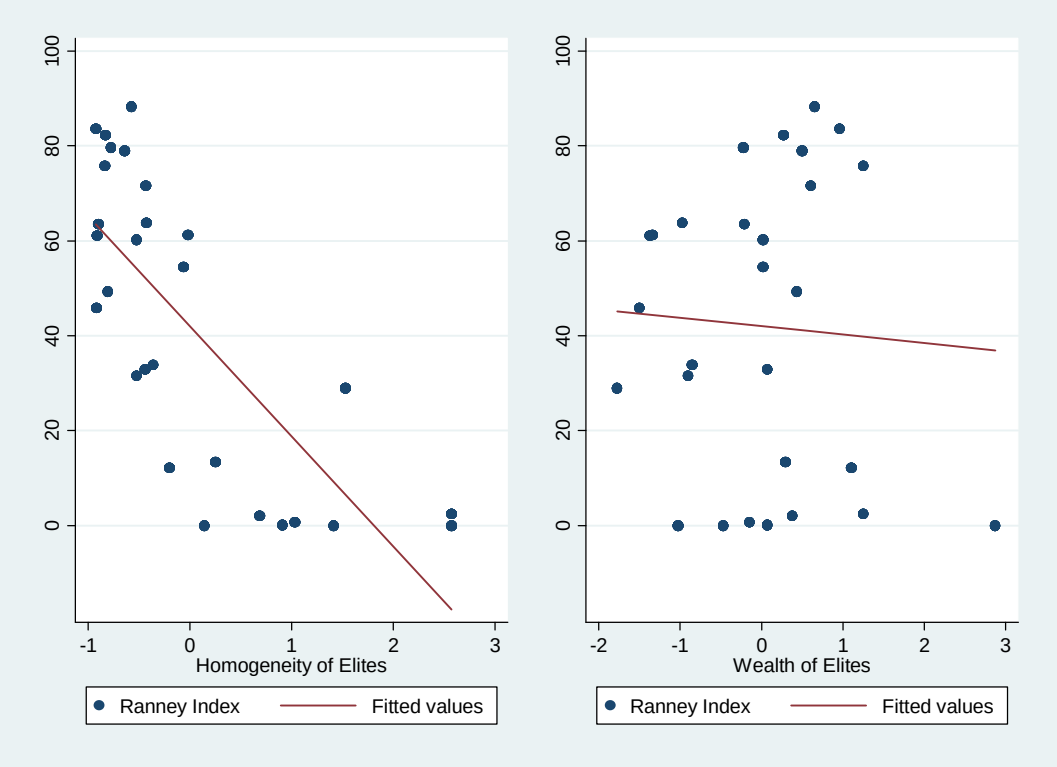


Figure 4.13: Political Competition 1960-1978

