The Balance of Power Among Economic Elites and the Establishment of Power-Sharing Institutions

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Abstract

Recent work on the creation of institutions suggests that the composition of elites has consequences for the design of legal frameworks, tax regimes, and electoral systems. We contribute to this literature by explaining variation in the establishment of political power-sharing institutions, particularly horizontal and vertical accountability mechanisms. Different from previous elite-based arguments, we propose that it is not the mere presence of competition among elite groups, but the balance of power between them, that explains the establishment of political accountability mechanisms. We use an original measurement on geological resource diversity as an instrument for intra-elite balance of power, as proxied by levels of market concentration, to estimate the latter’s effect on institutional design. Our cross-national analysis shows that where geological resources are more diverse, competition between similarly powerful groups within the economic elite is more likely to emerge, leading ultimately to the establishment of accountability mechanisms that allow elite groups to protect their diverging interests. We illustrate the inter-temporal dynamics of our argument through two historical case studies.

* This is a preliminary draft. Please do not cite or circulate without permission by the authors. Comments are welcome.
Acknowledgments

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1 Introduction

A broad consensus in political economy sustains that institutions affect economic development. Many contributions suggest that institutional arrangements, which protect property rights, establish the rule of law, and create incentives necessary for sustained technological change, are associated with prosperity (Acemoglu, Johnson, & Robinson, 2001; Acemoglu & Robinson, 2013; Evans, 1995; Haggard, 1990; North, 1990; North & Thomas, 1973; North, Wallis, & Weingast, 2009; Przeworski & Limongi, 1993; Wade, 1990). Moreover, many scholars find a positive correlation between democracy and economic development, arguing that economic development is associated with rising education levels, greater social complexity, and the emergence of the middle class, which are key forces behind democratization (Boix & Stokes, 2003; L. Diamond, Hartlyn, Linz, & Lipset, 1999; Epstein, Bates, Goldstone, Kristensen, & O’Halloran, 2006; Lipset, 1959).

However, among middle- and high-income countries there is wide variation in regime types and the quality of institutions (Huntington, 1984; Muller, 1995). These observations have opened a prolific debate about the direction of the relationship between economic prosperity and institutional design. Furthermore, they lead to one of the most fundamental questions in political economy, why do institutions and institutional quality vary significantly across countries?

Because political institutions affect the distribution of power and wealth in society, they are typically treated as an endogenous to social structures. For example, Ansell and Samuels (2014) argue that an intra-elite dispute between the owners of land and an emerging manufacturing elite explains transitions to democracy. Similarly, others posit that intra-elite dynamics explains variations in legal frameworks (Berkowitz & Clay, 2011), income tax regimes (Mares & Queralt, 2015), fiscal capacity (Beramendi, Dincecco,
& Rogers, 2018), and malapportionment in electoral systems (Beramendi & Rogers, 2015). 

In this paper, we build on this literature to explain why some countries adopt institutional arrangements that establish a complex power-sharing system while others do not. In particular, we are interested in explaining why some nations establish accountability mechanisms that allow to put limits on those who momentarily hold power.

However, different from previous contributions, we argue that the balance of power—defined as the symmetric/asymmetric distribution of access to economic resources—between groups within the economic elite, influences the existence of power-sharing institutions, particularly institutional arrangements that generate accountability mechanisms. On the one hand, we argue that when there is a symmetric distribution of economic power within the elite—that is, given the presence of multiple yet similarly powerful groups—it is more likely that institutions embodying checks and balances emerge. In such a setting, in equilibrium, competition between elite factions leads to a political compromise about the establishment of power-sharing institutions. These institutions make it more difficult for any one faction to step over the interests of others.

On the other hand, when power is asymmetrically distributed within the elite—that is, a single or a few factions enjoy disproportionately high levels of economic power—it is more likely that no power-sharing institutions will emerge. In such cases, the powerful faction that dominates the economy is likely to capture the state and lock in a set of rules that block the emergence of competitors. Thus, the theory we propose is not about how intra-elite competition or the lack thereof shapes political institutions but about how the balance of power between elite factions does so.

To address potential endogeneity problems and related issues of reverse causality, the empirical novelty of this paper is the creation of an original measurement of resource
diversity that instruments for elite balance of power. The presence of natural resources is
not dependent on social organization and thus it is causally prior to political institutions.⁠¹
We claim that countries with several resources available in similar quantities—i.e., high
resource diversity—are more likely to give rise to multiple elite groups that enjoy relatively
symmetric degrees of economic power. Due to a plurality of downstream industries and
lower market concentration, an economy with high resource diversity is more likely to
produce multiple economic factions with competing interests. Likewise, countries with
low resource diversity tend to give rise to a monolithic elite and, therefore, to low intra-
elite competition, indicated by high market concentration.

Our novel measurement of resource diversity assesses the extent to which many dif-
ferent resources in similar quantities are present in a country. This is different from
traditional measurements that mainly focus on resource rents or the size of a country’s
resource stock, but not the internal distribution of resources.

In addition to the literatures on elites and democratization (Albertus & Menaldo,
2018; Ansell & Samuels, 2014), our study speaks to several bodies of the political economy
literature. First, we draw upon a recent but rapidly growing literature that associates
geography, elite configurations, and political institutions (Beramendi & Rogers, 2015;
Berkowitz & Clay, 2011; Boix, 2015; Easterly, 2007). Like these authors, we posit a
strong relationship between exogenous environmental factors—climate and distance to
navigable waterways in the case of Berkowitz and Clay (2011); “rich soils and a salubrious
climate” in the case of Boix (2015, 209); geographic concentration of economic activity
in the case of Beramendi and Rogers (2015); and the diversity in resource endowments in
ours—, the configuration of economic elites, and their impact on institutions. However,

⁠¹Nevertheless, there could be some endogeneity of the discovery of natural resources with social
organization (Berkowitz & Clay, 2011, 75). We discuss this issue in the appendix (subsection A.5).
our argument differs in that it underscores the balance of power between elite groups, and not their economic homogeneity, the reconfiguration of their interests, or the presence of multiple elites versus a single elite. Furthermore, differently from these works, ours specifically examines power-sharing institutions.

Moreover, our argument also draws upon existing works that investigate how environmental conditions (Acemoglu et al., 2001; Boix, 2015; Nunn & Puga, 2012) and natural resources affect economic, social, and political organization (Engerman & Sokoloff, 1997; Goldberg, Wibbels, & Mvukiyehe, 2008; Sachs & Warner, 1997). According to the resource curse thesis, abundance of resources can promote rent-seeking and predatory or authoritarian states (Auty, 2001; Karl, 1997; Ross, 2001). Similarly, some studies find a negative correlation between resource wealth and the duration of democratic regimes (Ulfelder, 2007). Several works also point out that the presence of oil in particular has a negative effect on democracy (Karl, 1997; Tsui, 2011). Additionally, high concentrations in resources may fuel domestic armed conflict (Le Billon, 2001). This effect of resources on political organization could be conditional on market structures (Dunning, 2005, 2008), institutions (Mehlum, Moene, & Torvik, 2006; Robinson, Torvik, & Verdier, 2006), and resource ownership (Luong & Weinthal, 2010).

However, when accounting for potential endogeneity, the relationship between resources and development could be positive (Brunnschweiler & Bulte, 2008, 2009). Similarly, other studies suggest that resource wealth has positive impact on regime durability regardless of the type of regime (Smith, 2004); that it does not block democratization (Liou & Musgrave, 2014); and that is has a positive effect on economic growth (Alexeev & Conrad, 2009). Moreover, some scholars suggest that natural resources potentially have positive social consequences (Haber & Menaldo, 2011; Menaldo, 2016; Mitchener &
We share the understanding that resources can have an impact on socio-economic development. However, we argue that resource configurations—specifically also diversity; in addition to endowment levels—affect social structures and political institutions.

This paper proceeds as follows. First, we present our theory of elite power balance and accountability institutions. Second, we construct a novel measurement of resource configurations and conduct a cross-national analysis. Finally, we present two case studies which illustrate the inter-temporal dynamics of resource configurations, elite competition, and the existence of power-sharing institutions.

For an opposing perspective, see Andersen and Ross (2014).
2 Intra-Elite Balance of Power and Accountability

Institutions

We define the economic elite as the set of individuals who own and/or manage the factors of production and extraction in an economy. Within it, there are often multiple subgroups that manage the extraction, processing, utilization, and/or trading of specific resources, goods, and their derivatives. We assume each of these groups has an interest in promoting the development of the economic sector they are associated with, which involves advancing policies that might be at odds with the interests of other groups.

The literatures on international and comparative political economy provide comprehensive evidence that different subgroups of the economic elite have diverging interests with respect to a large number of policy issues, indicating the presence of latent intra-elite conflicts. Specifically, the literature on trade shows that preferences around trade policy are typically divided between the owners of different production factors (Rogowski, 1989) or of export-oriented and import-competing activities (Frieden, 1992). Moreover, a recent set of contributions has shown that issues such as democratization (Ansell & Samuels, 2014), taxation (Mares & Queralt, 2015), and fiscal capacity (Beramendi et al., 2018) divide economic elites between those who own land and those who are involved in manufacturing activities. Similarly, Mizruchi (1989) finds evidence that when two businesses are dependent on different primary industries, they display divergent political behavior.

Building upon these works, we claim that the benefits and costs of economic policies are asymmetrically distributed across factions of the economic elite. As Ippolito and Walker (1980, 282) point out,

\[^3\text{For a comprehensive literature review on how economic elites are treated in the international and comparative political economy literatures, see Paniagua (2018).}\]
“the business community is not a monolithic, single-minded entity. [...] A policy responsive to the needs of the natural gas industry might jeopardize the future of the coal companies. For this reason, business groups often conflict with each other...”

Thus, different groups within the economic elite most likely have opposing preferences over key policy issues, resulting in a situation of persistent latent conflict where each elite subgroup wants to implement its particular policy preferences over those of other groups. This means that each group within the economic elite needs to protect itself from situations in which other groups gain unchecked political power. In other words, each subgroup needs to ensure that they either hold power and implement their own policy preferences, or, if they are not in power, that institutional mechanisms put limits on office holders.

Given these circumstances, a possible course of action is to capture the state apparatus, a process that inevitably supposes the eruption of disruptive conflict between a current incumbent group and a single or multiple challenger elite groups who mobilize their economic resources for political purposes (Ansell and Samuels, 2014, 40; Acemoglu and Robinson, 2005, 80). However, the likelihood of disruptive conflict depends on the balance of power within the elite. When economic power is more evenly distributed within the economic elite, it is unlikely that a single elite group could succeed in such a disruptive conflict. Therefore, disruptive conflicts with the goal of capturing the state apparatus are less likely to be initiated by any faction. Considering that there are few opportunities for a single elite to dominate, elites are likely to enter a compromise, which creates power-sharing institutional arrangements and generate a credible commitment against unchecked power.

