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On the Merits of the Resource Curse Theory: Resource Rents and Corruption

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ON THE MERITS OF THE RESOURCE CURSE THEORY:

RESOURCE RENTS AND CORRUPTION

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2011

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A thesis submitted in partial fulfillment
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Abstract

Since the breakup of the colonial empires following World War II, many newly independent states have embarked on a path of seeking political and economic development. Scholars studying this phenomenon soon became aware of an interesting puzzle. Why do the economies that have substantial natural resource endowments at their disposal tend to develop at a slower rate than economies that are less endowed with natural resources? From this question, the resource curse theory was derived. The resource curse theory has three main claims. The first claim is that resource rich economies grow at a slower rate than non-resource rich economies. The second claim is that resource rich states are more prone to conflict.¹ The last claim, that resource rich states are more prone to corruption, will be addressed by this study. Using data on resource rents and resource exports, this study utilizes statistical modeling to test the relationship between natural resource endowments and corruption. This study finds that only fuel related natural resources have a statistically significant and negative relationship with perceptions of corruption due to asset specificity and relative scarcity.

¹ The first two claims have been well studied in the literature and are not the focus of this thesis.

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Chapter One

Introduction

Why has corruption become a topic of interest for scholars? Over the last thirty years, numerous agencies and many scholars have begun to take the topic of corruption seriously. As a result of these efforts, numerous ratings agencies have created systems of measuring and comparing corruption across countries and over time. This has, in turn, allowed for the quantitative analysis of the determinants and effects of corruption. To begin, it is necessary to answer the following question. What is the effect of corruption on a state or an economy?

The Effects of Corruption on the State

Two competing theories have emerged describing the effect of corruption on a state or on an economy. The first theory states that corruption actually has a positive effect on a given state or economy. It arises as the result of government policy failures and utilizes market mechanisms to correct them. The other theory is that corruption harms a given state or society. What follows is an examination of both perspectives on corruption.

According to some scholars, corruption may be beneficial to society. If this is the case, is it worth paying close attention to? Many scholars have identified possible benefits of corruption. Leff (1964) makes the classic argument about the possible benefits of corruption. For Leff, corruption provides information about the effective political system whereas laws only provide information about the formal political system. Therefore, corruption is in effect the actual practice of government. Specifically,

corruption provides the means to avoid a bureaucracy that may be indifferent or hostile to the economy or to development. Corruption can also fill the void that may exist in a government bureaucracy that has other priorities. Leff also believes that corruption reduces uncertainty between investors and bureaucrats. This, in turn, is likely to increase the opportunities for investment. Corruption can also provide an avenue for innovation according to Leff. Entrepreneurs may, through graft, gain access to policy makers and bureaucrats and introduce innovation into the market before becoming established politically. Lastly, Leff views corruption as a hedge against bad government policy. Actors can engage in corruption to avoid them all together (8-11).

Bayley (1966) echoes many of the claims of Leff and gives other scenarios in which corruption can be beneficial to a society. First, the opportunity to extract rents in a bureaucracy could serve to attract higher quality candidates to the bureaucracy. The rents can be treated as a portion of the wages earned. Therefore, a higher wage level should attract better candidates, *ceteris paribus*. The rents extracted from these corrupt exchanges, if they end up in banks, could serve to divert money from consumption to investment. The Marcos regime in the Philippines stole millions of dollars, which ended up in bank accounts in the West. These funds were then invested by the banks, possibly creating economic growth elsewhere. Corruption and nepotism may also serve as a substitute for a public works system and provide a means of giving the left-out a stake in the political system. In the context of states undergoing modernization, corruption may serve to reduce the hardships of transitioning from traditional to Western norms (727-730). Klitgaard (1988) points out that corruption may help to introduce market forces in

the distribution of state goods, it may also foster political integration through payments, appointments, and policy formation, and finally, it can help organizations avoid constraining bureaucratic rules (31-33). Theobald (1990) echoes some of these supposed benefits of corruption. In terms of economic development, corruption may enhance capital formation, entrepreneurialism, reduction of red tape, and the introduction of market forces into the state sector. In terms of political development, corruption may help in the development of political parties, participation, and national integration (116-125).

How have these claims stood up to empirical testing? There is a large and substantial body of empirical work that demonstrates the negative consequences of corruption. In terms of economic development, the negative consequences of corruption cannot be ignored. One consistent finding in the literature is that corruption reduces investment (Mauro, 1995; Gray and Kaufman, 1998; Wei, 2000; Habib and Zurawicki, 2002). Firms, *ceteris paribus*, will prefer to invest in climates with the lowest risk and the highest return. The frequency and number of bribes paid become a cost to doing business and discourage investment. Corruption has also been found to decrease spending on education and health care (Tanzi and Davoodi, 1997; Mauro, 1998; Gupta et. al., 2002). Opportunities to engage in graft are not as great in education spending or health care spending, so funds tend to be diverted elsewhere. This has a negative effect on the ability of a state to develop human capital, which has adverse effects on development. Studies have also shown that states with higher rates of corruption tend to spend more on large public works projects as corruption creates the opportunity to profit substantially (Tanzi and Davoodi, 1997; Mauro, 1998).

Not surprisingly, corruption has also been linked to political instability (Mo, 2001). Unstable political systems are generally unable to provide suitable climates for economic development. Similarly, corruption also undermines authority and distorts the ability of the state to collect revenues (Gary and Kaufman, 1998; Tanzi, 1998; Gupta et. al., 2002). This may lead to a situation where fewer firms are being taxed at a higher rate than would be if corruption were eliminated. Finally, corruption has been shown to have serious distributional consequences for citizens living in a corrupt state (Gupta, et. al., 2002).

Taken as a whole, all of these findings show many characteristics of corrupt states that can reduce economic growth. Quantitative scholarship has shown this to be true as well (Nas, 1986; Mauro, 1995; Tanzi and Davoodi, 1997; Mo, 2001; Gupta et. al., 2002). Unfortunately, corruption tends to spread throughout an economy rather than remain confined by a sector (Jain, 2002). Therefore, claims that corruption can be beneficial are highly questionable. More importantly, the manifestation of corruption in any portion of the state should be treated seriously by scholars due to the tendency for corruption to spread.

Clearly, corruption is harmful to states and economies in which it has taken hold. Due to this, corruption is indeed a worthy topic of study for scholars. In an interdependent world, the negative effects of corruption are not likely to be contained in one economy, and spillover may occur. Therefore examining the causes, consequences, and remedies for corruption has both practical and scholarly value.

The Resource Curse Theory

Many different empirical studies have been conducted on the causes, the consequences, and remedies for corruption. Many of these studies will be reviewed in later chapters of this study. Of central interest to this paper, however, is the relationship between natural resource endowments and corruption. The developing world contains many states that have rich resource endowments. These endowments have long been viewed as a key asset to help many developing states, which typically have lower levels of human development, achieve a higher standard of living. After all, is it not better to have rich resource endowments than to have none? Yet, a strange phenomenon has been observed since the end of the Second World War. The developing states with abundant natural resources suffered from a myriad of problems that severely hindered their political and economic development. Numerous studies have demonstrated relationships among natural resource endowments, corruption, internal conflict, and low levels of economic growth. States which suffer from one of these outcomes face impediments to development. In this manner, they are cursed by their resource wealth. This is known as the paradox of plenty or the “resource curse theory.”

Providing insights into the problems of the developing world is an important endeavor for political scientists and economists alike. The world system is, after all, interdependent. Due to this phenomenon, the problems of one state rarely stay within that state. States that are prone to corruption are more likely to be a cause for concern in the global system. The Democratic Republic of the Congo provides an excellent example. Rife with corruption, the DRC cannot develop necessary institutions to adequately

govern. The needs of its citizens are routinely not met by the state, providing an atmosphere of discontent that fuels various separatist militias. Unfortunately, the Congolese are not the only people harmed by this conflict as it has spilled over into many of the neighboring states. If natural resource endowments are a determinant of these outcomes, then it represents an important topic of study.

To this end, this study will examine the relationships between natural resource abundance and corruption. In contrast to other studies on this topic, this research makes use of disaggregated resource rent measures. Therefore, this study can add more precision to the resource curse theory. Namely, what types of natural resources are associated with higher degrees of perceived corruption? Answering this question will provide important insights to economists and policy makers engaged in natural resource governance. If certain types of industries are prone to corruption, policy makers and development professionals can devise strategies to mitigate some of the negative consequences. It can also empower citizens of states with rich resource endowments to carefully scrutinize relationships between identified resource sectors and the state.

Conclusion

Corruption is an important topic for study by political scientists and economists. A cursory examination of the literature clearly demonstrates the negative effects corruption has on developing states. Moving forward, this research intends to lay-out the linkages between natural resource endowments and corruption. To begin, it is necessary to review the existing literature on corruption. Chapter Two will examine definitions and typologies

of corruption that have been identified in the literature. Chapter Three is devoted to examining different theoretical perspectives on corruption and empirical research on the determinants of corruption. Chapter Four discusses the resource curse theory and how it relates to corruption. Chapter Five covers data collection and methodological issues relating to the statistical models this study will employ to test hypotheses. Chapter Six contains the outputs of the models used in this study along with an analysis of the results. Finally, Chapter Seven contains the conclusions of this study

Chapter Two

Definitions and Typologies of Corruption

Corruption is a problem that occurs in all polities. Corruption may undermine effective governance and lead to deadweight loss in the economy. There is an extensive body of work related to the causes and effects of corruption. Many of these works are broad based and are not specific to particular industries or countries. Before beginning, it is essential to first provide a definition of corruption. Specifying a definition makes it possible to determine what to analyze and what to ignore. After reviewing different definitions of corruption, this chapter will then cover existing typologies of corruption. Combined, a review of definitions and typologies of corruption will allow for a careful examination of the different theoretical perspectives on corruption.

