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Daniel Eidell April 9, 2014

The Perils of Production: The Impact of Oil and Gas Production on the Availability of Credit

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Abstract

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This paper tests the impact of higher levels of oil and gas production on the amount of credit that is available to private sector actors. It begins by reviewing the literature on financial development and the proverbial resource curse. After establishing a theoretical link between increased production and decreased supplies of credit, the paper proceeds to test this theory quantitatively and qualitatively. Using OLS regressions on a large-N dataset and confirming these findings on a smaller subset of countries, the relationship between oil and gas production and domestic credit is negative and highly significant. Supplementing this analysis is a case study comparing Indonesia and Nigeria over time. Analysis shows that while Nigeria demonstrates much of what I propose, Indonesia deviates from expectations. Improvements to the theory are proposed that could strengthen its generalizability and ability to apply to a broader set of cases.

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I) Introduction

Financial intermediation, an activity in which financial institutions and other market participants facilitate economic transactions, plays a critical role in any economy. By channeling "funds from lenders to borrowers", financial institutions respond to a need in the marketplace for key services including the diversification of risk, the allocation of capital among economic actors, and the evaluation of rewards associated with potential projects (OECD 2003). Within the field of economic development, arguments about financial development—defined as an increase in the operating capacity and depth of penetration by financial intermediaries—have been historically divided into two camps (King and Levine 1993). Some, like Robinson (1952), argue that financial development effectively follows from broader economic development (Levine, Loayza and Beck 2000). Others, meanwhile, argue that financial development contributes to long-term economic growth by improving the number and quality of financial services available to consumers.[1] Recent empirical findings increasingly support this second argument and lend further weight to the view that financial development leads to economic growth (Levine 1997).

Entrepreneurship[2] is an implicit part of this argument. In judging the relative risk and reward of an investment, financial intermediaries weigh the proposals of entrepreneurs in the marketplace, rewarding some at the behest of others (King and Levine 1993); (Wennekers and Thurik 1999). These services contribute to both diversification and upgrading—two phenomena

[1] See: (Pagano 1993); (Galbis 1977); (King and Levine 1993); (King and Levine 1993); (McKinnon 1973); (Shaw 1973)

[2] As Wennekers and Thurik (1999) argue, "Entrepreneurship is an ill-defined concept" (Wennekers and Thurik 1999, 30). That said, this paper uses their definition of this phenomenon, included here:
"*Entrepreneurship is the manifest ability and willingness of individuals, on their own, in teams, within and outside existing organizations to: Perceive and create new economic opportunities (new products, new production methods, new organizational schemes and new product-market combinations) and; To introduce their ideas into the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions.*" (Wennekers and Thurik 1999, 47). Italics added.

that make economies less susceptible to external shocks and stabilize growth rates (Shediac, et al. 2008); (Mobarak 2005). The interactions between entrepreneurs and financial intermediaries and the services that those intermediaries provide are essential for economic development.

In countries with abundant natural resource wealth, questions over economic diversification and financial development come to the forefront. Dependent to varying degrees upon natural resources in potentially volatile markets, governments should support the development of financial institutions and the political and legal institutions that enable them. Doing so would allow for more entrepreneurship, diversification, and more stable long-term growth. In practice, this support does not always materialize. In the Middle East and North Africa alone, the quality of governance and level of financial development both vary widely (Creane, et al. 2003). As Figure 1 shows, this variation in the provision of credit within (and between) regions is not uncommon. My research question examines one piece of this discrepancy.

Figure 1: Variation in Credit by Region, 2008

Credit is a prerequisite for entrepreneurship; without the funds for investment, refinement, or expansion, entrepreneurship suffers. I set out to answer the following questions about the availability of credit:

1) Do higher levels of oil and gas[3] production decrease the availability of credit?

2) If so, how does that impact manifest itself?

The answers to both questions lie in the interaction between political and economic interests in a country and the institutions—the accepted or prevailing customs, practices, or laws of that country—that could directly affect the availability of credit. Regardless of regime type, the existence of a government creates incumbent political actors. To ensure their own stability, those in power must be responsive to some subset of the domestic population and shape policy based on their interests. When incumbent actors answer to broader sets of interests, stronger institutions of governance should develop. When institutions such as the rule of law, bureaucratic quality, and control of corruption in government are strengthened, so too should be the financial institutions that develop as a result.[4] Together, strong governance and financial institutions create the framework for a high level of credit availability. Conversely, when a government represents a

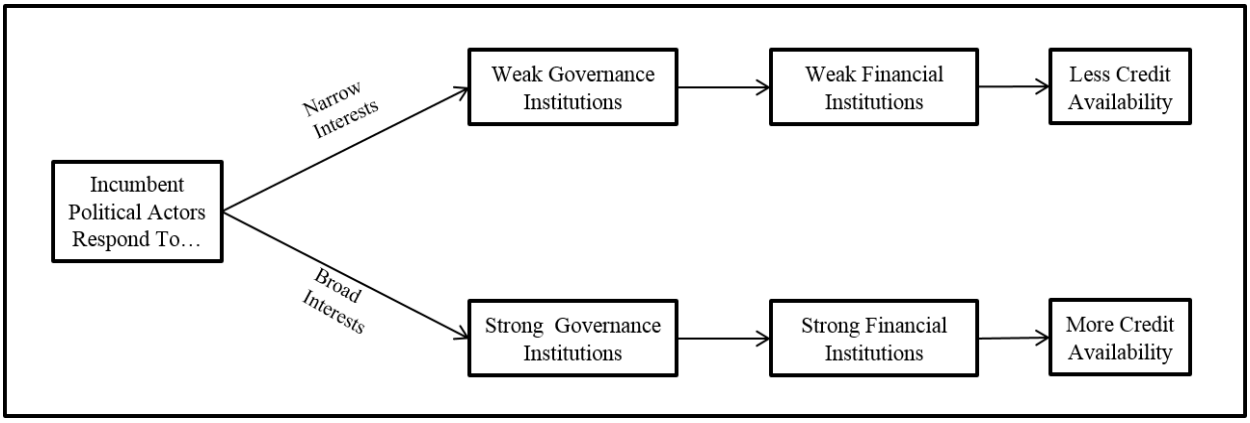


Figure 2: Flowchart of Incumbent Actors and Credit Availability

[3] Previous scholarly work on natural resources maintains that oil and gas wealth are markedly different from other kinds of natural resource wealth (timber, diamonds, copper, agriculture, etc.). For a discussion of this, please see Dunning (2005), Ross (2001), and Ross (2012) among others.

[4] The institutions listed here are a sampling of factors found to be significant in the development of financial markets by Levine *et al. (*2000), Aron (2000), Stiglitz *et al* (1993) and Robinson, Torvik, and Verdier (2006).

narrower group of interests, weaker institutions should develop, thus inhibiting the availability of credit for potential entrepreneurs. Figure 2 diagrams this relationship.

Superimposed on this framework—and when owned by the state as opposed to non-governmental actors—resources rents[5] become an important determinant of how widely distributed incumbent interests will be. Ross (2012) notes that oil and gas wealth brings with it two specific properties: scale and source (Ross 2012, 5-6). Oil and gas reserves are often so vast that governments can expect to receive rents far into the future. Further, these rents usually accrue directly to the government without first reaching the population. As a result, government operations are funded not through taxation of the population but through continued production, subsidy, and export.

The direct revenues provided by natural resources fundamentally alter the distribution of interests to which governments respond. By not requiring citizens to fund their operations, national governments need not necessarily be accountable to the general population. Oil and gas wealth concentrates the groups that political actors represent and leads to weaker governance and financial institutions relative to countries without resource wealth. As a result, the provision of credit becomes more limited. Higher levels of oil and gas production lead to lower levels of credit availability. Figure 3 updates Figure 2 to include the impact that oil has as an anteceding variable.

In the first part of the study, I use a large-N dataset that includes 51 years of observations for 160 countries. Regressing levels of domestic credit on levels of oil and gas production, I find that oil and gas production has a highly significant negative impact on the amount of credit

[5] In an economic sense, rents refer to the portion of a payment that arises as a result of the scarcity of a resource. Under such conditions, buyers pay a higher price for a commodity than would otherwise be charged because of the commodity's scarcity. The difference between the initial price and the final price represents the rent. Rent-seeking behavior, a related concept, describes the actions of sellers who engage in the practice of charging and collecting rents when selling scarce commodities.

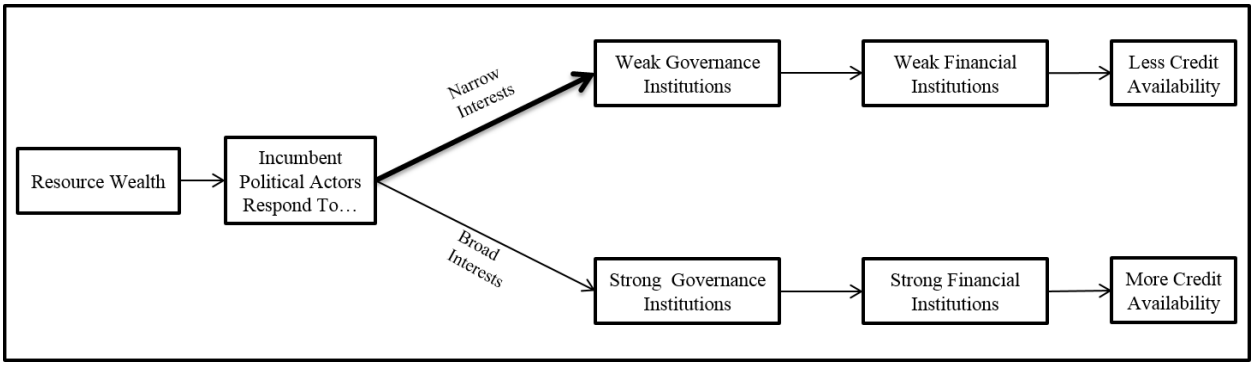


Figure 3: The Role of Resource Wealth in Shaping Political Decision-Making

provided to the private sector in a country. This relationship holds true for the entire dataset as well as for a chosen subset. Using country-level graphs on a subset of countries, the relationship between higher levels of production and the amount of credit provided to the private sector is made abundantly clear. This subset also reveals patterns about the effect of oil on various political and governance-related variables. This analysis is complimented by a most-similar case study analysis of Indonesia and Nigeria. Testing for the breadth of interests represented and the quality of governance before, during, and after the oil boom of 1970, I find that Nigeria demonstrates many parts of my theory while Indonesia does not. This suggests further refinements and considerations that must be taken into account.

This project has both theoretical and practical relevance. On a theoretical level, both financial development and the impact of resources on development have sizeable bodies of literature associated with them. Rarely have they been joined together to create an explanation of how oil and gas resources limit the availability of credit for economic actors. Despite the fact that both natural resources and financial development are independently important to economic development, their combined application has been overlooked.

Additionally, in practice, inconsistencies in financial development have dominated the Middle East and North Africa for at least a decade (Creane, et al. 2003). This has translated into vocal demands for increased economic opportunity since the Arab Spring protests began in Tunisia

in 2011. A desire for greater economic opportunity remains a major sticking point within the region and, in the years since, has spread to other parts of the world (Ghanem and Shaikh 2013). Given the appropriate support, entrepreneurship offers individuals a means of creating economic opportunity. We must seek to understand what shapes that support.

The next section reviews the two bodies of literature mentioned here, discussing both the institutions and interests involved in financial development before moving onto the presence of resources and the rentier state. Section III details my hypotheses and research design. Sections IV and V contain the analytical findings of this study. Section IV uses regression analysis on a large-N dataset to analyze broader global patterns and is complemented by Section V: a case study analysis of Indonesia and Nigeria. Section VI concludes and offers further questions.

II) Literature Review

Scholarly work related to my questions comes from two sets of literature. The first discusses the institutions of financial development and the actors that shape those institutions. The second focuses on the impact that resources can have on the political calculus of those actors and on interest formation and representation.

A) Institutions and Financial Development

Boettke and Coyne (2003) attempt to untangle the relationship between entrepreneurship and economic development. Building on landmark works of economic theory, they expand the classical model of economics to include variations in capital accumulation. Arguing that it is institutions that "provide an incentive structure that influences the actions that economic agents [and] entrepreneurs will take", they label the presence of strong political and legal institutions as

key catalysts for both financial intermediation and entrepreneurship (Boettke and Coyne 2003, 13).[6] These, in turn, lead to economic development.

Financial intermediaries alleviate market imperfections and help to minimize the number of situations in which markets fail to efficiently allocate goods (market failures). In the absence of any rules or knowledge about other economic actors, interactions between parties are characterized by uncertainty and cost. Actors must pay for information about other actors and their intentions (King and Levine 1993). They must bear the risks of unfamiliarity (Bates 2003). They must weigh the societal value of unintended consequences and public goods against their own valuations of the same things (Greenwald, Stiglitz and Weiss 1984). In practice, each of these imperfections make it harder to transact over greater distances, in larger amounts, and with increased frequency. As some actors choose not to engage in transactions because of market imperfections, fewer transactions occur. Those that do are burdened by prohibitively high costs. Without an organization or institutions that can efficiently resolve these problems at a societal level, even rational actors make decisions that decrease the overall potency of an economy (King and Levine 1993); (Bates 2003).

Thanks to their size and scope, governments and financial intermediaries alike can limit the damage caused by market imperfections. They oversee transactions, provide efficient solutions to market failures, reduce uncertainty among actors, and facilitate socially optimal behavior (Pagano 1993); (King and Levine 1993); (Bartik 1990); (Boettke and Coyne 2003); (Datta-Chaudhuri 1990). These services minimize the risks of interacting and the costs of transacting and

[6] Some scholars argue that there are issues of reverse causality between economic development and the creation of strong institutions. To quote Rodrik, "However important the reverse arrow of causality may be, a growing body of empirical research has shown that institutions exert a very strong determining effect on aggregate incomes" (Rodrik 2007, 184).

lower the barriers to all kinds of economic activity. Provided with this support, transactions grow in both volume and value and the overall level of efficiency in the economy increases.

In order to provide these services, however, financial intermediaries require support. Though government intervention has been shown to decrease market imperfections and limit the risk of market failure, it can also have an opposite, negative, effect (Haggard and Lee 1993); (Schiavo-Campo 1999); (Roe 2011); (Datta-Chaudhuri 1990). Political and legal institutions provide the support that enables financial intermediaries to navigate market imperfections. Though neither bank- nor market-based systems have been found to be better for long-term growth, both require equally strong legal and political frameworks (Demirguc-Kunt and Maksimovic 2002); (Levine 2002); (Beck and Levine 2002); (Rodrik 2007); (Ergungor 2004). Regardless of a country's specific financial system, intermediaries need legal and political foundations such as property rights, an effective bureaucracy, and effective dispute resolution mechanisms (Aron 2000); (Robinson, Torvik and Verdier 2006); (Rodrik 2007). It falls to political actors to establish these institutions.

B) The Politics and Interests of Financial Development

Political actors with the power to increase market efficiency have vested interests in the outcomes of potential reforms. Numerous authors have discussed the fact that political decision-making is important to both market intervention and financial development[7]. Acemoglu (2001) and Sokoloff and Engerman (2000) both concentrated on how the various incentives facing decision-makers impacted their choices. Haber (2008) and Rajan and Zingales (2007) echoed this point, arguing that the government is a key stakeholder in financial markets and noting

[7] See: (Roe 2011), (Perotti and Volpin 2007), (Rajan and Zingales 2003), (Law and Azman-Saini 2012), (Fatás and Mihov 2013), (Pinto, Weymouth and Gourevitch 2010), (Roe and Siegel 2010), (S. Haber 2008), (Acemoglu, Johnson and Robinson 2001), (Sokoloff and Engerman 2000), and (Zhang 2007).

government's propensity "to behave opportunistically" (Law and Azman-Saini 2012, 220). Institutions that promote economic competition and political participation counteract this tendency (Bueno de Mesquita and Root 2000); (Law and Azman-Saini 2012); (Rodrik 2007). Rules and norms about participation and responsiveness to different interests shape the behavior and choices of political decision-makers.