How does a symmetric distribution of economic power prevent the emergence of disruptive conflict? When no group has significantly more economic power than others, the
chances of any one group to establish and exercise disproportionate control over political institutions are scant. Furthermore, considering the costs associated with engaging in intra-elite conflict under these conditions, the less likely it is a group will consider confronting other groups. Under these circumstances, we would expect a balance of economic power to lead to elite compromise. This compromise entails the establishment of power-sharing mechanisms, in particular accountability institutional arrangements that allow elite groups to protect their interests from being overstepped by the group that is momentarily in power. To put it differently, when there is balance of power between elite groups, in equilibrium, due to low chances of success and significant costs, elite factions have only marginal incentives to engage in disruptive conflict to capture the state.

In the alternative scenario characterized by an imbalance of power across elite factions—with one group enjoying disproportionate economic power—we instead expect the stronger faction to have both the incentives and capacity to capture the state and impose its preferences over those of others. Simultaneously, the weaker factions will have no incentives to expose themselves to a futile fight over controlling the state. In such a situation, it is unlikely that the dominant elite group will pursue the implementation of accountability mechanisms that would allow weaker elite groups to protect their interests.

Between these two extremes, there are many possible intermediate scenarios. In all in-between cases, different groups within the elite might perceive they could be able to dominate the others. Then, attempts to capture the state are likely to occur albeit not to succeed permanently. While such attempts may take place, as long as elite factions perceive there is a relative balance in their power, an elite compromise with the creation of democratic power-sharing institutions—allowing for a number of different interests to be represented in political decision-making—is the most stable equilibrium outcome.
Of course, the relationship between intra-economic elite dynamics and institutional arrangements is subject to potential feedback loops: institutions might shape economic structures and affect intra-elite dynamics (Acemoglu & Robinson, 2013; Mehlum et al., 2006; Robinson et al., 2006). Thus, to test the plausibility of our argument we use geological resource diversity as an instrument for intra-elite competition. Building upon an extensive literature which posits that geographic conditions shape social and economic organization (Clark & Jacks, 2007; J. M. Diamond, 1998; Shulman, 2015), we claim that the diversity of geological resources has a significant impact on the emergence of economic elite factions. Specifically, we argue that resource diversity, that is, the presence of various natural resources in similar quantities, is likely associated with the existence of multiple elite factions that have a relatively similar strength. Because of the likely emergence of multiple elites and/or downstream industries, great diversity in natural resources means both greater intra-elite competition and greater economic complexity, often reflected by low levels of market concentration (i.e. more market competition). Under these conditions, when many resources are present in similar quantities, the economic power between elite groups is closer to being balanced: no single group has the economic power to dominate the others by the means of coercion.

On the other hand, where a single natural resource dominates, that is, where resource diversity is low, there is a high degree of economic monolithicity. In this scenario, a single subgroup of the economic elite concentrates the ownership of valuable economic assets centered on the extraction and/or trading of this resource, leading to high levels of market concentration. Under such conditions, we argue, there are fewer conflicts of interest within the elite, and the relative economic power base of one subgroup is greater. Since there are no other significant resources available in this economy, the chances of a
rival or competitor elite emerging are smaller.\footnote{Similarly, Goldberg et al. (2008) find evidence that American states in which the oil industry provided rents to political elites suffered from lower levels of political competition.}

In short, without intra-elite competition, we expect the predominance of exclusive political institutions. We derive the following empirical expectations from this theory:

**Hypothesis 1:** In countries with greater resource diversity, we expect higher levels of intra-elite competition, indicated by lower levels of market concentration.

**Hypothesis 2:** In countries with higher levels of intra-elite competition, indicated by lower levels of market concentration, we expect the presence of stronger power-sharing institutions.

In the appendix, we discuss the temporal limitation of our theory to the period of industrialization (subsection A.4) the role of ‘pre-existing elites’ (subsection A.1).
3 Empirical Test

We empirically test our argument with a cross-national instrumental-variable (IV) regression. First, we investigate the link between resource configurations and market concentration. Second, we use resource configurations as an instrument to estimate the relationship of market concentration and power-sharing institutions.

Since endowment data for large number of specific resources is only available for recent years, our empirical analysis is focused on cross-country comparisons. Considering the potential shortcomings of such an approach (Haber & Menaldo, 2011), we also explore the inter-temporal dynamics of our theory through case studies (section 5).

3.1 The Dependent Variable: Power-Sharing Institutions

We are primarily interested in explaining variation in power-sharing institutions, for which we use a variety of indicators from the Varieties of Democracy dataset (Coppedge et al., 2018).\(^5\) They all have in common that they refer to mechanisms to decentralize, distribute, or put checks on political power.

(1) Division of power index: Refers to the division of power between federal, regional, and local government institutions.

(2) Election Management Body (EMB) autonomy: Refers to the degree to which the body managing national elections can operate without political interference.\(^6\)

(3) Political civil liberties index: Refers to the comprehensiveness and strength of political civil liberties, i.e. rights to organize politically.

(4) Horizontal accountability index: Refers to the degree of accountability be-

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\(^5\)We use data from the year 2015 as this marks the most recent year with wide data availability.

\(^6\)The fair conduct of elections is a central feature of democratic political systems and its absence indicates authoritarianism (Levitsky & Ziblatt, 2018, Ch. 4).
tween branches of government.

(5) **Vertical accountability index:** Refers to the degree of accountability of the government towards citizens.

In the appendix, we provide more information on these variables (subsection A.2) and show the correlation with economic development (subsection A.3).

### 3.2 The Instrument: Resource Configurations

To measure natural resource endowments and diversity, we create a novel indicator. The first two versions of this measurement are based on seven resources that are of great strategic and/or economic value. Whereas the first measurement relies on the earliest data available, the second one relies on the most recent data available. The resources considered are the following:

1. Coal (reserves) *(BP, 2017)*
2. Iron Ore (production) *(USGS, 2014)*
3. Oil (reserves) *(BP, 2017)*
4. Natural Gas (reserves) *(BP, 2017)*
5. Diamonds (production) *(Kimberly Process, 2016)*
6. Agricultural Land (reserves) *(World Bank, 2017)*
7. Timber/Forest Area (reserves) *(World Bank, 2017)*

A third measurement incorporates three additional resources of great relevance for modern economies (often constituting their own industries):\(^8\)

1. Aluminum (production) *(Matos, 2015)*
2. Copper (production) *(Matos, 2015)*
3. Pig Iron (production) *(Matos, 2015)*

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\(^7\)For more details on the different measurements, see the appendix (subsection A.7).

\(^8\)Additionally, in the third measurement, we standardize agricultural land and forests by both area and population instead of just area.
As many of these resources only achieve their full value through industrialization, we discuss the limitations of our approach in the appendix (subsection A.4).

In order to reduce potential measurement errors in the creation of this indicator we followed certain rules. First, we chose sources that offer data for as many countries as possible (as we have to assume a value of zero for other countries).

Second, when multiple measurements that cover a similar number of countries were available, we chose data on endowments over data on production (extraction) levels, since the latter could be endogenous to political regimes (Brunnschweiler & Bulte, 2008, 2009).

Third, we use data from the earliest moment of data availability. On the one hand, this is to ensure that our independent variable is measured temporally prior to our dependent variable whenever possible. Additionally, economic elites and downstream industries may have emerged historically, and the natural resources may have declined over time. In order to ensure that the eventual exhaustion of those resources does not obfuscate historical differences, we use the earliest data available for each resource.9

We use these data to construct three different measurements of resource diversity. Our measurements capture the extent to which a country has many different resources in comparable quantities. All mathematical details on the construction of the measurement can be found in the appendix (subsection A.6). As resources existed prior to social organization and most of the resources measured were of little/no strategic value during the era of imperialism, we suggest that the requirement of exogeneity and as-if randomness is met (Angrist, Imbens, & Rubin, 1996). Nonetheless, we address some potential issues of endogeneity with social organization in the appendix (subsection A.5).

Figure 1 and Figure 2 show the distribution of resource endowments and resource

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9Detailed information on the date of measurement is provided in the appendix (subsection A.7). We alternatively use recent data in our second measurement of diversity.
diversity (according to our first measurement) across countries. Further graphs, based on the other measures, can be found in the appendix (subsection A.8 and subsection A.9).

Figure 1: Scatterplot — Resource Diversity and Resource Endowments (1st Meas.)
3.3 The Key Explanatory Variable: Average Market Concentration

As a proxy to measure competition within the economic elite we use the average level of market concentration. Market concentration is high when a few firms have a large market share and low when many firms of similar size are present. When market concentration is high, the owners and managers of the most dominant firms concentrate a high level of economic power, which can be used to influence politics and push through particular interests (Du Boff & Herman, 2001, 26-28). Economic power can be used to finance political parties, bribe office holders, and fund campaigns. Especially small, homogeneous groups can exert disproportionately high levels of influence on politics (Olson, 2009).

The measurement we use is based on an indicator created by Ballesteros (2016) who utilizes the Herfindahl-Hirschman Index to estimate the degree of market concentration by industry and country. We rely on this data based on the year 2006 to calculate
the average market concentration across industries. Since this variable is based on all industries within a country, we expect that there are only marginal changes from year to year. Considering that yearly changes can be expected to be small, we do not anticipate any problems associated with the time of measurement.

Under conditions of high market concentration, i.e. low levels of intra-elite competition, we expect the absence of power-sharing mechanisms. As shown in the appendix (subsection A.11), we find this theoretical expectation confirmed. However, similar to economic development, it is not entirely clear if this is a one-directional relationship due to the possible presence of endogeneity. Therefore, in our main empirical analysis, we rely on two-stage regression with natural resource configurations as our instrument.

3.4 Covariates and the Possibility of Endogeneity

In addition to market concentration, we include two covariates. Due to our confidence in the relative exogeneity of resource configurations and the potential of measuring the same concept twice (resource endowments vs. resource rents, see subsection A.10), we only include these covariates to demonstrate that many of our results hold even when accounting for these additional factors.

**GDP PC (Log.):** We use the natural logarithm of GDP per capita to account for levels of economic development.

**Resource Rents (% of GDP):** We use the level of resource rents as percent of GDP to address the possible argument that our analysis merely replicates the resource curse.

However, these models might suffer from endogeneity. As inclusive political institutions likely affect economic development (Acemoglu & Robinson, 2013; Baum & Lake, 2003) and political configurations can impact the level of resource rents (Brunnschweiler
Bulte, 2008, 2009), the results with additional covariates are likely to be biased. Thus, we favor the models without controls and only include additional variables to be fully transparent about the robustness of our results under varying conditions.

In the appendix, we discuss and empirically examine the validity of the exclusion restriction (subsection A.10). We also show how the inclusion of settler mortality as measured by Acemoglu et al. (2001) as an additional/alternative instrument affects our results (subsection A.12).