Definitions of Corruption

A review of the literature shows that defining corruption has proven difficult. Cockcroft (2012:3) observes that definitions of corruption range from “the decay of society to the single act of bribery.” Containing such a wide range of behaviors and activities makes it difficult to reach a consensus. Yet an outline has emerged in much of the scholarship on corruption that can be utilized as a baseline definition. Shleifer and Vishny (1998) offer a simple definition of corruption as the “sale by government officials of government property for personal gain” (91). This definition, while concise, has limitations. First, what is classified as government property? Does the provision of services and the granting of access count under this definition? This definition is also

silent on whether or not the act violates the law or the common good.

The above definition is very similar to the definition of corruption used by the World Bank, which is the “abuse of public office for unauthorized private gain” (World Bank, 2000). By using the term abuse instead of sale, this definition covers a broader category of behavior. This definition also incorporates the term unauthorized, which allows researchers to compare the act with the legal code. Jain (2002:73) provides a definition that is nearly identical. For Jain, corruption “is an act in which the power of public office is used for personal gain in a manner that contravenes the rules of the game.” Is there a difference between unauthorized behavior and behavior that contravenes the rules of the game? “Unauthorized behavior” implies strict legal sanction whereas “contravenes the rules” of the game can be interpreted to include informal norms inherent to any institution. In these definitions, only government officials are guilty of corruption. Private actors, which can also be a beneficiary of a corrupt act, are absolved of responsibility. This is a serious shortcoming of defining corruption in that manner as private actors may initiate a corrupt exchange with a public employee. Furthermore, it is not clear what classifies as abuse or circumvention. Does this have to do with actually circumventing the law or acting in a manner inconsistent with the common good?

While there are shortcomings to the above definitions, they form the traditional baseline definition of corruption. Yadav (2011) offers three amendments to the above definition to increase its validity. First, the public or political entities do not have to actually occupy an office. They may promise to abuse office upon being appointed or elected in exchange for support. Second, the gains from engaging in corruption can be

indirect. For example, gains from corruption may go to a collective group, such as a political party or an interest group as a whole rather than an individual member. Finally, the law does not have to specifically be violated for an act to be considered corrupt. Legislators may legally enact legislation that favors a group that offered prior compensation (5-6).

della Porta and Vannucci (1999) offer a more concise version of the definition above. To them, corruption is a situation in which “there is a secret violation of a contract that, implicitly or explicitly, specifies a delegation of responsibility and the exercise of some discretionary power in an agent who, against the interests or preferences of the principal, acts in favor of a [corruptor], from which he receives a reward” (17). Two important aspects of corruption are implicitly identified in this definition. The first is that economic elites may try to leverage their wealth to seek public power and influence over policy. This is referred to as state capture. The other aspect is that political elites may leverage their positions to gain wealth. This is referred to as state predation (Spector, 2012:5-6). This definition identifies actors in specific positions and utilizes the common good as a reference point. Referencing the common good is troubling, however. This requires investigators to identify the common good prior to identifying corrupt acts, but it is doubtful that a consensus could ever be reached on such a topic.

Rogow and Lasswell (1978) offer a definition of corruption to address these particular situations. These authors define a corrupt act as an act that “violates responsibility toward at least one system of public or civic order and is in fact incompatible with and destructive of any such system” (54-55). A question emerges from

this definition for corruption. What kinds of acts are incompatible with and destructive of public or civic order? Can an act betray a system of public order but not be incompatible with it or destructive to it? Consider an act that circumvents an existing law that is harmful to the public good. Would this be considered corrupt? Like the definition given by della Porta and Vannucci, basing a definition off of an ideal common good presents challenges.

Certainly there are many other definitions of corruption that exist in the literature. The survey of definitions above, however, is enough to raise important questions. First, does an act have to be in violation of legal statutes to be considered corrupt? Second, does the act have to be in exchange for some type of benefit? Third, does the act have to be contrary to the public good? Different opinions on these three questions can produce varying definitions that would disagree on many types of exchanges.

Typologies of Corruption

While there seems to be a general outline of corrupt behavior, the above definitions are not enough to effectively categorize corrupt acts. As Vogl states, “Corruption is not a single event, but a continuum” (2012:12). Therefore, typologies are needed to classify corruption in terms of degree. A number of scholars have offered different typologies to capture the various forms of corruption. This section reviews and synthesizes the literature.

The first typology to be covered was introduced by Theobald (1990). He chose to classify corrupt acts based upon the principles they betrayed: public office, public

interest, and public opinion. The public office typology is based upon Max Weber's ideal type of rational-legal bureaucracy (2). At the core of this ideal typology is the assumption that bureaucrats are expected to be impartial, to be impersonal, and to accept the strict separation between the incumbent and the office. Deviations from this model are generally seen as being corrupt. This typology tends to view corruption as an individual act rather than a system of behavior. It is also the easiest to classify, as any bureaucracy should have a codified system of rules that determine what is legal and what is not. The public interest typology of corruption includes any act that can be said to betray the common good (5-6). Classifying corruption in this manner can present challenges. First, scholars must have a clear idea of what type of behavior is in the public good. Second, certain behaviors may be in the common interest but against the law and, on the other hand, certain lawful acts may be against the common interest.

The last typology of corruption identified by Theobald is called the public opinion conception. This type of corruption classifies an act as corrupt if public opinion in a given society would judge it to be corrupt. Three types of the public opinion conception of corruption exist: black corruption, gray corruption, and white corruption. The differences between the three types depend on how they are perceived by elites and how they are perceived by the masses. Black corruption is corruption that elites and the masses condemn. Gray corruption is corruption that one group condemns, usually elites, and one group is ambiguous about. Finally, white corruption is an act of corruption that is seen as unworthy of punishment by the majority (6). Like the public interest conception, the public opinion conception could be difficult to apply. Survey data could provide evidence

into public opinion at a given time, but it would take time to carry out such a survey for each action. It may also be difficult to judge who qualifies as an elite and who does not.

Alam (1989) introduces a typology based upon the ways in which government officials distort legally prescribed interactions between an actor's claim to benefits and costs an actor must bear. Stated differently, officials can seek to deny rights or absolve obligations for some form of compensation. From this framework, four types of corruption are identified by Alam. The first is cost-reducing corruption. This type of corruption is best represented by situations where a government official grants tax reductions or is lax in the enforcement of regulations. The second type of corruption is cost-enhancing corruption. This type of corruption occurs when an official has control over the provision or administration of a good or service and charges a cost for their use. An example of this type of corruption is when an official will only issue a license for a bribe. The next two types of corruption relate to the distribution of benefits. First is benefit-reducing corruption. This type of corruption occurs whenever an official transfers excess benefits to an actor. This could include over reporting work done to pay out more monetary rewards. This is common in nepotism and patronage. The second type is benefit-reducing corruption. Benefit-reducing corruption includes acts in which a government official appropriates goods that were intended for an actor. For example, the theft of medical supplies would count as benefit-reducing corruption (442-443). This typology is limited however in that it only recognizes the corruption of state functions. It does not recognize private sector corruption. Furthermore, it uses the law and policies as its baseline for judging an act to be corrupt or not. Many types of lobbying would not be

covered by this typology.

Aidt (2003) created a typology of corruption based upon two different factors. The first factor is the degree of benevolence of an official tasked with implementing a policy or designing an institution. The second factor is whether the determinant of the level of corruption is institutional or historical. From these factors, Aidt identifies four different categories of corruption. The first is efficient corruption. Efficient corruption facilitates beneficial interactions between different actors that could not be possible otherwise. Theoretically, efficient corruption promotes efficiency in the allocation of goods that may arise from pre-existing state failures. Next is corruption with a benevolent principal. This type of corruption occurs when a benevolent actor grants discretionary power to a non-benevolent actor. The degree of corruption in this type depends upon whether the institution was designed optimally. Corruption with a non-benevolent principal is the next category of corruption. This occurs when a non-benevolent actor introduces inefficient policies in order to extract rents. The degree of corruption in this type depends on the incentive structures that exist within existing institutions. Lastly, Aidt identifies self-reinforcing corruption. This type of corruption depends on the levels of corruption in the past and depends on history (F633). This typology has the most use when diagnosing strategies for addressing corruption. Solutions are implicit in the definitions of the first three types. The fourth type of corruption in this typology, however, does not have an easy solution.

Other scholars have offered typologies based upon the frequency, the duration, and the amount of resources at stake. Using those dimensions, della Porta and Vannucci

(2012) identify four types of corruption. The first is petty corruption. Petty corruption occurs at a low frequency or a short duration and involves a small amount of resources. An example of this could be an officer taking a bribe for a ticket. Individual corruption occurs at a short frequency or a low duration but involves a large amount of resources. This could be a high level bureaucrat granting a license for resource extraction for a large sum of money. Structural corruption occurs at a high frequency or a long duration and involves a small amount of resources. An example of this type of corruption could be an entire bureaucracy that charges a small fee for service delivery. Lastly, systemic corruption occurs at a high frequency or a long duration and involves a large amount of resources. This type of corruption could be represented by a political regime that systematically utilizes political appointments to accrue vast amount of wealth (37-39). There is still a bit of ambiguity in this typology. Measuring differences in frequency, duration, and the amount of resources at stake involves a degree of subjectivity and relativism. If baselines could be established, however, this problem could be solved at the state level. Whether this typology would be useful for cross-national studies is difficult to say.

For the purposes of this study, it is useful to make use of the traditional definition of corruption utilized by the World Bank. Many of the cross national surveys created to make comparisons of corruption use this definition which will allow this study to generalize with the surveys. This study also incorporates Theobald's typology of corruption, specifically the public office conception. Like the World Bank definition, this typology is common in much of the empirical work that has been done and will allow this

study to contribute to that wide body of literature.

Conclusion

Defining and categorizing corruption has proven to be a challenge for scholars studying this phenomenon. When the definition of corruption is written narrowly, it can aid in the examination of a specific type, but it loses the ability to view corruption systemically. When the definition of corruption is written too broadly, however, scholars can become overwhelmed by the many different types of corruption. It seems like it would be helpful to try to define corruption based upon the environments with which it occurs. For example, bureaucratic corruption will differ from private sector corruption. By doing this, scholars may be able to build theories within these domains and perhaps make linkages between the two.