Perotti and Volpin (2007), Pinto et *al.* (2010), and Zhang (2007) analyze the relationship between incumbent governments and institutions of governance in broadly-based political systems. While Pinto *et al.* analyze political parties by placing them on an ideological spectrum, Zhang assesses the breadth of a party's base and internal unity. Utilizing a theory that links the concentration and internal unity of political parties with the financial policy changes and regulatory reforms a country is able to pass, Zhang shows how responsiveness to broader interests can lead to reforms that aid financial development (Zhang 2007, 346). Taking a different approach, Pinto *et al.* connect leftist parties with reforms that support financial development in developing countries. Judged on either ideological or other grounds, political calculus and the strength of party-specific institutions are the main considerations in a democratic system (Perotti and Volpin 2007); (Pinto, Weymouth and Gourevitch 2010); (Zhang 2007). Given public support, political organizations and institutions can support financial development.

A separate set of authors have focused on the incentives for making decisions in more closed political systems. Rajan and Zingales (2003) examine the hostility of industrial incumbents toward financial development and the losses they could incur as a result of it (Rajan and Zingales 2003, 7). As the controllers of credit in underdeveloped financial systems, economic and political incumbents use market failures to maximize their own benefit and vigorously oppose potential

change (Rajan and Zingales 2003, 18-19).[8] These actors oppose both increased political accountability and economic competition because they often go hand-in-hand (Perotti and Volpin 2007). In a country characterized by more concentrated political influence and participation, incumbent political actors are both capable of and interested in impeding financial development and the development of its associated institutions. When governments are responsive to narrower groups of interests, those interests "must pursue political strategies aimed at obtaining state protection against the market and change" (Shafer 1993, 34).

This type of behavior has been discussed in multiple geographic contexts. Dunning discusses the use of a minority group of commercial elites in Soeharto's Indonesia while Spector focuses on a similar phenomenon in Kazakhstan (Dunning 2005); (Spector 2008). Levitsky and Way extend the same idea to Africa, highlighting shared struggle as an additional factor that could create a narrow set of interests (Levitsky and Way 2012, 880). The narrowly-backed coalitions in many of Asia's newly-industrialized countries are another example (Haggard and Lee 1993); (Storm and Naastepad 2005, 1086).[9] Even studies of Saudi Arabia have concentrated on the importance of being responsive to a specific set of interests to ensure their continued support of the regime (Nehme 1995). In each of these contexts, "authoritarian states (…) rely on bargains of various kinds" to maintain their legitimacy in the eyes of some cross-section of the public (Kamrava 2007, 199).

All governments must be responsive to some set of interests. Whereas in some countries responsiveness to broad-based interests inspires reform, regimes representing narrow interests

[8] As noted in Rajan and Zingales (2003), for literature that speaks to development's impact on the number of firms entering a given market, please see: Haber (1997), Rajan and Zingales (1998), and Johnson *et al.* (2000).

[9] An important consideration here is the fact that these countries did not possess great resource wealth. Faced with external threats and "systemic vulnerability', however, these narrow regimes instituted industrial policies that drove broader economic growth (Doner, Ritchie and Slater 2005).

focus on the preferences of the bloc(s) that keep them in power. In these cases, opposition to both improved governance and financial institutions develops because "generating an entrepreneurial class with an interest in industrial transformation would be almost as dangerous as promoting the political organization of civil society" ((Evans 1995, 467) as cited in Dunning, 2005). In more open systems, by contrast, broad-based interests represent a catalyst for reform.

It is the distribution of interests represented—not regime type or political party—that affects the incentives for financial development. Whereas governments representing broader-based interests will support the development of stronger financial institutions, less responsive governments act on the preferences of political and economic interests who may oppose reform. Oil and gas production profoundly impacts the distribution of these interests.

C) Resource Wealth and the Rentier State

A substantial body of literature exists surrounding the presence of oil and gas resources and their impact on a country. Cabrales and Hauk (2010) propose five core points of agreement:

1) Countries endowed with resources grow more slowly than those without;
2) The evidence of resources only affecting countries in one way is inconsistent;
3) The quality of institutions is critical in determining if resources are a blessing or a curse;
4) Oil and mineral wealth, and natural resources in general, makes states less likely to be democratic;
5) Revolutions in many cases have been linked to payments received in exchange for the extraction and export of natural resources (Cabrales and Hauk 2011, 58-59).

Many of these points, however, are far from settled. Ross (2012) develops a strong argument against the notion that states with resource wealth grow more slowly than those without while echoing Jones-Luong's (2010) criticism of the way institutions are treated as static over time. Additionally, Ross (2012) found that while oil does not inherently impede democracy, it does possess anti-democratic properties (Ross 2008); (Ross 2012). Diamond and Mosbacher (2013) and

Smith (2007) make a similar argument about the ability of oil and gas to overpower democratic regimes.

One theory embedded in the literature on natural resources is the idea of the rentier state. Using Beblawi's definition, Ross (2001) defines this concept as "one where the rents are paid by foreign actors, where they accrue directly to the state, and where 'only a few are engaged in the generation of this rent'" ((Beblawi 1987), cited in Ross 2001, 329). Ross attributes the growth of the rentier state to the simultaneous occurrence of three mechanisms: the "Taxation Effect", the "Spending Effect", and the "Group Formation Effect" (Ross 2001, 333-334). Each of these mechanisms has substantial backing in the literature[10] and implications for this project.

Income derived from resource rents fundamentally differs from income derived from taxation. In the presence of a sufficiently large non-tax-based income stream, leaders gain "extractive autonomy from society" (Kamrava 2007, 203). No longer lacking in revenue, governments in oil- and gas-rich states can impose lower taxes on their citizens and, at the same time, provide more generous social services (Ross 2001, 332), (Ross 2012). Rather than be accountable to the domestic population, governments in resource-rich states must simply decide which group(s) will benefit the most (Smith 2007). The inverse relationship that can exist between oil revenues and connections with society at-large is generally agreed upon (Smith 2007); (Brooks and Kurtz 2011).

When governments operate as rentier states, the incentives for development shift. In rentier states, it is often narrow elites whose voices and preferences reach incumbent officials (Kamrava 2007). Forged by rational actors engaging in rent-seeking behavior, these relationships provide a

[10] For information on the spending effect—a connection between oil wealth and the size of state patronage networks—see Entelis (1994), Vandewalle (1998), Kessler (1999), and Bazdresch and Levy (1991). For further information on the Group Formation effect—defined as the government's ability to prevent the formation of civil society groups—see (Ross 2001, 34) for a full list of previous works.

constant opportunity for regimes to reinforce the importance of their own survival while gauging the opinions of the constituents who matter most (Rosser, The Political Economy of the Resource Curse: A Literature Survey 2006); (Nehme 1995). As the beneficiaries of the status quo, the incumbents who benefit from the survival of the current regime have a vested interest in preserving it (Rosser, The Political Economy of the Resource Curse: A Literature Survey 2006).

Case studies across the Middle East have shown this to be true in countries ranging from Jordan to Syria to Kuwait (Moore and Salloukh 2007). Moving to other regions, Dunning's analysis of three different case studies—Botswana, Zaire, and Indonesia—found a similar drive for survival among regimes in resource-rich states in other parts of the globe (Dunning 2005). In two of his three cases, resource wealth provided a class of elites representing narrow interests with concentrated power and a vested stake in limiting the scope of economic diversification because of potential spillover into the political realm. Oil and gas wealth simultaneously shrinks the interests represented by the government while stifling the growth and development of civil society groups that may advocate for broader reform.

* * * * *

The bodies of literature on financial development and the rentier state evaluate different pieces of similar phenomena. In the former, much has been written about the role of incumbent interests and political support from vital subsets of the population in affecting the level of financial development that takes place. In the latter, by contrast, a substantial body of work suggests that governments in resource rich states can afford to be less responsive to broader parts of the population. Thus far, these two bodies of work have not been extensively linked. The impact of oil has been measured on a wide range of actors and institutions but never on the availability of credit. Similarly, much has been made of the interests that influence financial development policies and lead to lower levels of financial development, but little work has investigated what shapes

these interests. Having drawn on these bodies of literature here, and recognizing the fit between them, this project seeks to add to both bodies of literature by filling complementary niches.

III) Hypotheses and Research Design

A) Hypotheses

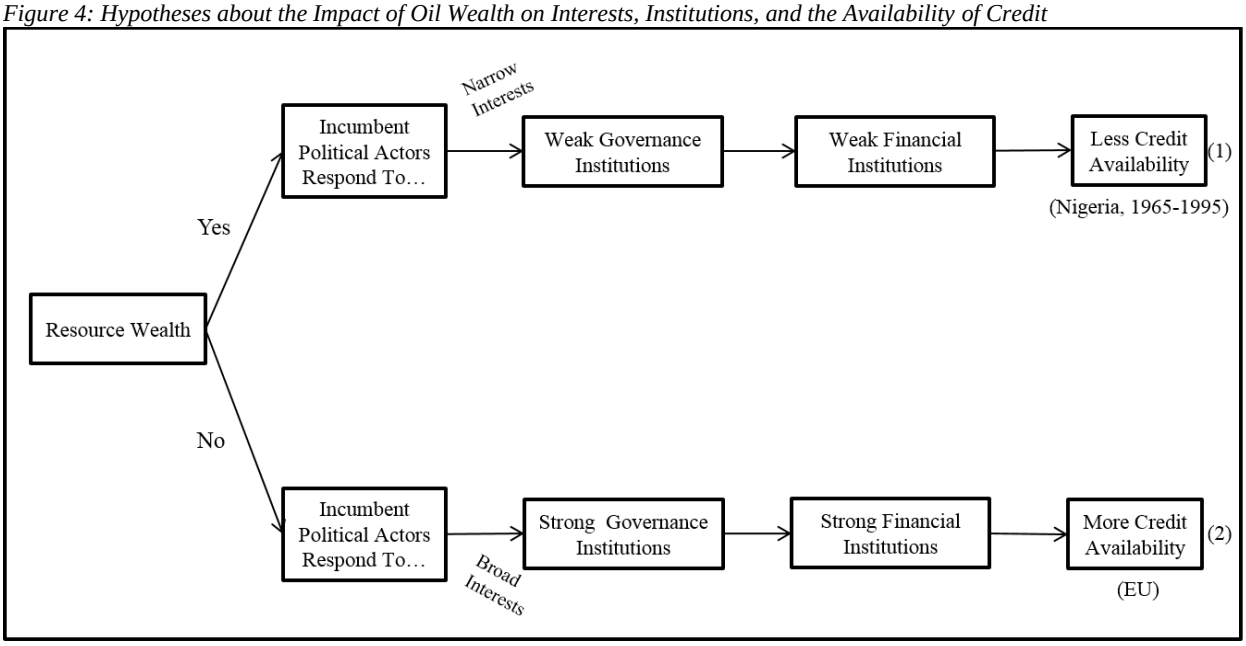
I expect higher levels of oil and gas production to decrease the amount of credit available to private sector actors in a country.

In the case that a country has higher levels of production, I expect a more concentrated political coalition to form. This coalition will oppose the development of strong governance and, by extension, financial institutions, thus limiting the availability of credit for the private sector overall. Conversely, if a country has relatively little (or no) oil and gas production, broader groups of the population will be represented by the incumbent government. This participation will create a drive for stronger governance and financial institutions and facilitate an increase in the availability of credit.

These hypotheses flow from the previous section. Income derived from the production of oil and gas resources allows governments greater degrees of operational separation from the domestic population. No longer requiring broad-based support, the regime will maintain the backing of some core constituency—an extended royal family, a particular minority group, or some other subset of the population—and represent their interests when crafting policy. Because they benefit from the policies being enacted, these interests will attempt to perpetuate the status quo and prevent an increase in the availability of credit because such a change would threaten their own standing. Conversely, a regime without resource rents is more dependent upon taxation for its revenue. This requires greater accountability on the part of the government and, thereby, increased development of governance and financial institutions. As a result, credit should be more available.

Depending on a country's production levels and the coalitions and institutions that follow them, I expect two general patterns to emerge. Referencing Figure 4, I expect countries fitting pattern one to supply less credit to the private sector. In the presence of resource wealth, an incumbent regime representing a narrow set of interests would not be interested in passing the governance reforms necessary for financial development. Additionally, without the need for broad-based support, political pressure will not force the regime's hand. As a result, credit availability will be very limited. Countries fitting this pattern include Nigeria.

Figure 4: Hypotheses about the Impact of Oil Wealth on Interests, Institutions, and the Availability of Credit



By contrast, countries fitting pattern two should provide greater amounts of credit. Lacking in resource-related income, these countries are more dependent upon their tax bases for support. As a result, political coalitions are likely to be answerable to larger parts of the population and sensitive to demands for stronger institutions. Provided with this foundation, stronger financial and regulatory institutions can develop and increase the overall amount of credit available. The United States and most of Western Europe demonstrate this hypothesis.

Clearly, there are countries that will deviate from the two patterns discussed above. The newly-industrialized nations of East Asia demonstrate that narrowly based coalitions in resource-poor nations can make credit readily available. Facing "systemic vulnerability", governments in these nations made calculated decisions to support the bank-based systems and institutions that would ensure regime and national survival (Doner, Ritchie and Slater 2005). Likewise, there are countless countries that lack resources and still maintain narrow governing coalitions. Finally, there are resource-rich countries that combat countervailing pressures of broad coalitions and the potential for the government to become more detached from the population. These examples do not directly fit into the theoretical framework proposed above. For it to be all-encompassing, my framework would need to be deeply nuanced and incredibly specific. Rather than enumerating every contingency, I highlight these two as the ones in which, broadly constituted, the greatest number of countries will fall.

B) Research Design

Countries serve as the unit of analysis for the quantitative portion of this study. Using 160 countries over 51 years[11] (1961-2011), each country has one observation per year. The services provided by financial intermediaries and governments are public goods. Every actor in a country benefits from them and, at least in theory, cannot be excluded from using them. Though firms and individual actors are the ultimate benefactors of financial intermediation, the services they benefit from are provided on a national level. That is the level at which they are best judged.

The primary independent variable in this study—the amount of oil and gas produced by a particular country measured as a percentage of GDP—will be taken from Michael Ross' dataset (Ross 2012). While the IMF classifies those countries where fuel comprises more than 20 percent

[11] Observations that occur before a country's independence are left blank. As discussed later, the level of reporting for many countries and variables changes significantly over time.

of total exports as "resource rich", this measure fails to account for domestic sales and subsidies. As Ross writes, "Governments earn oil revenues from both domestic and foreign sales. Even when fuel is sold domestically at subsidized prices, the true value of this oil (…) should be accounted for" (Ross 2012, 15). Using levels of oil and gas production provides a more holistic view of a country's reliance on resources. I convert production levels into percentages of GDP in 2005 dollars in order to standardize differences in both income level and absolute levels of production and better represent the importance of oil and gas production in the economy as a whole. Just as the dependent variable varies both within and between regions (see Figure 1, p. 2), so too do levels of production.

