Chapter 3: Dependence, Income, and Regime Stability

The last chapter demonstrated that the negative correlation between fuel exports and a lack of liberalism was not illusory. Even though the implications of the natural resource curse thesis have already begun to be translated into scholarly conventional wisdom and public policy, we are still a long way from understanding the causes of this phenomenon, especially in a cross-national framework. Much of the work that has been done in this area generalizes from a particular set of cases (ex. Loung and Weinthal, 2006; Ross, 2001; Karl, 1997). But the countries affected by the natural resource curse exhibit a wide variety of development patterns. Thus, the current explanations are unlikely to prove a satisfactory basis for scholarly analysis or policy-making.

To set this empirical phenomenon on firmer theoretical ground, this chapter provides a model which uses the government distribution imperative associated with fuel exports to explain the general lack of democracy in these states. This analysis demonstrates that fuel dependent states experience a wide variety of outcomes and that an approach based on government distribution fits the empirical patterns observed across fuel exporting countries better and also provides a clear identification of the underlying dynamics of fuel exporting politics.

The beginning of this chapter will cover existing explanations for the empirical patterns across countries and regions. After establishing some of the gaps in previous work, the theory-building section of this chapter begins. The discussion will focus on how the attributes of fuel exports increase the importance of government distribution in the state's economy. From these general attributes of fuel exports, I introduce a formal model to show how the increased emphasis on government distribution that results from fuel export dependence explains the statistical pattern associated with the natural resource

curse. The final section returns to the literature-to-date on the natural resource curse. Here I argue that the model focusing on the importance of government distribution has several important advantages over previous hypotheses, and I suggest some straightforward and novel expectations that will be tested in the next three chapters.

The main contentions from this analysis are: (1) As individual income becomes more tied to government distribution, individuals are less likely to challenge authoritarian governance. (2) As individual income becomes more tied to government distribution, individuals are less likely to prefer democratic outcomes, which make control over government resources uncertain. (3) States with a high ratio of fuel export revenue to population, referred to as "capital surplus" fuel exporters, remain stable, since they can avoid conflict through distribution. (4) Fuel dependent states with a lower ratio of revenue to population, referred to as "capital deficient" fuel exporters, are characterized by unstable government because of conflicts over control over distribution of the resource.

3.1. Limited explanations

Scholars posit several hypotheses to explain the pattern in the last chapter. All of these explanations are insightful, but they fall short providing general theory that explains why fuel dependent states, which have quite different individual characteristics, historical legacies and political outcomes, still form an overall class of democratic under-performers.

3.1.1. Authoritarian stability

The most cited explanations for the lack of democracy in fuel dependent states draw from the literature on the Middle East. This literature focuses on explaining authoritarian stability. Ross (2001) was the first to analyze whether theoretical concepts developed in the Middle Eastern literature extend to a large-N framework. First, he finds that fuel exporters' ability to raise revenue without taxation reduces calls for political reform. Second, fuel exporters have greater resources for patronage to reduce pressure for democracy. Third, the government's oil wealth, either purposefully or accidentally, reduces the formation of civil society groups. Together, these hypotheses are labeled the "rentier effect" of oil revenues. He also finds some support for the contention that fuel wealth does not result in socio-economic development that is proportionate to the increases in per capita GDP, although he does not give an explanation for why this is the case. In all of these explanations, the implication is that fuel dependent states are more likely to be authoritarian because increased government revenues which are obtained independently of social collection make authoritarian governments more stable.

Most scholars, even the ones discussed below, will grant that when raw material values are high, authoritarian governments can prevent changes in the regime through "buying off" the opposition. Many, however, do not believe that it will last when the government runs short on revenue because of low raw material prices. Benjamin Smith (2004) argues that this is not the case. He contends that four cases, the "big four," grab the attention of researchers -- Iran, Nigeria, Algeria and Venezuela.[1] Instability in these four countries has led researchers to predict government crises as a result of falling fuel prices. However, he argues cases like Suharto in Indonesia and Saddam Hussein in Iraq, who both lasted more than thirty years, are more common (p. 242). A duration analysis

[1] Ross (1999) makes the case that Venezuela was actually quite stable as compared to its neighbors and actually doubts whether most oil states are all that more unstable than their neighboring countries.

of fuel dependent regimes in the developing world supports his argument. These results, contrary to what would be expected, hold up regardless of whether oil prices are high or low. He theorizes that oil dependent regimes effectively use their revenues to align social interests and create institutions to support the regime.

Another hypothesis for authoritarian stability revolves around increased spending on repression. Some scholars note a positive correlation between oil dependence and spending on military and police as a proportion of their income (Skocpol, 1982; Clark, 1997). Cross-national support for this hypothesis is generally weak (Ross, 2001; Smith, 2004). Separating spending on domestic repression from spending on national defense is very difficult. Saudi Arabia, Iran, Iraq, and Kuwait are expected to spend more than the average amount on defense, since all of them have been threatened with foreign invasion in the past twenty years. Algeria, Nigeria, Indonesia and Angola all have civil unrest on a scale that would require active military intervention. Increases in military and police spending are more likely an effect of domestic and international instability, rather than a cause of domestic tranquility.

Another factor receiving much attention, primarily in the media, is the international support given to oil-rich regimes. Especially in the case of Iran, observers credit US support for both the rise and fall of the Shah (ex. Cottam, 1979). Others contend that Saudi Arabia, Kuwait and other oil rich regimes in the Middle East do not receive sufficient international pressure regarding their human rights practices that countries without oil do (Ross, 2 May 2006). A number of oil rich countries have been subject to significant international sanctions, including Iran, Iraq, Syria, Sudan, Chad and

Libya; this has primarily been because of international aggression rather than domestic rights abuses.[2]

The "rentier effect," slow socio-economic development, institution building, repression, and the lack of international pressure are all plausible explanations for the statistical pattern of the natural resource curse, but all of them rely on explaining the pattern through authoritarian stability.

3.1.2. Democratic instability

A number of other scholars suggest that the main reason for the pattern of non-democracy is the instability of governments, especially democratic ones, in fuel dependent states. Karl's (1997) work on Venezuela, Iran, Nigeria, Algeria, Indonesia and Norway is the best-known example of this literature. She contends that when a government receives a large windfall from spikes in oil prices, it will have a difficult time resisting social pressures to increase spending.

> As a result, when faced with competing pressures, state officials become habituated to relying on the progressive substitution of public spending for statecraft, thereby further weakening state capacity (1997, p. 16).

Governments will remain relatively stable as long as the price of fuel continues to rise. When the price falls, however, the fragile framework on which the government in a developing state rests will collapse.

Chaudhry (1997) makes a similar argument about the importance of establishing government capacity to avoid instability during a drop in prices. She compares Saudi Arabia, which depended on oil revenues, and Yemen, which depended on labor transfers,

[2] Developed states will sometimes attempt to support/install cooperative regimes in oil exporting states. This has certainly been the case in the US support of Kuwait and Saudi Arabia in the first Gulf War. The same argument could also be made about the Shah in Iran. These actions, however, have a mixed record of success and seem to be limited to a few historic examples.

and finds that Saudi Arabia had much weaker institutional capacity to respond to crises. The primary reason for institutional weakness is weak tax collection. Because the government of Saudi Arabia did not have incentive to tax the population, a number of other functions necessary for state control, including tracking the population and gathering demographic information, fell by the wayside. Luong and Weinthal (2006) also cite the lack of a professional taxation apparatus as a key aspect of institutional weakness in some oil dependent states.

Other scholars posit a pattern of democratic instability that works in reverse of Karl's boom-bust cycles. Lam and Wantchekon (2002) suggest that oil dependent states in Africa experience political "Dutch disease," whereby politicians elected to government with high fuel revenues are able to use resources to consolidate a one-party state. They argue that office-seeking leaders are able to use patrimonialism and corruption to lock in an electoral advantage. Thus, as fuel export revenues rise, the danger of a democracy being replaced by a one party state increases.