3.5 Descriptive Statistics

In Table 1, we show descriptive statistics for all variables used in the empirical analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Min</th>
<th>q1</th>
<th>x̄</th>
<th>q2</th>
<th>x̂</th>
<th>q3</th>
<th>Max</th>
<th>IQR</th>
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</thead>
<tbody>
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<td>Market Concentration</td>
<td>169</td>
<td>0.21</td>
<td>0.82</td>
<td>0.89</td>
<td>0.93</td>
<td>1.00</td>
<td>1.00</td>
<td>0.18</td>
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<tr>
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<td>162</td>
<td>0.00</td>
<td>13.60</td>
<td>13.64</td>
<td>14.06</td>
<td>14.39</td>
<td>15.08</td>
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<td>-0.49</td>
<td>-0.14</td>
<td>0.01</td>
<td>-0.03</td>
<td>0.05</td>
<td>3.81</td>
<td>0.19</td>
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<tr>
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<td>13.73</td>
<td>14.13</td>
<td>14.48</td>
<td>15.16</td>
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<tr>
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<td>189</td>
<td>-0.52</td>
<td>-0.13</td>
<td>0.00</td>
<td>-0.03</td>
<td>0.04</td>
<td>3.77</td>
<td>0.17</td>
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</tr>
<tr>
<td>Resource Diversity 3</td>
<td>151</td>
<td>0.00</td>
<td>14.34</td>
<td>13.94</td>
<td>14.92</td>
<td>14.98</td>
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<td>0.64</td>
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<tr>
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<td>151</td>
<td>-0.20</td>
<td>-0.18</td>
<td>0.01</td>
<td>-0.14</td>
<td>-0.05</td>
<td>3.41</td>
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<td>Division of Power Index</td>
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<td>0.19</td>
<td>0.51</td>
<td>0.47</td>
<td>0.88</td>
<td>0.99</td>
<td>0.70</td>
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<td>EMB Autonomy</td>
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<td>Civil Political Liberties Index</td>
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<td>0.81</td>
<td>0.91</td>
<td>0.98</td>
<td>0.39</td>
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<td>Horizontal Accountability Index</td>
<td>169</td>
<td>-1.50</td>
<td>-0.27</td>
<td>0.50</td>
<td>0.70</td>
<td>1.20</td>
<td>2.17</td>
<td>1.47</td>
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<tr>
<td>Vertical Accountability Index</td>
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<td>-1.40</td>
<td>0.32</td>
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<td>GDP PC (Log.)</td>
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<td>9.22</td>
<td>9.37</td>
<td>10.17</td>
<td>11.85</td>
<td>1.97</td>
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<tr>
<td>Resource Rents (%GDP 2015)</td>
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<td>0.35</td>
<td>5.78</td>
<td>2.04</td>
<td>8.23</td>
<td>46.44</td>
<td>7.89</td>
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Table 1: Descriptive Statistics: Empirical Analysis
4 Results

4.1 IV Regression: Stage 1

Table 2 shows the results of our first-stage regression. We find that resource diversity is negatively associated with average market concentration. These results are in line with our first hypothesis: resource diversity leads to greater fragmentation within the economic elite.

Resource endowments are also negatively associated with market concentration. This result is also in line with our argument as countries with some resource endowments can develop at least one economic elite (in addition to a political-administrative elite).

Table 2: Stage 1: Resource Configurations and Market Concentration

<table>
<thead>
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<th>Dependent variable:</th>
<th>Market Concentration</th>
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</thead>
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<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Resource Diversity 1</td>
<td>−0.026**</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
</tr>
<tr>
<td>Resource Endowment 1</td>
<td>−0.169***</td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
</tr>
<tr>
<td>Resource Diversity 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Endowment 2</td>
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<tr>
<td>Resource Endowment 3</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.245***</td>
</tr>
<tr>
<td></td>
<td>(0.158)</td>
</tr>
<tr>
<td>Observations</td>
<td>147</td>
</tr>
<tr>
<td>R²</td>
<td>0.074</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.062</td>
</tr>
</tbody>
</table>

Note: OLS *p<0.1; **p<0.05; ***p<0.01
4.2 IV Regression: Stage 2, First Measurement

In the second stage of our regression, we estimate the effect that average market concentration has on our different measurements of power-sharing institutions. Figure 3 and Figure 4 graphically show the effect of market concentration when we use values that are predicted by natural resource configurations.\textsuperscript{10} As expected, we observe a strongly negative relationship between market concentration and the presence of democratic power-sharing institutions. Thus, these results confirm hypothesis 2.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Market Concentration (IV1) and Division of Power Index}
\end{figure}

\textsuperscript{10}The figures include 90%-confidence intervals.
Table 3 and Table 4 show detailed numerical results of our IV regression. In the appendix (subsection A.13), we discuss a large number of diagnostic tests for all three measurements, including weak instruments, Wu-Hausman, and Sargan tests.

Table 3: Market Concentration (IV1) and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Market Conc. (IV1)</td>
<td>-3.005***</td>
<td>-8.528***</td>
<td>-2.004***</td>
<td>-5.307***</td>
<td>-4.113***</td>
</tr>
<tr>
<td></td>
<td>(0.861)</td>
<td>(2.771)</td>
<td>(0.743)</td>
<td>(1.746)</td>
<td>(1.268)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.170***</td>
<td>8.453***</td>
<td>2.474***</td>
<td>5.227***</td>
<td>4.412***</td>
</tr>
<tr>
<td></td>
<td>(0.758)</td>
<td>(2.426)</td>
<td>(0.652)</td>
<td>(1.527)</td>
<td>(1.114)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE  
*p<0.1; **p<0.05; ***p<0.01
Table 4: Market Concentration (IV1) and Democratic/Inclusive Institutions (With Controls)

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Conc. (IV1)</td>
<td>−4.396***</td>
<td>−18.241***</td>
<td>−3.948**</td>
<td>−8.368**</td>
<td>−7.628**</td>
</tr>
<tr>
<td></td>
<td>(1.494)</td>
<td>(6.461)</td>
<td>(1.514)</td>
<td>(3.530)</td>
<td>(3.224)</td>
</tr>
<tr>
<td>GDP PC (Log.)</td>
<td>−0.184**</td>
<td>−0.687*</td>
<td>−0.197**</td>
<td>−0.216</td>
<td>−0.258</td>
</tr>
<tr>
<td></td>
<td>(0.081)</td>
<td>(0.368)</td>
<td>(0.078)</td>
<td>(0.211)</td>
<td>(0.189)</td>
</tr>
<tr>
<td>Resource Rents (Pct.)</td>
<td>0.002</td>
<td>0.0002</td>
<td>0.001</td>
<td>−0.004</td>
<td>−0.002</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.029)</td>
<td>(0.007)</td>
<td>(0.017)</td>
<td>(0.016)</td>
</tr>
<tr>
<td>Constant</td>
<td>6.064***</td>
<td>23.288***</td>
<td>5.989***</td>
<td>9.922**</td>
<td>9.888**</td>
</tr>
<tr>
<td></td>
<td>(1.976)</td>
<td>(8.750)</td>
<td>(1.981)</td>
<td>(4.881)</td>
<td>(4.414)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE  
*p<0.1; **p<0.05; ***p<0.01

4.3 IV Regression: Stage 2, Second Measurement

Table 5 and Table 6 present the results of our second-stage regression when using the second measurement of resource configurations. In general, we find similar results as in our first analysis. However, when including control variables, some of the relationships do not reach conventional levels of statistical significance. This may be due to issues of endogeneity (which occur when covariates are included) as discussed in the previous section and in the appendix (subsection A.10).

Table 5: Market Concentration (IV2) and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Market Conc. (IV2)</td>
<td>−3.105***</td>
<td>−7.238**</td>
<td>−1.575**</td>
<td>−3.698</td>
<td>−2.673*</td>
</tr>
<tr>
<td></td>
<td>(1.091)</td>
<td>(3.530)</td>
<td>(0.783)</td>
<td>(2.241)</td>
<td>(1.460)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.271***</td>
<td>7.358**</td>
<td>2.105***</td>
<td>3.827*</td>
<td>3.172**</td>
</tr>
<tr>
<td></td>
<td>(0.965)</td>
<td>(3.111)</td>
<td>(0.690)</td>
<td>(1.980)</td>
<td>(1.296)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE  
*p<0.1; **p<0.05; ***p<0.01
Table 6: Market Concentration (IV2) and Democratic/Inclusive Institutions (With Controls)

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Market Conc. (IV2)</td>
<td>-4.698**</td>
<td>-15.333*</td>
<td>-3.104*</td>
<td>-4.666</td>
<td>-4.452</td>
</tr>
<tr>
<td></td>
<td>(1.891)</td>
<td>(7.784)</td>
<td>(1.673)</td>
<td>(3.729)</td>
<td>(2.817)</td>
</tr>
<tr>
<td>GDP PC (Log.)</td>
<td>-0.199*</td>
<td>-0.518</td>
<td>-0.151*</td>
<td>-0.031</td>
<td>-0.090</td>
</tr>
<tr>
<td></td>
<td>(0.103)</td>
<td>(0.432)</td>
<td>(0.086)</td>
<td>(0.210)</td>
<td>(0.154)</td>
</tr>
<tr>
<td>Resource Rents (Pct.)</td>
<td>-0.001</td>
<td>-0.027</td>
<td>-0.005</td>
<td>-0.024</td>
<td>-0.018</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.029)</td>
<td>(0.006)</td>
<td>(0.015)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Constant</td>
<td>6.519**</td>
<td>19.477*</td>
<td>4.892**</td>
<td>5.120</td>
<td>5.696</td>
</tr>
<tr>
<td></td>
<td>(2.548)</td>
<td>(10.624)</td>
<td>(2.225)</td>
<td>(5.118)</td>
<td>(3.780)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE
*p<0.1; **p<0.05; ***p<0.01

4.4 IV Regression: Stage 2, Third Measurement

Table 7 and Table 8 show the results of our second-stage regression when using the third measurement of resource configurations. In general, we find results comparable to the ones obtained in our first and second analyses. However, similar to the above results, when using control variables, many variables are not statistically significant at conventional levels.

Table 7: Market Concentration (IV3) and Democratic/Inclusive Institutions

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</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Market Conc. (IV3)</td>
<td>-3.095**</td>
<td>-8.803**</td>
<td>-1.472*</td>
<td>-7.538***</td>
<td>-3.862**</td>
</tr>
<tr>
<td></td>
<td>(1.265)</td>
<td>(3.559)</td>
<td>(0.753)</td>
<td>(2.642)</td>
<td>(1.510)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.266***</td>
<td>8.738***</td>
<td>2.018***</td>
<td>7.208***</td>
<td>4.214***</td>
</tr>
<tr>
<td></td>
<td>(1.117)</td>
<td>(3.121)</td>
<td>(0.661)</td>
<td>(2.329)</td>
<td>(1.319)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE
*p<0.1; **p<0.05; ***p<0.01
### Table 8: Market Concentration (IV3) and Democratic/Inclusive Institutions (With Controls)

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market Conc. (IV3)</strong></td>
<td>−2.751***</td>
<td>−11.685*</td>
<td>−1.817</td>
<td>−7.228*</td>
<td>−5.632</td>
</tr>
<tr>
<td></td>
<td>(1.009)</td>
<td>(6.470)</td>
<td>(1.171)</td>
<td>(4.022)</td>
<td>(3.475)</td>
</tr>
<tr>
<td><strong>GDP PC (Log.)</strong></td>
<td>−0.100</td>
<td>−0.403</td>
<td>−0.093</td>
<td>−0.201</td>
<td>−0.188</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.399)</td>
<td>(0.072)</td>
<td>(0.242)</td>
<td>(0.223)</td>
</tr>
<tr>
<td><strong>Resource Rents (Pct.)</strong></td>
<td>−0.003</td>
<td>−0.031</td>
<td>−0.005</td>
<td>−0.017</td>
<td>−0.016</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.027)</td>
<td>(0.006)</td>
<td>(0.018)</td>
<td>(0.016)</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>3.883***</td>
<td>15.110</td>
<td>3.204*</td>
<td>8.839</td>
<td>7.567</td>
</tr>
<tr>
<td></td>
<td>(1.427)</td>
<td>(9.104)</td>
<td>(1.636)</td>
<td>(5.601)</td>
<td>(4.970)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE

*p<0.1; **p<0.05; ***p<0.01
5 Case Studies

The previous statistical analyses provide initial support for our argument. Yet, these correlations do not necessarily allow us to make a perfect claim for causality (Levine & Zervos, 1993). Furthermore, due to the cross-sectional character of our data, it should be complemented by an analysis of individual cases over time. This would be important to ensure that our theory also applies when considering inter-temporal dynamics in elite competition and institutional design (Andersen & Ross, 2014; Haber & Menaldo, 2011).