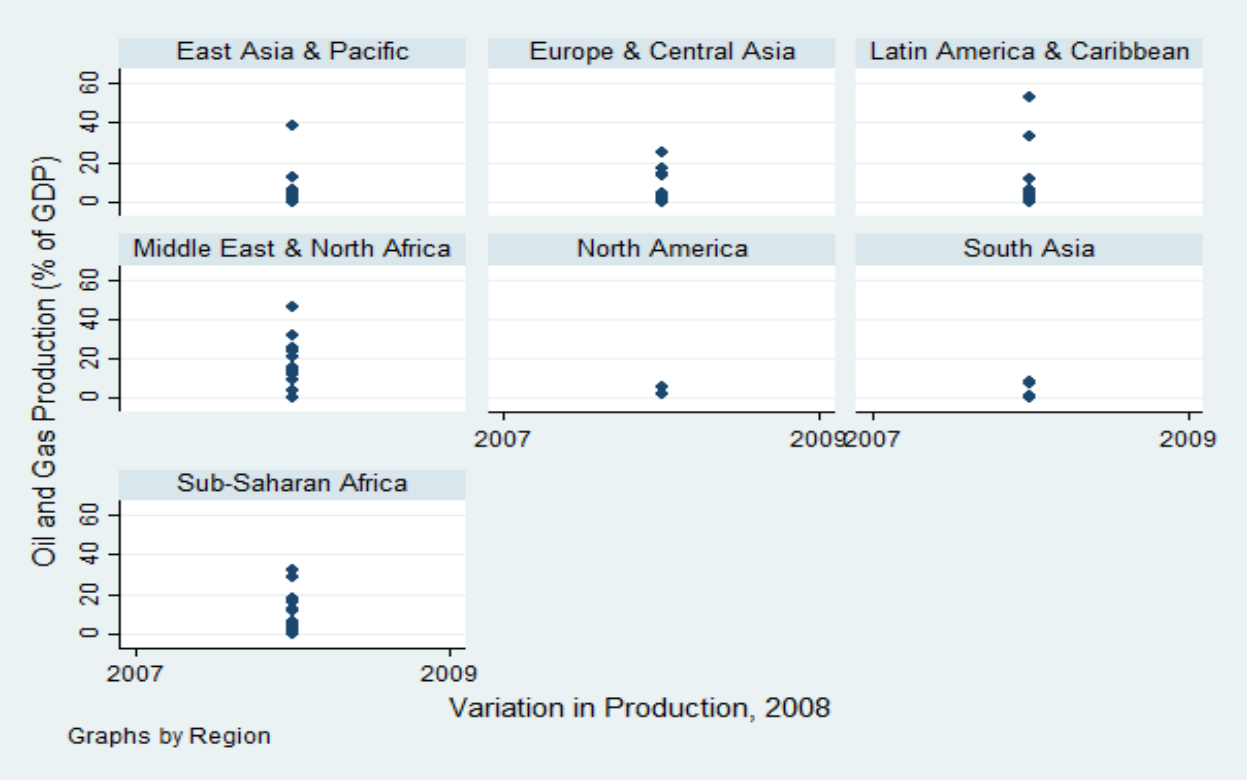


Figure 5: Variation in Oil and Gas Production, 2008

The dependent variable will be measured using a World Bank Development Indicator: domestic credit to the private sector as a percentage of GDP. This is a measurement of "financial resources provided to the private sector (…) that establish a claim for repayment" (World Bank). It is the aggregated version of what this study is most interested in—how much capital is available

to firms and businesses within their domestic environments. As a measure of credit, it has clear shortcomings. In addition to not including credit provided to the state sector or assessing the distribution of credit, it also lacks certain information about loans, the business climate, and other key contextual factors. That said, this measure has been used to represent levels of financial development and credit availability in the literature and is an appropriate measure for this study (Law and Azman-Saini 2012); (Rajan and Zingales 2003); (Chinn and Ito 2006); (Andrianaivo and Yartey 2010).

The political portions of this study focus on government actors and the breadth of interests to which they are accountable. I use three proxy variables to measure this. Two—combined polity score and minimum winning coalition—were taken from the World Governance dataset and capture the breadth of interests to which a government responds. Discussed at length by Smith and Bueno de Mesquita, the minimum winning coalition measures the amount of support for a leader relative to the number of people eligible to choose them (Bueno de Mesquita, Smith, et al. 2004). Though Bueno de Mesquita is criticized for taking the position that some sort of coalition must exist at all times, I argue that in order for a government to remain in or assume power—even under conditions of shifting coalitions—this is a reasonable assumption. Despite the fact that measurements of this variable do not exist after 1999 (and, therefore, do not necessarily overlap with the observations for many indicators of governance), it is featured in my case studies.

That said, because of the limited overlap between observations of *minimum winning coalition* and the indicators of governance I use, I include a second variable measuring the distribution of interests a government is responsive to: combined polity score. Though it is ultimately a measure of regime type and not the set of interests a regime answers to, it is a suitable proxy and will be useful because it has been measured in every year since 1961. Combined polity

score judges a regime on a scale ranging from strongly autocratic (-10) to strongly democratic (10) and reflects how broad the interests are that a government must respond to. By definition, most authoritarian regimes will represent narrower groups of interests than most democratic regimes. It is not an ideal alternative, but given the high level of correlation between it and winning coalition size (r=0.832), it is appropriate.

The third measure I plan to use is related to the total tax revenue a state collects. A key piece of the rentier state literature is that states generating revenue through resource rents have a source of direct income and do not, therefore, need to tax as heavily. Using data collected annually by the research arm of the Heritage Foundation, I plan on evaluating this claim as part of my model. The measure I use—fiscal freedom—is a "measure of the tax burden imposed by the government" (Heritage Foundation 2013). It is a composite number comprised of the top marginal tax rates on individual and corporate income as well as a measure of the total tax burden as a percentage of GDP (Heritage Foundation 2013). The way the variable is measured, higher fiscal freedom scores reflect lower individual, corporate, and overall taxes in a country. As discussed previously, a state that collects less revenue through the taxation of its people can operate more autonomously than one dependent on tax dollars. In the context of resource-rich states, evaluating this claim is crucial.[12]

In assessing a country's institutions, I am specifically interested in institutions related to governance rather than those in the financial space. As discussed previously, certain legal and governmental institutions are necessary for all financial systems. Recognizing that neither bank- nor market-based systems are necessarily best for long-term growth, I focus on attempts to create

[12] This variable should be positively correlated with oil and gas production. Whereas I expect oil and gas to have negative effects on the distribution of interests and various measures of governance, I expect it to cause fiscal freedom to rise.

the common infrastructure for both systems rather than the financial systems and institutions themselves. Defined this way, I select the variables used by Law and Azman-Saini (2012) and others (Langbein and Knack 2010); (Easterly 2002); (Al-Marhubi 2004); and (Bjornksov, 2006). I include six highly correlated World Governance Indicators, "each representing a different dimension of institutional quality and governance": voice and accountability, political stability and lack of violence, government effectiveness, regulatory quality, rule of law, and control of corruption (Law and Azman-Saini 2012, 224). While past authors have averaged these six indicators, I will not. Though this may lead to over-specification of the model, averaging them would ignore the potential for one to have greater impact or statistical significance than another.

Having integrated the relevant variables into one dataset, I use pairwise descriptive statistics and visual relationships to show the associations and expected relationships between my independent and dependent variable. I then use robust regression analysis to further strengthen my arguments about the connections between these two variables and the other components of my hypotheses.

I plan on controlling for several things in my analysis that could impact a country's availability of credit. Smith (2007) found that the question of when oil was discovered was highly significant in his study of oil's impact on institutions. By measuring production amounts as a continuous variable instead of a binary one, I effectively do the same. I also control for GDP per capita, regional location, and OECD membership using World Bank classifications.

Additionally, in light of Jones Luong's findings (2010) I include industry ownership structures (Luong 2010). I create a binary variable for ownership where "1" represents heavy state involvement and/or ownership in the oil and gas sectors. To determine this distinction, I begin by following Ross' methodology (2012) and using EIA briefings of oil and gas sectors as either state-

or non-state-controlled. In the event that the EIA does not have detailed briefings on a country, I use suitable alternatives like the Resource Governance Index to characterize the structure of the industry. After scoring the state's role in the industry in the most recent time period (0 or 1), I use this value for every year from 1961-2011. Countries registering as zeroes include Azerbaijan, Gabon, the United Kingdom, and the United States. Countries registering as ones include the nations of the Arabian Peninsula, China, Malaysia, and Trinidad and Tobago among others.

In addition to the quantitative analysis, I also incorporate a comparative case study of Indonesia and Nigeria. While statistical modeling proves useful for analyzing the relationship between production and credit, these studies complement my findings and allow for further testing related to my proposed intervening variables.

In both the qualitative and quantitative portions of this project, my findings may contradict my hypotheses. In the quantitative portion, this would mean oil and gas production does not have a statistically significant impact on the availability of credit. If this is the case, the process I propose in my second hypothesis will be null. That said, it could also be true that while levels of production are a factor in the amount of credit provided to the private sector, the relationships I propose are wrong. If this is the case, attempts to link the component pieces of my hypothesis will fail. Issues may also arise in the quantitative section. It could be that the countries I choose do not follow the hypothesis I propose because of omitted variables or factors I fail to consider. Further, there could be issues of sequence wherein one element of my hypothesis precedes something that is supposed to cause it. Additionally, ruling out alternative explanations may prove difficult because of restricted access to resources. As a result of these issues, it is very plausible that I am partially (or even wholly) incorrect.

IV) Statistical Analysis

A) Summary and Descriptive Statistics

The years in which my key variables are measured differ in this study. While Ross' dataset has complete measurements of oil and gas production dating to the 1930s, the World Bank did not begin measuring domestic credit to the private sector until 1961. Fiscal freedom and measures of governance, by contrast, have only been recorded for the past 20 years. Even among those statistics that have been recorded for longer periods of time, the completeness of measurements vary over time: only 50 percent of countries report levels of domestic credit in 1968 and, prior to 1991, fewer than 75 percent of countries report annually. As a result, sample sizes change both over time and depending on the variables used. Recognizing this, I construct models that allow for the highest possible number of observations. Though not ideal, this is the most effective way to incorporate the relevant variables and test my theory using the greatest possible number of observations. Information about the years in which measurements of a particular variable exist are provided alongside summary statistics in Table 1.

Variable	Obs.	Mean	Std. Dev.	Min	Max	Years
Domestic Credit to Private Sector	6234	37.42	37.87	0.724	319.461	1961-2011
Oil and Gas Production (% of GDP)	6800	5.58	18.93	0	343.708	1961-2011
Polity Score	7879	0.665	6.92	-10	10	1961-2011
Fiscal Freedom	2437	70.73	15.25	10	99.9	1995-2011
Control of Corruption (WBGI)	2560	2.44	1.02	0	5.09	1996-2011
Government Effectiveness (WBGI)	2560	2.48	0.99	0	4.91	1996-2011
Political Stability and Lack of Violence (WBGI)	2560	2.33	0.982	-0.68	4.17	1996-2011
Rule of Law (WBGI)	2560	2.4	1	0	4.5	1996-2011
Regulatory Quality (WBGI)	2560	2.49	0.96	0	4.75	1996-2011
Voice and Accountability (WBGI)	2560	2.39	0.98	0.28	4.33	1996-2011
Ownership	8160	0.21	0.4	0	1	1961-2011
GDP per Capita	6515	7628.1	12124.3	50.04	87716.7	1961-2011
Winning Coalition Size	5208	0.56	0.32	0	1	1961-1999

Table 1: Summary Statistics of Key Variables

As a first test of the hypothesized relationships, I use correlation coefficients to both verify the validity of my independent and dependent variables and gain preliminary insights about potential relationships.

Created using raw measures of oil and gas production in a given year and one price for the respective commodities annually, O*il and Gas Production* is positively correlated with several measures. Just as in the Ross dataset, production values display a correlation with both the raw number of commodity exports and the value of those exports. Moving beyond the Ross (2012) dataset, this variable shares a similar level or correlation with the measurement of a country's fuel exports as a percentage of GDP (taken from the World Development Indicators). Table 2 displays correlation coefficients between these measures.

Variable 1	*Variable 2*	*r*	*N*
Oil and Gas Production (% of GDP)	Fuel Exports as % of GDP (WDI)	0.2551	4467
Oil and Gas Production (% of GDP)	Oil Exports	0.2424	3278
Oil and Gas Production (% of GDP)	Value of Oil Exports	0.2003	3278
Oil and Gas Production (% of GDP)	Gas Exports	0.1737	3278
Oil and Gas Production (% of GDP)	Value of Gas Exports	0.2041	3278

Table 2: Correlation between Independent Variable and Related Measures
Source: (Ross, Oil and Gas Data, 1932-2011 2012)*;* (World Bank 2013)

Similarly, as a measure of available credit and financial development, my dependent variable has several measures with which it should be correlated. Among these are the number of new firms started in a country (measured by the World Bank Enterprise Group), the market capitalization of listed companies in a country as a percentage of GDP, and several measures of financial deepening—the number of ATMs and commercial bank branches per 100,000 adults and the amount of highly liquid and easily-convertible assets in a country (measured as Broad Money as a percentage of GDP). As table three shows, the association between domestic credit and other

measures related to financial development within a country is even stronger than the correlation displayed by my primary independent variable.[13]

Variable 1	*Variable 2*	*r*	*N*
Domestic Credit	New Firms	0.3947	735
Domestic Credit	Market Capitalization of Listed Companies (% of GDP)	0.3152	1735
Domestic Credit	ATMs per 100,000 Adults	0.5792	781
Domestic Credit	Commercial Bank Branches per 100,000 Adults	0.5231	880
Domestic Credit	Broad Money (% of GDP)	0.4863	4749

Table 3: Correlation between Domestic Credit and Other Measures of Financial Development
Source: (World Bank 2013)

A brief look at the correlation coefficients between the intervening variables also reveals the expected trends. Consistent with its theoretical anti-democratic effects, oil and gas production is negatively correlated with both polity score and the size of the winning coalition. Fiscal freedom is also negatively correlated with both. Both polity score and the size of the winning coalition are positively correlated with all indicators of governance, indicating that there is a generally positive relationship between the breadths of interests a government represents and the strength of legal and political institutions in a country. Finally, both the political and governance-related variables are positively correlated with my dependent variable. These results (displayed in Table 4) suggest that there is at least some association between levels of production and the political and governance indicators I use.

There also appears to be a relationship between oil and gas production and the amount of credit provided to the private sector. While the correlation coefficient between oil and gas production and the amount of credit available seems weak (r= -0.10, N=6172), it is possible that oil, through its effects on both political coalitions and the institutions that political actors create, has a greater effect on than this coefficient suggests. A visual representation of the relationship

[13] An important caveat here is the fact that the sample size used to measure the correlation between three sets of variables in this table is smaller by an order of magnitude than the sample size used previously. The final four variables all come from the World Bank Data Center

(Figure 6) plots a country's level of oil and gas production against the amount of credit provided to the private sector for the year 2008. Represented graphically, a clear negative relationship emerges.