Still others point to an even larger pattern of political instability in fuel dependent states, especially in terms of social unrest and civil war. Ross (2003, p. 21) notes that five of the twenty most oil dependent states he examines experienced some type of civil war related to natural resource reserves since 1990. In a similar vein, Collier and Hoeffler (1998; also Bannon and Collier, 2003) observe a strong correlation between dependence on natural resources and the probability of civil war. Bannon and Collier (2003, p. 5) also note that oil production increases the risk that a civil war, when it occurs, involves secession. They posit several reasons for this. First, separatist groups must bankroll themselves, and they use extortion and the exploitation of trade in primary commodities to do it. High revenue exports are an easier to use for extortion, trade,

taxation and/or participation in the trade itself. Second, regions have a greater incentive to assert their independence where the distribution of resources aligns with other cleavages of conflict, such as ethnicity. Third, poor governance and corruption exacerbate civil strife, as it leads to perceptions of a national resource being stolen by corrupt elites.

While these authors have not drawn a direct connection, a relationship between fuel dependence and social unrest may explain the lack of democracy in these states. As Linz and Stepan (1978, p. 18) note, "Civil war almost always results in non-democratic governance." Wantchekon (1999) comes closest to making this link explicit, by contending that unequal distribution of oil resources results in resentment that undermines stability of democratic rule. If this is the case, then fuel export dependence should be correlated with greater incidence of civil war, and this, in turn, should explain some of the democratic underperformance in these states.

Weak governance, decaying bureaucracies, political Dutch disease, and civil conflict all provide convincing explanations for greater democratic fragility in fuel dependent states. This predicted outcome stand in contrast, however, to the pattern of authoritarian stability predicted in the previous section.

3.1.3. Ambiguous Empirical Results

What is most interesting about the contradictory conclusions reached by these studies is that they all make a persuasive case, both in a regional setting and using large-N statistical research. Why is this? An answer begins to emerge in Table 3.1 which shows some characteristics of the most fuel export dependent countries, those for whom fuel exports average more than 5 percent of total GDP from 1965-2001. The second

column lists the percentage of GDP made up from fuel exports and the third column gives an approximation of the income from those exports per capita. The fourth column gives a listing of regime types, classified according to their Polity score as authoritarian, soft-authoritarian, semi-democratic, and democratic. The final column gives a listing of civil conflicts, classified as minor, intermediate or full civil war (Gleditsch et. al., 2002).[3]

[Table 3.1 About Here]

A wide variety of political outcomes are represented here, from very stable authoritarian states and democratic states, to states which alternate regularly between regime classifications and experience several bouts of civil unrest. Of the 22 countries listed in this table, about ten of them have relatively stable polities, experiencing one or fewer transitions. The other half experiences two or more – as many as seven in the case of Nigeria – alternations between polity types. The presence of civil unrest has a similar pattern, with about fourteen experiencing some type of civil unrest and eight experiencing no measured civil disturbance. No clear pattern emerges about the relative stability of these states. Indeed, the sample is split almost exactly in half between countries with stable political institutions and those experiencing civil unrest. This is problematic, then, for theories which predict one causal pathway to democratic under-performance in fuel dependent states.

Placing this back into the context of explanations for the natural resource curse, whether a researcher observes an underlying pattern of stability or instability as the explanation for non-democratic outcomes depends heavily on the sample. Karl's (1997) research, for example, is explicitly limited to six states – Venezuela, Iran, Nigeria, Algeria, Indonesia, and Norway -- which are major world exporters, have a certain level

[3] Smith (2004) also uses these classifications.

of dependence, and do not have a general capital surplus. Smith's (2004) statistical analysis, discussed in the next chapter, is heavily influenced by the stability of a few very wealthy oil states.

That these problems have not been explicitly addressed is problematic for a number of reasons. First, most readers do not appreciate these limitations. For example, even though Karl's (1997) research is explicitly limited to a few cases, many now talk about the "paradox of plenty" without reference to the qualifying conditions. Second, limited samples prevent researchers from looking for underlying patterns that might explain both outcomes. Some underlying attributes of fuel exports that might explain the patterns presented in Table 3.1, but studies that draw from a single region fail to identify these relationships. Finally, scholarship has become stuck in a futile debate about underlying patterns of stability and instability, which, depending on the sample and methods, will produce inconsistent results. In reality, this debate appears largely illusory and diverts attention away from exploring the baseline characteristics of fuel resources that might influence governance.

3.1.4. Other Explanations

The inconclusive results from the regional literature on the Middle East and Africa has led some scholars to bring forth alternative hypotheses for the underlying patterns of the natural resource curse.

One such area of research focuses on the ownership of the natural resource. Ross (1999, p. 319) suggests that state ownership of the resource might explain the pattern of success and failure in economic development among states, as parastatals tend to soften

budget constraints (see also Quinn, 2007).[4] Luong and Weinthal (2006) take this further, arguing that state ownership, at least in the post-Communist context, might provide an explanation for different institutional outcomes. They argue that state-owned resources reduce the need for taxation, resulting in two outcomes: (1) less social pressure associated with taxation decisions; and (2) weakened bureaucracy, since the state is not concerned with revenue extraction (see also Chaudhry, 1989). The first outcome explains the stability of some authoritarian regimes, since they face less social pressure for reform. The second outcome explains the instability of governments, since they have inadequate state capacity to respond to crises.

Generalizing this hypothesis produces a number of problems. First, the lines between state and private ownership are not entirely clear in the oil sector. Even in states that give concessions, which are increasingly rare, the government often retains legal ownership of the underground reserves. This, along with the numerous legal regulations that accompany a company's investment into oil reserves, means that the state maintains an asymmetrical relationship with the oil development company.

Second, states often renege on agreements with private firms. Russia, which is Luong and Weinthal's primary example of domestically privatized oil development, is rife with examples. In 2004, the state owned oil company, Rosneft, acquired the largest private oil producer, Yukos, after questionable tax evasion and fraud charges were brought against the company by the government.[5] This move was seen by many analysts as a response to the political activism of Mikhail Khodorkovsky, the former owner of

[4] A "parastatal" is an agency or company that is owned, either in whole or in part, by the government.
[5] Controversy still surrounds the tax evasion charges. While the accounting company PricewaterhouseCoopers has stood by its audit reports since the 2004 tax evasion charges were leveled against Yukos, they recently recanted, saying that they were provided with false information by the managers. Khodorkovsky's lawyers blame this on pressure from the Russian government (RFE/RL, 25 June 2007).

Yukos, against the President Vladimir Putin's government (RFE/RL, 1 August 2006). Currently, Khodorkovsky is in a Siberian labor camp, and his company is bankrupt.[6]

This is hardly a portrait of a private industry that has strong bargaining position vis-à-vis the state. Even the larger international oil firms have difficulty asserting independence. As Ottaway (2001) notes, the US government has pinned considerable hope on the ability of international oil companies to promote greater levels of democracy and transparency in oil exporting states. Yet the power of these countries in their host states is often very tightly constrained. In Russia, several major oil companies have had large investment projects re-negotiated unilaterally by the government after making significant initial investments. In the Sakhalin II oil field, Shell and its two Japanese partners, Mitsui and Mitsubishi, were bullied into selling a majority stake in the project to Gazprom, the state-owned gas company. This prompted the European Bank for Reconstruction and Development to cancel its investment in the project (Pfeifer, 30 December 2006). British Petroleum (BP) also became a victim of nationalization in the fuel industry. In June 2007, the Russian government forced the British-Russian joint venture, TNK-BP, to cede control of the Kotytka gas field to Gazprom. The official reason for this move was that TNK-BP was purportedly not producing enough gas to comply with its production agreements with the Russian government. The Russian authorities did not mention that the company has repeatedly said that it could not meet its production agreements without a pipeline to China and state-owned Gazprom had repeatedly blocked this project (Kupchinsky, 13 June 2007).

Oil companies make an extremely large fixed investment, and once this investment occurs, the power in negotiations shifts from the company, who provide

[6] In addition to the charges of tax evasion, Khodorkovsky and his former business associate, Platon Lebedev, have now been charged with stealing $32 billion in oil (RFE/RL, 9 February 2007).

needed investment and expertise, to the host country, which has the power to nationalize (Vernon, 1971). The only real negotiating power the private companies have against the government derives from the fear that future investment may be less forthcoming and their ability to produce at a higher level than the state owned industries. In the latter case, many governments do not believe that international companies are really more efficient, fear that the international company will produce in a manner that is adverse to the state's interests, or simply care less about overall production than about control over resources. In the former case, threats of future withholding of investment are not likely to be credible, both because of the increased competition for oil reserves coming from India and China and because, even where the states confiscates or nationalizes assets, oil development projects can still be incredibly profitable (*The Economist*, 2-8 June 2007, p. 66-67).