We have selected two cases that share a comparable level of overall resource endowments but that differ in the three key indicators of economic heterogeneity: (1) our measurement of resource diversity, (2) the measurement of market concentration based on Ballesteros (2016), and (3) the economic complexity rankings by CID (2018). Specifically, we consider Argentina (intermediary resource diversity, high market concentration, intermediary economic complexity) and Germany (intermediary resource diversity, low market concentration, high economic complexity). In the appendix, we also present an additional case study of Saudi Arabia (low resource diversity, high average market concentration, intermediary economic complexity) (subsection A.16).11 Moreover, to test the explanatory power of our theory, our cases also represent different world regions—the South America, Europe, and the Middle East.

In the case studies, we systematically discuss (1) the natural resource configuration, (2) economic structures and elites, and (3) which role these elites played in the creation, maintenance, or abolishment of power-sharing institutions.

We find that, in Argentina, a more diverse resource endowment (fertile land and smaller amounts of other resources) gave rise to persistent competition between a strong

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11In the appendix (subsection A.15), we provide detailed numerical information on all of these measurements for the three cases selected.
landed elite and a smaller but at times powerful industrial elite. Moreover, in Germany, many different resources led to the emergence of a variety of downstream industries, which resulted in high levels of economic complexity. This high economic complexity led to significant intra-elite competition, resulting in extensive power-sharing mechanisms as the political-economic equilibrium. Finally, in the appendix, we also show that in Saudi Arabia, where there is one predominant resource (oil), a relatively monolithic economic elite emerged, captured the state, and, from within the state apparatus, reproduced institutions that prevent power sharing.

5.1 Argentina

Natural Resource Endowments in Argentina

Argentina is endowed with a relatively wide variety of natural resources of which arable land is the most important. Except for oil and natural gas, exploitable mineral reserves are generally small and geographically scattered (BP, 2017). Furthermore, a wide range of nonmetallic minerals is found throughout the country (The CIA Factbook, 2018).

The area of agricultural land in the country is about 54% (World Bank, 2017) and is the source of the country’s main exports, namely foodstuffs, animal, and vegetable products, which account for 63% of Argentinian exports. The rest of the exports are distributed across different industries: transportation sector (9.4%), chemical products (8.2%), and mineral products (4.4%) (MIT, 2018).

The Emergence and Persistence of Elite Competition

During the nineteenth century Argentina experienced a large economic expansion led by the agrarian sector. Therefore, the landed elite became the key economic actor (Losada,
By 1900, the country was one of the top world exporters of agricultural goods, meat, and leather (Haber, 1995), and the leading economic power in South America (Hora, 2001).

Argentina’s wealth attracted immigrants from all over Europe who fueled rapid urban growth. Increasing demand for consumer goods due to the expansion of the domestic market was met through imports and growth in the domestic manufacturing sector. By 1913, manufacturing activities had become a vital component of the domestic economy, accounting for 16.6% of GDP (Pineda, 2009).

The role of the state in creating and sustaining a profitable industrial sector was key. Since 1876 tariff protections were applied on selected products (Rocchi, 2005). By the 1930s, substantial government support of domestic industry had helped it maintain its position as the second most important sector behind the agrarian. However, it was not until the years following the Depression that a radical modification occurred with the inauguration of the industrialization by import substitution (ISI) process (Barbero & Rocchi, 2003).

The ISI period, which reached its peak in the 1940s, helped consolidate the domestic power of the industrial elite. Despite changes in the international economic context, this sector continued to expand until the mid-1970s (Barbero & Rocchi, 2003). Thereafter, liberalization of trade produced led to relative industrial decline. However, the weakened industrial elite did not disappear. Instead, it experienced transformations during the following decades and, finally, it was revitalized during the 2000s.
Elites and the Creation of Political Institutions in Argentina

After decades of confrontations, national reunification was achieved in 1861 with ratification of the 1853 Constitution by Buenos Aires, enacted by the Confederation. The Constitution facilitated presidential supremacy through mechanisms such as federal intervention, but it also put in place checks and balances: the limit to presidential re-election, the control over the executive by the Congress and the Judiciary, and the latter’s independence. Furthermore, the liberal principles of the Constitution made the development of an independent press possible, which closely monitored national authorities (Gallo, 1993, 98).

Between 1880 and 1916, political power was in hands of the National Autonomy Party (PAN), a party with conservative characteristics and strong linkages to the export-oriented interests of big ranchers. Its power was based on electoral fraud and the maintenance of large political clienteles, especially in rural areas, which could be easily mobilized (Alonso, 1996; Botana, 1977).

As the power of the working class and industrial elite increased, the hegemonic power of the PAN began to be contested. This was reflected, first, by the creation of Radical Party (UCR), formed in 1891 by a coalition of heterogeneous social groups with competing interests, including the working class, certain groups of the industrial elite, and some sectors of the rural elite (Berensztein & Spector, 2003). Second, the passage of the 1912 law introduced universal and secret voting (Devoto, 1996).

The UCR won the 1916 election and remained in power until 1930. During this period, it accepted the emphasis on export-led economic growth but called for an overall increase in the government’s role, both in providing basic services to citizens and as an economic actor (Rock, 1975). In 1930, the UCR was overthrown by members of the armed forces.
representing the old conservative elites. This began the cycle of military interventions in 
the political process that plagued Argentina until the 1980s.

In 1945, the election of Perón inaugurated a new period characterized by the expansion 
of labor rights and the deepening of the ISI process that further contributed to empower 
the industrial elite vis-à-vis the landed elite. The agricultural elite experienced a decay, 
especially after the centralization of agricultural commerce in the state (Gerchunoff and 
Llach 2007, 189).

Perón’s government was overthrown in 1955 by a coalition of military factions and the 
export-oriented elite. They proposed a revision of the policies which they believed had 
led to the creation of an over-protected industrial base that discouraged rural producers 
(Torre & De Riz, 1993). This lasted until the 1958 constitutional attempt to build a more 
highly integrated industrial structure (Torre & De Riz, 1993, 273). However, in 1962 yet 
another coup led by the military and the agrarian elite took power. Thereafter, a new 
period of attempts to restore a constitutional government began, frequently interrupted 
by military coups. This unrest reflected the tensions between landed and industrial 
interests.

After the military dictatorship (1976-1983), which benefited the rural sector to the 
detriment of the industrial one, democracy was restored. Since then, free elections have 
brought political parties into power that, at different times, have been closer either to the 
agrarian elite or to the industrial one. The reestablishment of democratic institutions has 
organized the dispute between these two actors so that they now compete by supporting 
different parties and candidates.

To summarize, a resource endowment with significant arable land but also including 
other resources gave rise to both a powerful landed elite and a number of industries.
Despite its smaller size and lower economic relevance, the industrial elite was able to gain strength throughout the twentieth century, partially due to import-restricting policies. Throughout most of the twentieth century, the struggle between these two groups led to the alternation between democratic and military regimes.

5.2 Germany

Natural Resources in Germany’s Past and Present

Germany has significant natural resource reserves. At the earliest point of data availability, 55% of its area was agricultural land (1961) (World Bank, 2017) and 32% were forest area (1990) (World Bank, 2017). Germany also has comprehensive coal and natural gas reserves (BP, 2017). Historically, it enjoyed access to significant iron ore supplies (Roesler, 1921, 75-86). However, peace treaties in 1918/19 meant the loss of 74.5% of the iron ore reserves (Berglund, 1919; Stolper, Häuser, and Borchardt, 1967, 74).\(^{12}\) Germany still has extensive pig iron production (Matos, 2015).

The German Economy and Economic Elites: Historical Developments and Contemporary Structures

The presence of many different natural resources contributed to a highly diversified economy. In the 19th century, agriculture gave rise to wool, linen, and cotton industries amongst others (1902 Encyclopedia, 2018; Pierenkemper and Tilly, 2004, 17-19).\(^{13}\) The value of agricultural products and increases in agricultural productivity (Stolper et al., 1967, 21; Pierenkemper and Tilly, 2004, 29, 75-86) constituted the power base of the

---

\(^{12}\)Its shortage became a factor during World War Two (Karlborn, 1965).

\(^{13}\)This was also true for Alsace-Lorraine (Stolper et al., 1967, 19).
landed elites (Anderson, 1993; Baranowski, 1996; Carsten, 1990; Schissler, 1980).

Iron ore reserves were the foundation of a large iron and steel industry (Stolper et al., 1967, 13, 19; Pierenkemper and Tilly, 2004, 17-18, 54-57). Furthermore, coal was used to power steam engines and trains in a rapidly growing railroad network, fueling a new elite centered on transportation. However, the nationalization of the train network in the late 19th and early 20th centuries ultimately disintegrated this elite subgroup (Stolper et al., 1967, 40-42; Pierenkemper and Tilly, 2004, 56-68).

During industrialization (1850-1920), Germany had multiple economic centers that gave rise to geographically dispersed elites (Stolper et al., 1967, 14). Even within a single geographic region, like Bavaria, the business elites were often heterogeneous in terms of industry association (Krauss, 2016). Interests diverged significantly between sectors. For instance, in the 19th century, German trade and agricultural elites supported free trade, while the textile and steel industries lobbied for protectionism (Böhme, 1967, 219-220; Eley, 1992, 8-10).

Despite the cartelization of German industries in the late 19th and 20th centuries, conflicts of interest did not only exist between but also within sectors: “The history of German cartels is one of continual internal struggles. At every renewal of an expiring cartel agreement fights flared up...” (Stolper et al., 1967, 49)

The complexity of industry in Germany has steadily increased over time. Its present-day economy is highly diversified: the automotive industry, the machine industry, the chemical and medical industries, and the electronics industry are leading export sectors (CID, 2018; Braun, 1990, Ch. 13). In particular its famous Mittelstand businesses have been categorized as “extremely heterogeneous” (Owen-Smith, 2012, 419). A high degree of internal competition is reflected by the measure of average market concentration at
0.58 (mean = 0.89) (Ballesteros, 2016).