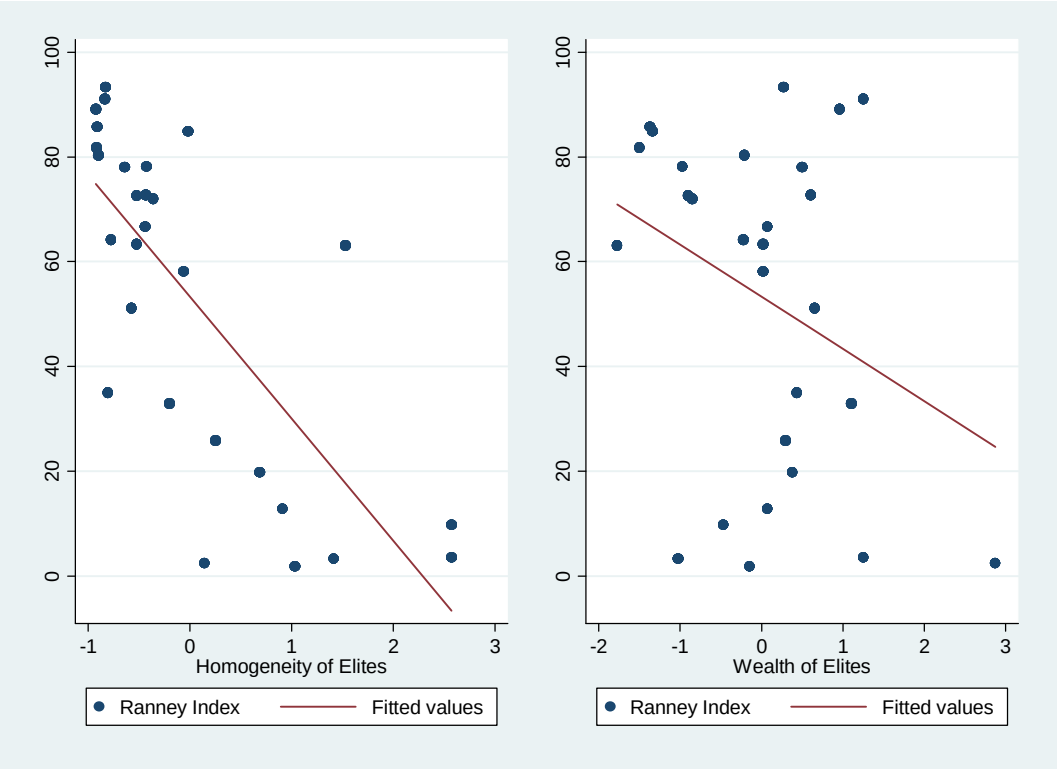


Figure 4.14: Political Competition 1980-2000

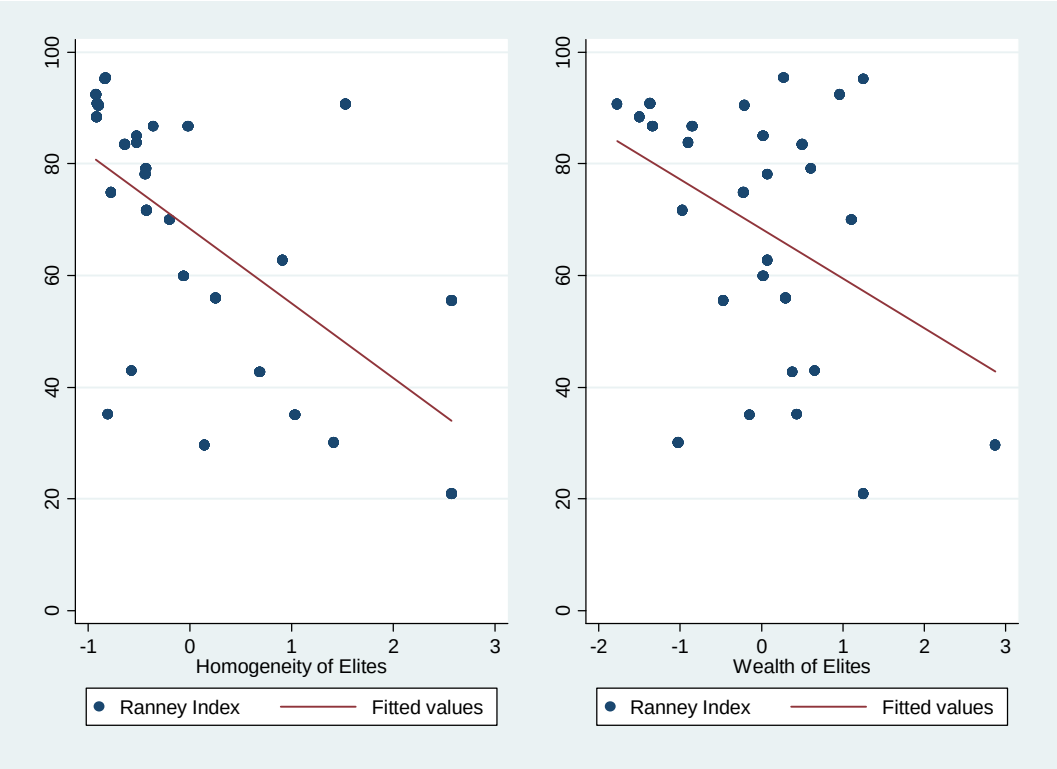