Variable 1	*Variable 2*	*r*	*N*
Oil and Gas Production (% of GDP)	Polity Score	-0.1495	6584
Oil and Gas Production (% of GDP)	Winning Coalition Size	-0.1873	4656
Oil and Gas Production (% of GDP)	Fiscal Freedom	0.0815	2411
Fiscal Freedom	Polity Score	-0.1648	2353
Fiscal Freedom	Winning Coalition Size	-0.1149	663
Polity Score	Governance Variables[14]	0.2342	2466
Winning Coalition Size	Governance Variables	0.3184	640
Oil and Gas Production (% of GDP)	Domestic Credit to Private Sector	-0.099	6172
Fiscal Freedom	Domestic Credit to Private Sector	-0.1032	2363
Polity Score	Domestic Credit to Private Sector	0.3786	2474
Winning Coalition Size	Domestic Credit to Private Sector	0.4372	4306
Governance Variables	Domestic Credit to Private Sector	0.3695	2338

Table 4: Correlation Coefficients for Hypothesized Relationships
Source: (Ross, Oil and Gas Data, 1932-2011 2012)*;* (Teorell, et al. 2013)*;* (World Bank 2013)

Figure 6: Oil and Gas Production v. Credit to the Private Sector, 2008; Source: (World Bank 2013)

[14] For the purposes of this table, the correlation between "*Governance Variables"* and any other variable is an average of the individual correlations between each of the six indicators and the second variable.

B) Regression Analysis: Production and Credit

In testing my first hypothesis (that higher levels of production are linked with lower levels of credit to the private sector), I began by regressing my dependent variable on oil and gas production and the two core control variables in this study—state ownership in the oil and gas industry and the log of GDP per capita. Though somewhat limited in its ability to explain variation in levels of domestic credit (R^2*=.4473),* each of the three coefficients were significant beyond the one percent level. Additionally, while oil and gas production had a negative coefficient as expected, its magnitude was far smaller than the coefficient attached with the variable for state ownership.

In the first model, each additional percentage of oil and gas production leads to a .29 percent decrease in the amount of credit provided to the private sector. At face value, this appears minimal. An important consideration, however, is the fact that among countries whose levels of production are positive, the mean amount of production as a percentage of GDP is 10.56 percent (*N=3595).* If limited to countries where production is equal to more than one percent of GDP, the mean level of production increases to 17.1 percent *(N=2139).* Multiplied by the coefficients in the base model, these levels of production would lead to a decrease in the availability of credit by three and five percent respectively. When the coefficient is applied to the average level of production among oil- and gas-producing countries, its impact increases dramatically.

This is compounded by the impact of state ownership of oil and gas resources. In the base model, the coefficient on this variable is -9.22. State ownership and of oil and gas resources decreases the amount of credit supplied by almost ten percent. Taken in conjunction with the levels of production discussed above, the amount of credit provided to the private sector could decrease

by almost 15 percent if the sector is state-dominated and the country produces even an average level of oil and gas.

DV: Credit to Private Sector	Base	Model 2	Model 3	Model 4
Oil and Gas Prod.	-0.294 ***	-0.282 ***	-.256 ***	-.0796 ***
	(.029)	(.028)	(.027)	(.024)
State Ownership	-9.222 ***	-8.154 ***	-6.799 ***	-10.338
	(1.03)	(1.08)	(1.054)	(13.028)
Log GDP per Capita	15.794 ***	15.823 ***	13.158 ***	26.297 ***
	(.2334)	(.333)	(.385)	(.949)
East Asia & Pacific	-	-8.664 ***	-9.04 ***	95.708 ***
		(3.07)	(2.973)	(24.637)
Europe & Central Asia	-	-31.004 ***	-32.762 ***	-44.165 ***
		(2.866)	(2.753)	(12.03)
Latin America & Caribbean	-	-36.994 ***	-32.479 ***	18.306 ***
		(2.99)	(2.966)	(23.054)
Middle East & North Africa	-	-30.106 ***	-28.039 ***	48.449 **
		(3.08)	(3.041)	(23.922)
South Asia	-	-21.682 ***	-22.141 ***	48.501 **
		(3.462)	(3.359)	(21.263)
Sub-Saharan Africa	-	-28.383 ***	-28.06 ***	64.147 ***
		(3.093)	(3.018)	(19.961)
OECD	-	-	12.786 ***	63.351 ***
			(2.973)	(18.906)
Constant	-81.943 ***	-54.47 ***	-56.377 ***	-216.448 ***
	(1.865)	(4.357)	(5.546)	(21.89)
Country Dummy Variables	No	No	No	Yes
Annual Dummy Variables	No	No	Yes	Yes
F Statistic	1584.25	637.74	115.51	100.99
Adjusted R-Squared	0.4473	0.4940	.5393	.7840
N	5870	5870	5870	5870
Root MSE	28.626	27.389	26.135	17.897

Numbers beneath coefficients are standard errors.
=significant at 10% level; **=significant at 5% level; *=significant at 1% level*

Table 5: Regression Results--Domestic Credit on Oil and Gas Production

Building out the model further, I include a series of regional variables as classified by the World Bank. In models where regional variables are included throughout this project, I use North America as the regional control variable. Though using North America as a baseline makes it likely that the coefficient of every other regional variable will be negative, North America has

unparalleled homogeneity as a region and, as a result, is a strong baseline. Table 5 displays my regression results.

Model two adds regional variables to the base model. Each region's coefficient is both negative and statistically significant beyond the one percent level. This is hardly surprising because it shows that North America is significantly different from every other region of the world in terms of its provision of credit to the private sector. While including these variables increases the overall goodness of fit (based on the increased R^2 and lower Root MSE), the impact of both oil and gas ownership and state ownership have decreased. This may result from the fact that certain regional variables are correlated with oil and gas production (i.e. being located in the Middle East or North Africa). Without regional variables, the coefficients on both production and ownership also capture geographic trends. Both O*il and Gas Production* and *Ownership* retain their original levels of significance.

Models three and four contribute more evidence about the connection between production levels and the availability of credit. Model three adds OECD membership as an additional control while also using annual dummy variables to control for global growth over time. Model four supplements this with country-level dummy variables to account for variation in initial levels of domestic credit.

The coefficient on oil and gas production decreases again in model three. Just as the decrease in the coefficients in model two were not surprising because of regional factors, this decrease is not surprising because of the general increase in the availability of credit over time. The inclusion of annual variables accounts for that positive trend and essentially scales the impact that oil can have based on the prevailing amounts of credit provided to the private sector in a given

year. While adding the regional and annual variables improves the overall fit, model three accounts for just over half of the variation in my dependent variable and can still be improved.

Model four makes the most sizeable improvement in goodness of fit. Adding both annual and country-specific variables improves the base model by capturing both global growth over the past 50 years and countries' individual starting points. With these improvements in the model, however, the coefficient on oil and gas production decreases sharply and ownership loses significance. This comes as a result of the fact that *ownership*, as I have operationalized it, does not change over time. As there is no variation in this variable within a country and model four accounts for country-specific paths, the variable should not be significant. Equation 1 shows this final model.

$$DomCredit = B_0 + B_1(Production) + B_2(Own) + B_3(GDPperCap) + B_4(East\ Asia) \ldots + B_{10}(OECD) + Annual\ Dummy\ Variables + Country\ Dummy\ Variables + u \quad (1)$$

A country would have to produce upwards of 25 percent in the final model for the amount of credit provided to decrease by two percent. Viewed as a percentage, this seems negligible. Even in resource-rich countries where production is equivalent to thirty percent or more of GDP, the drop in domestic credit provided to the private sector will be less than five percent. Analyzed as a percentage, oil and gas production seems to have a marginal effect at best.

Taken from percentages to real dollars, though, this impact becomes far larger. In 2008, for example, Algeria's production of oil and gas was equal to 46.125 percent of its GDP; its GDP, in 2005 dollars, was $142,381,484,247.70. Using the coefficient from model four, oil and gas production in Algeria in 2008 led to a decrease in the amount of credit provided to the private sector by over $5 billion. Measured as a fraction of GDP, a three percent drop in the amount of credit available seems insignificant. As a number that affects entrepreneurs and businesses, however, this equates to a sizeable amount of potential investment. Though not necessarily

crippling, this seemingly-minimal drop could leave countless firms and individuals without the capital necessary for growth.

The negative impact of oil and gas production on the availability of credit is statistically significant beyond the one percent level in every model. Especially after the inclusion of the annual and country-specific dummy variables, the coefficient on the variable becomes smaller than I would have expected. Even at this lower level, though, the effect of oil and gas production remains clear. Credit to the private sector is less available in countries where oil and gas production is equal to a higher percentage of GDP.

C) Robustness Check

As a test on the strength of my findings, I chose a subset of nine countries that vary in, among other things, their levels of production, political traditions, geographic locations, and levels of domestic credit provided.[15] Five of these countries have been major producers of oil and gas at

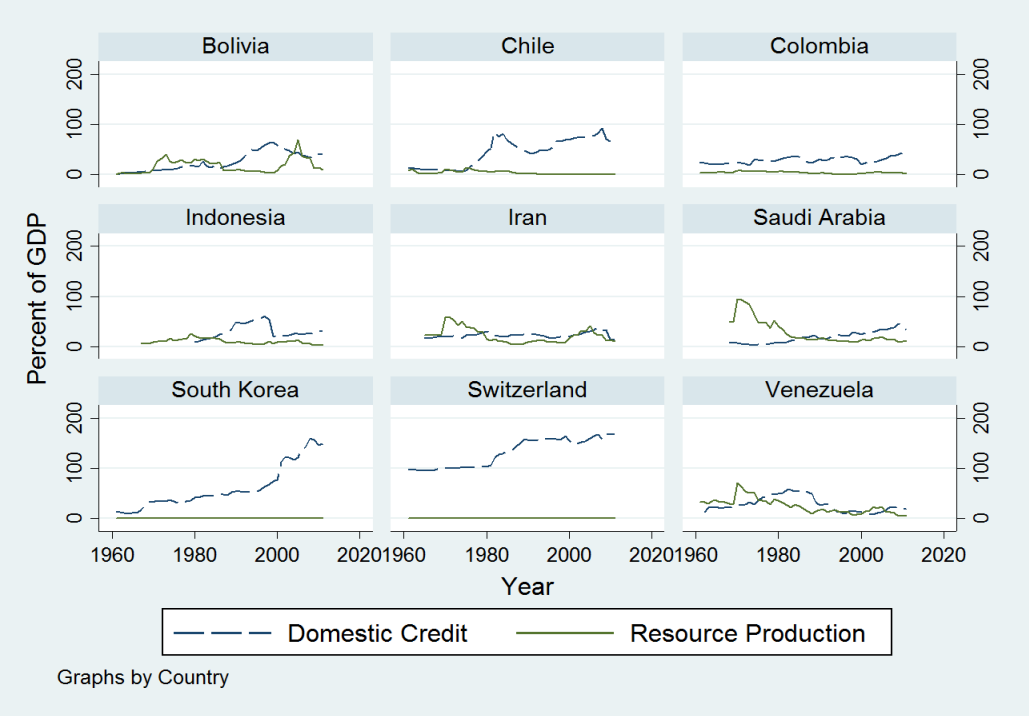


Figure 7: Resource Production and Domestic Credit, 1961-2011; Source: (World Bank 2013)

[15] The nine countries are Bolivia, Chile, Colombia, Indonesia, Iran, Saudi Arabia, South Korea, Switzerland, and Venezuela.

some point (Bolivia, Indonesia, Iran, Saudi Arabia, and Venezuela). Line graphs show the actual and fitted values of production and credit over time by country (Figures 7 and 8).

These plots further demonstrate my findings. Based on Figure 7, several things are clear. First, as expected, the two countries that have never been oil and gas producers (South Korea and Switzerland) have the highest provisions of credit by far. Neither of these nations had the ability to use resources to fund their growth and, as a result, made credit more readily available throughout the twentieth century. South Korea's graph is surprising due to the relatively narrow coalitions that led the country for a number of years, but it would appear that existential fears overpowered authoritarian tendencies and drove higher degrees of availability.

Second, Chile and Indonesia (after 1982) chart the course for what happens in countries where the role of resources changes over time. Resource production in these two countries peaked in 1976 and 1979, respectively. Within five years of peaking, however, the industry in both nations entered precipitous decline. Having lost the revenue associated with resource production, the supply of credit to the private sector increased rapidly as both countries used neoclassical economic policies to generate higher growth.

The final plots show less dynamic growth in credit to the private sector. In Iran, Saudi Arabia, and Bolivia there is only modest growth over the 50-year period while in Venezuela the supply of credit actually decreases. This point is made even more clearly by the fitted lines in Figure 8. While resource-poor nations like Chile, Indonesia, South Korea, and Switzerland generally have significant increases in the amount of credit provided to the private sector, nations specializing in resource production throughout the 50 year period have flatter (or even negative)

trend lines.[16] Colombia is the lone exception. While Switzerland, South Korea, and Chile represent the pattern of global growth from the 1960s through the 2000s, Bolivia, Iran, Saudi Arabia, and Venezuela show the limiting effects of oil and gas production.

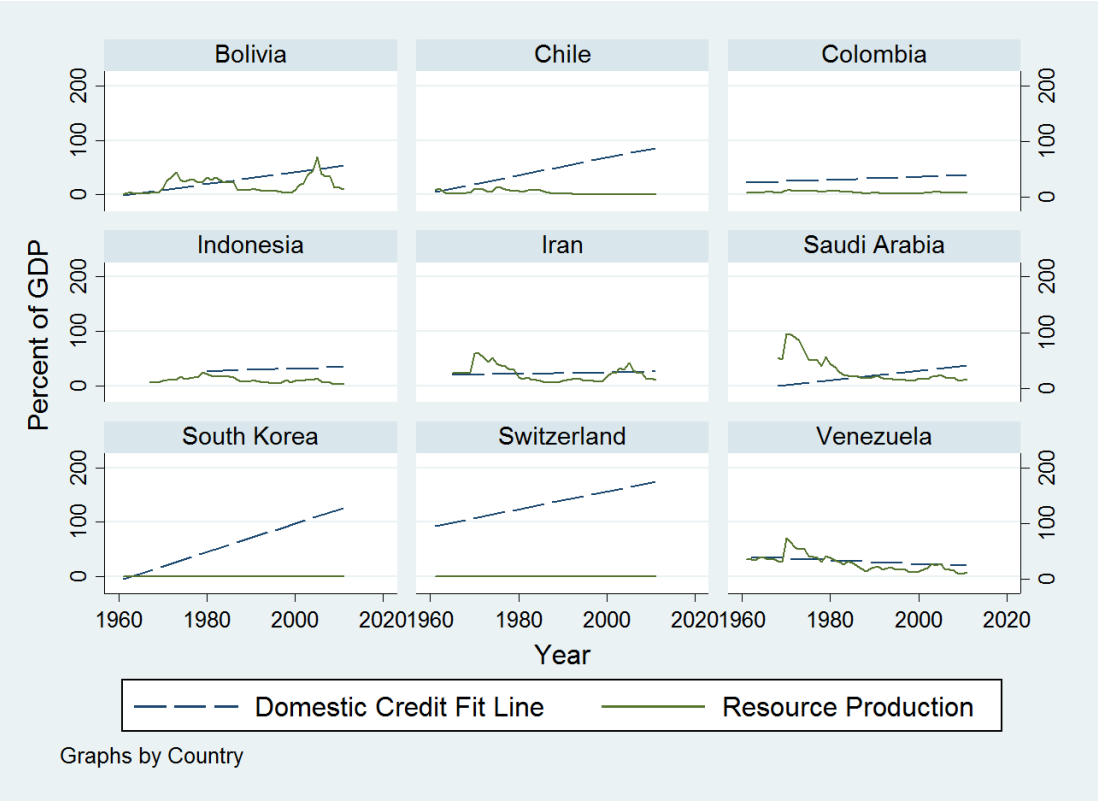


Figure 8: Resource Production and Domestic Credit (Fitted Values), 1961-2011; Source: (World Bank 2013)

To assess the relationships between production and the political and governance variables of interest, I remove three countries (Bolivia, Colombia, and Indonesia) from this subset and focus on the countries with either very high or close-to-zero production over time. Figure 8 showed that levels of domestic credit increased more rapidly in countries without heavy oil and gas production. Cross-country time series graphs also reveal trends that support my hypothesis about how the negative impact of production manifests.