The Role of Economic Elites in the Creation and Maintenance of Power-Sharing Institutions

Comprehensive political power-sharing institutions were created in 1871. The landed elites unified Germany, but the revolution of 1848 had shown that the rising entrepreneurial and professional middle classes enjoyed significant political mobilization potential (Budde, 2009, Ch. 4; Shorter, Edward, 1969).

Thus, the construction of the political system reflected a compromise: Even though the nobility controlled the executive, business elites were represented in parliament, especially by the National Liberal Party which also governed with Bismarck (Craig, 1980, 62-64; O’Boyle, 1956; Wehler, 1994, 80-90). Moreover, wealthy industrialists maintained informal channels of political influence (Augustine, 1991). Thus, the Empire’s political system was considered a settlement between the agricultural and entrepreneurial/professional economic elites (Eley, 1984; Rogowski, 1987; Mooers, 1991, 144). Reflecting the geographic dispersion of elites, there was also vertical political decentralization in the form of federalism.

In 1918, it appeared that Germany could become a socialist state. However, the political power of the agricultural and industrial economic elites prevented this. Shortages in food supply even meant a temporary increase in agricultural elite power (Stolper et al., 1967, 73, 111). Due to the inability of the socialist parties to challenge the power of the agricultural and economic elites, a representative democracy with a complex system of checks and balances was maintained. It included two parliamentary chambers and a dual executive consisting of a politically powerful Chancellor and an influential President.
Does the abolishment of power-sharing institutions associated with the emergence of Nazi Germany in 1933 contradict our theory? We argue that it does not. First, two exogenous shocks (hyperinflation in 1923 and the Great Depression in 1929) contributed to the end of democracy (Braun, 1990, 37-41, 64-77). Second, a subset of the economic elite was able to exert disproportionate political power. The landed elites still controlled many positions in army, bureaucracy, and politics and allowed for the National Socialists’ rise (Baranowski, 1996; Stolper et al., 1967, 110-111). Additionally, certain segments of the heavy industrial elite contributed financially to anti-democratic newspapers, parties, and organizations (Requate, 2000; Wiesen, 2003, 12; Ziegler, 2000, 25; Requate, 2000, 180-181). This is compatible with our theory: elites want to gain political power by capturing state institutions and only if other elites keep them in check, will we see the maintenance of power-sharing mechanisms.  

While Germany retained a relatively complex economy throughout most of the Nazi era—with the exception of the total war economy 1943-45 (Tooze, 2008)—, the Nazis eliminated the Jewish business elite (Mosse, 1989; Ziegler, 2000, 16-18). In light of our theory, attempts by the Nazis to homogenize the economic elite and request their cooperation in the preparation for war can be seen as attempts to consolidate their authoritarian rule.

After 1945, a policy goal of the Allies was preventing the concentration of economic power in a monolithic elite—a potential threat to democracy (Kramer, 1991, Ch. 2; Stolper et al., 1967, 194-196). Furthermore, the post-war business elite mainly promoted parties that were in favor of democracy: the Christian Democratic Union (CDU) and the Free Democratic Party (FDP). Also, businessmen were generally overrepresented in the German parliament (Grünbacher, 2017, Ch. 6). Besides Germany’s Social Democrats,
the two parties that found the strongest support of the business elite (CDU and FDP) were crucial for the creation of a new set of power-sharing institutions (Lange, 1978; Markovitz, 2007; Morsey, 1970).

Until the present day, economic and political actors have continued their collaboration in maintaining the current political-economic system. This wide-ranging cooperation is also reflected by the classification of Germany as an ideal type of a coordinated market economy (Soskice & Hall, 2001).

To summarize, Germany has a highly diversified natural resource environment which historically gave rise to a large number of downstream industries and a diversified economic elite. Heterogeneous interests between different elites generally contributed to the maintenance and establishment of power-sharing institutions (with the important exception of 1933-1945).
6 Summary and Conclusion

Why do some of the wealthiest countries in the world remain authoritarian? Why is there so much institutional variation among middle-income countries? We argue that the configuration of economic elites is a crucial component to the existence of power-sharing institutions. Building on an extensive literature in political economy (Beramendi & Rogers, 2015; Berkowitz & Clay, 2011; Boix, 2015; Easterly, 2007; Engerman & Sokoloff, 1997), we posit that natural resource configurations, specifically resource diversity, impact intra-elite competition, which in turn shapes political institutions.

Empirically, we find a strong relationship between natural resource diversity and average market concentration. Furthermore, the predicted levels of market concentration are highly correlated with the presence and strength of various power-sharing institutions. Because our statistical analysis is based on cross-sectional data, we also explore inter-temporal dynamics of elite competition and power-sharing institutions through case studies. What are the implications of our findings? First, when explaining elite configurations, we cannot ignore environmental, geographic, and climatic factors. Natural resources and other environmental conditions can have enormous effects on social structures. Second, with respect to the emergence of democratic institutions, economic elites play a crucial role. Third, proponents of modernization theory should take the relationships between economic elites as an additional explanatory factor for political development into account.

Even though this paper has shed light on an important issue, it can only be considered a small part of answering the question of how natural resources shape intra-elite competition and how elite competition affects power-sharing institutions. More refined empirical tests, ideally in subnational settings, and additional case studies need to be conducted to consolidate these insights.
References


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countries: Latin America. Lynne Rienner Pub.


cessed March 20th, 2018.


Liou, Y.-M., & Musgrave, P. (2014). Refining the oil curse: country-level evidence from exogenous variations in resource income. *Comparative Political Studies, 47*(11),
1584–1610.


In the appendix, we present additional empirical evidence and further discuss claims that were made in the paper. In subsection A.1, we explore the role of previous elites for our theory. In subsection A.2, we provide detailed information on the dependent variables. In subsection A.3, we show the relationship between economic development and inclusive political institutions. In subsection A.4, we explain the temporal limitations of our theory and empirical predictions. In subsection A.5, we discuss potential issues of endogeneity of resource measurements with social organization. In subsection A.6, we explain in significant detail how we constructed our three measurements of resource diversity. In subsection A.7, we provide information on the differences between the three measurements of resource diversity we have created. In subsection A.8 and subsection A.9, we graphically show the distribution of cases in the second and third measurement respectively. In subsection A.10, we discuss the exclusion restriction. In subsection A.11, we investigate the relationship between average market concentration and inclusive political institutions when we use the raw format of the former variable (i.e., when it is not predicted by variations in resource diversity). In subsection A.12, we show the regression results when accounting for settler mortality in addition to resource diversity. In subsection A.13, we conduct tests for weak instruments, Wu-Hausman tests, and Sargan tests to check the validity of our IV regressions. In subsection A.14, we show the direct correlation between resource diversity and inclusive political institutions, but also highlight that two-stage models are the more appropriate choice given our theory. In subsection A.15, we provide detailed numerical information on our case studies in terms of our indicators of intra-elite competition/market complexity. In subsection A.16, we present an additional case study of Saudi Arabia.
A.1 The Role of Previous Elites in our Theory

In some cases, like Saudi Arabia, a single and relatively monolithic elite existed prior to the discovery of natural resources (oil, in this specific case). Does this mean that Saudi Arabia was destined to be an authoritarian regime in the first place? How does the existence of previous elites affect this theory?

The fact that an elite existed prior to the discovery of reserves in oil, gas, etc. is not a factor unique to Saudi Arabia. In the vast majority of cases, there were some elites prior to the discovery of other resources. For instance, in both the European and Latin American context, much of the economy was centered on agriculture and agricultural elites were the dominant elite throughout most of pre-modern history (Doyle, 1992, Ch. 4). Similarly, in the South of the United States, agricultural elites persisted even beyond the Civil War, which had led to the abolishment of the slave economy under their control (McKenzie, 1993). However, the discovery of natural resources and their use through emerging industries gave rise to a number of new economic elite subgroups. The pre-existence of an old elite does not preclude the emergence of new groups, as many cases in which those new elites were added to and existed side by side with the nobility demonstrate (Ansell & Samuels, 2014).

In short, despite the fact that the landed elites were already present in most countries when modern industries emerged, we observe significant diversification in economic structures and the creation of new economic elite subgroups. Even though we account for the potential impact of the landed elites in our statistical analysis by including agricultural land, in the industrial age, agricultural resources are only one among many resources that can give economic power to certain groups. Accordingly, the existence of elites prior to the discovery and utilization of natural resources (such as coal, oil, gas, etc.) does not
invalidate our theory.

However, this discussion also highlights a limitation to our theory. It is only applicable to the 19th, 20th, and 21st centuries, as many of the resources of interest only gain their high economic value as a result of industrialization. This issue will be discussed in detail in a following section of the appendix (subsection A.4).
A.2 Detailed Description of the Dependent Variables

In this section, we provide detailed descriptions of the dependent variables used in the empirical analyses. The descriptions are all taken from Coppedge et al. (2018).

(1) **Division of power index:** “Are there elected local and regional governments, and—if so—to what extent can they operate without interference from unelected bodies at the local level?” (Coppedge et al., 2018)

(2) **Election Management Body (EMB) autonomy:** “Does the Election Management Body (EMB) have autonomy from government to apply election laws and administrative rules impartially in national elections?” (Coppedge et al., 2018)

(3) **Political civil liberties index:** “To what extent are political liberties respected?” (Coppedge et al., 2018)

Clarification: “Political liberties are understood as freedom of association and freedom of expression. Among the set of civil liberties, these liberal rights are the most relevant for political competition and accountability. The index is based on indicators that reflect government repression and that are not directly referring to elections.” (Coppedge et al., 2018)

(4) **Horizontal accountability index:** “To what extent is the ideal of horizontal government accountability achieved?” (Coppedge et al., 2018)

Clarification: “Horizontal accountability concerns the power of state institutions to oversee the government by demanding information, questioning officials and punishing improper behavior. This form of accountability ensures checks between institutions and prevents the abuse of power. The key agents in horizontal government accountability are: the legislature; the judiciary; and specific oversight agencies such as ombudsmen, prosecutor and comptroller generals.” (Coppedge et al., 2018)
(5) **Vertical accountability index:** “To what extent is the ideal of vertical government accountability achieved?” (Coppedge et al., 2018)

Clarification: “Vertical accountability captures the extent to which citizens have the power to hold the government accountable. The mechanisms of vertical accountability include formal political participation on part of the citizens—such as being able to freely organize in political parties—and participate in free and fair elections, including for the chief executive.” (Coppedge et al., 2018)
A.3 Economic Development and Democratic/Inclusive Institutions

In Table 9, we show that the existence of the inclusive political institutions discussed above (subsection A.2) is generally highly correlated with the level of economic development as measured by GDP per capita.