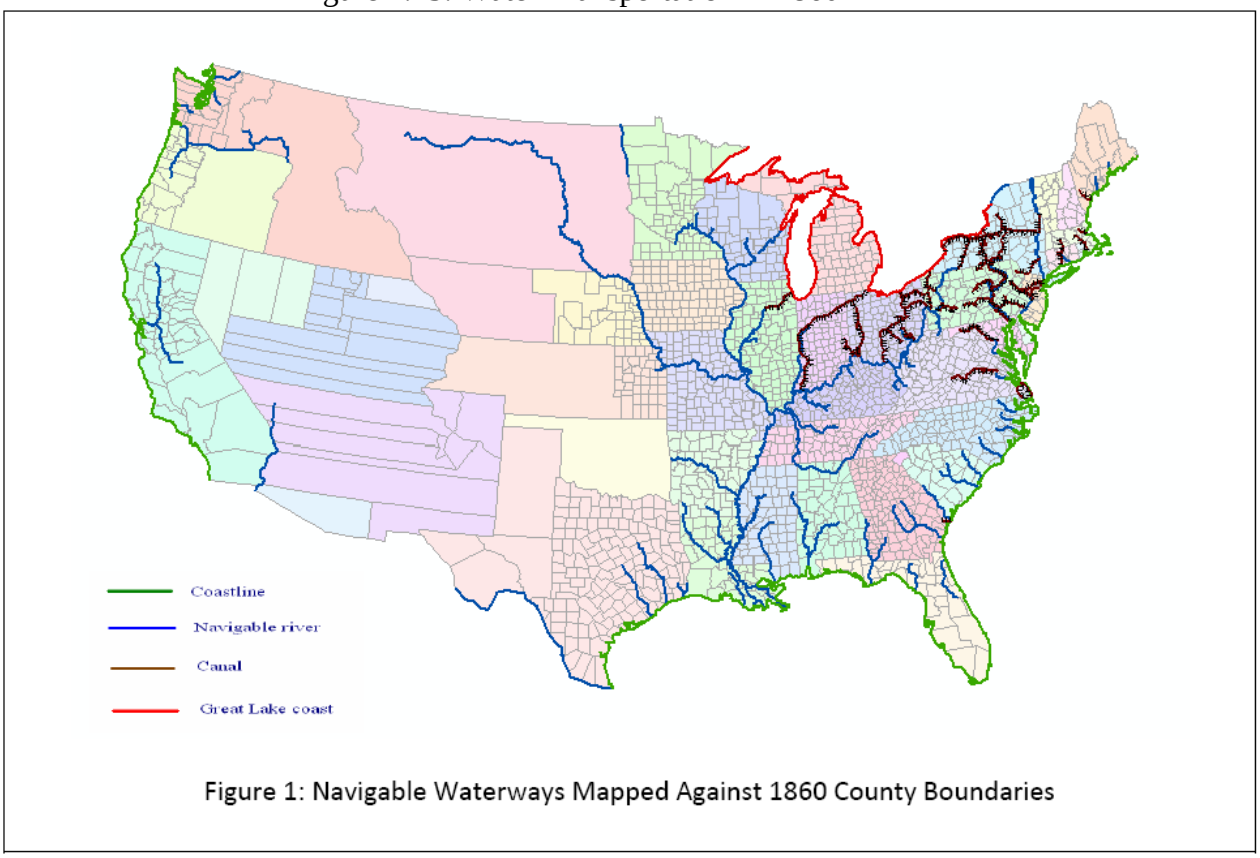
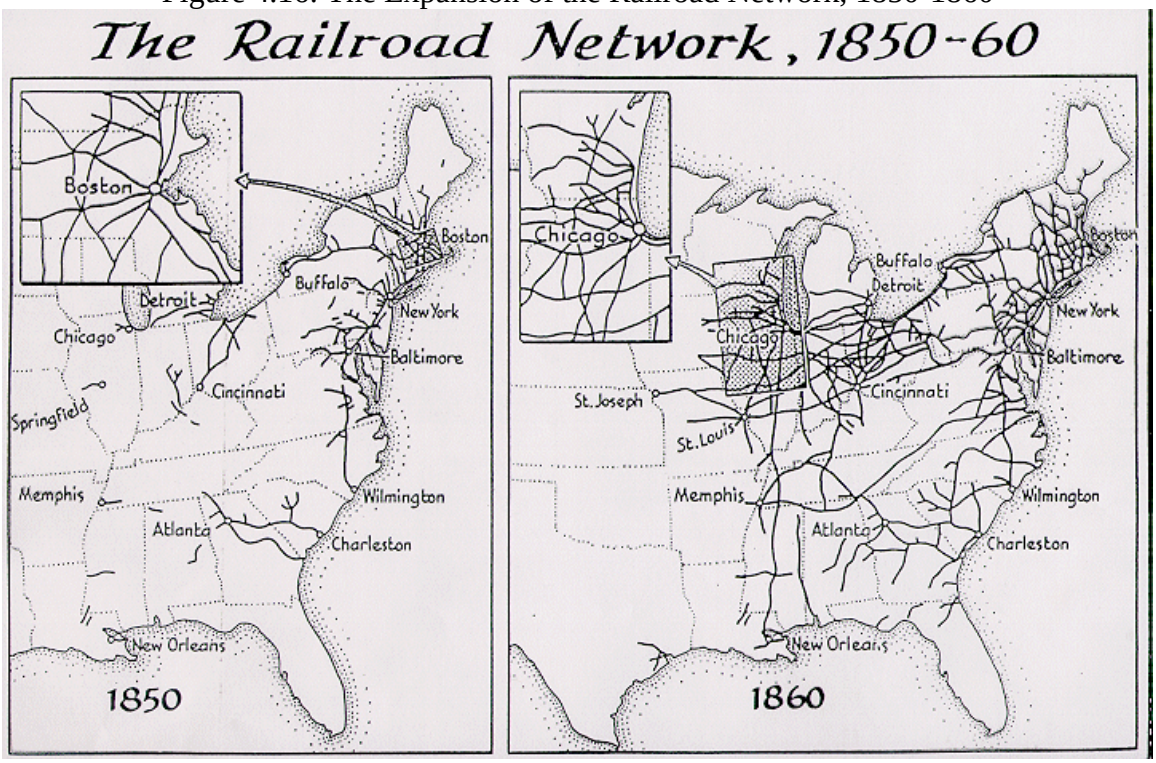