Oil companies also lack incentives to promote democratization. Domestic private firms have often gained their footing in the market through less-than-democratic transactions. Russia's privatization of its fuel resources was an opaque affair, with former and current government apparatchiks receiving favorable treatment (Shleifer and Treisman, 2000). These groups often trade the continuation of their property contracts for at least tacit support of the current government. International fuel development companies also face weak incentives to promote democratization. As long as their property rights are secure, they gain little from government reform. Transparency measures are also difficult to implement, since they put the participating companies at a strategic disadvantage compared to those who are willing to forego transparency to get a contract (Ross, 2003).

Another method for explaining non-democracy in fuel exporting states is to extrapolate from more general theories about democratization. Boix's (2003) explanation of authoritarianism, for example, also has implications for fuel exporting states. Boix contends that where domestic income inequality is high and capital assets are fixed, elites are less likely to accept democratization, because it likely involves the taxation of their profits and redistribution to less-well-off individuals. In fuel exporting states the main export, oil, is a fixed asset and inequality between those who directly benefit from the oil industry and the many who are not employed in this sector is likely to be high. This causes the elite that benefits from oil development to protect the authoritarian regime, since democracy would result in the redistribution of their resources.

While this explanation is intellectually compelling, especially since it brings the dynamics of fuel exporting states into line with the general democratization literature, several problems exist. First, discussions of taxation and re-distribution are not easily applied to fuel dependent states. Indeed, in many of the fuel dependent states, revenue accrues directly to the government rather than being acquired through taxation. Not only that, but this lack of taxation appears to have the effect of quelling popular unrest, not causing it as Boix would predict. Boix's explanation provides a reason why elites would continue to support an authoritarian solution, but he does not explain why those who are not directly involved in oil development would support the status quo. Yet in at least half of the cases, many of which happen to be the richest fuel exporting states, the primary interest for scholars has been the relative absence of pressures for democracy (ex. Smith, 2004).

Boix's explanation also does not lend itself easily to the exploration of causal pathways for political outcomes in fuel dependent states, in that it does not provide

guidance for predicting the variant outcomes among fuel dependent states displayed in Table 3.1, primarily because the theory functions independently of government resources.

The explanations advanced so far all highlight important aspects of politics in fuel exporting states, but fall short of explaining the general pattern presented in section 2.4. Indeed, the reliance on generalization from a few cases or regional patterns has resulted in a body of theory that masks the underlying variety in political outcomes across fuel exporting states. To move away from this approach, the next section focuses on the major attributes of fuel exports as compared to other products. The explanation for non-democracy advanced below is complementary to many of the theories discussed in this section, but it differs in terms of its potential application to the wide variety of fuel exporting states. This explanation also helps identify important underlying patterns which can be useful for both policy-makers and case-study researchers in interpreting the dynamics of governance in fuel exporting states.

3.2. Modeling the Curse

This section turns to establishing an explanation for the general pattern of non-democratic governance in fuel dependent states by drawing a consistent theory from the attributes of fuel exports, rather than generalizing from a particular case or group of cases. This method produces more accurate predictions in the large-N framework than have generalizations from the case literature, as demonstrated in the next two chapters.

I focus on government distribution and draw several conclusions. (1) As individual income becomes more tied to government distribution, challenges to authoritarian governance are less likely. (2) As individual income becomes more tied to

government distribution, opposition groups are less likely to prefer democratic outcomes. (3) States with a high ratio of fuel export revenue to population remain stable, since they can avoid conflict through distribution. And (4) fuel dependent states with a lower ratio of revenue to population are characterized by unstable government because of conflicts over control over distribution of the resource.

3.2.1. Why are Fuel Exports Different?

How do fuel exports differ from the export of other products? The answer to this question serves as the foundation for an explanation of the natural resource curse.

Low Employment Gains. Unlike agriculture, industry, and even some types of mining, exploration and exploitation of oil does not result in large levels of employment, and much of the employment that does take place occurs during the initial phases of construction and development. For example, in the small country of Trinidad and Tobago, in 1973, fuel exports made up about 83 percent of total merchandise exports and about 20 percent of GDP, but employed only 4 percent of the total workforce (Black et. al., 1976). Oil development companies also tend to bring in trained workers from outside of the host country, especially in developing states which do not already have a trained workforce. The importation of trained labor further limits the employment gains from oil development. Kazakhstan is so concerned about this tendency that it has resorted to adopting a number of laws to bolster the hiring of Kazakhstani workers, including barring companies from bringing in non-Kazakhstani workers if a citizen of Kazakhstan could do the same job.

Geographic Concentration. Oil and natural gas are usually referred to as "point source" resources, because they are concentrated in specific areas of a country. This

means that whatever employment and revenue gains accrue to a country will tend to be geographically concentrated unless they are re-distributed through other non-market means. The map in Figure 3.1 illustrates this in the case of Nigeria. The green areas show the concentrations of different major tribal groups and the triangles indicate the location of oil wells, which are predominately located along the Niger Delta in the south of the country. This fact has been even more problematic for Nigeria in that the north is the more populous area.

[Figure 3.1 About Here]

A similar debate is occurring in Iraq, where oil reserves are predominately located in the primarily Kurdish north and the primarily Shi'a south of the country. This has proven a major point of contention for the transition, as groups argue over how revenues should be distributed among groups (ex. Weinstein, 2004; Djerejian et. al., 2002). Figure 3.2 shows this pattern visually, marking the major oil fields in Iraq (see Horn, 2003), along with approximate dividing lines for the major population groups. As with Nigeria, the debate over how much revenue should remain in the areas of production and how much should be distributed across regions and groups is a contentious issue.

[Figure 3.2 About Here]

Government Distribution. Ross (2 May 2006) put it most bluntly -- "New oil revenues will make the government much richer, but it may not make the people richer." Oil revenues are not automatically distributed to a large portion of the population. If left to its own natural trajectory, oil revenue will accumulate in geographically concentrated outposts of oil development. For a number of political and social reasons, government will try to make the distribution of oil windfalls more widespread by signing contracts with the oil development company requiring that the government receives some of the

windfall. Several types of contracts exist. Concessions are the simplest types of contracts, and typified early oil development. Under these contracts, the government sells the rights to the land to a developer for a lump sum of money. Revenue-sharing is much more common today. Under these contracts, a pre-determined portion of the company's revenue goes to the government. Production-sharing agreements are another method for sharing revenue between the government and the oil development company. Here the government "owns" a portion of the oil mined by the company and is entitled to the revenue from that production. Both revenue-sharing and production-sharing agreements allow the government to have a much larger say in the operation of the oil company (ex. by mandating a level of production), and provide a longer-term stream of revenue for the government. State-ownership is the most aggressive state strategy. Here a state-owned company develops the oil resources, sometimes with the help of outside contractors.

A large amount of variation exists within these types of contracts in terms of the government's role, the level of regulation placed on the oil development company, and the revenues that accumulate to each signatory. Countries use a variety of contracts for oil field development, and sometimes a single development project can involve several types of contract. For example, a country may sign a production-sharing contract in extraction from a field, but will maintain state-ownership over the transportation of the extracted oil. This complicates categorizing the oil development strategies of countries into neat categories based on contract types.

Luong and Weinthal (2006) are correct to note that not all oil resources are state-owned, but the complexity of oil agreements makes drawing general conclusions about a state's development policies difficult. The increased importance of government

distribution, however, is an important and consistent aspect of fuel export development. Where a country is dependent on oil resources, government distribution will play a much larger role in individual economic life because oil development does not result in commensurate gains in employment and geographic development.

Large Price Shifts - The Boom/Bust Cycle. Some scholars have suggested that an important attribute of oil export dependence is the susceptibility to price fluctuation. From January 1980 until January 2006, the real price of a barrel of oil, based on constant 2005 dollars, has had a standard deviation of $18.73, with prices ranging from $86.99 in January 1981 to $11.16 in December 1998 (EIA, 2006).[7] These fluctuations cause enormous swings in export revenues for oil exporting countries. For example, in 1980 Nigeria produced approximately 2.1 million barrels of oil per day, which, at the average yearly price of $82.15 for that year, would have been worth $173 million a day in 2004 dollars. In 1998, the average price was $15.20 and Nigeria produced about 2.2 million barrels a day, but its production value dropped to $33 million a day despite the increased production. This amounts to a total drop in daily production value of approximately $140 million a day.[8] Figure 3.3 illustrates these changes during the period from 1965-2004.