[16] An important caveat here is the impact of the 1999 East Asian financial crisis. While both Indonesia and South Korea suffered from its effects, the impact was far more severe in the case of the former. Looking at Figure 7, the impact of this event on Indonesia was startling.

Figure 9 plots polity scores against levels of production over time. To a degree, these scores are the result of certain national prerogatives and historical contingencies and events. During their respective eras of dictatorship, for example, both South Korea and Chile have very low polity scores. Yet despite these events, there are clear differences between the two sets of countries. Chile, South Korea, and Switzerland all have extremely high polity scores beginning in the late 1980s and early 1990s. Iran, Saudi Arabia, and Venezuela, by contrast, are a mixed bag. Saudi Arabia has had the lowest possible polity score since the variable was first measured. Iran operated as an authoritarian state for the entire period of time except for the seven year period between 1997 and 2003. Venezuela breaks with this mold, retaining a positive polity score until 2009. Generally speaking, based on these six countries, nations with higher levels of production have lower polity scores and, therefore, less representative governments.

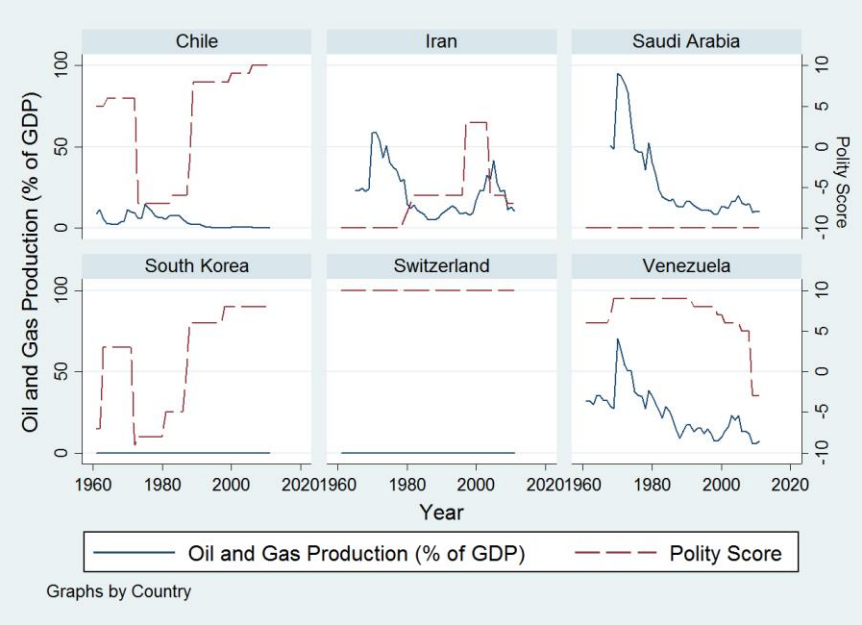


Figure 9: Oil and Gas Production and Polity Scores over Time; Source: (Teorell, et al. 2013)

This may not be the result of increased operational autonomy. According to the theory of the rentier state, Saudi Arabia, Iran, and Venezuela should have significantly higher levels of fiscal freedom as a result of being oil- and gas-producing nations. Based on Figure 10, this is not the case. As a nation that charges no income tax on individuals, Saudi Arabia has an extraordinarily

high level of fiscal freedom. Excluding Chile, however, levels of fiscal freedom in the other four nations are comparable whether or not resource production plays a major role. Switzerland and South Korea may have lower levels of fiscal freedom than Venezuela and Iran, but the difference is marginal. Variation in tax regimes does not vary dramatically based on a country's levels of oil and gas production.

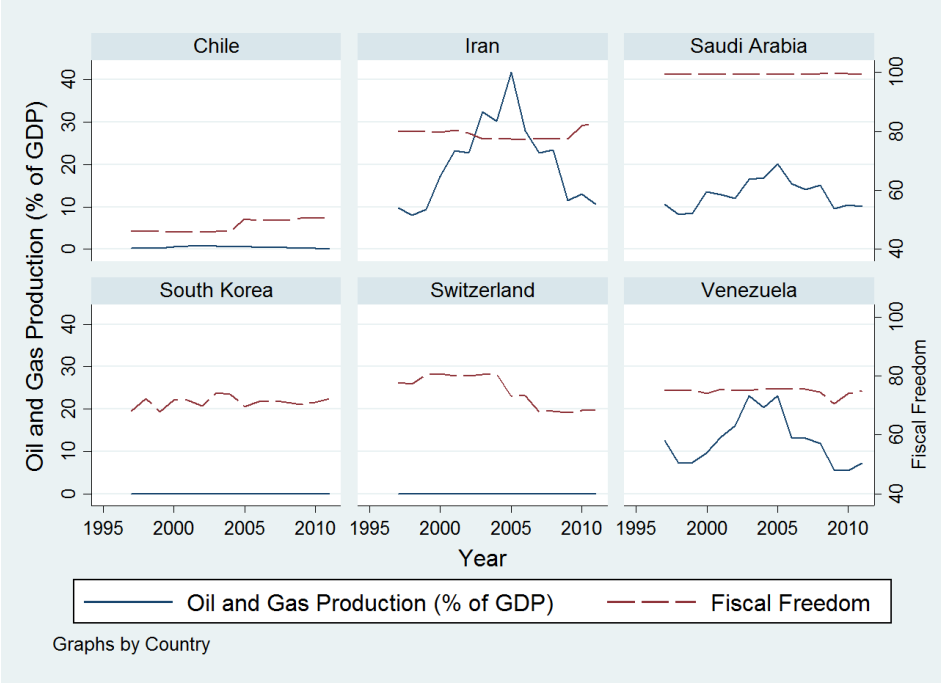


Figure 10: Oil and Gas Production and Fiscal Freedom over Time;
Source: (Index of Economic Freedom Time Series Data 2013)

Governance is also noticeably worse in countries where oil and gas production equals a higher percentage of GDP. In nations that do not specialize in resource production, both control of corruption and the rule of law are higher than they are in their resource-producing counterparts. Saudi Arabia leads the group of resource-producing nations, scoring just over a two in its implementation of the rule of law and a three in its ability to control corruption in 2011. These are the highest levels of governance achieved by any resource-producing nation in the time period from 1996 to 2011[17]. Chile and Switzerland, by contrast, score fours or higher for the entire time

[17] These indicators of governance do not exist prior to 1996.

period. South Korea deviates from this pattern, scoring lower than Saudi Arabia in its control of corruption in 2011 and possessing a negative trend line overall. Even so, a clear gap emerges. Countries with little (or no) oil and gas production have higher levels of governance.

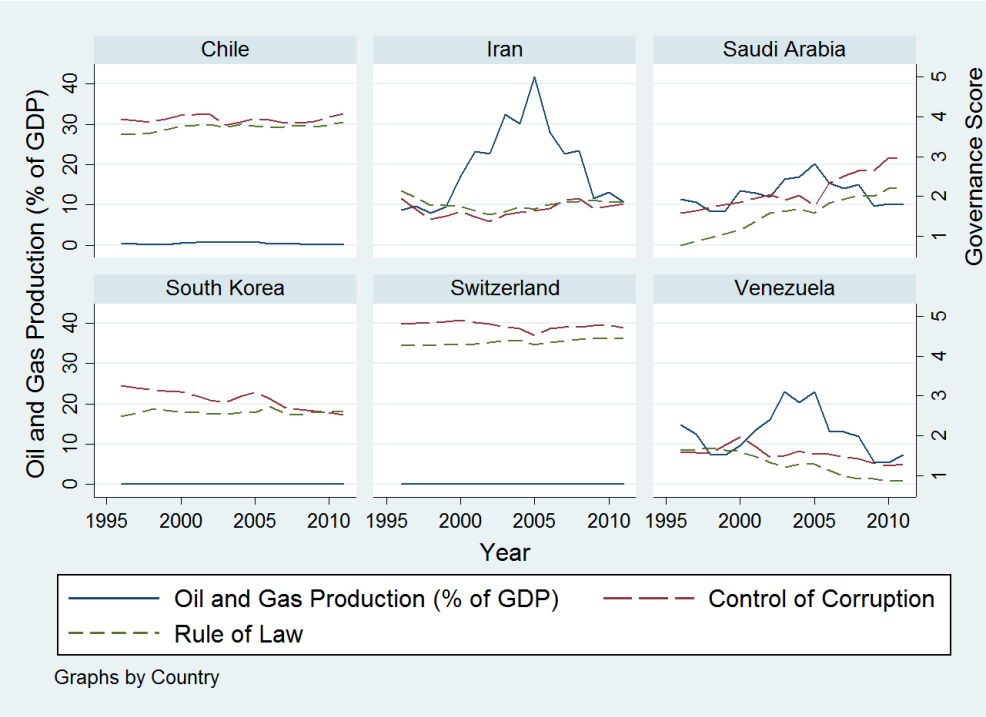


Figure 11: Oil and Gas Production and Governance over Time; Source: (Teorell, et al. 2013)

The observed relationship between increased levels of production and decreased levels of domestic credit is also not the result of foreign financing. Because oil and gas companies operate in international markets, it could be the case that higher levels of foreign direct investment (FDI) are connected with either (or both) oil and gas production and the level of domestic credit to the private sector. I test this possibility using net inflows of FDI as a percentage of GDP In the full dataset, there is little association between levels of foreign investment and either increased production levels (*r= -0.003)* or the levels of domestic credit supplied *(r= -0.059).* There is a much stronger association between production and FDI when using the six-country subset (*r= -0.3247)*, but the sample size is considerably smaller. Based on the full dataset, this alternative explanation of where credit for the domestic economy originates can be ruled out.

Based on large-N analysis and trends among a subset of countries, the relationship between oil and gas production and levels of credit supplied to the private sector in a country is clear. Higher levels of oil and gas production decrease the overall availability of credit. Having confirmed this part of my hypothesis, I proceed to further examine the mechanisms that I believe explain this relationship.

V) Case Study Analysis

A comparative case study compliments the analysis conducted above. While those findings prove my first hypothesis and lend support to the second one, this section allows for more thorough examination and testing of my theory. I divide my study of Indonesia and Nigeria into three time periods: pre-1970 (Before the Boom), 1970-1982 (the Oil Years), and post-1982 (After Oil).

Structured as a most-similar case study, Indonesia and Nigeria share overwhelming similarities both before and during the advent of the oil boom. From political evolution to ethno-linguistic cleavages, the countries are surprisingly similar, differing in one critical way. In Nigeria, the advent of oil led to the rise of successive governments supported by narrow coalitions that had a vested interest in limiting credit. In Indonesia, by contrast, one government representing narrow interests was able to remain in power for over twenty-five years. Prior to 1998, the amount of credit provided to the Indonesian private sector increased in every year but two (1991 and 1992) relative to the previous year, growing at an average rate of 10 percent annually. By contrast, the average growth rate for credit provided to the Nigerian private sector barely topped one percent between 1965 and 1995. Whereas Nigeria fits my hypothesis, Indonesia defies expectations. What explains this difference?

A) Indonesia and Nigeria as Most Similar Cases

This study is hardly the first to compare Indonesia with another hydrocarbon-producing nation. Within the last decade, Smith (2007) has compared it with Iran, Pepinsky (2009) with Malaysia, and Lewis (2007) with Nigeria. This last study is of greatest interest here.

As Peter Lewis details[18], the high degree of similarity between Indonesia and Nigeria make the two ripe for comparison. On the surface, Nigeria and Indonesia are alike in their status as regional leaders in both population and economic strength. Each country is also characterized by societal tensions between various ethnic and cultural groups and different religious traditions. Moving beyond demographics, both countries emerged from their struggles for independence with democratic governments that would succumb to ineffectiveness and give way to authoritarian regimes. Their economies were remarkably similar prior to the oil boom as both were dependent upon the production and export of agriculture. Even during the oil boom of the 1970s, their GDP growth rates and development priorities were similar as governments attempted to fund state-led development. Finally, both economies were subject to the same external price shocks throughout the 1970s and 1980s.

Key Criteria for Nigeria and Indonesia	*Similar*	*Different*
Regional Leaders (Economic, Population)	X	
Subject to Multiple Sets of Societal Cleavages (Ethnic, Cultural, Religious, etc.)	X	
Pre-Oil Economies Overwhelmingly Agrarian	X	
Subject to Exogenous Price Shocks Related to Resources	X	
Failed Democracy after Independence Leads to Narrow Coalitions	X	
Interests Comprising Governing Coalition		X
Level of Institutional Development Prior to the Oil Boom		X
Availability of Credit During and After Oil Boom		X

Table 6: Similarities and Differences Between Indonesia and Nigeria

[18] For a fuller explanation of these similarities, please see (Lewis 2007, 56-61)

Considering these similarities, it would be reasonable to expect the countries to follow similar trajectories. Despite them, however, they do not. Their similarities do not account for their divergence. As Figure 12 shows, the supply of Nigerian credit barely increased in the thirty-five years between 1960 and 1995. Indonesia's, by contrast, increased six-fold. The discrepancy between the two suggests several improvements to my theory.

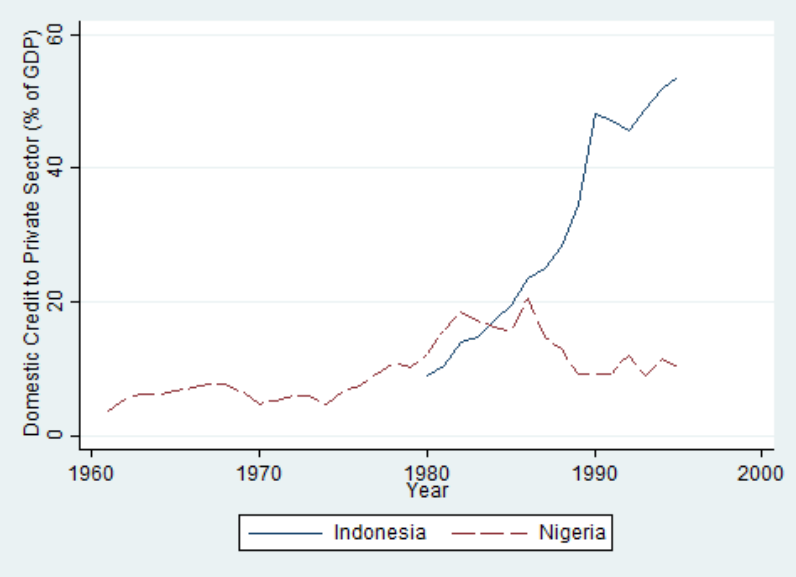


Figure 12: Credit to Private Sector over Time, by Country; Source: (World Bank)

B) *Nigeria*[19]

Before the Boom

On gaining independence in 1960, Nigeria was founded as a republic. Oil and gas production was equal to less than five percent of GDP annually until 1970. Early political organizations and institutions formed along regional lines with each territory being "controlled by a hegemonic political party" (Lewis 2007, 128). The eastern, northern, and western parts of the country backed different—rival—parties and political competition became "a basic three-way struggle" (Lewis 2007, 128). As each of the three groups sought to implement different political

[19] Unless otherwise noted, historical information for Nigeria comes from Khan (1994), Lewis (2007), and Pinto (1987). Information on Indonesia comes from Elson (2001), Lewis (2007), Liddle (1991), MacIntyre (1993), Mietzner (2009), Pepinsky (2009), Smith (2007), and Vatikiotis (1998).

and economic agendas, national politics quickly devolved into a competition over power and patronage. While coalitions throughout the early 1960s represented broad portions of society, political dysfunction was the norm and the federal government failed to establish even the most basic rights and protections. Property rights arose not as a result of the implementation of law and order but as a "process of political bargaining with segmented parties and regional elites who would provisionally guarantee the assets of particular clients within their sphere of control" (Lewis 2007, 132). Despite representing a majority of the population, the central government was fundamentally ineffective and governing coalitions were built on regional support.