Figure 4.15: Water Transportation in 1860



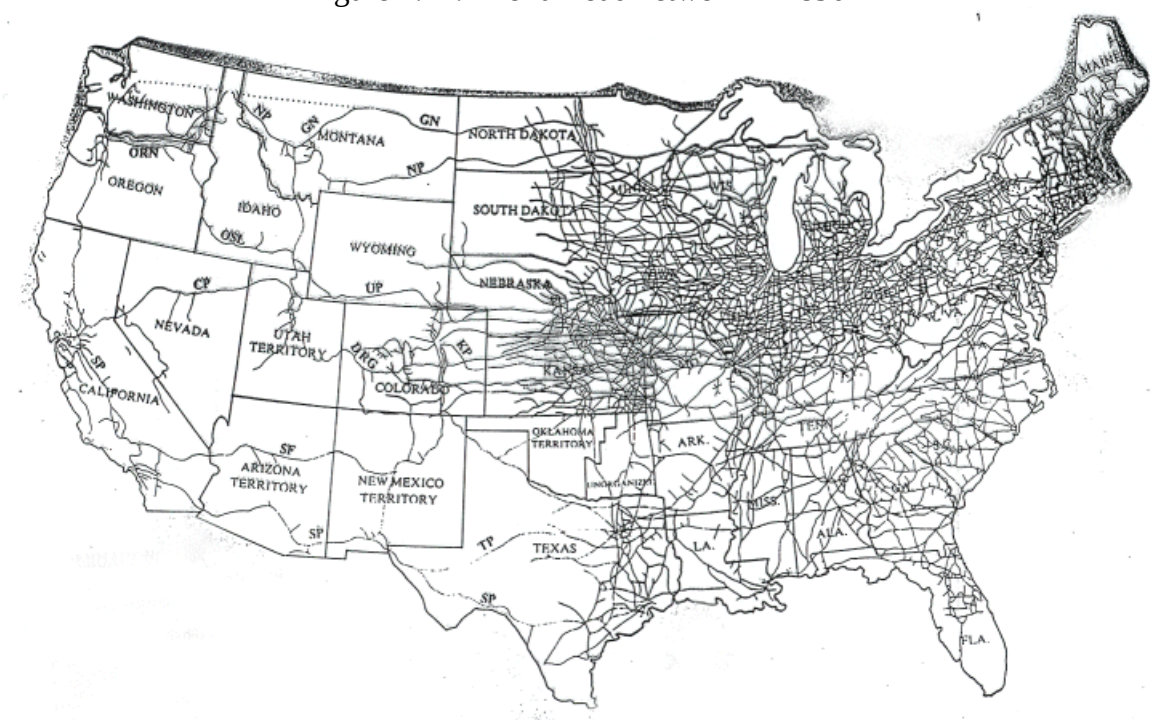
From http://www.nber.org/papers/w14410.pdf