The typologies covered in this chapter all offer important insights into looking at corruption. To create a typology, however, one must identify a baseline to judge an act as corrupt. All of the above typologies could be utilized to fully examine different corrupt acts. The benefit of doing so is that the typologies contain insights into the motivations behind and the consequences of a corrupt act. This can give scholars and policy makers insights on how to prevent bureaucrats and politicians from engaging in corruption.

To summarize, all of the definitions of and the typologies of corruption have utility. Scholars must think clearly and carefully about what specific types of corruption they wish to study and select the definition and typology that will provide the most leverage to their research program.

Chapter Three

Theoretical Perspectives and Determinants of Corruption

Definitions and typologies are useful for identifying and classifying corruption. They do not, however, answer a fundamental question about corruption. Namely, why does corruption occur? Scholars have given different explanations for why an actor may engage in corruption. Broadly, they fall into three categories: 1) political-economic or rational choice, 2) sociocultural, and 3) neo-institutional. Following an analysis of the theoretical paradigms, the empirical record will be engaged to identify the determinants of corruption.²

Theoretical Perspectives on Corruption

The political-economic model of corruption was first identified by Rose-Ackerman (1978) who provides a starting point from which most scholarship on the topic. As a rational-choice model, Rose-Ackerman's model focuses primarily on structural incentives and agency relationships (5-6). Three types of actors are specified in this model. First is the superior. Superiors have a set of preferences which relate to desired outcomes. Second, there are agents are directed by superiors to achieve these outcomes. Lastly, there are third parties that seek to influence an agent's decision. Monitoring can be costly to the superior. The larger a bureaucracy is, the higher the costs to monitor it. Therefore, agents obtain a degree of freedom from the preferences and outcomes desired by the superior. The more freedom there is, the greater the potential

² The theories on the resource curse and corruption, which are central to this study, are covered in Chapter Four.

supply of corruption. The demand for corruption comes from the third party. For the third party, corrupting an existing law is likely more cost effective than obtaining power to impose a new set of rules (6-9). Della Porta and Vannucci (1999) utilize a similar model of corruption that involves similar categories of actors. Instead of superiors, agents, and third parties, della Porta and Vannucci use a model that includes principals, agents, and corruptors respectively (16-17).

This model is exclusively a micro-level theory. On the supply side, corruption can be treated as an additional transaction cost imposed upon producers. In a basic supply and demand curve, the cost of the bribe or rent causes the price of a good to increase. This will negatively impact the demand function for a good, causing less to be produced at a higher cost to society (Shleifer, 1998:94). On the demand side, firms wish to avoid competition and will behave in a manner similar to a monopoly. They can be expected to pass on inefficiency to consumers by either producing less or charging more or both. Again, dead weight loss will occur with respect to the overall welfare of society (Lambsdorff, 2007:115). Implicit in this model of corruption is that human beings are rational, utility maximizing actors. If the probability of being caught and the punishment associated with being caught is less than the payoff of engaging in a corrupt act, one should expect the agent to engage in corruption.

Under what conditions is corruption most likely to occur in the political-economic theoretical perspective? Corruption thrives in situations involving asymmetries in information, bargaining power, and enforcement. When information is precious and difficult to obtain, corruption is likely to occur. If there is a high opportunity cost to

bargaining, then corruption is likely to occur. Lastly when monitoring and enforcing the law is costly or risky, corruption is likely to occur (della Porta and Vannucci, 2012:20-27). There are specific contexts in which corruption has been shown to flourish as well.

Another situation that lends itself to corruption is a situation in which there is competition between state officials and consumers (Shleifer and Vishny, 1993). One such example is a transition economy that has a mixture of controlled prices and market prices. The systems can create a dynamic where the rewards of entrepreneurship and investment decline against the returns to rent-seeking (Bardhan, 1997). Specific institutional situations can create incentives to engage in corruption as well. The way the state operates; the role of the state in licensing, permitting, authorizations, and granting monopoly power; and the structure of tax collection can all have a dramatic impact on the development of corruption (Tanzi, 1998:563-567). Tangentially related to institutional characteristics, civil servant pay has been shown to be correlated with perceptions of corruption. When the average pay of a civil service worker is low, perceptions of corruption should be high (Van Rijckeghem et. al, 2001).

The availability of rents seems to have a great deal of explanatory power in this regard. Rents become available under circumstances in which government intervention can lead to the presence of excessive profits. Types of government behavior that cause rents include: tariffs, import quotas, subsidies, tax deductions, price controls, multiple exchange rate practices, multiple foreign exchange allocation schemes, government controlled provision of credit, and natural resource abundance (Mauro, 1998). Ades and Di Tella utilize a cross sectional analysis of thirty one countries utilizing a variety of

control variables and find that countries where firms enjoy higher rents tend to have higher corruption levels (1999). Lastly, there is a preference by the suppliers of corruption, bureaucrats or politicians, to benefit from existing sources of rent-seeking rather than to create new forms of rent-seeking behavior (McChesney, 1997:24).

From a political-economic perspective, combating corruption is about changing incentive structures. Many measures could accomplish this. On the demand side, scholars have recommended scaling down regulations, streamlining the tax code, creating transparency in the bureaucracy, and eliminating discretion on the part of the bureaucracy (Kaufmann, 1997:128; Tanzi, 1998:590-591). To address the supply side of corruption, scholars have recommended increasing public sector wages, implementing effective monitoring systems, and changing the system of rewards and penalties (Bardhan, 1997:1330-1340; Klitgaard, 1998:77; Tanzi, 1998:590-591). Establishing a system of perfect monitoring is costly, however. Therefore, a trade-off must be made between the cost of monitoring and the cost of corruption. Completely eliminating corruption may cost more in terms of monitoring agents than allowing some corruption to occur. Ideally, an equilibrium point should be sought in which the cost of monitoring agents plus the cost of corruption occurring is the lowest.

Many of these recommendations seem to imply neoliberal reforms as a solution to corruption. Markets, however, may be an inadequate mechanism for controlling and combating corruption. Privatization itself opens up multiple opportunities for actors to engage in large scale corruption. Many of the states that appear as clean on Transparency International's Corruption Perceptions Index are not neoliberal states. It is likely that

solutions for corruption will be context specific. Like economic development, there is not a one size fits all solution.

There are criticisms of the political-economic theoretical perspective of corruption. Actually modeling corruption could prove to be quite challenging. Hypothetically, many variables interact in the cost function and the monitoring function of corruption. To adequately do so, it would be necessary to know how much corruption is occurring. Being a clandestine activity, this could prove to be difficult. Furthermore, cultural and ethical beliefs will be absent from such a model. This will severely undermine the predictive power of the model.

Cultural and ethical variables are largely ignored in this perspective. Ignoring culture and ethics can undermine the predictive power of this theoretical perspective. Imagine two bureaucratic situations. In the first, a great deal of discretionary power is given to agents with a strong cultural or ethical bias against corruption. In the second, less discretionary power is given to agents with no cultural or ethical bias against corruption. In which situation will there be a higher incidence of corruption? We would assume the second example, but this perspective may not be able to adequately answer that question.

The next theoretical perspective on corruption is the sociocultural perspective. This perspective emphasizes cultural traditions, social norms, and internalized values that inform moral preferences and societal roles. In this perspective, individuals are pushed toward corruption by the attributes of their internalized values and by the social norms that exert influence on individuals (della Porta and Vannucci, 2012:12-14). In this

theoretical perspective individuals are not assumed to be rational, utility maximizing actors. Rather, actors are viewed as acting within a set of socially constructed norms that prescribe behavior. This behavior can be ego centric or oriented toward group survival. It can be bound by kinship groups, ethnicity, religious affiliation, or economic class.

Inherent in this model is the tension between an idealized Weberian bureaucracy and more traditional modes of resource allocation. Due to this, corruption is judged based upon Western norms of bureaucratic behavior. The danger in examining corruption in this manner is that it can lead to ethnocentrism. In some political systems, actions that are deemed as corrupt can serve to link groups to the emerging or modernizing state. So while there may be a cost passed on in terms of the delivery of goods and services, the potential benefit of linking citizens to the state through patronage networks is hard to measure. Another problem with this theoretical perspective is that it becomes difficult to separate the behavior of an agent and a group as a whole. If a bureaucratic agent engages in corruption, does it mean the agent is culturally predisposed to corruption or is the agent merely responding to an incentive structure that allows the agent to do so? Furthermore, like many cultural or constructivist theories, it is difficult to determine the causal direction due to the agent-structure problem.

Curbing corruption in this model comes down to changing cultural perspectives and norms about corruption. If corruption stems from sociocultural systems, then changing attitudes seems to be the only way to reduce corruption (Klitgaard, 1988:90; Theobald, 1990:148). Building trust has also been shown to reduce corruption though there are limitations of this approach in fractionalized states (Rothstein and Uslaner,

2005). This makes the prospects for reducing or eliminating corruption very difficult, as cultures do not tend to change quickly. Furthermore, this could be interpreted as telling members of a group to behave in a more Weberian or Western manner. At best, proponents of this theory of corruption would recommend patience and understanding when dealing with a presumably corrupt bureaucracy and not expect dramatic change over time. This stands counter to examples of successful anti-corruption campaigns. Singapore provides an excellent example. Rife with corruption in the post-World War II era, the newly elected People's Action Party enacted the Prevention of Corruption Ordinance and created an autonomous agency called the Corrupt Practices Investigation Bureau. As a result, corruption was reduced to an "almost negligible proportion in contemporary Singapore" (Quah, 1982:162-163).

The last theoretical explanation is the neo-institutional perspective. della Porta and Vannucci (2012) provide an example of this theoretical perspective. This approach is similar to the political-economic approach except that it attempts to incorporate macro level phenomena and path dependency. By doing so, this theoretical explanation attempts to bridge the micro-macro divide. Once a certain organizational structure and the cultural norms that develop along with it are put into place, governance structures and enforcement mechanisms develop within networks that conduct illegal actions. This reduces uncertainty among actors and increases the chances that actors will engage in illegal acts (12-14).

Since this theoretical perspective incorporates aspects of both the political-economic theory of corruption and the cultural perspective of corruption, the situations in

which corruption occurs in the neo-institutional perspective are shared between both perspectives. Similarly, the recommendations for combating corruption under this perspective are also shared with the other two theoretical perspectives.