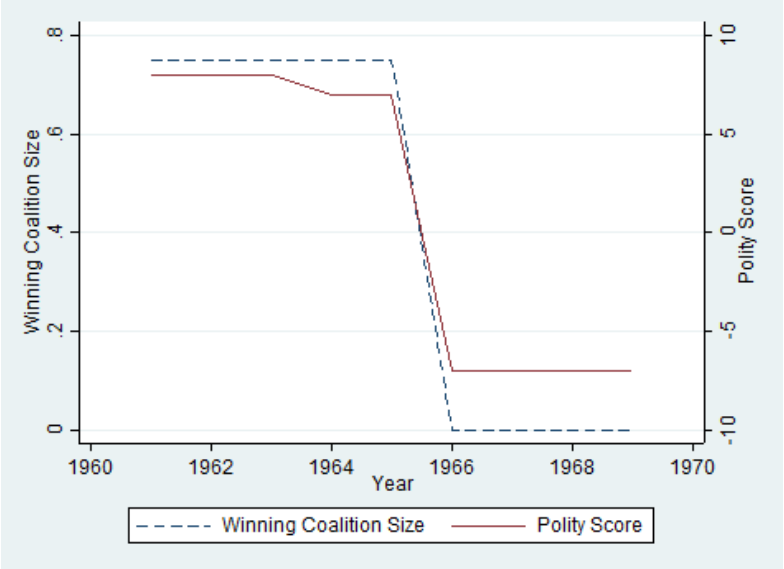


Figure 13: Consolidation of Power in Nigeria, 1960s; Source: (Teorell, et al. 2013)

Acting in lieu of a capable national government, regional authorities took on increasingly large roles in economic management, gaining relative autonomy over the distribution of revenues and resources within their territory. Recognizing the political weakness and economic incompetence of the federal government, regional officials and elites tightened their hold on power by dispensing patronage to supporters. Individuals and businesses became benefactors not of the national government, but of one politician or party. Even amid chronic instability, this arrangement led to an increase in GDP per capita by just over ten percent between 1960 and 1965.

In 1965, civil dysfunction turned to civil war. Following a contested census that provoked a coup and counter-coup, the southeastern region seceded from the rest of the nation and formed the Republic of Biafra. The home of most of the Nigeria's oil resources, both GDP per capita and oil and gas production decreased by almost one third before recovering in 1969—the final year of the war. The governing coalition consolidated dramatically over the course of the war as the national government took steps to secure its position. Responding to a dramatic decrease in manufacturing and mining capacity, the president at the time (General Yakubu Gowon) inserted capable economic technocrats into leading roles in the ministries of Finance, Economic Development, Petroleum, Defense, Industry, and Trade. He further worked to secure the loyalty of both the state bureaucracy and the military, ensuring the continuity of his regime but decreasing the breadth of his coalition in the process (Figure 13).

The national government emerged from the civil war stronger than it had been at any time previously. Nigeria's economy quickly rebounded and GDP per capita in 1970 exceeded 1965 levels. The war represented a symbolic victory that showed that the federal government could elevate itself above regional differences and political chaos. The senior technocrats that General Gowon had installed during the war remained in power and became key advisors in all economic matters (Lewis 2007, 134-135). A conference on national reconciliation in 1969 "laid out a blueprint for the postwar economic regime" and laid the foundations for a return to civilian rule (Lewis 2007, 135). The joint political-economic blueprint detailed plans about national reconstruction, government reform, the recreation of a participatory political process, and a timeline for new elections. Acting from a newfound place of strength, the national government had an opportunity to forge a sense of nationhood. A marked rise in government revenues brought

on by an increase in oil revenue and production stunted this process. Just one year after the reconciliation conference, the oil boom and its associated revenues rekindled the issues of the past.

The Oil Years

Year	Oil and Gas Production (% of GDP)	GDP Per Capita	Year	Oil and Gas Production (% of GDP)	GDP Per Capita	Year	Oil and Gas Production (% of GDP)	GDP Per Capita
1961	1.75	548.9	1969	4.74	568.5	1977	27.36	876.4
1962	2.5	559.8	1970	13.25	694.5	1978	22.98	801.0
1963	1.1	594.9	1971	29.1	775.1	1979	37.52	830.0
1964	1.58	611.1	1972	27.82	782.5	1980	27.33	840.5
1965	3.32	627.4	1973	28.58	804.7	1981	21.45	710.6
1966	4.6	587.8	1974	37.69	871.8	1982	21.32	685.0
1967	4.23	484.6	1975	25.32	804.0	1983	24.3	634.1
1968	2.02	468.1	1976	24.89	851.8	1984	30.7	605.7

Table 7: Oil and Gas Production and GDP per Capita in Nigeria, 1961-1984; Source: (World Bank 2013)

Prior to 1970, oil and gas production never equaled more than five percent of Nigerian GDP. Between 1969 and 1971, however, the value of oil and gas produced in the country grew by over six hundred percent (Table 7). Heavily controlled by the federal government, this exponential rise in production values brought windfall revenues to the recently-reconstructed nation. Building off of its military victory, the federal government's role as a distributor of benefits to both states and groups grew. Lacking in institutions and monitoring mechanisms to coordinate this distribution, and ever-mindful of the country's societal divides, Nigeria returned to fractious, regionally-based politics for most of the decade. Despite recording consistent economic growth, the nation remained fundamentally divided.

Narrow coalitions, inconsistent and ineffective economic policy, and unstable politics dominated the period of the oil boom. Following the civil war and the reunification of the Nigerian state, General Gowon and his technocratic advisors embarked on an ambitious plan of state-led development. Oil revenues and subsidies were pumped into state-owned industries led by lifelong politicians, federal officials, and military appointees. Lacking any capacity to monitor their

behavior, these enterprises became "[avenues] for politically inspired distribution" and means of addressing "pressures from key constituencies" (Lewis 2007, 137). Under universal scarcity and unchecked by any central authority, those with access divided favor and benefits amongst their supporters, ultimately creating widespread "collusion among military officers, politicians, bureaucrats, and business cronies" who had a vested interest in maintaining the status quo (Lewis 2007, 139).

Faced with political instability, patronage represented the best way for incumbents to guarantee continued positions of power. Having risen to power in a coup that provoked a civil war, General Gowon's regime survived through informal patronage and the selective distribution of benefits across sectors and regions. By ruling through a narrow coalition consisting of the military and civil service, General Gowon's government failed to unify the state behind his rule or his policies. Nominal attempts to increase the quality of life for Nigerians like the civil service wage hike of 1975 and the first round of indigenization were thinly-veiled attempts to benefit his own supporters within the politico-governmental infrastructure. Absent any true oversight, developmental policies were so decentralized that they implicitly "encouraged public officials" to plunder from the state (Lewis 2007, 143). By 1975, decentralization had turned to destruction. The regime faced macroeconomic turmoil and an absence of domestic public support. Following the national embarrassment of the "cement armada"[20] and the decision to postpone elections that would have returned the country to civilian rule, General Gowon's regime was overthrown in a bloodless coup while he was abroad.

[20] In this episode, the port of Lagos became overwhelmed with the amount of cement ordered by the regime. Able to process only one million tons of cargo per year, officials attached to General Gowon's regime had ordered 20 million tons of cement alone.

His successor—Brigadier Murtala Mohammed—seized power on the promise of reducing corruption and economic inefficiency. As a non-Southerner, his government had support in both the northern and middle parts of the country. Murtala acted quickly to remove the corrupt technocrats and officials appointed by General Gowon's regime in an attempt to disrupt and slash networks of patronage. This purge decimated the ranks of the bureaucracy and removed almost all upper- and mid-level civil servants. While this decision would indirectly lead to an increase in the exact behavior he was trying to prevent in the long-run, Murtala never saw its effects. He was assassinated in an attempted coup within nine months of his ascendance to the presidency.

Murtala was replaced by his second-in-command: Olusegun Obasanjo. In power from 1976-1979, Obasanjo's tenure coincided with another dramatic increase in oil production. Endowed with even greater revenues, Obasanjo's government increased the state's role to include being responsible for the development of manufacturing, public services, infrastructure, and transportation and utility networks throughout the country. Unfortunately, as a result of Murtala's purges, the bureaucracy was woefully underqualified to execute these plans. Instead of broad growth and improvement in the quality of services provided, the politicians and soldiers now holding senior positions in the state bureaucracy continued to operate in the same patrimonial fashion as before. National economic policy lacked all credibility. Nigeria's currency remained over-valued, little incentive or protection existed for investment, and credit was limited to those who received it as a result of patronage. A second wave of nationalizations of foreign-owned firms in 1977 only heightened fears among international investors about the nation and its economic trajectory (Godsell 1979).

Oil and gas production funded Nigeria's growth and overshadowed its underlying issues of corruption. GDP per capita continued to rise throughout the period of military rule (1965-1979)

despite political instability and economic mismanagement. On the eve of the country's return to civilian rule, Nigeria had undergone significant growth, oil and gas production was more valuable than it had been at any point in the country's history, and the drafting of a new constitution had paved the way for the military's exit from politics and the return to democratic government.

Yet even with nominally-sound foundations, Nigeria's Second Republic could not escape the problems or fate of its predecessor. The parties that emerged as major contenders in the 1979 elections mimicked those that existed in the First Republic: regionally-based, deeply distrustful of others, and motivated by potential patronage. One party each came to represent Eastern, Northern, and Southwestern Nigeria and none were able to capture electoral majorities. Attempts to forge a coalition between Eastern and Northern political groups failed, rekindling tensions between the two (each blamed the other for the inability to build a coalition) and with the western part of the country (because it had been excluded from the potential coalition) (Cowell 1981). Competition between regional, ethnic, and linguistic groups began anew over the spoils of governing. Elected officials—many of whom had served in some capacity during the period of military rule—reverted to their roles as distributors of largesse. As before, politicians channeled rewards and resources to the groups whose support they needed to maintain rather than the nation at-large. The government tried to balance this by expanding the provision and improving the quality of public services for all. Though possible during the oil boom, the impending price crash would soon make the dual burden of broadened networks of patronage and increased social spending infeasible.

Credit remained low throughout the period of the oil boom, increasing by only five percent over the course of the 1970s. When, for example, resource production peaks in 1974, the amount of domestic credit drops to pre-1970 levels. When production dropped off between 1975 and 1978, credit increases. Finally, with the outbreak of the Iran-Iraq War and the associated price increase in 1979, credit yet again decreases. The founding of the Second Republic in 1979 starts a positive trend for the availability of credit

as coalitions broaden and governance seems poised to improve. With the coming collapse of oil prices and the decreased value of production, the economy would soon enter a tailspin.

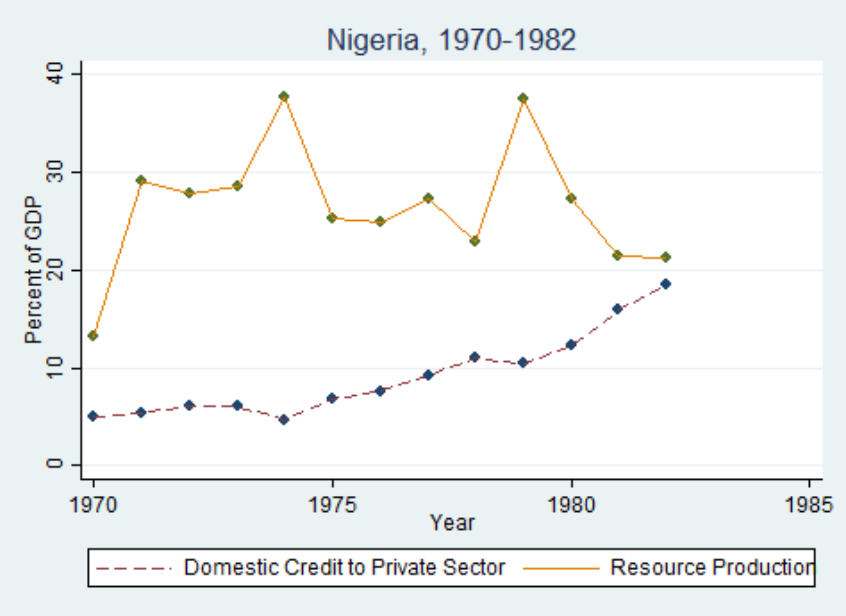


Figure 14: Nigerian Resource Production and Availability of Credit, 1970-1982; Source: (World Bank)

Nigeria after Oil

From 1980 through 1986, the year-over-year price of oil fell by an average of 15 percent annually. Federal revenue in 1981 decreased by 40 percent relative to 1980 (Lewis 2007, 157). Instead of cutting expenditures and slashing budgets, the federal budget continued to rise in both 1982 and 1983. As revenue derived from production decreased, corruption and clientelism became even more widespread. Groups and individuals nationwide competed for the favor of officials and sought to secure as much as possible from a rapidly-shrinking set of benefits (Gilroy 1981).

Without professional expertise or technocratic ability, the state bureaucracy was unable to implement policies that would attract foreign investment and fund government operations or even avert crises. Sharpened regional and cultural tensions teamed with a sudden, massive drop in government revenues to overwhelm a weak regime. After campaigning for the second set of elections led to even greater patronage and federal spending, democracy became untenable. Just as before, a narrowly-backed government drawn from the ranks of the military inserted itself. In

various iterations (and with five different heads of state), this would continue until 1999, when Nigeria elected a former military ruler—Olusegun Obasanjo—as the first president of the Fourth Republic.

While the amount of credit provided to the Indonesian private sector almost doubled between 1982 and 1995, Nigeria's decreased by 50 percent. Plagued by political instability, systematic corruption, and inefficient economic policy, the nation was unable to craft an effective response to the price collapse of the early-1980s. As a result, the country lingered in economic drift for several years as both the value of oil and gas and the amount of credit provided to the private sector bottomed out. Unable to react and lacking the technocratic knowledge to prevent a tailspin, Nigeria bordered on collapse during the 1990s before the transition back to civilian rule.