Figure 4.16: The Expansion of the Railroad Network, 1850-1860



From http://pooleandrosenthal.com/rtopic3_ucsd_2.htm

Figure 4.17: The railroad network in 1890



From http://voteview.ucsd.edu/rtopic7_ucsd_1.htm

Table 4.1: Distribution of Elite and Median Occupations

Occupation	Elite Share	Median Share
Farmers (owners and tenants)	0.435	0.366
Managers, officials, and proprietors (nec)	0.288	0.031
Other non-occupational response	0.052	0.028
Lawyers and judges	0.046	NA
Physicians and surgeons	0.027	NA
Operative and kindred workers (nec)	0.016	0.041
Laborers (nec)	NA	0.127
Farm laborers, wage workers	NA	0.061
Carpenters	NA	0.055
Shoemakers and repairers, except factory	NA	0.033
Blacksmiths	NA	0.023
Craftsmen and kindred workers (nec)	NA	0.016

Notes: All occupations as coded by IPUMs with at least 10 individuals in the elite are listed. All occupations as coded by IPUMs with at least 200 individuals in the median are listed. Nec is short for not otherwise classified. There are 695 individuals in the elite and 12,926 individuals in the median. All individuals were white men and all were in the elite or median *of their own state*.

Table 4.2: Initial Conditions and Occupational Homogeneity in 1860

Dependent Variable	HHI elite	Elite Wealth
	(1)	(2)
Precipitation	0.56**	-0.00
	(0.22)	(0.29)
Temperature	0.21	0.69***
	(0.29)	(0.21)
Transportation	1.17**	-1.26**
	(0.44)	(0.59)
Civil	-0.09	0.02
	(0.40)	(0.50)
Observations	28	28
R-squared	0.44	0.33
Joint exclusion of precipitation and temperature (p-value)	0.00	0.01

Notes: All of the variables except civil have been standardized to have a mean of zero and a standard deviation of one. Thus, in column (1), a one standard deviation increase in precipitation leads to a 0.55 standard deviation increase in HHI of the elite. Standard errors are corrected for heteroskedasticity: and, the notation *, **, and *** denotes statistical significance at the 10-percent, 5-percent, and 1-percent levels.