[Figure 3.3 About Here]

The low employment gains, geographic concentration, importance of government distribution, and price swings associated with oil development have shaped the explanations and causal pathways suggested by previous scholars, and will be a starting point for the model developed below.

3.2.2. The importance of government distribution

[7]For time-series dating back to 1861, see BP (2005)
[8]Calculated using data from BP (2005)

Of the factors established above, one requires particular attention: the importance of government distribution. Previously scholars have captured this in a tangential manner, by talking about public welfare programs, state ownership, or buying off of opposition. The tendency for government distribution to increase in importance for fuel dependent countries, however, can operate independent of assumptions about the methods of production or a government's maneuvering for power. Whether from altruistic motives, the desire to spread the wealth or decrease inequality between regions, political motives, or rewarding political supporters using fuel revenues, the results across regions of the world seem to be the same. Where countries are dependent on fuel reserves the importance of government distribution as a proportion of the total economy increases.

This increased dependence on distribution stems from several causes:

The need for re-distributing oil revenues. As noted above, fuel resources tend to result in low employment gains and those gains tend to be geographically concentrated. Either for political or ideological reasons, a government may decide that revenues need to be distributed more equitably. This re-distribution can take many forms. It could come in the form of increased social services, as has been the case in Saudi Arabia and other Middle Eastern oil states. It can also come indirectly through large state investment, such as in Venezuela and Nigeria.

Blaming leaders for these decisions is difficult, since inequality can become a divisive force. Indeed, re-distribution policies for oil revenues are not limited to developing countries. Norway distributes oil revenues from its state-owned oil company through a fund that that pays for the country's social security program. Similarly, Alaska distributes gains from its oil reserves through directly giving cash grants to residents from

its oil fund (see Tsalik, 2003). They key difference in these areas is that this re-distribution is not tied to the government in power. These policies are executed by relatively autonomous bureaucracies under legal obligation in law-abiding states, and so the resources are difficult for politicians to re-direct for other policy objectives.

Using oil funds for political support. A less altruistic reason for government distribution of funds from fuel exports is to reward or gain political support. In Nigeria, for example, the transfer of revenues from the oil-rich Niger Delta has reached such a high level that a large part of the Delta is still without basic utilities (*Petroleum Economist*, 3 November 2006) because political leaders are rewarding their own constituencies using oil funds. This, in turn, is a large part of the reason why the affiliations of presidential candidates and military leaders is so important in Nigerian politics – citizens assume oil funds will be distributed to that leader's ethnic, regional, religious or class group (Olowu, 1991). Kazakhstan has reversed this strategy, using its oil funds to build a new capital, and thus attract large new investment, into its originally less-supportive northern region.[9]

"Sowing oil funds." In developing countries, fuel exports are much more than a promising sector of the economy. Especially in capital-deficient countries, fuel exports are viewed as a solution to the country's economic problems and a chance to use the capital to promote a modern economy. The examples are numerous. In Karl's (1997) description of Venezuela, President Carlos Andrew Perez propagated a vision of *La Gran Venezuela*, where oil revenue pushed Venezuela into modernization over the course of years, rather than decades. In Nigeria, the government invested in auto manufacturing, a major steel complex, construction, transportation and primary education, going heavily

[9] Chapter 6 examines Kazakhstan in greater detail.

into debt to finance these projects (Kretzmann and Nooruddin, 2006, p.25). Ross (1999, p.309) calls these "wealth-induced stupors," where governments become so excited over the possibilities offered by resources, and are buffeted by so many demands and opinions of how to use them, that they outspend what is sustainable. Not every country will fall into this category. This kind of massive investment, and even going into debt against future revenues, is much more likely in fuel dependent countries with higher populations and lower reserves (Karl, 1997, p. 18-19).

These large-scale investment projects pose a problem for political dissent. Where the government has the primary responsibility for investment, it also has some control over those investments and the rules that regulate businesses. In the case of well developed and independent bureaucracies with strong civil oversight, as in Norway, this does not pose too large of a problem, since the use of state investments for personal or political gain will encounter strong resistance from the professional bureaucracy, opposition parties, and the popular press. Transparency, oversight and competition mitigate the corrupting tendencies of state-led investment. In a place without these institutions, the situation is very different. Large state investment projects are susceptible to the tendencies of prebendalism, where investment, jobs, and regulation are structured for the benefit of public officials, their constituents and their identity groups (Joseph, 1987; Joseph, 1996). To a certain extent Luong and Weinthal (2006) are correct – ownership does matter. However, ownership of the primary resource matters less than how the government's pre-eminent position in investment translates into control over the general economy.

3.2.3. Government distribution and democracy

Here a simple game theoretic model is enlightening. Below I will lay out in intuitive terms the strategies and interests that cause government distribution to undermine democracy. A formal mathematical treatment is in appendix III.

The game is played between a government (*G*) and a latent opposition in society (*O*).[10] The potential opposition receives a certain portion of their income from money distributed to them by the government to prevent unrest and a certain portion from production that is independent of government control. In addition, the opposition has some level of affinity for the government, modeled here as the amount of money that they would hypothetically be willing to surrender to obtain their ideal policy point. Government-controlled distribution refers to any disbursement, employment or means of production that the government has the ability to bestow or withhold through direct action. This includes, for example: welfare programs; employment in state-owned enterprises; buy-offs; public contracts; and also the presence of regulations and/or enforcement mechanisms that allow the government to expropriate otherwise legally-held private property.

The game is played over an infinite time period, with decisions made in the current period setting up a discounted income stream for the future. The game starts with the government receiving an amount of revenue from the economy, from which it assigns an amount of distribution to the opposition. Government leaders keep revenues that are not distributed. In addition to the revenue they are able to keep, the government receives a certain amount of inherent benefit from being in power.

After the distribution occurs, the opposition must decide if they want to challenge (*C*) or not challenge (*NC*) the government. This opposition will have a certain

[10] Collective action problems in forming the opposition are left undefined for clarity. The opposition can either be thought of as an organized opposition, which the government is interested in buying-off, or simply as a sum of social groups that has potential for challenging the government.

probability, p, of winning, drawn from nature (N). This probability can be based on the size of the opposition, the presence of outside support, the strength of the government's repressive apparatus, challenges to organization, or the success/failure of previous challenges (see ex. Boix, 2003).[11]

If the opposition chooses not to challenge, the status quo will continue indefinitely. This includes the distribution from the government and the money received from other production, deflated by their affinity for the current government. If the opposition chooses to challenge, then it receives nothing in the current period and then receive a payoff based on whether that challenge is successful. The loss of payoff in the current period is a simple method for associating some cost to the act of challenging. If the challenge is successful (*win*), the opposition receives a payoff depending on the type of regime that follows. If the challenge is unsuccessful (*lose*), the status quo resumes, but the opposition is excluded from future government distribution.

If the challenge is successful, the opposition decides whether to prefer an elected/democratic regime (E), or a non-elected/non-democratic regime dominated by the opposition (NE). If they choose the former, then elections occur, with a certain probability of the opposition (O) winning and a certain probability of the government (G) winning.[12] When the opposition wins, they receive a distribution from the opposition-led government in addition to money received from non-government production. As with the previous government, this is deflated by their affinity for the policy outputs.[13] When the government wins, the opposition receives only the money from non-government

[11] For simplicity, the probability of winning is exogenous to government and opposition action, since the primary interest here is on the effects of distribution.

[12] The same actors compete in the democratic and non-democratic context in this model. Other actors could be substituted in with similar results, since it is the probabilistic access to distribution that is the important characteristic of democracy. However, this would involve inserting two or more actors into the model and unnecessarily complicate the notation.

[13] Even where the opposition controls the government apparatus, it is unlikely that their policy ideal point will be achieved because of institutions, foreign pressures, or historic circumstance.

production, deflated by their affinity for the government. For simplicity, I assume that the opposition has a general idea of the performance of the economy under a democratic regime. This means that they have already taken into account the policies under probabilistic alternation in power. They therefore look at the general expected amount of money to be received from the economy under a democratic regime as opposed to any particular electoral outcome.

When the opposition chooses an opposition-led non-democratic regime (A), the result is a continual stream of distribution from the opposition, plus the amount of money from the independent economy under this new non-democratic regime, minus the affinity for the opposition's policy outputs. Table 3.2 shows each potential outcome and the corresponding payoffs.