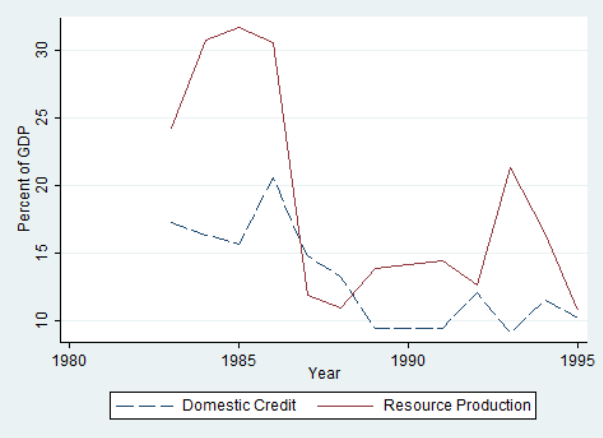


Figure 16: Production and Credit in Nigeria, 1983-1996
Source: (Teorell, et al. 2013)

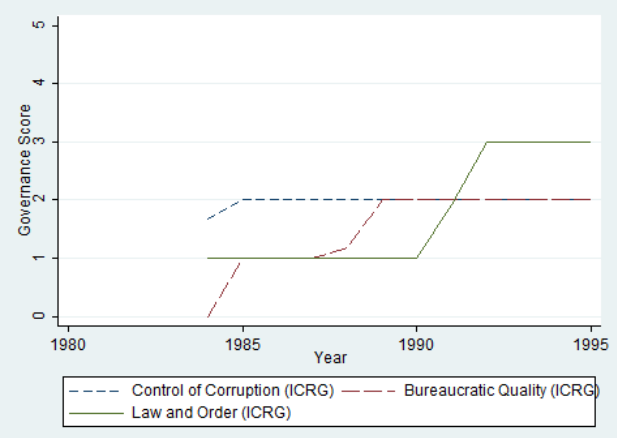


Figure 15: Changes in Quality of Governance, 1983-1996;
Source: (Teorell, et al. 2013)

C) Indonesia

Before the Boom

Indonesia emerged from its struggle for independence as a nation whose levels of oil and gas production rivaled that of the Netherlands. Establishing itself as a democracy, its early years were beset by political dysfunction and civil unrest. Leading a "presidential system with parliamentary characteristics", Sukarno became the nation's first president, serving from 1945-

1967 (Republic of Indonesia 1945). Tasked with both overseeing political instability and forging a national identity, Sukarno put down numerous uprisings and rebellions during the 1950s and 60s. The nation's political space was divided amongst two camps. On one hand, Muslim parties sought to establish political Islam while, on the other, nationalists, Communists and Socialists wanted to create a strong state with a secular ideology (Mietzner 2008). Divides existed over ideologies and arguments above all else. Even the Indonesian Communist Party—at one point the largest non-governing communist party—"was essentially a political alliance between the radical nationalists among the elite and Communists" (Mortimer 1969, 12). As parliamentary democracy perpetuated acute dysfunction, the nation had 10 prime ministers in a fourteen year period (1945-1959).

Year	Saudi Arabia	Trinidad and Tobago	Venezuela	Kuwait	Netherlands	Indonesia
1965	-	36.1	35.0	87.5	-	-
1966	-	44.2	32.2	78.7	2.3	-
1967	-	41.8	32.4	81.0	4.2	6.79
1968	50.7	48.7	29.0	84.9	6.9	6.06
1969	49.7	46.3	27.3	84.6	9.6	6.12

Table 8: Oil and Gas Production across Nations, 1960s; Source: (Ross, Oil and Gas Data, 1932-2011 2012)

Seeking to end the political chaos, Sukarno reinstated the 1945 Constitution in July, 1959 after Indonesia's Constitutional Assembly failed to draft and ratify a new constitution. Transitioning to a presidential system and eliminating the post of prime minister, this change made the president directly responsible for both leading the government operations and serving as commander in chief of the armed forces. Sukarno then began implementing a pseudo-authoritarian program of "Guided Democracy". Concentrating power amongst himself and his allies, Sukarno "ruled through his cabinet in a patrimonial manner with few checks" from any other group or institution (Lewis 2007, 93). The leftist regime placed severe restrictions on opposition and civil society groups and, in the economic sphere, pursued disastrous policies that terrified foreign investors, even triggering a hyperinflation crisis in 1965 (Liddle 1991).

In the midst of the crisis—and after a botched coup attempt later attributed to Indonesia's Communist Party—Soeharto began working to supplant Sukarno as the head of state. In contrast to Sukarno's prioritization of national unity and ideologically-driven economics, Soeharto strove to create political and economic stability, law and order, and widely-distributed economic growth. From 1965 through 1967, Soeharto consolidated his support base, violently removing Sukarno loyalists and Communist sympathizers alike from the military and civil service and launching a campaign against those theoretically responsible for the attempted coup. Building a coalition of university students, established religious and community organizations, economic elites, and the military, Soeharto ruled with a coalition approximately half as diverse as that of Sukarno's and in an even more authoritarian way (Smith 2007). As inflation levels rose to 1000 percent in 1966 (Lewis 2007), Sukarno's gradual fall from power ended. Soeharto was named acting president in 1967 and elected to the same position in 1968.

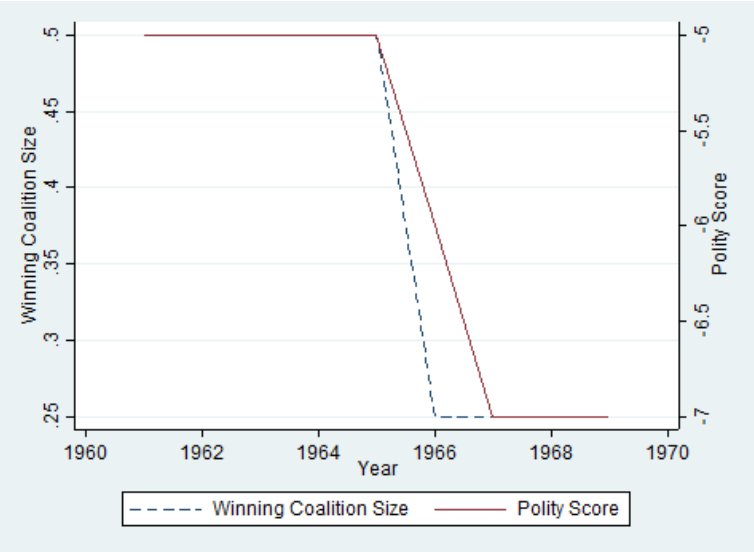


Figure 17: Soeharto's Consolidated Coalition (1965-1968); Source: (Teorell, et al. 2013)

Each partner in the coalition received a clear benefit for backing Soeharto's New Order. Rural elites and leaders of community-oriented religious organizations—disturbed by Sukarno's Communist leanings and ideas of land reform—were assured that land reform would not be a pillar of the new regime. University students, angered by economic mismanagement and perceived

managerial incompetence, supported a group of Berkeley-trained economists at the University of Indonesia for key roles in the new regime. These individuals would soon comprise Soeharto's core economic advisors and implement the macroeconomic policies that fueled the country's growth. In exchange for these concessions, all three groups facilitated Soeharto's takeover. Students relentlessly protested against Sukarno's agenda, going as far as to call for the outlawing of the Indonesian Communist Party (one of Sukarno's key constituencies) and its forced removal from any cabinet positions (Elson 2001, 130). Throughout the country, meanwhile, Muslim organizations and the military came together to violently eliminate Communist sympathizers both within the armed forces and in the larger population (Elson 2001, 125). Soeharto's new coalition engaged in a direct effort to discredit and minimize support for Sukarno and establish the new coalition's hold on power.

Soeharto's political accomplishments were accompanied by notable successes in economic policy. The student-backed economic technocrats (the "Berkeley Mafia") implemented a series of macroeconomic policies geared toward supporting domestic producers and reintegrating Indonesia into the global economy. Indonesia sent credible signals to the rest of the world by devaluing its currency, easing import and export restrictions, and mandating that the federal budget be balanced. Subsidies were cut, state-building projects reduced, and budget deficits strictly limited. The country's capital account was also liberalized, increasing the liquidity of foreign investment and the potential consequences of poor performance. During Sukarno's tenure, nationalization of foreign-owned firms and withdrawal from the global financial system was the standard. Soeharto's New Order, by contrast, consciously worked to rebrand the nation and solicit foreign investment.

Political consolidation and sound economic policy benefitted Indonesians almost immediately. Beginning in 1967, per capita Indonesian GDP rose for 14 consecutive years until

the oil price crash of 1982. Relative political stability became the norm for almost three decades as Soeharto built a national coalition early on in his rule. On the eve of the oil boom, Indonesian oil and gas production represented only a small portion of GDP. The ideologically-divided country was led by a narrow coalition that combined nationalist and pro-market secular forces. The New Order had established the rule of law, turned popular demands for technocratic oversight into an engine for growth, and triggered a path of long-term growth that overcame the regime's patrimonial ties. The state and military retained control over the domestic allocation of credit, directing benefits toward its supporters in the military, bureaucracy, and a small group of Chinese entrepreneurs in the country (Liddle 1991). For international and domestic businessmen alike, Soeharto established the fundamental protections necessary for transacting.

The Oil Boom

In 1970, the production value of Indonesia's oil and gas rose dramatically. Having built a reputation for sound economic management both domestically and abroad and overseen the creation of political stability, the basic elements of government were entrenched. Though the oil and gas industry had existed during Indonesia's colonial history and its first two decades of

Figure 18: Indonesian Resource Production and Availability of Credit, 1970-1982; Source: (World Bank 2013)

independence, it had never played a dominant role in the largely-agrarian economy. Between 1970 and 1983, however, Indonesian levels of oil and gas production averaged over 15 percent of GDP annually. Resource production took on increased importance and facilitated a major shift in economic policy.

Despite retaining its pre-boom size, Soeharto's coalition had been divided over economic policy since the mid-sixties. On one hand, the student-supported members of the Berkeley Mafia were trained in neoclassical economics and advocated for liberal macroeconomic policies. On the other, many Indonesians across class lines had a deep distrust for free market economics due to the exploitation and inequality it created during the colonial period. Making an argument built around economic nationalism, this group (known as economic nationalists or technologists) argued that the state should take a guiding role in driving economic development. Before the oil boom, coalition priorities and the need for growth led Soeharto to delegate economic policymaking authority to a team of credible technocrats. Aligning sound economic policy with the leader's desire to project stability and order, the Berkeley Mafia enacted macroeconomic policy that reversed Indonesia's economic fortunes. Even during the 1970s, this group continued to set macroeconomic policy.

Domestic policy, however, shifted over the course of the oil boom as the demands of key constituencies changed. Amidst public outcry, the regime's military supporters had actively colluded with a group of Chinese businessmen whose interests aligned with the regime's (Dunning 2005). Macroeconomic openness had led to an influx of foreign investment and the economic elevation of foreigners above indigenous Indonesians. University students and Muslim organizations became increasingly "vociferous in attacking what they saw as the loss both of a sense of national morality (…) and of sovereignty over the nation's wealth" (Elson 2001, 205).

Simmering discontent reached a boiling point when the Japanese prime minister visited Jakarta in January, 1974. Lingering unease among Muslim organizations about the regime's practices joined with university riots against "corruption, inequality, and autocracy" (Lewis 2007, 76) to represent one of the first challenges to Soeharto's New Order. The regime's increasing involvement with business groups further exposed it to criticism from industrial partners and business elites (Lucas 1997). Looking to quell an increasingly-mobilized public, domestic economic policy prioritized self-sufficiency and economic nationalism. Technocratic prudence gave way to technologist ambition.

While Soeharto's coalition did not become more concentrated over the course of the boom, its policies did change and governance did suffer. Production revenues and coalition pressures shifted domestic economic policy from the technocrats to the economic nationalists. At the local level, producers benefitted from increased subsidies (slashed during the late 1960s) and preferential access to credit while state-led industrialization expanded into new industries nationwide. As Lewis writes, "the petroleum windfall essentially reversed efforts to rationalize the state sector. (…) Financial discipline slackened as the public sector grew" (Lewis 2007, 102-103). Nowhere was this clearer than at Pertamina—the Indonesian national oil company.

Formed in 1968 after the merger of two smaller national oil companies, Pertamina was led by senior army official and staunch economic nationalist Ibnu Sutowo. A close ally of Soeharto, Sutowo used his access to revenues for dual purposes: patronage and the expansion of the public sector economy. Under Sutowo's leadership, Pertamina became a means of expanding and maintaining the coalition and a hub for the financing of development projects. Financed by international loans, the company's budget was not subject to the same fiscal requirements as the rest of the state. Immune to accountability and "answerable only to the president," Sutowo used

Pertamina's revenue to fund investment in petroleum-related ventures (liquefied natural gas, shipping, oil tankers) and other projects alike (telecoms and tourism to name two) with no true oversight (Vatikiotis 1998, 72).

Strapped for revenue because of a nationwide credit crunch, Pertamina had taken on two short-term loans from foreign banks to fund its continued operations in 1973-74. In February and March of 1975, it defaulted on both. Still credible internationally because of past macroeconomic policies, Soeharto worked with foreign donors to reschedule debt payments and avoid a balance of payments crisis. Inquiries into how much debt needed to be repaid, however, yielded disastrous findings (Coggin 1975). In sum, Pertamina had taken on $10 billion in loans—an amount greater than the entire national budget (Elson 2001, 214). Because of past initiatives and its integration into the global economic community, Soeharto's government was able to secure $3.4 billion in immediate support (Lewis 2007, 106). Albeit only temporarily, the Pertamina scandal thrust the technocrats back into the spotlight and revealed the breakdown in governance during the oil boom.

Over the same time, the amount of credit available fluctuates dramatically, peaking at almost 50 percent in 1979 after falling under 10 percent in 1975 only to dip again in 1982. The first part of this graph appears to align with my theory. As oil and gas production rose between 1970 and 1975, the amount of credit available decreased dramatically—but not as the intentional result of any policy. On the contrary, it was caused by an international credit crunch (Woo and Nasution 1989). Looking past this shock, the level of market capitalization rose overall during the oil boom, rising and falling alongside overall levels of production rather than operating inversely. This increase in the availability of credit between 1975 and 1979 came as a result of the preferential access to credit for indigenous Indonesian businessmen and the expanded provision of credit by economic nationalists.

After the Oil

Year	Oil and Gas Production (% of GDP)	Oil Production (Metric Tons)	Change in Oil Price (Year Prior)	Year	Oil and Gas Production (% of GDP)	Oil Production (Metric Tons)	Change in Oil Price (Year Prior)
1978	15.4	80000000	-	1983	17.4	66000000	-13%
1979	25.3	78000000	103%	1984	18.3	69000000	-9%
1980	21.2	78000000	3%	1985	16.8	68000000	-5%
1981	18.9	79000000	-12%	1986	15.3	71000000	-49%
1982	16.5	66000000	-14%	1987	9.9	70000000	24%

Table 9: Drop in Oil Prices, 1978-1987; Source: (Ross, Oil and Gas Data, 1932-2011 2012)

Beginning in 1980, the value of production began to plummet. Even though production levels dropped only slightly, the value of oil and gas produced as a percentage of GDP decreased by 60 percent between 1979 and 1987 (Table 9). Oil Prices dropped by an average of 14 percent annually. Government revenue evaporated and its ability to dispense patronage decreased substantially. For economic nationalists, the bottom had fallen out. Without the rents to support public work projects and patronage networks, the economy had to be dramatically reformed.