Table 4.3: Wealth of State Legislators in the Upper and Lower South

State	Median Wealth of Legislator in 1860	90th Percentile of Wealth Distribution in 1860	95th Percentile of Wealth Distribution in 1860	99th Percentile of Wealth Distribution in 1860
Alabama, House & Senate	21,000 (H) 58,500 (S)	13,370	27,000	86,000
Arkansas, House & Senate	9,000 (H) 18,000 (S)	6,000	13,900	80,000
Florida, House & Senate	9,000 (H) 52,000 (S)	7,400	14,500	44,000
Georgia, House & Senate	13,000 (H) 21,000 (S)	8,500	18,360	62,000
Kentucky, House & Senate	9,250 (H) 12,000 (S)	6,000	11,010	38,000
Louisiana, House & Senate	18,000 (H) 35,839 (S)	10,000	25,000	191,130
Maryland, House & Senate	11,250 (H) 33,150 (S)	6,000	14,000	40,870
Mississippi, House & Senate	22,000 (H) 27,500 (S)	19,270	37,000	103,000
Missouri, House & Senate	8,300 (H) NA (S)	4,750	8,460	30,000
North Carolina, House & Senate	17,000 (H) 31,000 (S)	6,800	16,000	54,300
South Carolina, House & Senate	32,000 (H) 70,000 (S)	20,000	33,300	110,000
Tennessee, House & Senate	14,000 (H) 11,500 (S)	8,000	16,030	50,960
Texas, House & Senate	18,600 (H) 25,000 (S)	9,600	16,630	62,000
Virginia, House & Senate	17,000 (H) 35,000 (S)	11,460	21,500	72,600

Notes: Data for the Upper South are from Wooster (1975) Table 6 (p. 35) and Table 8 (p. 38). Data for the Lower South are from Wooster (1969) Table 4 (p. 39) and Table 5 (p. 40).

Table 4.4, Panel A: Elites and Political Competition

Specification	(1)	(2)
Period	Occupational Homogeneity	Wealth Shares
1866-1879	-9.28***	2.44
	(3.10)	(4.09)
1880-1899	-18.01***	0.88
	(2.58)	(4.45)
1900-1919	-19.32***	-1.14
	(3.07)	(5.60)
1920-1939	-18.02***	-0.86
	(2.79)	(5.45)
1940-1959	-23.24***	-1.78
	(3.59)	(5.88)
1960-1979	-23.32***	-9.97*
	(3.92)	(5.20)
1980-2000	-13.36***	-8.87**
	(4.09)	(3.83)

Notes: These are the results from OLS regressions where the sole explanatory variable apart from the constant is occupational homogeneity in specification (1) and wealth in specification (2).

Table 4.4, Panel B: Elites and Political Competition Controlling for the South

Specification	(1)		(2)	
Period	Occupational Homogeneity	South	Wealth Shares	South
1866-1879	-9.60*	1.00	4.92	-15.73**
	(4.76)	(10.97)	(4.18)	(7.63)
1880-1898	-13.96***	-12.70*	6.65**	-36.66***
	(3.29)	(6.93)	(3.23)	(6.52)
1900-1919	-10.19***	-28.59***	6.26	-47.05***
	(3.54)	(7.30)	(4.02)	(5.99)
1920-1939	-8.02**	-31.31***	6.53**	-46.94***
	(3.16)	(7.10)	(3.63)	(5.77)
1940-1959	-9.93***	-41.66***	7.80**	-60.81***
	(3.14)	(6.28)	(3.45)	(5.21)
1960-1979	-10.28**	-40.84***	-1.44	-54.13***
	(4.10)	(10.07)	(3.11)	(8.44)
1980-2000	-5.92	-23.28**	-4.38	-28.51***
	(5.16)	(10.21)	(3.30)	(8.41)

Notes: These are the results from OLS regressions where the explanatory variables apart from the constant are the South and occupational homogeneity in specification (1) and the South and wealth in specification (2).

Table 4.5: Elites in the North and South
Categorical Means

	Observations	Occupational homogeneity, 1860	Wealth shares, 1860
North	18	0.419 (0.026)	0.237 (0.015)
South	10	0.682 (0.063)	0.285 (0.024)
Difference in Means: North v. South		-0.264*** (0.068)	-0.048 (0.028)

Notes: Standard errors are in parentheses. To test for the differences in means, a two-sided t with unequal variances in utilized, and ***, ** and * denotes significance at the 1-percent, 5-percent and 10-percent levels.

Table 4.6: Water Transportation and Elites in 1860

Dependent Variable	HHI elite	HHI elite	Elite Wealth	Elite Wealth
	(1)	(2)	(3)	(4)
Transportation	1.44*** (0.47)	1.14** (0.49)	-0.15 (0.44)	-1.26** (0.54)
Controls	None	Precipitation and temperature	None	Precipitation and temperature
Observations	28	28	28	28
R square	0.22	0.43	0.00	0.33

Notes: Standard errors are corrected for heteroskedasticity: and, the notation *, **, and *** denotes statistical significance at the 10-percent, 5-percent, and 1-percent levels. Constant is estimated but not reported.