Only by thoroughly examining the institutional settings and the history of past corrupt practices can this perspective on corruption be utilized. In this sense, it is harder to generalize from case to case because context matters a great deal. Due to this difficulty, it is not likely that a general theory of corruption can be developed from the neo-institutional perspective. Furthermore, corrupt acts typically occur in a clandestine nature. This makes it difficult to fully utilize this theoretical perspective as it is unlikely a research will have a complete understanding of the corruption occurring within a contemporary bureaucratic structure. This method is better suited for historical cases of corruption in which a more information is available for scrutiny.

After examining the strengths and limitations of each theoretical perspective, this study will make use of a political-economic approach to corruption. It provides the best opportunity to model corruption in a large-N data set and control for relevant variables identified in the literature.

Determinants of Corruption

With a theoretical perspective selected, it is now important to discuss some other factors that may have an impact on corruption. Once identified, these determinants can then be measured and incorporated into the model that will be developed later in this study. Scholarship has been conducted on the many different possible causes of

corruption. The following were found to be determinants of corruption in other studies: the level of democracy, the rule of law, gross domestic product per capita or poverty, the size of the population, government consumption, trade openness, and ethnolinguistic fractionalization.

Democracy has been shown to have a negative impact on corruption. If members of a given polity are able to identify corrupt politicians and have them removed from office, corruption should abate over time. There are many assumptions inherent to this line of reasoning. First is the assumption that the means to expose corruption exist. The right of a free press, which is important in exposing corruption, is one reason why democracy may lower corruption. Another assumption is that the electoral process is free and fair, allowing voters to punish parties that are unwilling or unable to tackle corruption within the government. Utilizing data from a large set of countries over a fifteen year period, Rock (2009) is able to show that an inverted U relationship exists between democracy and corruption. In newer democracies, corruption tends to fall rather quickly. In consolidated democracies, there is a tendency for corruption to increase slightly over time. This means that it is absolutely necessary that a measure of democracy is included in this research model. The predictability of the rules of the game are also important for determining corruption. Consolidated regimes are more likely to have established rules in place. Consolidated regimes may also be able to articulate preferences and exert more leverage vis-à-vis private entities. Why is there a discrepancy between the empirical findings of Rock and this theoretical assumption? Actors over time will adapt to changing political and economic contexts. As a regime becomes consolidated, it develops more

capacity. However, actors adapt to these changes and develop more sophisticated methods of engaging in graft. Micro-level, incentive shaping factors will then come into play to determine outcomes of corruption. Therefore, a measure for regime durability or consolidation is necessary for a complete analysis of corruption though it is important to understand that over long periods of time, its explanatory value will diminish.

Poverty exacerbates corruption because it undermines the ability of government institutions to function effectively. Control of corruption, rule of law, government effectiveness, voice and accountability, and political stability were all found to be negatively impacted in strong ways by poverty rates (Tebaldi, 2010). When faced with survival issues, government workers, as utility maximizers, are also likely to engage in rent-seeking behavior in order to make ends meet. Furthermore, an impoverished country is not likely to have the resources available to create a professional bureaucracy. Poverty also creates an incentive to engage in corruption to improve income. Access to education and sound legal systems are clearly undermined by poverty, impacting the decision making of potential suppliers of corruption and the ability to hold suppliers of corruption to account. The per capita income of a state can be used to capture this relationship.

The relationship between the size of a state's population and corruption is a topic of debate within the literature. There are a couple of theoretical reasons why one would anticipate a higher level of corruption in states with more people. Many of these theoretical arguments were analyzed and tested by Knack and Azfar (2003). First, a state with more citizens has a larger demand for the provision of services, which are scarce. Therefore, citizens may engage in corruption in order to gain access to a limited pool of

state services. In more populous states there are also less government workers per citizen. Therefore, citizens may be tempted to bribe government workers to jump ahead in a presumed queue. The empirical results of the authors' regression models were mixed, however (10). They attribute this to selection bias in the data available from the corruption measuring indexes. Many years have passed since this study, so it may be appropriate to retest these relationships.

The amount of government spending might also influence the incentive to engage in corrupt behavior. This is a tenet of classical liberalism where the state only distorts economic activity. Economists of the public choice and the rent-seeking schools see most government spending as inherently wasteful and prone to rent-seeking opportunism. Goel and Nelson (1998) use a logit model to analyze panel data on the number of corruption convictions in the United States and the size of state spending. Their results demonstrate a positive and significant relationship between local government spending and corruption convictions while controlling for many measures of judicial monitoring and enforcement (115). In a separate study, Gupta et. al. (2001) seek to analyze the relationship between military spending, government spending, and corruption for a data set of 120 countries from 1985-1998. Their findings demonstrate a positive and statistically significant relationship with military spending as a share of GDP, military spending as a share of government expenditures, government procurement outlays as a percentage of GDP, and government spending (759-771). These studies are not conclusive due to a focus on just the United States in the former and a small sample size in the latter. However the logic is straight forward. The more resources a state has at its disposal, the greater the incentive to

engage in corrupt practices. Therefore, any model on corruption should include some measure of government spending.

Trade openness has also been identified as having a negative impact on corruption. Trade restrictions shift resources to rent seeking activities, which increases corruption. Utilizing the International Country Risk Guide and Transparency International's Corruption Perceptions Index, Torrez (2002) finds a mixed relationship. The negative relationship between the International Country Risk Guide and trade openness was found to non-existent to weak depending on how openness is measured. He does find the relationship holds with the Transparency International measure, but the number of observations is very low.

Ethno linguistic fractionalization has been found to be highly correlated with corruption in different studies. Controlling for various measures of bureaucratic efficiency, Mauro (1995) finds that ethnolinguistic fractionalization is correlated with corruption. The presence of different ethnic groups may lead bureaucrats to favor members of their group over others (693). Dincer (2008) finds evidence that ethnic and religious polarization and ethnic and religious fractionalization are also associated with corruption in the United States controlling for educational attainment levels, income inequality, and the size of the manufacturing sector. Like Mauro, Dincer argues that this is due to the likelihood that members of a group will allocate resources to their own group (98). Therefore, any model predicting corruption should include ethno linguistic fractionalization to capture this effect.

To summarize, the above factors should be accounted for in any study of

corruption. A failure to do so may create an omitted variable bias and decrease the explanatory power of the model.

Conclusion

Three different theoretical perspectives on corruption have been identified in the literature: political-economic, cultural, and neo-institutional. In order to make generalizations across cases of corruption, this study will utilize a political-economic theoretical perspective on corruption. The cultural and the neo-institutional models of corruption require close attention to context and history, making generalizations from case to case difficult. Furthermore, reviewing the empirical research record on corruption shows that the political-economic approach is common and has generated a large body of work on the determinants of corruption. This study will incorporate these finds to build a statistical model to test whether or not natural resource endowments demonstrate a significant relationship with perceptions of corruption.

Chapter Four

The Resource Curse Theory and Corruption

What are the theoretical linkages between natural resources and corruption? From a political-economic perspective, incentive structures provide the most insight into determining the total level of corruption in a given state or economy. A state with a large amount of natural resource endowments relative to its economy could provide both more opportunities to engage in rent seeking behavior and greater gains from engaging in corruption. Therefore, a clear theoretical link may exist between the political-economic perspective on corruption and the resource curse theory. To examine whether this potential link has merit, it is first necessary to examine the existing literature on the resource curse theory. Once this literature has been reviewed, this chapter will build a link between resource rents and corruption and construct a theoretical model to capture this relationship.

The Resource Curse Theory

To sustain economic development, countries need access to natural materials that can be exploited. The more richly endowed a country is, the greater the prospects for the economic development of that country. This line of reasoning seems straight forward. If one could choose a starting point from which to found a new country, one would likely want ample farmland, timber, minerals, hydrocarbons, and any other resource useful for providing for development. The management of these resources, whether through cultivation, mining, or drilling, brings with it spillover into the broader economy. As

these processes become more efficient due to market forces, economies of scale or simply learning by doing, less labor will be required to produce the same if not greater output. This should, in turn, also cause the prices of these commodities to fall. Because these commodities are inputs to so many different goods, the overall price level should fall over time. Meanwhile, the newly freed labor can be then shifted into different sectors in the economy, which should respond to the growing demand for goods that are becoming cheaper. As the resource endowments gradually diminish, as all certainly do, the output that would have been generated is replaced by the output of both a more skilled workforce and a more diversified economy. For all intents and purposes, this model put forth by Ginsburg (1957) provides the argument for the conventional view of how a large natural resource endowment should benefit a given country when it is in the early stages of economic development.

There are many assumptions inherent to the model mentioned above. First, there is an assumption that the efficiency benefits that occur in these economic sectors are enjoyed in the host country. If the host country is not willing or able to turn these raw commodities into finished goods for sale, will the host country benefit? A country that exports copper ore but imports copper semiconductors, for example, is likely to pay more for the semiconductor than it was paid for the copper ore. Should a country become dependent on mineral extraction without a subsequent diversifying of the economy, it may become burdened with a bloated mining sector or high unemployment. This can be applied to other extractive sectors of the economy. What if the earnings from these resources are not reinvested in the economy or distributed as wages to workers in the

extractive sector? If these earnings are instead stolen through corruption, the natural resource endowments may not provide the assumed benefits. Political violence can also develop over land ownership rights that contain rich resource endowments. These conflicts can lead to civil wars or secession movements. All of these outcomes will have a negative impact not only on economic growth but also the political system in general. In this scenario, when the resources begin to diminish, the hypothetical country could be set up for a difficult situation.