The New Order regime was well-positioned to execute the necessary changes. Its core technocratic policymakers and institutions of government had been in place since the late-1960s. With the disappearance of oil and gas windfalls, fiscal discipline became a priority yet again. Economic authority shifted back to the technocrats. Funds allocated to various kinds of development projects were slashed as were the budgets of key coalition partners (the military in

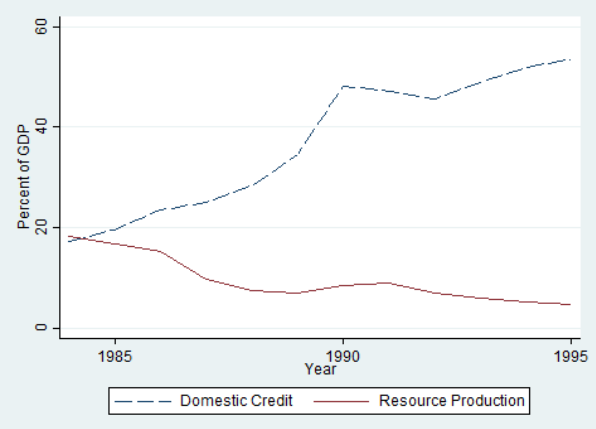


Figure 20: Resource Production and Domestic Credit in Indonesia, 1982-1995

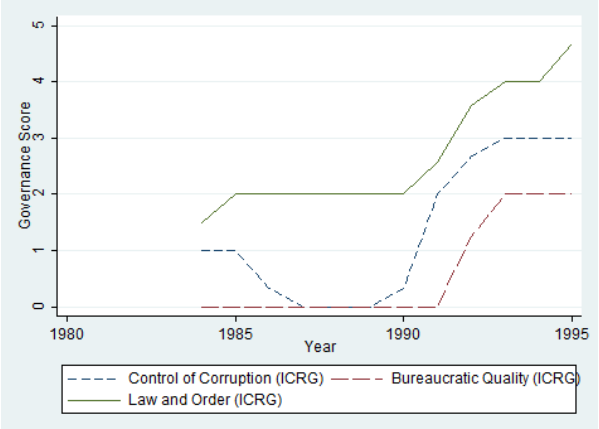


Figure 19: Changes in Quality of Governance, 1983-1996; Source: (Teorell, et al. 2013)

particular). At the same time, a series of economic reforms and policies were introduced that gradually excised the state from its role as the prime driver of the economy. Macroeconomic policy continued to incentivize and favor domestic producers (and, indeed, often created production monopolies), but corruption was limited by the embedded institutions of the state. By the mid-1980s, reforms liberalizing the banking and financial sectors eliminated most preferential credit schemes and opened the market to intermediaries foreign and domestic. "By the early 1990s, (…) Indonesia had ceased becoming an oil economy but was now an export economy with oil" (Lewis 2007, 117). Governance reforms accompanied economic ones and, by the 1990s, Indonesia became a hub for investment.

As a result the oil price crash of the early-1980s, Indonesia and Nigeria found themselves in markedly different places. Indonesia developed a booming economy driven by foreign investment and export-oriented production. Nigeria, on the other hand, was crippled by societal cleavages and political and economic instability.

D) Comparing the Cases

Prior to 1970, Nigeria and Indonesia were similar in many ways. From demographic divides to political and economic upbringings, they share many features. Their differences, however, explain why Indonesia succeeded while Nigeria drowned.

Before the advent of the oil boom, both countries' attempts to establish themselves as democracies were crippled by dysfunction. The particular brand of chaos that each country went through demonstrates the difference that would eventually separate them. In Nigeria, politics were divided among fractured regions and ethnic groups, each of which wanted to maximize the benefit for their own group and none of which necessarily agreed with each other. In Indonesia, by contrast, stepping back from the divisions between parties and groups revealed one major divide

upon which other issues were super-imposed. Indonesian parties were divided in the debate between secular nationalism and political Islam (Mietzner 2008). As a result, Nigerian coalitions were more fractured by default than their Indonesian counterparts. Nigerian coalitions had to piece together support groups from different regions and with different priorities. Indonesian ones, by contrast, simply had to represent one side of the debate while ensuring that the opposition remained loyal. Though this dichotomy led to the breakdown of Indonesian democracy, the divide would continue into the period of the New Order.

Additionally—and on a related topic—the quality of the institutions that develop before the oil boom represent another large difference. Because of the fractious politics and regional rivalries in Nigerian politics, the national government could not establish any strong institutions that would either create political norms or enforce basic laws and rights. As governments could not secure the support of constituents for prolonged periods of time, the requisite support for institutional development never developed. Soeharto was provided with the support and stability that enabled his regime to build preliminary institutions prior to the oil boom. These institutions would prove pivotal in enforcing the fiscal standards and implementing the policy shifts that would occur over the next twenty-plus years.

Regional placement also plays a role in the availability of credit to the private sector. Though the above analysis does not discuss it at length, the geographic locations of these two countries do play a role. As Figure 21 shows, the amount of investment in developing nations far outweighs the amount that goes to those in Africa. In the Indonesian case, foreign financing was responsible for both the initial increase in standards of living at the end of the 1960s and the Pertamina Scandal of 1975. By virtue of its location, it was privy to larger amounts of investment

from abroad. This may have, in turn, triggered investment and innovation in the domestic economy.

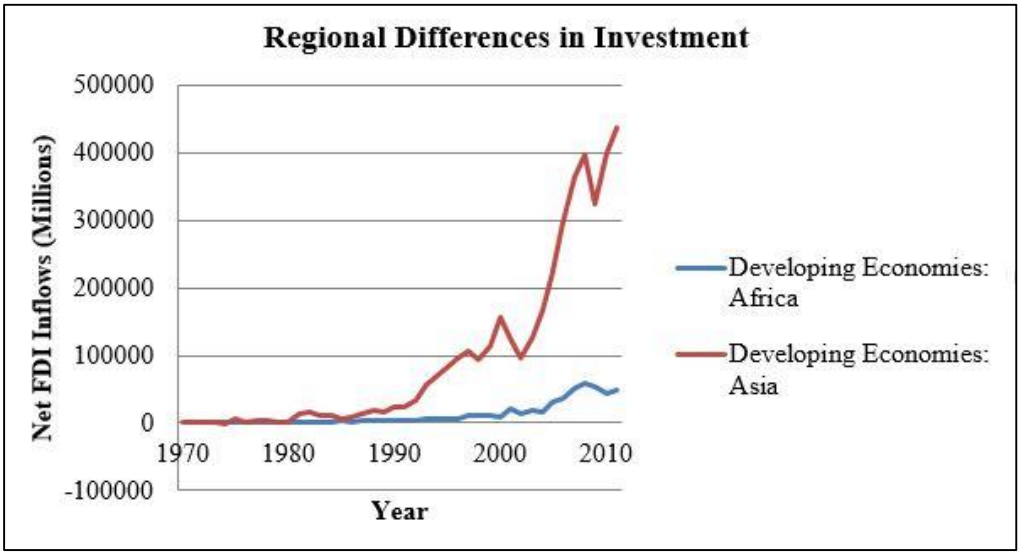


Figure 21: Regional Differences, Net FDI Inflows *Source: OECD Statistical Database*

Finally, the difference in the nature of Indonesian and Nigerian business sector groups shaped the governing coalitions in both countries and the policies for which they advocated. The military, foreign investors, and domestic Chinese entrepreneurs backing the New Order regime all prioritized the creation and guarantee of property rights. Acting on behalf of the "interests of capital-in-general", Soeharto regime crafted policies that would guarantee these basic rights and create incentives for the reduction of risk via the diversification of economic activities (Rosser 2007, 50); (Schneider 2009). In Nigeria, by contrast, political instability precluded the formation of coalitions that may have advocated for similar reforms. Nigeria's societal divides made it harder for a pro-growth coalition to form and for business groups to maintain any sort of ongoing relationship with the national government (Brautigam, Rakner and Taylor 2002). Operating under such instability and without any basis for constant communication with the government, Nigerian business groups failed to form as united a front as was present in Indonesia and had no political counterparts with whom they could have worked.

E) Improvements to My Theory

Neither of these cases fit my theory perfectly. In the Nigerian case, General Gowon's governing coalition was already small by the time oil revenues began to flow. While both his

regime and those that followed exemplified the latter portions of my theory, the sequencing is incorrect. In Nigeria, narrow coalitions created weak institutions and little basic governance. Networks of patronage and largesse flourished as a result. Oil may have amplified these tendencies over the course of the 1970s, but it did not cause the narrowing of coalitions. Because of the Biafran War and, more fundamentally, the societal divisions within the nation, coalitions and political support were narrowly-based to begin with. Oil may have increased the opportunity for patronage and certainly contributed to the country's corruption, but could not be the cause of Nigeria's narrowly-based regimes.

My theory similarly fails to account for two things regarding Soeharto's coalition. First—as in the Nigerian case—the coalition does not actually narrow as a result of the oil boom. Soeharto consolidated his coalition between 1965 and 1968 and, at least according to the two measures I use, maintained the same breadth of interests represented for the next 30-plus years. The desires of certain partners and supporters changed throughout this time, but the fundamental size of the group supporting the regime did not. Further, his regime created relatively strong, stable institutions despite the fact that the breadth of interests it represented may have benefitted from a more chaotic arrangement.

To account for these issues, my theoretical framework needs to be expanded in several ways. First, in addition to the size of the interests represented, I must consider what those interests are. The Nigerian and Indonesian governments were both measured as narrow coalitions for almost the entire period under investigation here. The difference lies the composition of the coalition and the strength of the coalition partners. Whereas Nigerian regimes were often supported by a select few ethnic groups and reviled by the rest, Soeharto's regime was backed by diverse enough groups that the distribution of interests within his coalition represented a cross-section of society.

Moreover, as Smith (2007) argues, Indonesian civil society groups were well organized and capable of mobilizing their supporters. Elson (2001) directly discusses the fact that the Indonesian Community Party's ability to mobilize its members posed a real threat to the regime. Ultimately, this became one reason for their persecution. Accounting for both the kinds of groups that supported the governing coalition and their relative strength and cohesion would improve this piece of my argument.

Additionally, the theory implicitly assumes that coalitions (and the desires of coalition partners) will not change over time. In Indonesia, this was very clearly not the case. Changing interests among coalition partners inspired the alternation between neoclassical economics and economic nationalism. Part of this was the result of both economic viewpoints being part of Soeharto's coalition, but 1974's Malari Riots were as much in favor of economic nationalism as they were in opposition to market economics.

Finally, my theory fails to account for both the number and quality of institutions that existed prior to the oil boom. Nigeria is an unfortunate example of what happens when oil and gas production intersects with weak and ineffective institutions. Given only three years head start, Indonesia was able to create institutions that, while allowing for corruption and patronage, kept both relatively in check and allowed for political order and economic stability. While this project tried to treat institutions as exogenous from both political structures and the presence of resources, such treatment may not be feasible. My theory may have fit Indonesia significantly better if pre-boom institutions were better accounted for.

VI) Conclusion

Substantial bodies of literature focus on both financial development and the resource curse. Within the work on financial development, scholars have come to some consensus about the

relationship between financial development and broader economic development and, further, about the fact that levels of financial development are ultimately the result of political decisions and institutional supports. Depending on the breadth of a government's coalition and its political philosophy, regimes and politicians make calculated political decisions about the value of potential reform. Especially in cases where economies are dependent upon one commodity, the pursuit of diversification and more stable long-term growth should be priorities. In practice, they are not.

This study sets out to connect the variation in the amount of oil and gas a country produces with the amount of credit provided to that country's private sector. The impact of oil has been studied on a wide range of economic, political, and social variables in previous works. Very few of these works, however, focus on the relationship between production levels and the availability of credit or financial development. Previous works on financial development, meanwhile, focus on interests and institutions without investigating their origins. In connecting the two bodies of scholarly work, I suggest oil as one source.

Using large-N statistical analysis on a set of 160 countries over a 51-year time period, I find strong support for my hypothesis that high levels of oil and gas production have a negative effect on the amount of credit supplied to a country's private sector. Across all models, the coefficient on production remains negative and statistically significant at the one percent level. While its magnitude turns out to be smaller than I would have anticipated, scale is an important consideration. For most major oil and gas producers, average amounts of production would cause a two-to-three percent decrease in the amount of available credit. As a percentage, this seems unimportant. Translating the percentage into real dollars changes this interpretation immediately. Higher levels of production mean billions of dollars fail to reach private sector businesses and entrepreneurs. As a percentage of GDP, five, seven, or ten billion dollars seems insignificant. For

an entrepreneur trying to build a business, one-one millionth of that total may be enough to capitalize on an idea.

The mechanisms through which this happens are hardly unique within the literature on the resource curse. Building on the idea of a rentier state, I hypothesize that governments endowed with greater levels of production are less responsive to broader parts of the population. They instead represent narrow coalitions and act to secure their own stability at the behest of broader development. Weaker institutions and governance follows, thus undermining the support for both bank- and market-based financial systems. Without the necessary support infrastructure, the availability of credit suffers.

Case study analysis of Indonesia and Nigeria yields results that support pieces of my theory. In Indonesia, the oil boom (1970-1982) did lead to an increase in levels of production and a decrease in the overall quality of governance. It did not, however, lead to further concentration of the governing coalition or lower supplies of credit to the private sector. Indeed, credit fluctuated wildly during these years, generally moving in sync with oil and gas production. In Nigeria, meanwhile, higher levels of production led to both decreased governance and lower levels of credit availability but not more concentrated coalitions. These issues suggest ways to improve my theoretical framework. One way to do this would be to analyze what interests actually form a coalition and, more importantly, what socio-economic classes and interests they represent relative to the rest of the country. Additional consideration should be given to judging the strength of civil society groups in a country because well-organized groups capable of mobilizing networks of supporters can immediately limit the power of the incumbent regime. Finally, the quality and number of pre-existing institutions must be taken into account. As Indonesia demonstrates, even a

few years of institution building can make a monumental difference in the presence of high oil and gas production.

There are two main implications that come as a result of this study. The countries whose production levels are highest are also the ones who are most vulnerable in the event of an exogenous shock. Yet, as a result of their levels of production, the amount of investment flowing into private sector ventures is considerably lower than it should be. This is the first major implication of the project. Higher levels of oil and gas production create a catch-22. Not only are countries where oil and gas represent the highest levels of GDP the ones who need to diversify most in order to achieve stable long-term growth. They are also the ones whose diversification into other economic ventures is most limited.

Extending on the above, the second implication deals with entrepreneurship—the original source of interest for this study. Higher levels of oil and gas production actively reduce the amount of innovation and entrepreneurship that occurs in a country by removing sizable chunks of potential capital from the economy and undermining the core infrastructure that would support such investment. Increased oil and gas production values limit the opportunity for entrepreneurs to acquire credit and make its allocation less efficient. Ideas that represent potential breakthroughs flounder as a result and the cycle of resource dependence continues.

Further questions and opportunities for research fall into two broad categories. Using entrepreneurship as a general guide and different datasets including the World Bank Enterprise Surveys, an analysis of the impact of oil on other factors related to entrepreneurship is warranted. Much has been written about the effects of oil on human capital and this work expands on the relationship between oil and gas and finance, but an analysis of more immediate impediments to starting a business could reveal interesting trends. Starting with levels of production, there are also

phenomena with which oil has not been connected but which may be worthwhile. Using a similar approach to the one taken here, it may be interesting to investigate the relationship between levels of oil and gas production and the types of Islam that arise in countries worldwide. Ross (2008) connects oil and gas production with female labor force participation and political participation while concentrating on the impact of oil rather than the impact of Islam. It is possible, however, that oil and gas production leads to the rise of different kinds of Islam. This warrants further examination.

Finally, an expansion of this study is in order. While I focus on credit to the private sector, many states—especially those with resource-driven revenue streams—engaged in patterns of state-led development throughout the second half of the twentieth century. If one were to merge information on the supply of credit to both the public and private sectors, it may be the case that the decrease observed here is overshadowed by a subsequent increase in public sector credit.

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