Table 4.7: Elite Wealth in 1860 and Income Distribution after 1920

Dependent Variable	Share of State income going to the top 1-percent of earners in a period	
Column	(1)	(2)
Period		
1920-1939	0.70** (0.29)	0.78* (0.38)
1940-1959	0.45*** (0.12)	0.45* (0.22)
1960-1979	0.32*** (0.07)	0.31** (0.13)
1980-2000	0.39** (0.18)	0.45* (0.22)
Controls	None	Precipitation, Temperature, Water Access, Legal Origins and Homogeneity of Elites

Notes: These are the results from OLS regressions where the sole explanatory variable, apart from the constant, is elite wealth in 1860. Constant is estimated but not reported. Standard errors are corrected for heteroskedasticity: and, the notation *, **, and *** denotes statistical significance at the 10-percent, 5-percent, and 1-percent levels.

Table 4.8: Occupational Homogeneity of Elite and Political Competition, OLS and 2SLS Estimates

Column	(1)	(2)	(3)	(4)
Estimation procedure	OLS	2SLS	2SLS	2SLS
Controls	None	None	Access to Ocean	Precipitation and Temperature
1866-1878	-9.28***	-15.05**	-13.88*	-25.19*
	(3.10)	(8.76)	(7.20)	(14.34)
1880-1898	-18.01***	-25.31***	-26.22***	-30.28**
	(2.58)	(6.97)	(5.93)	(11.84)
1900-1918	-19.32***	-36.61***	-34.83***	-39.67**
	(3.07)	(9.01)	(6.97)	(17.48)
1920-1938	-18.02***	-33.17***	-31.75***	-33.56**
	(2.79)	(8.16)	(6.53)	(14.06)
1940-1958	-23.24***	-39.36**	-37.21***	-42.56***
	(3.59)	(9.92)	(7.61)	(18.14)
1960-1978	-23.32***	-35.18***	-37.14***	-22.89**
	(3.92)	(8.83)	(7.09)	(10.93)
1980-2000	-13.36***	-17.28**	-19.81***	-8.53
	(4.09)	(7.30)	(5.38)	(9.76)

Notes: The F-statistics for transportation (the instrument) in the first stage regression in columns (2), (3) and (4) are 9.6, 12.9 and 5.6. Thus, access to water is a reasonably strong instrument.

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Appendix

Table 4.1A Initial Conditions and the Ranney Index, 1870-2000
(36 states, Table 3.6)

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	-13.19*** (4.06)	-1.20 (3.25)	1.25 (6.15)	-9.00 (8.26)
Fixed effects estimates, (1990-2000 is the reference period) 36 states				
1870s	3.771 (7.119)	1.002 (5.741)	20.70** (9.663)	-22.00** (11.04)
1880s	-1.790 (5.885)	4.685 (4.637)	2.651 (8.065)	-29.09*** (9.126)
1890s	11.88** (5.720)	-6.783 (4.510)	8.213 (7.860)	-19.98** (8.902)
1900's	-3.698 (5.717)	-0.640 (4.508)	-9.814 (7.866)	-16.82* (8.914)
1910's	-0.176 (5.722)	-7.555* (4.520)	-10.46 (7.882)	-15.35* (9.004)
1920's	2.073 (5.709)	-0.475 (4.492)	-9.642 (7.872)	-9.735 (8.821)
1930's	-5.428 (5.706)	-7.752* (4.492)	-3.007 (7.847)	-15.55* (8.826)
1940's	-8.455 (5.693)	-6.944 (4.489)	0.619 (7.827)	-29.36*** (8.842)
1950's	-6.972 (5.652)	-7.467* (4.459)	0.186 (7.771)	-20.87** (8.796)
1960's	-6.561 (5.543)	-5.917 (4.374)	-0.114 (7.623)	-19.28** (8.643)
1970's	-1.451 (5.256)	-9.912** (4.148)	5.556 (7.228)	-15.09* (8.186)
1980's	-4.239 (4.447)	-5.393 (3.509)	-0.485 (6.115)	-9.086 (6.925)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. Nebraska was dropped, because it has a unicameral legislature, and Arizona, Colorado, Idaho, Montana, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Washington and Wyoming were all dropped, because they have limited data for this period. Data is for even years, because legislatures are elected on a two or four year cycle. This model includes a first-order autoregressive error term (which is a two year lag since only even-years are included). The correlation (Durbin Watson statistic) coefficient for contemporary and two-year lagged errors is 0.65. The panel is reasonably balanced with years covered per state running from 60 to 64 (full coverage). The number of observations is 2,277.