The above criticisms of the conventional view of how resource endowments can benefit early stage economic development form the basis of the resource curse theory as it relates to growth and development. A great deal of scholarship has been done on this subject. The post-World War II era provides a starting point to analyze the claims of this theory as many countries became independent and sought to utilize their resource wealth, if they had it, to pursue economic development. Using the geographical size of a country as a proxy for resource endowments, Auty (1993:2) found that the smaller, and thus resource deficient countries like Korea and Taiwan performed much better economically than China, India, Brazil, and Mexico. Auty claims that all six of these countries began with similar economic models, namely autarkic industrial policy or import-substitution industrialization³. Korea and Taiwan, due to mineral deficiencies, quickly had to adopt a more export oriented policy because of the negative terms of trade associated with a reliance on commodity exports. Autarkic models of development require a great deal of financing to support tariff regimes and other forms of protection. Therefore, these

³ Import-substitution industrialization refers to a strategy of economic development in which the state utilizes trade barriers to encourage domestic production of goods for the internal consumer market. This was prominent in Latin America from the 1950s until the 1970s.

countries ran into foreign exchanges shortages more quickly than their resource rich counterparts (Auty, 1993:2). Because South Korea and Taiwan switched to a more competitive model quickly, fewer imbalances built up in their economies than in China, India, Brazil, and Mexico. Therefore South Korea and Taiwan were better off as the switch in economic models was more costly for the larger countries. Furthermore the growth rates of South Korea and Taiwan during this period were much higher than those of China, India, Brazil, and Mexico. Today these two countries enjoy a higher standard of living as well. There are other reasons why this could have occurred, however. The geopolitical decisions of the United States during the Cold War could have influenced this outcome as well. Concerned about communist resistance movements developing in East Asia, the United States provided special access to the United States domestic market and development assistance to Japan, South Korea, and Taiwan. The other four countries in this case study did not receive this preferential treatment by the world's largest domestic market. Lastly, geographic size is a poor operationalization of resource wealth as there are many resource deficient yet large countries like Chad and Niger.

The above framework operationalized resource wealth as a function of the actual geographic size of a country. How does this thesis fare when it is made sector specific? Are there characteristics of extractive industries that lend themselves to economic under performance? Scholars have identified characteristics of these industries that can lead to poor economic performance. The first relates to the amount of capital required to engage in extractive activity. If we again begin in the post-World War II era, we find mineral rich countries that lack the capital necessary to exploit these endowments. The capital must,

then, come from developed countries. These sectors will employ a small portion of the labor force and likely export the extracted resource without any value added labor. An enclave economy is likely to develop, which will have limited to no linkages to the domestic economy. Thus, spillover effects will be largely mitigated. Furthermore, the earnings on the commodity exports can be lost to either the service on the foreign capital investment or negative terms of trade (Prebisch, 1950; Singer, 1950; Auty, 1993:3).

Empirical research provides support to both of the above claims. Manzano and Rigobon (2001) utilize scatter plot to show a relationship between resource abundance and debt growth from 1975 and 1985. This study also shows a steep decline in the price of many commodities over the same period (22-23). Many developing states leveraged their resource wealth during this period, leaving them with high levels of debt. There is also empirical evidence showing that the terms of trade between primary commodities and manufactured goods has deteriorated since the Second World War. Utilizing data from the United Nations and the World Bank, Spraos (1980) found that the terms of trade between primary products and manufactured goods had declined since World War II regardless of the data source (122). The model utilized by Spraos was scrutinized by Sapsford (1985) for containing structural instability in the parameters used to analyze the terms of trade over the period covered. Sapsford corrects for this by utilizing a Cochrane-Orcutt model to bridge the gaps between the two sub periods in Spraos' work (783). The new model confirms the findings of Spraos that the terms of trade between primary commodity goods and manufactured goods declined until the 1980s. These results generated a great deal of controversy in the economics literature due to its anti-orthodox

policy prescriptions. A great deal of scholarship has been done to disprove these results, yet they were confirmed again utilizing updated data that included observations up to 1986 (Sapsford et. al., 1992).

This does not mean, however, that this phenomenon is a predetermined outcome. When extractive industries in developing states become captured and held hostage to political interests, more efficient firms can be crowded out along with many of the other problems listed above. Countries like Botswana, Chile, Malaysia, and Indonesia seem to have been able to develop policies toward these industries that have kept them competitive and effectively mitigated some of the problems that can occur with enclave economies (Auty, 2006). These policies include reinvesting the earnings on natural resource exports into light industry or manufacturing, educational services, and health services. A more diversified economy, along with more educated and healthier workers, has obvious benefits for an economy.

Hammond (2011) found evidence that government policy vis-a-vis the extractive industry, in this case oil, may have a critical impact on future development. Hammond compares Angola and Venezuela to demonstrate his thesis. Angola's resources were opened up to foreign capital. A lack of state capacity and civil strife lead to a situation where rent seeking proliferated. Politicians relied on bribery to retain a privileged position in society. Well aware of the wealth of their country and the crushing poverty, the citizens of Angola took up arms to try and change the political climate. A three party civil war developed along with a succession movement in the oil rich region of Cambinda. Venezuela under Hugo Chavez, however, has a nationalized extraction

industry (PdVSA) that is exposed to market pressure, which keeps it lean. Venezuela is then able to take its foreign exchange earnings from oil and redistribute the wealth, invest in other sectors of the economy, invest in education, or invest in health services⁴. This has resulted in a reduction in the poverty level in the country, which in turn creates a larger domestic market for producers to sell goods in. What can be said, in general, is that a wide body of scholarship has demonstrated that resource rich states have demonstrated lower growth rates since the end of colonialism.

Natural Resources and Corruption

As mentioned above, corruption is another important aspect of resource curse theory. As the guarantor of property rights, states can be said to control access to the natural resources within its territorial boundaries. The legal mechanisms to control access to these resources, according to resource curse theory, are frequently undermined. This can happen through a variety of mechanisms. First, bureaucrats could be tempted for various reasons to accept a bribe to circumvent legal procedures. Second, firms may pay bribes to secure privileged access to resources. Bureaucracies in many mineral rich developing countries use rents to pay for access to these resources. Research has shown that these bureaucracies lack accountability and transparency because of the reliance on external funding. This reliance on outside money can also lead to policy positions contrary to the welfare of the country as a whole but beneficial to individuals associated with the bureaucracy. Furthermore, accurately recording revenue and enforcing laws

⁴ Specifically, Chavez created social programs called Missions that were funded by PdVSA earnings (Daguerre, 2011).

requires state capacity and strong institutions, which developing countries tend to lack. This as a whole can lead to the formation of a rentier state or a state that utilizes government revenue in a manner that does not benefit society.

A key question emerges at this juncture. Is the lack of institutional capacity at the initial stages of resource extraction a cause or an effect of corruption? The resource curse theory focuses exclusively on developing countries. In the modern context, firms from developed countries are typically involved in extracting resources from developing countries. Developing countries are generally capital poor and have to import machinery and expertise to make effective use of their resources. Therefore, extraction generally begins before mechanisms are in place to guard against corruption. In an environment with limited capacity to monitor or regulate, the clientelistic relationships at the base of corrupt networks can develop. Therefore, a lack of institutional capacity at the initial stages of extraction can be an initial cause of corruption. Over time, however, corruption can impact the development of the institutions required to reduce corruption. The institutional capacity then becomes an effect of corruption.

With regard to mineral wealth, Matti (2010) provides a case study of how corruption begins and continues to occur in the Democratic Republic of the Congo, (DRC). Extremely underdeveloped, the DRC is reliant on foreign firms to extract its vast mineral wealth. It has very poor if nonexistent institutions. Multinational firms can offer bribes, at a relatively low cost, that politicians are willing to accept to gain access to these resources. Enclave economies develop around the mines with little to no spillover effect into the broader economy. In this manner, the DRC is cursed by its resource wealth.

Shaxson (2007) examines a similar process with regard to oil wealth in Sub-Saharan Africa. He finds that all oil producing states in Sub-Saharan Africa have below average government effectiveness as measured by Kaufmann's Government Effectiveness Index and are at the bottom of Transparency International's Corruption Perceptions Index. He finds that scholarship on the subject is limited in two ways. First, it does not consider the systemic nature of the resource curse, i.e. the relationship between developed and developing countries. Second, scholarship on this topic ignores cross border corruption. Overall, Shaxson finds that governance matters most. Resource endowments can be a necessary but not sufficient factor in perceptions of corruption.

Other scholarship has attempted to provide tests of the resource curse theory. Leite and Weidmann (1999) find a strong, negative correlation between the International Country Risk Guide corruption index and the share of fuel and ore exports as a percentage of gross national product while controlling for rule of law, revolutions and coups, and trade openness. In this corruption index a lower score means more corruption. Utilizing data from eighty eight countries, Gylfason (2001) plots the percentage of the labor force in the extractive sector with Transparency International's Corruption Perceptions Index and finds a strong and negative correlation between the two variables. The larger the percentage of the labor force in the extractive sector, the lower the rating in the Corruption Perceptions Index. In this index, a higher score means less corruption. Fjelde (2009) utilized panel data from 123 countries from 1985 to 1999 and finds that oil wealth is associated with higher corruption. In this study, Fjelde operationalized oil wealth and oil production per capita and made use of the International Country Risk

Guide to operationalize corruption.

Arezki and Brückner (2011) utilize panel data from thirty oil producing states from 1992 to 2005 and find that the effect of oil rents on corruption depends on the state's involvement in the oil sector. States with high state participation faced higher corruption while the effect was ambiguous in states with low amounts of state participation in the oil economy. These scholars utilized Political Risk Services to measure corruption and measured oil wealth as the amount of rents available (obtained from the International Monetary Fund). Lastly, Askari, Rehman and Afraa (2012) find that Islamic, oil exporting states have lower levels of corruption than states with similar regimes that are non-Islamic, oil exporting states. The effect of culture on corruption can be ambiguous. Rather, corruption is linked to poor business environments and weak mechanisms for good governance. Overall, many of these studies do indeed find that a resource curse exists with respect to oil. What about other natural resources? Does this relationship hold for other sources of resource wealth or is the resource curse just an oil curse?

There is some literature that casts doubt on the relationship between natural resources and corruption. Utilizing data from the Corruption Perception Index from 1980-1985 and 1996, Di John (2011) finds that non-mineral abundant developing countries are more corrupt than mineral-abundant countries. The perception of corruption in mineral-abundant countries has more to do with the nature of the state and politics as well as the structure of ownership in the export sector. If citizens view the industries as being foreign owned or owned by a certain ethnic group, they are likely to describe the business

environment as corrupt. These sentiments were recently expressed in Bolivia during the events known as the “Gas War” (Kohl and Farthing, 2006). Perceptions of corruption are lower if the firms are seen to be benefiting the citizenry.