Table 9: Economic Development and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP PC (Log.)</td>
<td>0.074***</td>
<td>0.359***</td>
<td>0.026</td>
<td>0.253***</td>
<td>0.183***</td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td>(0.094)</td>
<td>(0.017)</td>
<td>(0.060)</td>
<td>(0.041)</td>
</tr>
<tr>
<td>Constant</td>
<td>−0.162</td>
<td>−2.378***</td>
<td>0.482***</td>
<td>−1.781***</td>
<td>−0.889**</td>
</tr>
<tr>
<td></td>
<td>(0.221)</td>
<td>(0.873)</td>
<td>(0.160)</td>
<td>(0.560)</td>
<td>(0.385)</td>
</tr>
<tr>
<td>Observations</td>
<td>137</td>
<td>148</td>
<td>148</td>
<td>148</td>
<td>148</td>
</tr>
<tr>
<td>R²</td>
<td>0.067</td>
<td>0.091</td>
<td>0.015</td>
<td>0.108</td>
<td>0.117</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.060</td>
<td>0.085</td>
<td>0.008</td>
<td>0.102</td>
<td>0.111</td>
</tr>
</tbody>
</table>

Note: OLS
*p<0.1; **p<0.05; ***p<0.01
A.4 The Temporal Limitations of Our Theory and Empirical Predictions

Many of the resources included in our analysis become economically valuable or significantly more valuable during the time period of industrialization. For example, the economic value of coal dramatically increases through the invention of the steam engine (Clark & Jacks, 2007), and the invention of the petrol engine leads to a steep increase in the value of oil.

This means that our measurement of resource diversity is a useful measurement for diversity in economic elites only beginning in the time period of industrialization (19th century). Furthermore, it fully applies only to 20th and 21st centuries economies which depend on all of the resources named above.

Could this pose any problem to our analysis? Due to the absence of time-series data with respect to most resources, our statistical analysis is cross-sectional. We measure our dependent variables exclusively based on data covering the 21st century. Our key independent variable in terms of resource diversity does not go back further than 1961. Thus, the fact that the resources only gain full relevance in the 20th century is not problematic because our empirical test is limited to the second half of the 20th and early 21st centuries. Similarly, our case studies are restricted to this time period as well.

While this does not affect our empirical test, it is important to acknowledge it as a limitation on the applicability of our theory.
A.5 The Potential Endogeneity of Resource Discovery and Social Organization

Berkowitz and Clay (2011, 75) argue that resource discovery may depend on social organization, especially “increases in population and the development of demand for the natural resources.”

We believe that Berkowitz and Clay are correct in their assessment that increases in population and the development of demand for the natural resources are key factors in promoting their discovery. Does this pose a major problem to our analysis? We argue that it does not. As elaborated above (subsection A.4), the entirety of our empirical analysis is focused on the second half of the 20th century onwards. This is the era of globalization, in which we see an increasingly globalized supply and demand structure. Throughout the 20th century, natural resources have been discovered in both democratic and authoritarian countries. Due to global demand structures, incentives for their discovery have been comparably high regardless of regime type or level of development. The value of resources primarily depends on world markets and not on domestic political regimes. Therefore, we argue that for the 20th and 21st centuries, the discovery of resources is primarily determined by global economic forces.

Interestingly, Berkowitz and Clay (2011, 75) also add that “oil and mineral discoveries would not happen until the second half of the nineteenth century and often later.” This could be a problem for a paper that is centered on developments prior to the year 1900, but as explained above (subsection A.4), our paper is strictly temporally limited both in theory and empirical predictions.

15Here, Berkowitz and Clay refer to the American states, but the observation that many resource discoveries took place only in the late 19th century and afterwards can be generalized to other countries as well. However, as pointed out above, other than in the American case, in many cases the drivers of discovery were not domestic but global economic factors.
A.6 Resource Diversity: Details on Constructing the Measurement

In this section, we complement our initial discussion of the new measurement through additional details on the mathematical procedure, which we have applied to construct the indicator.

To construct our measurements of resource endowments, we conduct the following steps: First, for coal, iron ore, oil, natural gas, and diamonds, we compute the amount per capita in each country.

With respect to both agricultural land and forest area, we use two different forms of obtaining a relative value for each country. In the first and second measurements, we use agricultural land and forest area relative to the overall area of the country. In third measurement, we calculate the square kilometers of land relative to the population size. These alternative forms of accounting for the prevalence of resources measured in land area are meant to ensure that the results hold across different proxies.\(^{16}\)

We proceed by standardizing the endowment of every resource \(i\) to have a mean of 0 and a standard deviation of 1 across countries. We do this through the following formula \((i = \text{index for resources, } j = \text{index for countries})\):

\[
ResSt_{ij} = \frac{Res_{ij} - \text{Mean}(Res_i)}{SD(Res_i)}
\] (1)

This means that a country that has the average endowment of a specific resource has a value of 0. A country with a value of 1 has one standard deviation more in this resource than the average country. A country with a value of -1 has one standard deviation less

\(^{16}\) Detailed information on the differences between the three measurements can be found in the appendix (subsection A.7).
in this resource than the average country. Note that this measurement also partially reflects the value of the resource as the value of resources is directly related to their scarcity. We do not include a direct measurement of price because resource prices are highly endogenous to social/economic organization. Accounting for the endowment across countries, our standardized measure is a good representation of the relative availability of resources and thus to some extent of their relative value.

Subsequently, we identify the mean resource endowment of a specific country \( j \) (across all resources). This number reflects how much a country deviates—on average—from other countries in terms of its overall resource endowment.\(^{17}\)

\[
Mean \text{ Endowment}_j = \frac{\sum_{i=1}^{n} ResSt_{ij}}{n = 7}
\] (2)

Effectively, this is the average of a country’s endowment in natural resources. Countries can score highly on this measurement if they have an enormous amount of a single resource (e.g., 1 resource at 7 SD above the mean). Alternatively, they can have moderately high amounts of each resource and also score highly (e.g., 7 resources at 1 SD above the mean each, which would lead to the same overall endowment as the country above). This measurement indicates the presence of resources in general but does not yet allow us to make statements about diversity.

To create a measurement of resource diversity, we proceed in multiple steps: For mathematical reasons, we first create a measure of resource monolithicity. This measurement is high when there is a single predominant resource:

\[
Monolithicity_j = \sqrt{\sum_{i=1}^{n} (ResSt_{ij} - Mean \text{ Endowment}_j)^2}
\] (3)

\(^{17}\)In the third measurement, the denominator is \( n = 10 \) as we include three additional natural resources.
Mathematically, this is comparable to the standard deviation in resources for any given country. This measure is very high when there is an uneven distribution of resources, i.e. when a country has highly concentrated endowments in only one or only a few resources (relative to the rest of the world). The standard deviation is bound between 0 and $\infty$.

We then transform this measurement to one of resource diversity. To do this, we begin by taking the inverse of monolithicity:

$$Inverse\ Monolithcity_j = -Monolithcity_j \tag{4}$$

This variable is bound between $-\infty$ and 0. Then, we subtract the minimum observed value from this measurement to create a measurement of diversity that has 0 as its lower bound.\textsuperscript{18}

$$Diversity_j = Inverse\ Monolithcity_j - \text{Min}(Inverse\ Monolithcity) \tag{5}$$

\textsuperscript{18}Since the inverse of monolithicity is negative, subtracting the minimum value effectively adds the absolute value of the minimum to it.
A.7 Resource Diversity: Details on the Alternative Measurements

As discussed in the main body of the paper, we create a total of three different measurements for resource diversity to check if our results hold across different specifications of resource diversity. The key distinction between the first measurement (Table 10) and second measurement (Table 11) is that the latter uses the most recent data on natural resources available (to the best of our knowledge). This is to show that the results hold under both conditions.

Table 10: Details on the First Measurement

<table>
<thead>
<tr>
<th>Type</th>
<th>Coal</th>
<th>Iron Ore</th>
<th>Oil</th>
<th>Gas</th>
<th>Diam.</th>
<th>Agr.Land</th>
<th>For.Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>BP</td>
<td>USGS</td>
<td>BP</td>
<td>BP</td>
<td>KP</td>
<td>WB</td>
<td>WB</td>
</tr>
<tr>
<td>Source</td>
<td>BP</td>
<td>USGS</td>
<td>BP</td>
<td>BP</td>
<td>KP</td>
<td>WB</td>
<td>WB</td>
</tr>
</tbody>
</table>

Table 11: Details on the Second Measurement

<table>
<thead>
<tr>
<th>Type</th>
<th>Coal</th>
<th>Iron Ore</th>
<th>Oil</th>
<th>Gas</th>
<th>Diam.</th>
<th>Agr.Land</th>
<th>For.Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>BP</td>
<td>USGS</td>
<td>BP</td>
<td>BP</td>
<td>KP</td>
<td>WB</td>
<td>WB</td>
</tr>
<tr>
<td>Source</td>
<td>BP</td>
<td>USGS</td>
<td>BP</td>
<td>BP</td>
<td>KP</td>
<td>WB</td>
<td>WB</td>
</tr>
</tbody>
</table>

In the third measurement, we use three additional resources and compute values of agricultural land and forest area that are relative to both the area and population size (instead of just area).

Table 12: Details on the Third Measurement

<table>
<thead>
<tr>
<th>Type</th>
<th>Coal</th>
<th>Iron Ore</th>
<th>Oil</th>
<th>Gas</th>
<th>Diam.</th>
<th>Agr.Land</th>
<th>For.Area</th>
<th>Alum.</th>
<th>Copper</th>
<th>Fig.Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>BP</td>
<td>USGS</td>
<td>BP</td>
<td>BP</td>
<td>KP</td>
<td>WB</td>
<td>WB</td>
<td>Mattos</td>
<td>Mattos</td>
<td>Mattos</td>
</tr>
</tbody>
</table>
A.8 Graphs of the Second Measurement

Figure 5 and Figure 6 show the distribution of resource endowments and resource diversity in our second measurement.

Figure 5: Scatterplot — Resource Diversity and Resource Endowments (2nd Meas.)
Figure 6: Scatterplot — Resource Diversity and Resource Endowments (Zoom) (2nd Meas.)
A.9 Graphs of the Third Measurement

Figure 7 and Figure 8 show the distribution of resource endowments and resource diversity in our second measurement.

Figure 7: Scatterplot — Resource Diversity and Resource Endowments (3rd Meas.)
Figure 8: Scatterplot — Resource Diversity and Resource Endowments (Zoom) (3rd Meas.)
The exclusion restriction is an important component of instrumental-variable regression analysis. Thus, in this section, we examine whether or not our instrument of choice meets it.

With respect to our first main covariate, GDP per capita, we make the argument that resource endowments are not a powerful predictor as there simply is no systematic observable relationship between resource wealth and economic prosperity. Instead, both countries that are richly endowed in resources and poorly endowed in resources may be poor or rich or at intermediary levels of wealth. The argument that resource configurations are not directly related to levels of development is also supported by Easterly (2007, 769-772) who investigates the impact of agricultural endowments on economic development.

One might argue that much of the resource curse literature demonstrates that resources undermine economic development. However, our key claim is that resource configurations, particularly diversity, play the more important role.