Table 4.2A Initial Conditions and the Ranney Index, 1870-2000
28 states that have data on elites

Initial Conditions	Precipitation	Temperature	Civil Law	Water Transportation
Column	(1)	(2)	(3)	(4)
OLS estimates, 1990-2000	-15.41*** (4.13)	-4.04 (3.34)	-5.22 (6.23)	-1.69 (11.22)
Fixed effects estimates, (1990-2000 is the reference period) 36 states				
1870s	7.593 (7.954)	5.553 (5.736)	28.93*** (9.427)	-51.11*** (15.01)
1880s	1.002 (6.312)	7.117 (4.741)	10.31 (7.893)	-47.85*** (12.11)
1890s	8.780 (6.165)	-0.538 (4.657)	15.34** (7.787)	-34.33*** (11.82)
1900's	4.447 (6.204)	2.542 (4.662)	6.583 (7.870)	-40.74*** (11.74)
1910's	8.168 (6.175)	-3.587 (4.666)	9.163 (7.819)	-49.03*** (11.81)
1920's	11.83* (6.164)	1.144 (4.665)	8.860 (7.834)	-28.86** (11.87)
1930's	0.391 (6.164)	-4.285 (4.665)	15.16* (7.809)	-45.47*** (11.87)
1940's	-1.259 (6.158)	-3.948 (4.660)	18.49** (7.796)	-53.38*** (11.86)
1950's	-1.572 (6.134)	-6.837 (4.642)	14.59* (7.766)	-35.28*** (11.80)
1960's	-2.071 (6.059)	-6.898 (4.584)	10.73 (7.676)	-31.37*** (11.64)
1970's	-0.980 (5.830)	-10.59** (4.411)	12.12 (7.381)	-26.25** (11.23)
1980's	-3.757 (5.062)	5.713 (3.831)	3.625 (6.409)	-13.80 (9.770)

Notes: The constant and controls for annual time effects are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. This model includes a first-order autoregressive error term (which is a two year lag since only even-years are included). The correlation (Durbin Watson statistic) coefficient for contemporary and two-year lagged errors is 0.60. The panel is reasonably balanced with years covered per state running from 60 to 64 (full coverage). The number of observations is 1,774.

Table 4.3A: Occupational Homogeneity of Elite and Political Competition, Panel 2SLS Estimates

Column	(1)	(2)
2SLS estimates, 1980-2000	-17.28** (7.30)	-8.53 (9.76)
Fixed effects estimates	1980-2000 is the reference period for time varying effects of Elites	
1866-78	2.23 (10.44)	-16.66 (11.52)
1880-98	-8.03 (9.48)	-21.74* (12.57)
1900-18	-19.32* (11.17)	-31.14* (17.96)
1920-38	-15.89 (10.30)	-25.02* (14.87)
1940-58	-22.08* (11.58)	-34.03* (17.75)
1960-78	-17.90** (7.32)	-14.36* (8.31)
Controls	Fixed Effects and National Period Effects	
Additional Controls	None	Precipitation and Temperature, time varying

Notes: The constant, controls for annual time effects, fixed effects and time varying effects of climate are not reported. The notation ***, ** and * denotes significance at the 1 percent, 5 percent and 10 percent levels. The panel is balanced and the number of observations is 196 (7 period time 28 states). The system is exactly identified by differential effect of water transportation in each 20-year period. Standard errors are clustered at the state level.