While there is some contention in the literature, there seems to be a broad theoretical basis and enough empirical research to support a relationship between resource rents and corruption. While there appears to be gaps in the literature in terms of disaggregated resource rents and the incorporation of many determinants of corruption as identified by the literature, it is appropriate at this time to build a formal model linking resource rents and corruption.

A Model of Corruption in the Extractive Sector

In the case of the extractive industry, corruption specifically means the collection of bribes for the issuing of permits and licenses, allowing goods to pass through customs or creating barriers to entry for competitors. This type of corrupt behavior may be called rent-seeking behavior. In economic terms, this behavior is undertaken for two reasons; suppliers of corruption want income, and demanders of corruption wish to avoid the rigors of market competition (Lambsdorff, 2007:113-117). This definition can be placed within a political-economic theoretical perspective. In doing so, this study may analyze the incentive structures that give rise to corrupt behavior. Having a large natural resource endowment can alter the incentive structure of bureaucrats and politicians which creates the potential for increased corruption.

As noted previously, corruption is the outcome associated with rent-seeking and

aversion to market competition. On the supply side, bureaucrats and politicians will seek to maximize their utility by extracting rents from already existing sources. In this case, the existing source is natural resource wealth. These politicians will take advantage of their monopoly on regulation to extract favorable outcomes. On the demand side, firms will seek to avoid as much market pressure as possible and maintain high profits. This means bribing officials to gain or retain access to natural resources and blocking the entry of new firms into the market.

The structure of a given market also has an impact in this model. Shafer (1994:23) identifies two key aspects of a given sector's organization that influence leverage vis-à-vis a state: capital intensity and the extent of economies of scale. Sectors that have high capital intensity and benefit from economies of scale will have more leverage in terms of capacity vis-a-vis a given governmental body in a developing state. This results primarily from the resulting market structure, namely monopolistic competition or oligopoly. Under these structural conditions, it is much easier for firms to form producer's associations than in situations where there is low capital intensity and no benefit from economies of scale because the latter will tend to produce more firms. Firms in this resulting "high/high" pairing of capital intensity and economies of scale can have more of an influence on the functioning of the state, whether through lobbying or bribery. This study assumes that it is more efficient, in terms of cost and outcomes, for a firm to bribe a bureaucrat or politician than to use official channels of lobbying.

As a "high/high" industry, the extractive sector is very sensitive to state policy. Frieden (1991) provides us with an analytical tool to utilize to determine whether or not

an industry is sensitive to state policy. Firms, being profit maximizers, will utilize any leverage they have to maintain profitability. The degree to which they will use this leverage is a function of how vulnerable the firm's holdings are to state policy. The more susceptible a firm is, the higher the incentive to try to influence political outcomes. Industries that are characterized by economies of scales, sunk costs, reputational costs, and barriers to entry will be more sensitive to government policy (1991:20-21). This should stand to reason. If a firm must invest in large, capital intensive factories to be profitable, it will be unable, once the factory is built, to just close shop and relocate. It will be too expensive to do so. Asset specificity is also an important aspect of a sector to analyze. If a firm can easily shift its capital from one form of production to another, it will do so if faced by the proper incentive structure. Firms with completely fluid assets, like financial firms, can just move money around, forever chasing the highest return. Firms with completely specific assets must remain within the same industry. The extractive industry can clearly be said to meet the requirements of an industry in which firms are sensitive to government policy. Extractive firms have large sunk costs and benefit from economies of scale. The labor is very capital intensive. There are also high barriers to entry. Finally, the assets associated with resource extraction can be said to be specific.

Bringing all of this together, it becomes easy to see how, theoretically, one might expect countries that are reliant on natural resources to be more corrupt. Natural resource endowments are on a continuum. Some states have rich resource endowments, while others have few resource endowments. This creates a scarcity in terms of where a firm

may engage in extraction. Politicians are fully aware of this and attempt to gain the maximum benefit from their resource endowments. Because developing countries rarely have the capital necessary to extract the minerals themselves, they must look to foreign firms. This makes them reliant on exogenous sources of funding, undermining accountability to their polity. Being risk averse, these politicians would rather rely upon already existing sources of rent-seeking rather than create new sources. These rent-seeking opportunities could involve the allocation of permits, for example. Thus, they will strive to ensure that the mining industry functions. This summarizes the supply side of corruption.

On the demand side of corruption, extraction firms are very sensitive to government policy. Having already invested heavily in exploration and the building of a large capital stock, mining firms will utilize all means available to keep profit margins high. Firms are thus faced with a choice. They must seek to influence policy through legally sanctioned channels or through corruption. In developing countries, corruption is likely the more efficient choice in terms of time, money and likelihood of success. Corruption in this regard could include paying bribes to regulators that might enforce environmental standards or to accountants trying to tax the revenue of a firm.

One last note needs to be made about the theoretical model. A country that has a large extractive sector but also has the means to finish and manufacture the resources should not suffer from resource curse theory like a state that does not. Being able to manufacture these commodities into goods is a sign of a more diversified and advanced economy. Resource curse theory tends to apply to countries that are just beginning to

develop. Furthermore the more reliant a country is on the extractive sector, the higher the incentive to engage in corrupt practices. Therefore it is important to look at the amount of rents available in a given extractive sector as a percentage of gross domestic product rather than the volume of rents available. For the sake of completeness, it will also be important to look at the percentage of resource exports as a percentage of total exports. This will help identify differences in states that export large amounts of low rent resources and states that export high rent resources.

Conclusion

This chapter builds upon the previous chapters of this study by building a theoretical bridge between natural resource rents and corruption. Many questions remain about the systemic relationship between the resource rents and corruption, however. Namely, is there a difference in how different natural resource rents affect perceptions of corruption? If there is a difference, what can explain it? In the following chapters, statistical models will be built to test the relationship between resource rents and corruption. The methodology of the study and the methods of obtain data will be covered. The results of the models and the inferences to be drawn from them will follow.

Chapter Five

Methodology and Data

Dependent Variable

To fully examine the relationship between resource endowments and corruption, this paper constructs a cross sectional time series for all countries measured by Transparency International's Corruption Perceptions Index (2012) from 1994-2012. Beginning in 1995, Transparency International's Corruption Perceptions Index (CPI) has utilized survey data to rate countries on how pervasive corruption is within the country. Johnston (2001) identifies the CPI as the most widely used and the most ambitious effort to measure and compare perceived levels of corruption (160). Specifically, Johnston notes that the CPI is both reliable in terms of the standard deviation of the scores and valid in terms of being related statistically with other measures of perceptions of corruption (161, 164-165). This does not mean that the measure is without fault. In terms of precision, it is difficult to evaluate whether the variation across all values are consistent or not. Furthermore, the CPI does not accurately reflect contrasts in the types of corruption (162-164). Husted (1999) identifies another potential problem with the CPI. The measures reflect the opinions of outsiders that work for business, nongovernmental organizations, or intergovernmental organizations. They do not measure the opinions of people within the given society. Also, the CPI measures corruption that occurs between outsiders and state agents, not corruption that occurs within a state (347). These issues aside, the measure is the best available for researchers and is widely used in many academic studies, thus, this study uses the CPI as the measure for the dependent variable.

Before moving on to the independent variables, it is important to analyze the way the CPI is constructed. Currently, the CPI draws upon data from thirteen different sources to create the composite index. Each source will be briefly covered by examining the instruments utilized to collect data. The first source used by the CPI is the African Development Bank's Governance Ratings (African Development Bank Group, 2012). These ratings assess the transparency, accountability, and corruption in the public sector in 53 African states. Specifically, they measure the accountability of the executive to oversight institutions and of public employees for their performance, access of civil society to information on public affairs, and state capture by narrow vested interests. The second source used by the CPI is the Bertelsmann Foundation Sustainable Governance Indicators (Bertelsmann Stiftung, 2011). This source focuses on 31 OECD states. This measure assesses the extent to which public officeholders are prevented from abusing their position for private interests. The third source used by the CPI is the Bertelsmann Foundation Transformation Index (Bertelsmann Stiftung, 2013). Scoring 128 states and territories, this index focuses on two main questions. First, the study asks to what extent are public officeholders who abuse their positions prosecuted or penalized. Second, the study asks to what extent does the government successfully contain corruption.

The fourth source used by the CPI is the Economist Intelligence Unit (EIU) Country Risk Ratings (The Economist Group, 2013). The EIU was established in 1946 as the research body for *The Economist*. Containing 144 states and territories, this data source rates states and territories based on the following eight criteria:

1. Are there clear procedures and accountability governing the allocation and use

of public funds?

2. Are public funds misappropriated by ministers/public officials for private or party political purposes?
3. Are there special funds for which there is no accountability?
4. Are there general abuses of public resources?
5. Is there a professional civil service or are large numbers of officials directly appointed by the government?
6. Is there an independent body auditing the management of public finances?
7. Is there an independent judiciary with the power to try ministers/public officials for abuses?
8. Is there a tradition of a payment of bribes to secure contracts and gain favors?

Combined, these questions help to capture many different aspects of corruption within a state.

The fifth source used by the CPI is the Freedom House Nations in Transit data set (Freedom House, 2012). These data focus on 29 states throughout Central Europe and several newly independent states. Specifically, six dimensions are examined by this data set:

1. Has the government implemented effective anti-corruption initiatives?
2. Is the government free from excessive bureaucratic regulations, registration requirements, and other controls that increase opportunities for corruption?
3. Are there adequate laws requiring financial disclosure and disallowing conflict of interest?

4. Does the government advertise jobs and contracts?
5. Does the state enforce an effective legislative or administrative process – particularly one that is free of prejudice against one’s political opponents – to prevent, investigate, and prosecute the corruption of government officials and civil servants?
6. Do whistleblowers, anti-corruption activists, investigators, and journalists enjoy legal protections that make them feel secure about reporting cases of bribery and corruption?

Similar to the EIU, these data present a robust system for analyzing the prevalence of corruption that exists within a given state.