[Table 3.2 About Here]

Figure 3.4 depicts the sequence of the game.

[Figure 3.4 About Here]

A solution for this game emerges through backwards induction, starting with when the opposition will prefer a democratic regime and when they will prefer an opposition-led non-democratic regime. If the opposition believes that the total economy will be more productive under democratic governance, the choice between democratic and non-democratic governance hinges on the probability that the opposition will win in elections and on how important distribution is for income.[14] Figure 3.5 shows how the probability of winning in elections (q) that is necessary for the opposition to choose

[14] If the opposition does not believe that the economy will perform better under democracy, or believes that it will perform better under a non-democratic government, the solution to this game becomes trivial – the opposition will always choose non-democratic outcomes, unless some new variable is added to represent civil liberties or some other value associated with democracy. For these purposes, such an addition is an unnecessary complication. The dynamics of the game will remain the same with the inclusion of additional democratic or non-democratic incentives.

democracy is related to the importance of distribution.[15] The blue area in the figure is the percentage probability of the opposition winning elections for which they choose democracy. As the percentage of the opposition's income that is reliant on government transfer distribution increases, the area in which they choose democracy decreases.

[Figure 3.5 About Here]

The reason for this relationship is quite intuitive. The more that income is reliant on who is in power, the less uncertainty the opposition is willing to allow in that outcome, even if democracy results in better overall economic performance.

Backing up a node in the game, we can now calculate the conditions under which the opposition chooses to challenge the government. Economic performance in this node is roughly equivalent under government and opposition non-democratic regimes, but expected re-distribution is higher under opposition rule and, again, that expected economic performance is highest under a democracy.[16] The key variables of interest are the probability of the challenge being successful (p) and, as above, the percentage of total income that comes from government distribution. Figure 3.6 shows the probability of success that is necessary to challenge for a democratic regime and the probability necessary to challenge for an opposition-led non-democratic regime.[17] The area above these two curves is the probability in which the opposition will choose to challenge.

[15]The figure is calculated with the following values: the total amount available to the individual is $1,000 in authoritarian outcomes and $1,200 in democratic outcomes; d_{iO} starts at .0 and moves by .1 until it reaches 1; f_{iO} moves inversely and is multiplied by the authoritarian total; f_{iD} moves inversely to d_{iO} and is multiplied by the democratic total; and the affinity is set at 100 for the government and 50 for the opposition.

[16] This assumption is to provide a clear illustration for the reader, even though these settings will not be realistic for all cases. The actual results are robust for any number of assumptions about economic performance, but the results will often be trivial. In this figure, the opposition's distribution is set .05 higher than the government's within the range 0 to 1.

[17]Additional settings for this simulation included setting the individual's discount rate and probability of winning elections. The discount rate was set relatively high, at 0.97, while the probability of winning elections was set at 0.5.

Where the importance of distribution is the lowest, the opposition does not need much probability of success to challenge for a democratic regime. Little is lost from the absence of distribution if the challenge is unsuccessful, making a challenge for the better economic performance posited in democracy worthwhile. The necessary probability of success for a democratic challenge increases rapidly to the point where, when re-distribution makes up approximately 20 percent of total income, the opposition becomes more likely to challenge for the non-democratic outcome. In both cases, the opposition becomes less likely to challenge the current government as the importance of distribution rises. Again, the intuitive interpretation of this phenomenon is that, as the importance of distribution increases, the amount of future income being risked is also increasing, making a challenge more costly.

[Figure 3.6 About Here]

Finally, the government's decision on how to distribute its revenue will be predicated on how much distribution is necessary to remain in office, the amount of revenues available, and the value of remaining in office. Distributions cannot exceed the government's total revenue.[18] Here the difference between capital-rich and capital-poor countries becomes apparent. In those countries with small populations and large reserves, making the necessary distribution to remain in power is relatively easy because of the loose budget constraint against the relatively lax social demands. For countries with larger populations and smaller resource endowments, this becomes more difficult, and raiding the government coffers when revenues are not enough to cover the necessary distribution becomes more likely. The government must also take into account the

[18] In reality, governments may have some flexibility in their revenue constraints. They can, for example, borrow against future revenues. This ability to borrow, however, is not unlimited, as was amply demonstrated by Nigeria and other heavy borrowing fuel exporters. Borrowing can therefore enlarge the budget constraint, but it does not eliminate it.

future value of remaining in office. If the value of remaining in office, which includes the amount of non-distributed revenue and the inherent value associated with the office, is less than the value of the revenue to be confiscated by raiding the government coffers and stepping down, then the government will choose to leave office.

While not modeled directly here, those governments for whom revenues are too shallow to maintain authoritarian governance, or for whom the value of maintaining this governance is too low, have the option of either leaving politics (and perhaps going into exile) or democratizing the political system. This suggests that capital-poor countries are more likely to undergo democratic transition. As noted above, however, these democracies are likely to be relatively unstable where the importance of distribution is high, and/or where the opposition has too little chance of assuming power under democracy.

The reader should draw several main points from this analysis:

- The size of the resource compared to the size of the population for distribution is critical in explaining overall political outcomes. Where the size of revenue which accrues to the government from fuel resources is very large compared to the population, the government is unlikely to change greatly. When the budget constraints are tighter, the expected pattern is one of instability, and perhaps some sporadic attempts at democratization.
- The importance of government distribution for the individual is a primary influence on the preference for democracy or non-democracy, and for the propensity to challenge the current authoritarian government. As government distribution becomes more important, a potential opposition has more to lose from challenging, and is thus less likely to challenge. It also has more at risk in the

outcome of democratic elections, meaning that it will have less tolerance for uncertainty in democratic outcomes.

- While not fully developed above, several other factors will be important for stability. For example, the probability of a successful challenge can be influenced by any number of other variables which are not explicitly included in the model, such as group cohesion, access to outside support, and the strength of the government's repressive apparatus. In addition, in the simulations for the figures above the difference between an opposition-dominated non-democratic government and the current non-democratic system was relatively minor. In the case of secession or where strong social cleavages exist between the government and opposition, this might not be the case. For example, politicians in secessionist provinces may promise the total economy per capita available for distribution will be much higher if it were to secede (Ross, 2003). This would also suggest that secessionist movements would be most likely in the geographic areas where the resource is concentrated. Finally, the probability of winning in democratic election is also important, and suggests that small minorities represented by the opposition are unlikely to prefer democratic outcomes. In capital-poor countries, where the government does not have the resources to structure distribution in a way to forestall the challenge, this poses a danger for separatist movements and may even lead to civil war.

3.3. Innovations and implications

The most obvious implication from this model is how the size of the endowment matters in the underlying causal pathway that describes the natural resource curse. This is not a completely novel insight. Karl (1997, p.17-19) suggests that there is an underlying difference between what she labels "capital-surplus" and "capital-deficient" countries. Capital surplus countries are those which have relatively small populations compared to the size of their oil endowments; they "could not possibly absorb all their revenues and thus ran balance-of-payments surpluses until 1983, when oil prices fell sharply" (p. 18). Capital deficient fuel exporters, on the other hand, have larger populations compared to their resource endowment, more diversified economies and a larger skilled workforce. As such "[t]hey appear to be able to absorb all the oil revenues from their booms and in fact have generally been net importers of capital, except during the brief period from 1974 to 1976" (p. 18). These latter countries are where shocks are most likely to be felt, because they are much more heavily constrained by the resources available for distribution and the social demands placed on the government.

The major difference here is that, while Karl (1997) excludes capital-surplus countries from her analysis and only dedicates a few paragraphs to the differences between these states, the above model suggests that some of the most important dynamics of the natural resource curse exist only in the difference between capital-surplus and capital-deficient fuel exporting states. The model also identifies microfoundations for the arguement. Perhaps most importantly, as the next chapter will show, looking at the systematic differences between these two types of fuel exporters shows that the debate about the underlying dynamic of authoritarianism in fuel dependent states is largely illusory.