To demonstrate that there is no systematic observable relationship between resource configurations and GDP per capita, we also examined their correlation and found that only a single measurement shows results indicating statistical significance. However, as shown in Table 13, this apparent relationship does not hold for other measures of resource diversity and is therefore potentially caused by statistical noise.
Table 13: Resource Configurations and GDP PC

<table>
<thead>
<tr>
<th></th>
<th>Dependent variable: GDP PC (Log.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Resource Diversity 1</td>
<td>−0.274**</td>
</tr>
<tr>
<td></td>
<td>(0.123)</td>
</tr>
<tr>
<td>Resource Endowment 1</td>
<td>−0.468</td>
</tr>
<tr>
<td></td>
<td>(0.574)</td>
</tr>
<tr>
<td>Resource Diversity 2</td>
<td>−0.162</td>
</tr>
<tr>
<td></td>
<td>(0.104)</td>
</tr>
<tr>
<td>Resource Endowment 2</td>
<td>−0.086</td>
</tr>
<tr>
<td></td>
<td>(0.490)</td>
</tr>
<tr>
<td>Resource Diversity 3</td>
<td>−0.201</td>
</tr>
<tr>
<td></td>
<td>(0.135)</td>
</tr>
<tr>
<td>Resource Endowment 3</td>
<td>−0.256</td>
</tr>
<tr>
<td></td>
<td>(0.760)</td>
</tr>
<tr>
<td>Constant</td>
<td>12.859***</td>
</tr>
<tr>
<td></td>
<td>(1.688)</td>
</tr>
<tr>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>123</td>
</tr>
<tr>
<td>R²</td>
<td>0.105</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.090</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: OLS</td>
<td>*p&lt;0.1; **p&lt;0.05; ***p&lt;0.01</td>
</tr>
</tbody>
</table>

With respect to our second covariate (Resource Rents), the exclusion restriction clearly is not perfectly met. Resource rents directly depend on the resources that are present within a state. The regressions including resource rents are likely to be biased for this reason.

Why did we include resource rents as a covariate nevertheless? Our goal is to demonstrate that under many conditions, resource configurations in terms of diversity and endowments are a more powerful predictor of political institutions (via market concentration) than resource rents—a measurement utilized in the resource curse literature.

Our claim is that resource rents themselves are not a good explanatory factor for political institutions as they do not take resource configurations, especially diversity, into account. Regardless, they are correlated with resource configurations (as they measure a closely related concept). Therefore, our primary concern is that resource rents partially measure our concept of resource configurations. The fact that our results still hold when
including resource rents as an additional covariate speaks to the explanatory power of market concentration and resource configurations.
### A.11 Average Market Concentration and Democratic/Inclusive Institutions

In Table 14 and Table 15, we show that the existence of the inclusive political institutions discussed above (subsection A.2) is highly correlated with the level of market concentration.

Table 14: Market Concentration and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Concentration</td>
<td>-1.081***</td>
<td>-3.805***</td>
<td>-0.471***</td>
<td>-2.829***</td>
<td>-1.531***</td>
</tr>
<tr>
<td>Constant</td>
<td>1.486***</td>
<td>4.331***</td>
<td>1.132***</td>
<td>3.060***</td>
<td>2.165***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Concentration</td>
<td>(0.204)</td>
<td>(0.910)</td>
<td>(0.169)</td>
<td>(0.562)</td>
<td>(0.408)</td>
</tr>
<tr>
<td>Constant</td>
<td>(0.182)</td>
<td>(0.810)</td>
<td>(0.150)</td>
<td>(0.500)</td>
<td>(0.363)</td>
</tr>
</tbody>
</table>

Observations 142 152 152 152 152
R² 0.167 0.104 0.049 0.145 0.086
Adjusted R² 0.161 0.099 0.043 0.139 0.080

Note: OLS *p<0.1; **p<0.05; ***p<0.01

Table 15: Market Concentration and Democratic/Inclusive Institutions (With Controls)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Concentration</td>
<td>-1.008***</td>
<td>-2.203*</td>
<td>-0.206</td>
<td>-2.070***</td>
<td>-0.502</td>
</tr>
<tr>
<td>GDP PC (Log.)</td>
<td>-0.008</td>
<td>0.128</td>
<td>-0.008</td>
<td>0.096</td>
<td>0.105**</td>
</tr>
<tr>
<td>Resource Rents (Pct.)</td>
<td>-0.011***</td>
<td>-0.058***</td>
<td>-0.012***</td>
<td>-0.030***</td>
<td>-0.027***</td>
</tr>
<tr>
<td>Constant</td>
<td>1.566***</td>
<td>2.111</td>
<td>1.050***</td>
<td>1.686</td>
<td>0.471</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Concentration</td>
<td>(0.292)</td>
<td>(1.221)</td>
<td>(0.222)</td>
<td>(0.779)</td>
<td>(0.533)</td>
</tr>
<tr>
<td>GDP PC (Log.)</td>
<td>(0.029)</td>
<td>(0.117)</td>
<td>(0.021)</td>
<td>(0.074)</td>
<td>(0.051)</td>
</tr>
<tr>
<td>Resource Rents (Pct.)</td>
<td>(0.004)</td>
<td>(0.017)</td>
<td>(0.003)</td>
<td>(0.011)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Constant</td>
<td>(0.459)</td>
<td>(1.885)</td>
<td>(0.343)</td>
<td>(1.203)</td>
<td>(0.823)</td>
</tr>
</tbody>
</table>

Observations 123 133 133 133 133
R² 0.218 0.203 0.130 0.228 0.223
Adjusted R² 0.198 0.184 0.110 0.210 0.205

Note: OLS *p<0.1; **p<0.05; ***p<0.01
A.12 Settler Mortality as an Additional/Alternative Factor

Acemoglu et al. (2001) suggest that settler mortality is one of the most important explanatory factors when it comes to differences in the quality of political and economic institutions. Do we have to take settler mortality into account when estimating the impact of resource diversity? We believe we do. However, it is important to emphasize that the argument by Acemoglu et al. (2001) is fully compatible with ours. In fact, their focus on environmental factors does not contradict our perspective on the importance of resource configurations. Both settler mortality and resource diversity could have an impact on socio-economic structures and development outcomes. Below, we show that most results of our regressions do not change when we include settler mortality as an alternative explanatory factor for elite configurations. Thus, we estimate the same regressions as shown in section 4, adding settler mortality as an additional instrument to directly compare its impact vis-a-vis resource configurations.

Table 16 shows that the results for resource diversity measurements 1 and 3 do not change substantially when accounting for settler mortality. However, measurement 2 is no longer statistically significant. This is likely in part due to the substantially smaller number of observations (when controlling for settler mortality) and the fact that some of the most important cases (former colonial powers) are excluded from the analysis, indicating a selection bias.
Table 16: Stage 1: Resource Diversity, Settler Mortality, and Market Concentration

<table>
<thead>
<tr>
<th></th>
<th>Market Concentration</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Resource Diversity 1</td>
<td>−0.048**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Endowment 1</td>
<td>−0.209**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.085)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Diversity 2</td>
<td>−0.026</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.020)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Endowment 2</td>
<td>−0.143*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.074)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Diversity 3</td>
<td>−0.032**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Endowment 3</td>
<td>−0.201**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.080)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Settler Mortality (Log.)</td>
<td>0.044***</td>
<td>0.041***</td>
<td>0.032***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.010)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>1.349***</td>
<td>1.053***</td>
<td>1.199***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.321)</td>
<td>(0.275)</td>
<td>(0.226)</td>
<td></td>
</tr>
</tbody>
</table>

Observations: 81 81 75  
R²: 0.238 0.224 0.252  
Adjusted R²: 0.208 0.194 0.220

Note: OLS  
*p<0.1; **p<0.05; ***p<0.01

The following tables (Table 17, Table 18, Table 19) show the second-stage regression results based on the predictions with settler mortality. The results are mostly in accordance with our theory and do not deviate substantially from previous regressions.

Table 17: Market Concentration (IV1 Alt.) and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td>Market Conc. (IV1 Alt.)</td>
<td>−1.496***</td>
<td>−7.569***</td>
<td>−0.818***</td>
<td>−4.446***</td>
<td>−3.471***</td>
</tr>
<tr>
<td></td>
<td>(0.552)</td>
<td>(2.180)</td>
<td>(0.309)</td>
<td>(1.245)</td>
<td>(0.934)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.869***</td>
<td>7.546***</td>
<td>1.449***</td>
<td>4.346***</td>
<td>3.848***</td>
</tr>
<tr>
<td></td>
<td>(0.480)</td>
<td>(1.965)</td>
<td>(0.267)</td>
<td>(1.103)</td>
<td>(0.842)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE  
*p<0.1; **p<0.05; ***p<0.01
Table 18: Market Concentration (IV2 Alt.) and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Conc. (IV2 Alt.)</td>
<td>-1.635***</td>
<td>-7.874***</td>
<td>-0.810***</td>
<td>-4.633***</td>
<td>-3.474***</td>
</tr>
<tr>
<td></td>
<td>(0.532)</td>
<td>(1.998)</td>
<td>(0.267)</td>
<td>(1.221)</td>
<td>(0.856)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.990***</td>
<td>7.814***</td>
<td>1.442***</td>
<td>4.510***</td>
<td>3.850***</td>
</tr>
<tr>
<td></td>
<td>(0.462)</td>
<td>(1.809)</td>
<td>(0.230)</td>
<td>(1.084)</td>
<td>(0.776)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE
*p<0.1; **p<0.05; ***p<0.01

Table 19: Market Concentration (IV3 Alt.) and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Conc. (IV3 Alt.)</td>
<td>-1.559***</td>
<td>-6.915***</td>
<td>-0.588**</td>
<td>-5.048***</td>
<td>-3.253***</td>
</tr>
<tr>
<td></td>
<td>(0.470)</td>
<td>(1.686)</td>
<td>(0.287)</td>
<td>(1.236)</td>
<td>(0.651)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.931***</td>
<td>6.987***</td>
<td>1.246***</td>
<td>4.872***</td>
<td>3.670***</td>
</tr>
<tr>
<td></td>
<td>(0.409)</td>
<td>(1.505)</td>
<td>(0.249)</td>
<td>(1.091)</td>
<td>(0.570)</td>
</tr>
</tbody>
</table>

Note: IV, Robust SE
*p<0.1; **p<0.05; ***p<0.01
A.13 IV Regression: Results of Diagnostic Tests

To test the appropriateness of an IV regression, we conduct a large number of tests, including tests for weak instruments, Wu-Hausman tests, and Sargan tests.

With respect to our weak instruments tests, we find that in all regressions we can reject the null hypothesis that we have a weak instrument \( (p < 0.05) \). This indicates that we have strong instruments and is in accordance with the results of our first-stage regression analysis (Table 2).

With respect to our Wu-Hausman tests, the results vary slightly by measurement. For our first measurement, we can reject the null hypothesis (which is desirable) in 9 out of 10 regressions \( (p < 0.05) \). For our second measurement, we can reject the null hypothesis that no endogeneity is present in 4 out of 10 regressions \( (p < 0.05) \). For our third measurement, we can reject the null hypothesis in only 2 out of 10 regressions \( (p < 0.05) \). The results improve slightly when applying the criterion \( p < 0.1 \) instead of \( p < 0.05 \). This indicates that our first and second instrument are consistent in most cases. However, it appears that our third measurement does not mean a major improvement over OLS in terms of consistency. This could also partially explain the weaker results we have obtained.