The sixth source used by the CPI is the Global Insight Country Risk Ratings (GI) (IHS, 2013). Founded in 1959, the GI provides a six factor analysis of the risk environment in 204 states and territories. With respect to corruption, GI focuses on the manner in which corruption affects the operational activities for businesses. Specifically, GI is interested in obtaining business permits, the policy environment, and planning decisions. The seventh source used by the CPI is the IMD World Competitiveness Year Book (International Institute for Management Development, 2013). Scoring 59 states, respondents were asked whether or not bribing and corruption exists within a state. The eighth source used by the CPI is the Political and Economic Risk Consultancy (Political and Economic Risk Consultancy, Ltd., 2013). This firm specializes in strategic business information and analysis for companies doing business in 15 countries in East and Southeast Asia. To provide sound information to clients, this firm analyzes corruption

along two dimensions. The first dimension of the study is the extent to which corruption is perceived to be a problem in the following positions: national-level political leaders, city and other local-level political leaders, civil servants at the national level, and civil servants at the city level. The second dimension of the study is the extent to which corruption is perceived to be a problem affecting the following institutions: the police department, the court system, customs, the taxation bureau, government licensing bodies, inspections bodies, and the military.

The ninth source used by the CPI is the Political Risk Services International Country Risk Guide (The PRS Group, 2013). This research monitors 140 states and asks survey respondents to rate the prevalence of actual or potential corruption with respect to excessive patronage, nepotism, job reservations, exchange of favors, secret party funding, and suspiciously close ties between politics and business. The tenth source used by the CPI is the Transparency International Bribe Payers Survey (Transparency International, 2013). This survey measures the degree to which public officials demand or accept bribes and the degree to which public funds are misused for private gain. Business executives from 30 countries are surveyed and interviewed in the creation of this data. The World Bank Country Policy and Institutional Assessment serves as the eleventh source utilized in the creation of the CPI (The World Bank Group, 2012). This assessment measures transparency, accountability, and corruption in the public sector for 78 IDA-eligible states. The World Economic Forum Executive Opinion Survey serves as the twelfth source used by the CPI (World Economic Forum, 2013). This survey measures the frequency in which firms must make undocumented extra payments or bribes for the

following services: imports and exports, public utilities, annual tax payments, awarding of public contracts and licensing, and obtaining favorable judicial decisions. The subjects of this survey are business executives, with nearly 100 executives surveyed per each of the 140 economies sampled. The last source used by the CPI is the World Justice Project Rule of Law Index. Containing expert responses from 97 states, this index measures the extent to which public officials use public office for private gain in the following sectors: the executive branch, the judicial branch, the police and the military, and the legislature.

The Transparency International Corruption Perceptions Index (CPI) uses the results from these previous thirteen sources and combines them to create a composite score that ranges from zero to ten. A zero represents a perfectly corrupt state. A ten represents a perfectly clean state. This is the most comprehensive measure for corruption found in the literature and is widely used in many empirical studies. The result of the composite score is a string variable that allows this study to utilize an ordinary least squares regression model.

Independent Variables

The first set of explanatory variables in this study represents a measure of the amount of resource rents, the difference between the cost of production and the sale price, earned as a percentage of gross domestic product. These rent measures are expressed as a percentage of GDP. The first rent measure captures the total amount of resource rents extracted in a given economy. These data are then disaggregated into five components: coal rents, forest rents, mineral rents, natural gas rents, and oil rents. The second set of

explanatory variables captures the amount of fuel exports as a percentage of total merchandise exports and the amount ores and metals exports as a percentage of total merchandise exports. This data is obtained from the World Bank's World Development Indicators (2012).

The next set of variables are control variables for covariates identified in the literature as determinants of corruption. The first set of controls relate to democracy and regime durability. The measure of democracy and the measure for regime durability comes from the Polity VI Project (Marshall and Jaggers, 2012). The democracy measure captures institutional features and places states on a scale from -10 to 10 with -10 being the most authoritarian and 10 being the most democratic. This paper uses the Polity2 measure as it is more amenable to time series analysis. Regime durability is a count variable that counts the number of years a regime has been in place.

The overall level of economic development is an important determinant of corruption. Gross domestic product is the standard measure of development. The natural logarithm of GDPPC will be used to fit the observations in a linear model. A larger share of government consumption may also create increased opportunities for rent seeking. To capture this, this study will utilize the measure for government consumption spending as a percentage of total consumption spending. A larger population is associated with a higher degree of corruption due to increased demand of scarce government resources. The logarithm of population will be used to fit the observations to a linear model. Lastly, openness, measured as imports and exports over GDPPC, has been identified as being associated with less corruption. If corruption is treated like a cost to operating then prices

will be affected. A market that is opened up to international trade must have competitive prices or be put out of business. Therefore, openness should decrease corruption. The measures for GDPPC, government consumption, population, and openness are all obtained from the Penn World Table Version 7.1 (Heston, et. al., 2012). Lastly, ethno linguistic fractionalization has been identified as having a positive relationship with corruption.

This study uses a primarily political-economic model to predict perceptions of corruption. However, certain socio cultural characteristics can inform micro-level decision making. The first characteristic to be incorporated is ethno linguistic fractionalization. The measure for ethno linguistic fractionalization was obtained from Alesina, et. al. (2003). This measure captures the probability that two individuals selected at random from a country would be from a different ethno linguistic group. This data was taken from a 2003 study; however the values are slowly changing and will not vary much over time. Therefore these values were assigned to the entire country during the period of the study. Previous studies have linked ethno linguistic fractionalization to higher levels of corruption, so this study incorporates this measure.

Certain regional dummies were also incorporated into model to attempt to capture aspects of regional regime characteristics. This study identified four particular regions of the international system of interest: Eastern Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, and Sub-Saharan Africa.⁵ Eastern Europe and Central Asia underwent a rapid transition from state socialism to capitalism following the collapse of the Soviet Union. Nearly 50,000 medium-scale and large-scale

⁵ See appendix for breakdown of regions.

enterprises were privatized during the first few years of this transition (Kaufmann and Siegelbaum, 1997). This created a unique opportunity through which wide spread graft and corruption could occur. In Latin America and the Caribbean, neopopulism has been identified as a factor that influences corruption. Neopopulist leaders typically seek to bypass established political parties and make direct appeals to the people. These direct appeals are typically broadcast through television, making neopopulism a costly method of attracting votes. This can increase the incentive to engage in corruption (Weyland, 1998). In the Middle East and North Africa, sultanistic modes of rule, in which the distinction between the state and the regimes becomes blurred, allow for increased opportunities for corruption to occur. This is due to the amount of discretionary power these rulers have and the narrow social base that supports the regime (Lucas, 2004). Similar to sultanistic regimes, in the neopatrimonial regimes common to sub-Saharan Africa the state emerged “as an extension of the ruler’s household” (Leiken, 1996:64). Therefore, patronage, ethnic ties, kinship ties, and bribes became the major methods of governance. These regional dummy variables will help to capture these unique characteristics that undoubtedly shape the micro-level decision making of actors.

Statistical Methodology

As noted previously, the data is arranged into a cross sectional time series. The descriptive statistics for the dependent and independent variables can be found in Table A1. Pooled data are prone to heteroskedasticity. Therefore, the model is estimated with ordinary least squares regression and panel corrected standard errors (Beck and Katz,

1995). The panels are unbalanced, so it will be necessary to use pairing to determine the variance. A Prais-Winsten regression revealed a very high rho (above 0.75), which demonstrates auto correlation in the data set. To account for this, it was necessary to estimate the model with a lagged dependent variable as an independent variable in the model (Beck and Katz, 1996). Doing so dramatically increased the R-squared of the model but significantly decreased the auto correlation in the dependent variable (the Prais-Winsten rho dropped to 0.03). This suggests that estimation of the model with the lagged dependent variable successfully controlled for serial correlation in the data set.

To assess multicollinearity, a variance inflation factor test was used as well. The scores ranged from 2.59 to 1.25 with a mean VIF for the entire model of 1.61. The VIF scores are well within tolerance. Summed residuals of all the models were analyzed to check for unit effects that may be exhibiting a strong effect in the model. None of the summed residuals were more than five times the mean of the dependent variable, which suggests it was necessary to model fixed effects. To account for endogeneity, all independent variables were time lagged one year. Finally, the resource curse is said to impact developing states, therefore this model will only be looking at states that are not members of the Organization for Economic Cooperation and Development (OECD). Asia is omitted as the reference category because the theoretical literature did not offer a clear hypothesis about states and corruption in this region.

Hypotheses

With the methodology of the statistical model covered, it is now appropriate to

introduce the hypotheses to be tested in this study. As the reviews of the various literatures have shown, a clear theoretical link can be made between corruption and natural resource abundance. Yet there are gaps in the literature. Many studies did not test for the relative reliance of an economy on resource rents. This study will do so using measures of resource rents. Specifically, theory would predict that the more capital intensive and scarce a resource, the higher the probably of corruption to occur. In terms of exports, fuel exports, due to capital intensity and scarcity, should be associated with higher levels of corruption for similar reasons as non-renewable rents.

Hypothesis One: Capital intensive and non-renewable natural resource endowments should demonstrate a positive association with perceptions of corruption.

Hypothesis Two: A greater reliance on fuel exports relative to total exports should be associated with higher levels of corruption.

Different institutional features of a state have been shown in various studies to have differing influences on the pervasiveness of corruption. Namely, democracy has been shown to be able to help curb corruption. Furthermore, the stability of a regime could influence the ability of actors in an environment to be able to predict future interactions. The nature of the stability is a function of the type of regime. Because of this, an interaction variable will be used, multiplying the polity score with regime durability. A durable democracy should have less corruption, whereas a durable

authoritarian regime should have more corruption.

Hypothesis Three: Higher levels of democracy should be associated with lower levels of corruption.

Hypothesis Four: The interaction variable of democracy and regime durability, with higher scores being related to long standing democracies and lower scores being associated with long standing autocracies, should have a negative effect on corruption.