The underlying causal mechanism in the model above is also important. While using the label "government distribution" for control of income by the government, the reality is that this does not have to be limited to a specific type of government program. Indeed, any kind of policy which makes individual income more directly linked to decisions of a particular governing power, and is removable if another group controls the government or if the individual withdraws support for the current government, should have the same effect. What this means is that the focus of the literature above on specific types of policies such as corruption, welfare spending, military spending, state-ownership, manipulation of regulation, etc., only grasp part of the underlying cause for the natural resource curse. The actual policy implemented matters less than the implications of that policy for political control over income. This also helps to explain the relative success stories among fuel exporting states. Norway, for example, uses its fuel exports to support its pension program, but the actual distribution from this program is not reliant on the particular administration in power, nor is it contingent on the individual supporting that administration. As Chapter 5 will demonstrate, systematic differences exist between the distribution policies of capital-rich and capital-poor countries. These differences have similar effects, albeit with different dynamics.

Finally, the context under which these resources are developed is also important. Other than their higher than expected per capita incomes, many of these countries look very much like their less-developed counterparts. Where underlying social tensions already exist, the geographic concentration of resources will tend to exacerbate them. In addition, the socio-economic changes that are expected to accompany rising incomes are largely absent from fuel exporting states. Chapter 6 demonstrates that, other than their inflated per capita incomes, fuel exporting countries look and behave very much like

developing countries. In particular, the fluctuation in revenues from fuel exports makes the development of socio-economic characteristics that might offset social tensions less likely.

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Tables

Table 3.1. Outcomes in Fuel Dependent Regimes, 1965-2001

Country	*Average Dependence on Fuel*	*Average Income per capita from Fuel*	*Polity Outcomes*	*Civil Conflicts*
Angola	40.98%	$200.61	1975-1990 authoritarian 1991 transition 1992 interregnum 1993-1996 transition 1997-2003 soft-authoritarian	1990-1994 war 1995 intermediate 1996-1997 minor 1998 war
Nigeria	39.65%	$106.61	1960-1965 democratic 1966-1977 authoritarian 1978 transition 1979-1983 democratic 1984-1997 authoritarian 1998 transition 1999-2003 semi-democratic	1966 minor 1967-1970 war
Saudi Arabia	34.85%	$3,065.24	1926-2003 authoritarian	1979 minor
Azerbaijan	34.68%	$147.25	1991 soft-authoritarian 1992 semi-democratic 1993-1994 soft-authoritarian 1995-2003 authoritarian	1993 minor 1994 war 1995- minor
Oman	31.51%	$1,561.06	1800-2003 authoritarian	
Kuwait	29.97%	$4,709.60	1963-1989 authoritarian 1990 foreign takeover 1991-2003 authoritarian	
Trinidad	29.31%	$1,212.25	1962-2003 democratic	1990 minor
Gabon	28.46%	$1,388.57	1960-1989 authoritarian 1990 transition 1991-2003 soft-authoritarian	
Congo Brazzaville	27.01%	$241.18	1960-1962 semi-democratic 1963-1990 authoritarian 1991 transition 1992-1996 semi-democratic 1997-2003 authoritarian	1993-1994 minor
Yemen	26.53%	$73.94	1990-1992 transition 1993-2003 soft-authoritarian	1994 war
Algeria	21.50%	$346.08	1962-1988 authoritarian 1989-1991 soft-authoritarian 1992-1994 authoritarian 1995-2003 soft-authoritarian	1991-1992 – minor; 1993-2001 – war

Country	*Average Dependence on Fuel*	*Average Income per capita from Fuel*	*Polity Outcomes*	*Civil Conflicts*
Iran	18.62%	$230.39	1955-1978 authoritarian 1979-1981 transition 1982-1996 authoritarian 1997-2003 semi-democratic	1966-1968 intermediate 1979-1982 war 1983-1988 intermediate 1990-1993 intermediate 1996-1997 intermediate 1999-2001 intermediate
UAE	17.73%	$5,895.76	1971-2003 authoritarian	
Venezuela	16.67%	$619.74	1958-2003 democratic	1992 minor
Turkmenistan	15.81%	$190.95	1991-2003 authoritarian	
Syria	13.72%	$97.99	1963-2003 authoritarian	1966 minor 1979-1981 minor 1982 war
Russia	12.08%	$283.30	1992 democratic 1993-1999 semi-democratic 2000-2003 democratic	1993-1994 minor 1995-1996 war 1999-2001 war
Kazakhstan	11.81%	$159.55	1991-2001 soft-authoritarian 2002-2003 authoritarian	
Indonesia	8.23%	$51.30	1959-1998 authoritarian 1999-2003 democratic	1965 minor 1967-1969 minor 1975-1978 war 1979-1989 intermediate 1990-1991 minor 1992 intermediate 1997-1998 intermediate 1999-2001 minor
Norway	7.59%	$2366.34	1945-2003 democratic	
Ecuador	6.94%	$102.70	1961-1967 soft-authoritarian 1968-1969 democratic 1970-1971 soft-authoritarian 1972-1978 authoritarian 1979-2003 democratic	
Malaysia	5.54%	$171.37	1957-1968 democratic 1969-2003 semi-democratic	1965-1966 minor 1974-1975 minor 1981 minor

*Some countries are left off the list because their fuel income is derived primarily through refining and shipping, as determined by comparing the World Bank (2003) and BP (2005) data. These are Bahrain, Lithuania, Bhutan, Lithuania, Singapore, and Belarus. Leaving these countries out of the statistical analysis does not significantly change the results. Libya, Iraq, and Qatar are not included in this table because of lack of data on their GDP. They are included in later models.
** Regimes were classified as follows: authoritarian if their Polity score was less than or equal to -5, soft-authoritarian is their score was higher than -5 and less than or equal to 0, semi-democratic if their score was between 0 and 6, and democratic if their score was a 6 or higher.

Table 3.2. Payoffs from Distribution Game

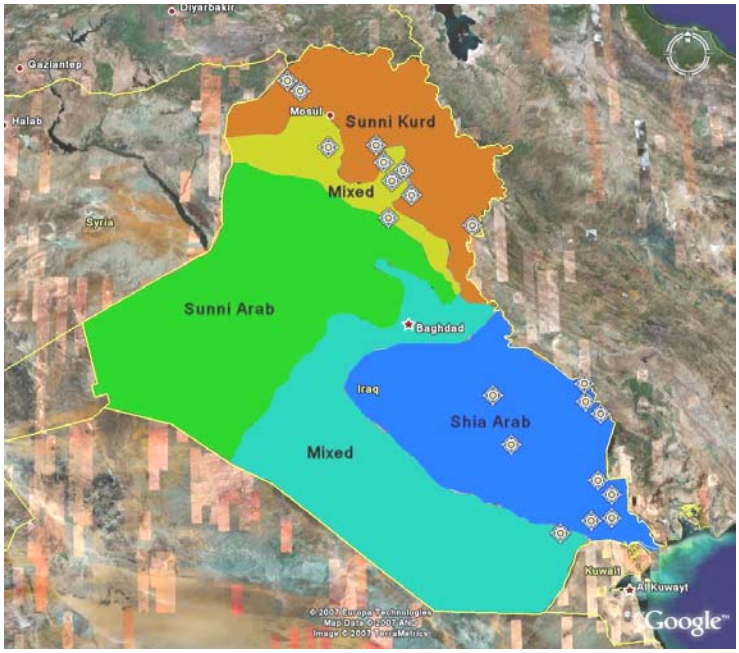
	government steps down (/)	not challenge (D_G, *NC*)	challenge, lose (D_G, *C, lose*)	challenge, win, no elections (D_G, *C, win, NE*)	challenge, win, democratic (D_G, *C, win, E*)
O	Income from economy in time *t*, plus future stream of income and distribution under replacement government, minus affinity for that government.	Current and future stream of income from economy and *G*'s distribution, minus affinity for *G*.	Zero in time *t*, plus future stream of income from economy, minus affinity for *G*.	Zero in time t, plus future stream of income from distributions from opposition and income from the economy, minus affinity for the opposition.	Zero in time *t*, plus stream of income under democratic economy, plus probabilistic distribution when opposition wins elections, minus affinity for winner of elections in each period.
G	Revenues from time *t*	Inherent value of holding office, plus stream of revenue left after distributions have been made.	Zero in time *t*, plus inherent value of holding office and stream of revenue left after distributions for indefinite future.	Zero in time *t*, plus zero in the future.	Zero in time *t*, plus probabilistic chance of winning office and keeping excess revenues when *G* wins elections.