With respect to our Sargan tests, the results vary again by measurement. For our first measurement, we cannot reject the null hypothesis (which is desirable) in 10 out of 10 regressions \( (p < 0.05) \). For our second measurement we cannot reject the null hypothesis in 7 out of 10 regressions \( (p < 0.05) \). For our third measurement, we cannot reject the null hypothesis in 10 out of 10 regressions \( (p < 0.05) \). These results indicate that our instruments are valid. The fact that we have to reject the null hypothesis in 3 out of 30 regressions could be caused by statistical noise as we would expect to reject the null hypothesis in a few cases. However, it is important to note that the weakly correlated instruments in our third measurement may have introduced some bias into our results.
hypothesis in 1.5 out of 30 cases on average when operating with the criterion $p < 0.05$. 
A.14 The Direct Correlation Between Resource Diversity and Inclusive Political Institutions

In section 4, we estimate the indirect impact of resource diversity on inclusive political institutions through market concentration via two-stage regression analysis. What the direct correlation looks like might be of interest. Therefore, Table 20 and Table 21 show the direct correlation between resource diversity and inclusive political institutions. While the results are interesting, we believe that the two-stage regression models are the more appropriate choice in light of our theory. The results presented here are merely additional information. As predicted, resource diversity is positively associated with the existence and strength of power-sharing institutions.

Table 20: Direct Correlation of Resource Diversity and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Diversity</td>
<td>0.115***</td>
<td>0.395***</td>
<td>0.101***</td>
<td>0.176**</td>
<td>0.206***</td>
</tr>
<tr>
<td>Resource Endowments</td>
<td>0.587***</td>
<td>1.841***</td>
<td>0.454***</td>
<td>0.985**</td>
<td>0.928***</td>
</tr>
<tr>
<td>Constant</td>
<td>−1.059**</td>
<td>−4.523**</td>
<td>−0.672**</td>
<td>−1.875</td>
<td>−2.053**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Diversity</td>
<td>(0.032)</td>
<td>(0.132)</td>
<td>(0.024)</td>
<td>(0.084)</td>
<td>(0.060)</td>
</tr>
<tr>
<td>Resource Endowments</td>
<td>(0.149)</td>
<td>(0.614)</td>
<td>(0.112)</td>
<td>(0.393)</td>
<td>(0.280)</td>
</tr>
<tr>
<td>Constant</td>
<td>(0.439)</td>
<td>(1.803)</td>
<td>(0.330)</td>
<td>(1.155)</td>
<td>(0.823)</td>
</tr>
<tr>
<td>Observations</td>
<td>137</td>
<td>143</td>
<td>143</td>
<td>143</td>
<td>143</td>
</tr>
<tr>
<td>R²</td>
<td>0.091</td>
<td>0.050</td>
<td>0.101</td>
<td>0.030</td>
<td>0.066</td>
</tr>
</tbody>
</table>

Note: OLS
*p<0.1; **p<0.05; ***p<0.01
Table 21: Direct Correlation of Resource Diversity and Democratic/Inclusive Institutions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Diversity</td>
<td>0.126***</td>
<td>0.541***</td>
<td>0.114***</td>
<td>0.238***</td>
<td>0.240***</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.130)</td>
<td>(0.024)</td>
<td>(0.088)</td>
<td>(0.059)</td>
</tr>
<tr>
<td>Resource Endowments</td>
<td>0.601***</td>
<td>2.274***</td>
<td>0.498***</td>
<td>1.128***</td>
<td>0.953***</td>
</tr>
<tr>
<td></td>
<td>(0.150)</td>
<td>(0.578)</td>
<td>(0.107)</td>
<td>(0.391)</td>
<td>(0.262)</td>
</tr>
<tr>
<td>GDP PC (Log.)</td>
<td>0.059**</td>
<td>0.336***</td>
<td>0.020</td>
<td>0.213***</td>
<td>0.178***</td>
</tr>
<tr>
<td></td>
<td>(0.026)</td>
<td>(0.102)</td>
<td>(0.019)</td>
<td>(0.069)</td>
<td>(0.046)</td>
</tr>
<tr>
<td>Resource Rents (Pct.)</td>
<td>−0.010***</td>
<td>−0.026*</td>
<td>−0.005*</td>
<td>−0.018*</td>
<td>−0.010</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.014)</td>
<td>(0.003)</td>
<td>(0.010)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Constant</td>
<td>−1.667***</td>
<td>−9.338***</td>
<td>−0.982***</td>
<td>−4.498***</td>
<td>−4.027***</td>
</tr>
<tr>
<td></td>
<td>(0.600)</td>
<td>(2.302)</td>
<td>(0.427)</td>
<td>(1.557)</td>
<td>(1.042)</td>
</tr>
</tbody>
</table>

Observations | 115 | 121 | 121 | 121 | 121  |
R²            | 0.273 | 0.272 | 0.241 | 0.223 | 0.282 |
Adjusted R²  | 0.247 | 0.247 | 0.215 | 0.196 | 0.257 |

Note: OLS *p<0.1; **p<0.05; ***p<0.01
A.15 Case Selection: Numerical Details

For our case studies, we chose countries that each have substantial resource endowments, but differ significantly in terms of resource diversity, market concentration, and economic complexity. Table 22 shows detailed information on resource diversity (as measured by us), average market concentration (Ballesteros, 2016), and the level of economic complexity (CID, 2018).

<table>
<thead>
<tr>
<th></th>
<th>Saudi Arabia</th>
<th>Argentina</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity 1</td>
<td>11.47</td>
<td>14.29</td>
<td>14.23</td>
</tr>
<tr>
<td>Diversity 2</td>
<td>11.56</td>
<td>14.20</td>
<td>14.48</td>
</tr>
<tr>
<td>Diversity 3</td>
<td>11.52</td>
<td>14.94</td>
<td>14.14</td>
</tr>
<tr>
<td>Avg. Market Concr.</td>
<td>0.81</td>
<td>0.79</td>
<td>0.58</td>
</tr>
<tr>
<td>Econ. Complex. Rank (2016)</td>
<td>47</td>
<td>59</td>
<td>3</td>
</tr>
</tbody>
</table>
A.16 Additional Case Study: Saudi Arabia

As indicated in the main part of the paper, we present an additional case study of Saudi Arabia in the appendix.

Natural Resources in Saudi Arabia

Saudi Arabia has been historically characterized as an economy with a very low level of diversification. Since the discovery of petroleum, the country has become heavily dependent on it. The oil sector accounts for about 45% of the total GDP, 90% of the total export earnings, and 85% of government revenues. It has also one of the largest reserves of natural gas in the world (BP, 2017).

Compared to the oil industry, other pursuits in this largely desert and resource-poor country have no economic significance (Lipsky, 1959). In 2015, 80% of Saudi Arabia’s exports were concentrated in petroleum and derivatives, 10% on plastics, and 6.5% in mineral products (CID, 2018). Although agricultural land was estimated at 40% in 1961 (the earliest moment of data availability) (World Bank, 2017), most of it has been used for subsistence pastoral and agricultural activities.

Oil and the State

Oil started being exploited in 1938 by the predecessor of the Arabian American Oil Company (Aramco) (Owen, 1975). Since then, Aramco has had the monopoly of oil extraction in Saudi Arabia and, therefore, become the most important entity of the Saudi economy.

It was not until 1973 that the Saudi state acquired participation in the oil sector. First, it acquired 25% of Aramco, then 60% and, finally, in 1980, it became the sole
owner of the company (Marcel, 2007). The management control of Aramco remained in foreign hands until in 1988 when the state assumed control as well. This increased the government’s power, which not only enjoyed all the revenues from oil but now also had discretion to appoint managers.

Aramco is today “one of the giants in the world of oil production” (New York Times, 2018). It produces more oil than any other company and manages the massive reserves of Saudi Arabia, which exports more crude oil than any other country (Business Insider, 2018). Aramco’s market worth has been estimated at 2 trillion dollars, making it the world’s most valuable company (Fortune Global 500, 2018).

Beyond the direct exploitation of oil, some related industries have developed, specifically the petrochemical industry. However, given the almost complete absence of other raw materials, no additional industries have prospered. Since the 1970s, the Saudi government has attempted to diversify its economy, but these efforts have mostly failed and Saudi Arabia remains one of the least diversified economies in the world (Albassam, 2015; Samargandi, Fidrmuc, & Ghosh, 2014).

In sum, due to the concentration of oil revenues in the hands of the state via Aramco ownership, the ruling elite and its inner circle represent a powerful monolithic economic and political elite.

**Elites and the Creation of Exclusive Institutions**

The Kingdom of Saudi Arabia was established by King Abdulaziz Al Saud in 1932 through the military conquest of territories and tribes. Upon unification, the king created a political order in which authority was concentrated in the hands of an executive figure who filled the three traditional roles: tribal leader, religious leader, and king (Lipsky, 1959).
Following the commercial exploitation of oil, and the associated increase in revenues, Saud was able to buy the loyalties of powerful tribe leaders whose potential to resist the concentration of power was nullified (Abir, 1987, 7).

As the oil industry flourished, government advisers increasingly included representatives of the big merchant families. The administrative system also included provincial governors directly responsible to the King. These were princes of the royal house or members of the aristocratic families. Until then, there was nothing like an integrated bureaucracy. The state was undeveloped and ruled through patrimonial and clientelistic links (Chaudhry, 1997; Hertog, 2010).

The development of the modern state began in 1953. It was a process guided by a few Saudi royals’ decisions (Abir, 1987) that were made in a top-down fashion but often resulted in the oil-funded recruitment of clients into the growing state apparatus (Hertog, 2010). In this hierarchical system, the only common denominator was and is “the central role of the Al Saud ruling family as patrons and controllers and the only macro-level political force in the kingdom” (Hertog, 2010, 98).

In 1953 King Saud established a Council of Ministers, one of the fundamental institutions in Saudi Arabia’s political system, responsible for drafting and overseeing state policies (The Embassy of the Kingdom of Saudi Arabia, 2018b). The Council is formed by the Prime Minister (the king), the Deputy Prime Minister (the crown prince), and government ministers, who are either descendants of the Saud family or members of the families linked to the oil sector. The king appoints all members of the council and government, including the Minister of Justice, who administers the Shari’a courts, the second fundamental institution (Dhanani, 1980).

The kingdom never had a written constitution. In 1992, King Fahd issued a document
known as the Basic Law of Government which provided guidelines for the organization of government. This paved the way in 1993 for the establishment of a quasi-legislative body, the Consultative Council, the third fundamental institution in the Saudi system, which has the power to draft legislation and promote it for the king’s approval (The Embassy of the Kingdom of Saudi Arabia, 2018a).

Today, Saudi Arabia is considered one of the most tightly controlled political systems in the world despite having implemented some modest reforms, including the introduction of the Basic Law, the holding of municipal elections, and the enfranchisement of women. However, the king still combines legislative, executive, and judicial functions and Saudis still lack protections for the exercise of basic civil rights, including speech and association, and have limited opportunity to participate in the political process at the national level (National Democratic Institute, 2018).

In sum, the historical control of oil revenues in the hands of the royal family and its inner circle has allowed the political-economic elite to suppress domestic and foreign pressures for changes that are considered to be inimical to their interests. Thus, it is not surprising that this rich country has been consistently rated as one of the least free countries in the world by organizations such as Freedom House (2018) and Polity Project (2013).