Figures

Figure 3.1: Location of Major Oil Fields and Ethnolinguistic Groups in Nigeria

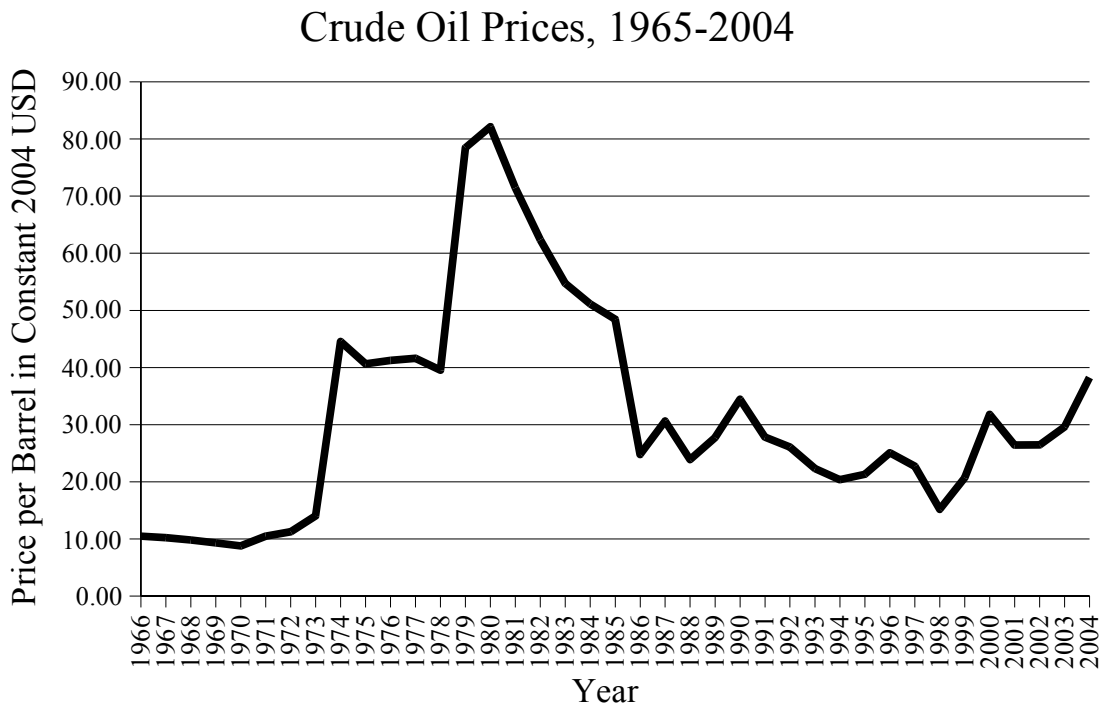
*Adapted from Marin (February 1999), CIA (1979).
** Produced using Google Maps.

Figure 3.2: Location of Major Oil Fields and Ethnoreligious Groups in Iraq



*Adapted from Horn (2003) and CIA (1992)
** Produced using Google Maps.

Figure 3.3. Crude Oil Prices, 1965-2004



* Source, BP (2005).

Figure 3.4: One Round of Distribution Game

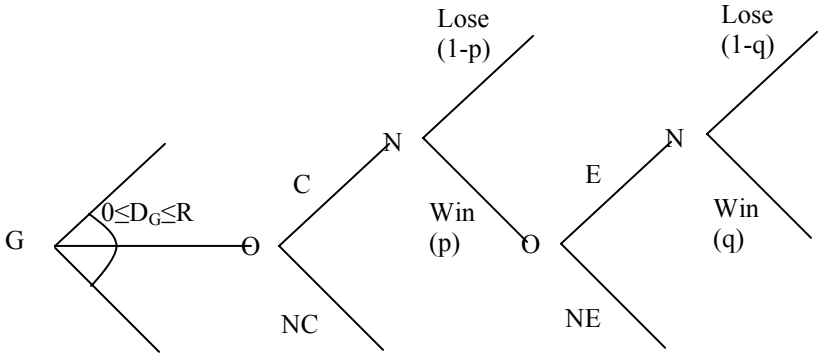


Figure 3.5: Effect of Importance of Distribution on the Necessary Expected Probability of Winning Elections for Preference of Democracy.

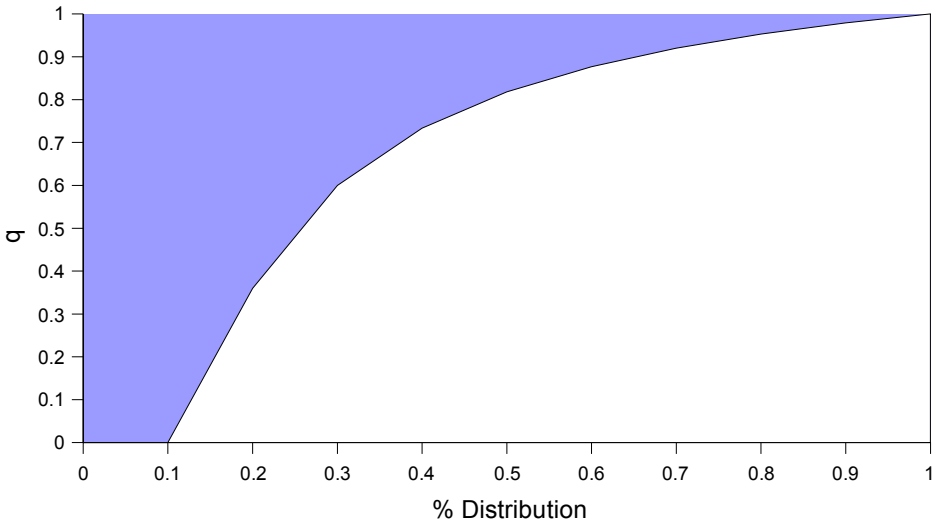
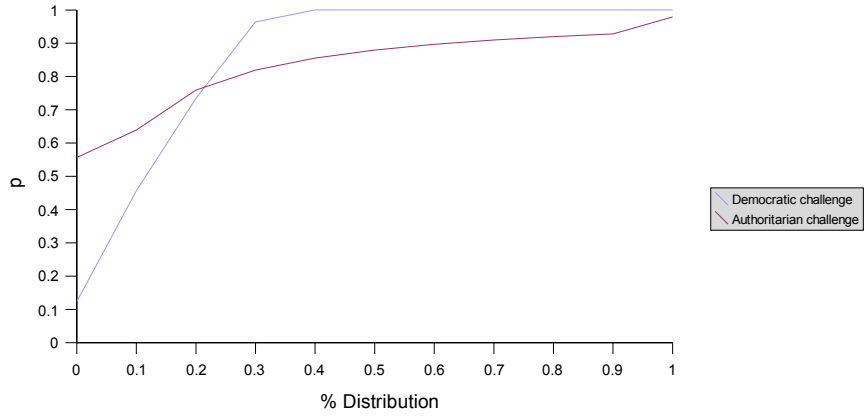


Figure 3.6: Effect of Importance of Distribution on the Necessary Probability of Success for Democratic or Authoritarian Challenges.



Appendix III: Formalizing Government/Individual Relations in Distribution-Oriented Societies

AII.1. The setup

This game is played between a government decision-maker, G, and a latent opposition, O, in society. The government has a certain amount of revenue R, which it can distribute to the opposition $0 \leq D_G \leq R$. Whatever the government does not spend on distribution, it can keep for itself. The government also gains a certain inherent value of Φ for being in power and being able to implement its policies.

After the distribution has been made, the opposition decides whether they are going to challenge the government, C, or not challenge the government, NC. If they decide to challenge, their probability of winning is based on a draw from nature, N, whereby the challenge has a probability of winning of p and a probability of losing of $1-p$.

If the opposition chooses not to challenge, they assumes that they will continue receiving the utility from the current government for the foreseeable future. This utility includes government distribution, D_G, plus income garnered from economic activities independent of the government, F_G. In addition, the opposition has some level of ideological affinity towards the current government, a_G. This last variable can be viewed simply as the amount of current income the opposition is willing to forgo in order to bring the government into line with their ideal point ideologically. This is loosely consistent with Kuran's (1991) contention that psychological costs shape tolerance for a government. It also explains why some groups are willing to forgo all current utility to protest against a government, while others only act against a government when they are sure that their actions will succeed.

While the government and opposition are making decisions at the current time, it is assumed that they expect the payoffs from that decision to continue indefinitely. In some ways this is similar to Boix's (2003) assumption that individuals choose regimes once during their lifetime. Unlike Boix, however, individuals in this model expect repeated distributions from the economy. This allows the individual to take actions that may result in greater average utility over time, rather than focusing on current utility. Since people's generally value current consumption more than future consumption, an individual's utility at each time point is multiplied by a deflation factor of $\sigma \epsilon [0,1)$. Thus, the expected utility stream for i for the status quo (SQ) is $EU(O:NC) = [u(SQ), \sigma u(SQ), ..., \sigma^t(SQ), ...]$.

This simplifies to:

$$EU(O:NC) = \frac{D_G + F_G - a_G}{1-\sigma} \qquad [1]$$

If the opposition challenges, and is not successful, L, they receive no income for the current time, and only those payments that are independent of the government, f_{iG}, and their ideological affinity for the government, a_{iG}, for the foreseeable future. If the opposition challenges, and is successful, W, they receive no utility for the present time, but have the ability to re-establish the government, either as a democracy, where the opposition competes with the government for political power, or as an authoritarian government with the current opposition as the new government. In both cases, the opposition receives zero utility for the current period, followed by one of three outcomes.

If the opposition challenges and loses, their utility is:

$$EU(O:C,L) = 0 + \frac{\sigma(F_G - a_G)}{1-\sigma} \qquad [2]$$

If they challenge, win, and a democracy is established, the future government is decided by elections (*E*), which the opposition wins with probability *q* and loses with probability *1-q*. If the opposition wins, they receive a government distribution, *Do*, in addition to their distribution that is independent of the government. If the current government wins elections, then they do not receive a private distribution from the government, but continues to receive the independent distribution from the performance of the economy. For simplicity, the opposition expects an overall performance for the economy under elections, resulting in a consistent payoff, F_E. This not only simplifies the equations, but is consistent for the comparisons made in choosing a regime-type as opposed to a policy formulation. When the choice is one of regime, the view of performance will usually be of that regime, not just of performance under a particular party under that regime, since the inherent risk of losing office is already taken into account (Przeworski, 1991). This is also consistent with expectations of aid from outside sources and greater accountability that are expected of democracy.

Thus, the total expected payoff from a transition to a democratic regime is:

$$EU(O:C,W,E) = 0 + \frac{\sigma[q(D_O - a_O) - (1-q)(a_G) + F_E]}{1-\sigma} \qquad [3]$$

Finally, if the opposition challenges, wins, and establishes an unelected regime (*NE*), they receives zero utility for the present time, followed by a continuous stream of private distributions, D_o, a distribution from the economy under the opposition's dictatorship, F_{NE}, and their affinity for policy outcomes. This case also works well for the situation where the opposition challenges in support of a separatist region in the country, as the current government will effectively be excluded from competing in the newly independent area. The total expected payoff for this situation is:

$$EU(O:C,W,NE) = 0 + \frac{\sigma(D_O + F_O - a_O)}{1-\sigma} \qquad [4]$$

The overall game was laid out above in figure 3.4. This intuitive setup can be solved by simple backwards induction, and the results will be analyzed in the following sections.

AII.2. Democratic or authoritarian challenge

The analysis of this game begins at the end, asking when the opposition, if their challenge is successful, will choose a democratic or authoritarian government. The opposition will choose to support democratization when the value of equation [3] is greater than the value of equation [4].[19] Solving for q, the probability of the opposition winning elections, yields the following solution:

$$q > \frac{D_O + (F_O - F_E) + (a_G - a_O)}{D_O + (a_G - a_O)} \qquad [5]$$

Note that as the importance of government distribution relative to distribution from the economy increases, the acceptability of democracy decreases. As the relative size of distribution, D_O, increases relative to economic distribution, F_{NE} and F_E, a change in economic importance decreases in importance. Put another way, the more important government distribution is compared to economic distribution for the opposition, the less likely they are to accept uncertainty in that distribution, even if it results in greater overall economic performance.

AII.3. The choice to challenge or not challenge

[19]It is assumed that, in the case of a tie, the opposition prefers less uncertainty, and therefore the authoritarian solution.

Now the choice of the opposition of whether to challenge, *C*, or not challenge, *NC*, can be explored. Here, opposition must also calculate in their probability of winning *(p)* or losing *(1-p)* if they challenge.

When this probability of winning or losing is included in an opposition's calculation, the total expected utility for challenging (C) in favor of a democratic regime is the following combination of equations [2] and [3]:

$$EU(O:C,E) = p\left[0 + \frac{\sigma[q(D_O - a_O) - (1-q)(a_G) + F_E]}{1-\sigma}\right] + (1-p)\left[0 + \frac{\sigma(F_G - a_G)}{1-\sigma}\right] \quad [6]$$

The total expected utility to challenge in favor of a non-democratic regime is a combination of equations [2] and [4]:

$$EU(O:C,NE) = p\left[0 + \frac{\sigma(D_O + F_O - a_O)}{1-\sigma}\right] + (1-p)\left[0 + \frac{\sigma(F_G - a_G)}{1-\sigma}\right] \quad [7]$$

These two outcomes must now be weighed against the expected utility of maintaining the status quo, which is given in equation [1]. Solving for values of p yields the following inequalities. When choosing between the status quo and challenging for a democratic regime, the opposition will not challenge if:

$$p < \frac{(D_G + F_G - a_G) - \sigma(F_G - a_G)}{\sigma[q(D_O - a_O) - (1-q)(a_G) + F_E - (F_G - a_G)]} \quad [8]$$

Put into words, this equation suggests that the status quo will be preferred if the probability of winning is less than the value of the status quo minus the results of losing, divided by the expected value of successful democratization minus the utility under the government if a challenge is lost. The intuitive interpretation of this is that the opposition will not challenge if the probability is less than the utility risked by challenging, divided by the expected gain of successfully challenging.

Similarly, comparing the expected utility from challenging for a non-democratic regime versus staying with the status quo results in the following:

$$p < \frac{(D_G + F_G - a_G) - \sigma(F_G - a_G)}{\sigma[(D_O + F_O - a_O) - (F_G - a_G)]} \qquad [9]$$

The intuitive interpretation of equation [9] is the same as in equation [8], with the opposition weighing the utility risked by a challenge against the gains from an authoritarian regime.

All other things being equal, increases in distributions controlled by the government, D_G, have a greater stabilizing effect than economic growth not controlled by the government. This is because the government is able to take away those gains if the opposition challenges and loses. Knowing this, the opposition is risking more when the government has a high level of distribution to withhold. If both D_G and F_G come out of the same pot (ex. if we are discussing proportion of ownership in industry), than the higher the proportion of income that comes from distribution, the riskier a challenge becomes.

AII.4. Preventing a challenge

At this point, the government must make some decision about distribution to the individuals in society within its budget constraint. To prevent the opposition from challenging for an authoritarian regime, the government must distribute to *O*:

$$D_G^* \geq \frac{p[\sigma(D_O + F_O - a_O)] + (1-p)[\sigma(F_G - a_G)]}{F_G - a_G} \qquad [10]$$

And to prevent a challenge for a democratic regime, the government distribution must be:

$$D_G^* \geq \frac{p[\sigma(q(D_O - a_O) - (1-q)(a_G) + F_E)] + (1-p)[\sigma(F_G - a_G)]}{F_G - a_G} \qquad [11]$$

AII.5. Equilibrium

Given the above equations, the government must make a decision over how much to spend on distribution, within its revenue constraint, *R*. The government will choose to make the necessary distribution to the opposition D_G^* if two conditions are met:

(1) $D_G^* \leq R$

and

(2) $\frac{\Phi + R - D_G^*}{1-\sigma} \geq R$

The first inequality simply states that the government cannot overspend its budget constraint. The second inequality suggests that the government faces a choice in whether or not to make the necessary distribution to the opposition. If the government makes the distribution, it receives the value of being in leadership and the remainder of revenues after the distribution has been made, and this is repeated into the indefinite future. If the government does not form a coalition, however, it is able to keep all the revenues at time *t* and leave. Thus, the value gained from forming a winning coalition must be higher than the value of raiding the state coffers.

The equilibrium in this case is:

1. Where both of the government's above conditions are met, the government forms a winning coalition and the status quo remains in place.

2. Where condition (1) does not hold, the government chooses not to form a winning coalition, raids the state coffers, and the opposition either forms a democratic or opposition-dominated regime based on equation [5].

3. Where condition (2) does not hold, the government chooses not to form a winning coalition, raids the state coffers, and the opposition forms either a democratic or opposition-dominated regime based on equation [5].