Economic influences should also demonstrate an effect on corruption. First, openness, an indirect manner of judging the exposure of an economy to the international price mechanism, should put pressure on corrupt states through competition. Therefore, openness should be associated with lower levels of corruption. A greater pool of resources to distribute through patronage a graft can change the incentive to engage in corruption. Therefore, a larger amount of government consumption spending relative to total consumption spending could be associated with higher levels of corruption. Lastly, higher levels of gross domestic product per capita alter the incentive structure by changing the opportunity cost. A higher wage level should, therefore, be associated with lower levels of corruption.

Hypothesis Five: Higher levels of openness should be associated with lower levels of corruption.

Hypothesis Six: Higher levels of government consumption spending as a percentage of total consumption spending should be associated with higher levels of corruption.

Hypothesis Seven: A higher gross domestic product per capita should be associated with lower levels of corruption.

The last set of hypotheses are related as socio-cultural influences. First, ethno-linguistic fractionalization can lead to favoritism and patronage on behalf of one's group. Therefore, higher levels of ethno-linguistic fractionalization should be associated with higher levels of corruption. A larger population increases the competition for state resources. A higher level of scarcity increases the demand on goods and services. This changes the incentive structure to engage in corruption by altering the opportunity cost. Lastly, regional variables have been included to try to capture shared societal norms and common historical experiences.

Hypothesis Eight: A higher level of ethno linguistic fractionalization should be associated with higher levels of corruption.

Hypothesis Nine: A larger population should be associated with higher levels of corruption.

Hypothesis Ten: States located in Central Asia should have higher levels of corruption due to the transition from state socialism to market capitalism.

Hypothesis Eleven: States located in Eastern and South Eastern Europe should have higher levels of corruption due to the transition from state socialism to market capitalism.

Hypothesis Twelve: States located in Latin America and the Caribbean should have higher levels of corruption due to the region's common history with neopopulist modes of rule.

Hypothesis Thirteen: States located in Northern Africa and the Middle East should have higher levels of corruption due to the region's common history with sultanistic modes of rule.

Hypothesis Fourteen: States located in Sub-Saharan Africa should have higher levels of corruption due to the region's common history with neo-patrimonial modes of rule.

To test these hypotheses, the following equation will be used to estimate levels of perceived corruption:

$$\begin{aligned} \text{Perceived Corruption} = & B_1 * \text{Perceived Corruption}_{t-1} + B_2 * \text{Resource Rent/Export}_{t-1} + \\ & B_3 * \text{Polity2}_{t-1} + B_4 * \text{Regime Durability}_{t-1} + B_5 * (\text{Polity2}_{t-1} * \text{Regime Durability}_{t-1}) + \\ & B_6 * \text{Government Consumption}_{t-1} + B_7 * \text{Trade Openness}_{t-1} + B_8 * \text{Ethno linguistic} \\ & \text{fractionalization} + B_9 * \text{Logarithm of Population}_{t-1} + B_{10} * \text{Logarithm of GDPPC}_{t-1} + \\ & B_{11} * \text{Central Asia} + B_{12} * \text{Eastern and Southeastern Europe} + B_{13} * \text{Latin America and the} \\ & \text{Caribbean} + B_{14} * \text{Middle East and North Africa} + B_{15} * \text{Sub-Saharan Africa} \end{aligned}$$

Conclusion

This study has attempted to utilize the best common practices in statistical modeling to test the above hypotheses. Special attention was paid to the different measure to try and capture the desired variables in the best manner possible. Based upon the model outlined in Chapter Four, this study anticipates that capital intensive and non-renewable resources, due to asset specificity and relative scarcity, will have more of an effect on corruption than non-capital intensive, recyclable, or renewable resources. This study also anticipates that micro-level measures that shape the incentive structure of engaging in corrupt behavior will have more of an influence on the aggregate level of perceived corruption than structural measures. The next chapter will provide a detailed discussion of the various statistical regressions utilized to test these hypotheses.

Chapter Six

Results and Analysis

In this chapter the results from eight regression models will be analyzed. Each model will be analyzed individually. After analyzing all eight models, generalizations will be made about possible systematic relationships across all models.

Before discussing the substantive variables in each model, an important issue needs to be covered. As noted in Chapter Five, due to serial autocorrelation in dependent variable, this study estimated each model with a lagged dependent variable. The coefficient for the lagged dependent variable is significant in all eight models, and it accounts for a great degree of the variation in perceptions of corruption⁶. Even with this, some independent variables still demonstrate a significant and theoretically predicted relationship with the dependent variable.

Resource Rents Models

The first model to be analyzed is the total rents model. In this model, total natural resource rents is the main independent variable of interest. It should be recalled here that with the Transparency International data for corruption higher values are associated with lower levels of perceived corruption. As anticipated by the resource curse theory, the coefficient for larger percentage of natural resource rents relative to gross domestic product is correlated with higher levels of perceived corruption. While an important

⁶ The standardized regression coefficient (beta) for the lagged DV has the following values in the eight regression models in the order that they appear: 0.921614, 0.9227602, 0.9385789, 0.9320781, 0.9322331, 0.9149208, 0.9012009, 0.9190365. Adding the lagged dependent variable changes the adjusted R-squared of the models by an average of 0.3384.

Table 1: Total Rents Model⁷

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.9112012***	0.023178	39.31	0.000	0.8657731	0.9566293
Total Rents	-0.0025815***	0.0007872	-3.28	0.001	-0.0041243	-0.0010387
Polity2	0.0064818**	0.0031452	2.06	0.039	0.0003174	0.0126462
Regime Durability	0.0007828	0.0008705	0.90	0.369	-0.0009234	0.0024889
Polity*Durability	-0.0001332	0.0000819	-1.63	0.104	-0.0002936	0.0000273
Government Consumption	0.002631	0.0016491	1.60	0.111	-0.0006011	0.005863
Openness	0.0005728**	0.0002887	1.98	0.047	6.92e-06	0.0011387
Ethno linguistic Fractionalization	-0.191477	0.041635	-0.46	0.646	-0.1007509	0.0624554
Log of Population	0.0013971	0.0101124	0.14	0.890	-0.184227	0.021217
Log GDPPC Con 2005	0.0903987***	0.0253941	3.56	0.000	0.0406271	0.1401703
Central Asia	0.0418421	0.0564132	0.74	0.458	-0.0687258	0.1401703
Eastern and Southeastern Europe	-0.0242396	0.0491086	-0.49	0.622	-0.1204907	0.0720115
Latin America and Caribbean	-0.0657668	0.0507566	-1.30	0.195	-0.1652479	0.0337143
Middle East and North Africa	0.0205656	0.0408966	0.50	0.615	-0.0595902	0.1007214
Sub-Saharan Africa	0.0830359*	0.0457186	1.82	0.069	-0.0065708	0.1726426
Constant	-0.5491589**	0.2589804	-2.12	0.034	-1.056751	-0.0415667
Adjusted R-squared	0.9470					
Wald chi-squared	139161.70					
Prob > chi-squared	0.0000					
Rho	0.0334422					
Observations	1276					
Groups	126					

*=p<0.1, **=p<0.05, ***=p<0.01

⁷ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

lower levels of perceived corruption. As anticipated by the resource curse theory, the coefficient for larger percentage of natural resource rents relative to gross domestic product is correlated with higher levels of perceived corruption. While an important finding, this does not shed much light on the original hypothesis. To adequately test the original hypothesis, the disaggregated natural resource rent measure will need to be analyzed.

The covariates for institutional influences display mixed results in the total rents measures. The coefficient for the Polity measure of democracy performs as expected. Higher levels of democracy are associated with lower levels of perceived corruption. Regime durability does not show a significant relationship with levels of perceived corruption. The interaction term created from the measure for democracy and regime durability does not demonstrate a significant relationship with perceptions of corruption.

The next group of independent variables in the total rents model capture the effect of economic influences. The coefficients for two variables demonstrate a significant relationship with corruption. The first is openness. A higher degree of openness to trade is associated with lower levels of perceived corruption. The second variable that demonstrates a significant relationship with corruption is gross domestic product per capita. The coefficient for GDP per capita (logged) show that higher levels of average income are associated with lower levels of perceived corruption. The coefficient for government consumption spending as a percentage of total consumption spending is not significant

The final group of independent variables can be categorized as socio-cultural

variables. One regional dummy variable, sub-Saharan Africa demonstrates a significant relationship with perceptions of corruption. Compared to Asia, sub-Saharan African states are less likely to be corrupt. The coefficient for ethno linguistic fractionalization does not demonstrate a significant relationship with perceptions of corruption. The coefficient for population of a state is also insignificant.

The second model to be covered is the coal rents model (Table 2). The coefficient for coal rents demonstrates that a larger percentage of coal rents as a percentage of gross domestic product is associated with a higher level of perceived corruption. Theoretically, this is expected. Coal is a non-renewable natural resource, which increases scarcity. Furthermore, coal extraction and processing is capital intensive, which is also theoretically relevant in terms of asset specificity.

Compared to the total rents model, the coefficients for institutional variables demonstrate a different relationship with perceptions of corruption in the coal rents model. Like the total rents model, the coefficient for the Polity measure of democracy is positive and significant. The interaction term for level of democracy and regime durability also does not demonstrate a relationship with perceptions of corruption. Interestingly, the coefficient for regime durability does demonstrate a significant relationship with perceptions of corruption. Specifically, the older the regime, the lower the levels of perceived corruption.

The covariates for economic influence also behave in a different manner in the coal rents model. The coefficient for gross domestic product per capita is positive and significant. A higher income level is correlated with lower levels of perceived corruption.

Table 2: Coal Rents Model⁸

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.8972682***	0.0237945	37.71	0.000	0.8506319	0.9439045
Coal Rents	-0.0126043**	0.055658	-2.26	0.024	-0.0235132	-0.0016955
Polity2	0.0094266*	0.0052	1.81	0.070	-0.0007653	0.0196185
Regime Durability	0.0022458**	0.0009853	2.28	0.023	0.0003146	0.0041769
Polity*Durability	-0.0001938	0.0001297	-1.49	0.135	-0.0004479	0.0000603
Government Consumption	0.0044385	0.0032245	1.38	0.169	-0.0018814	0.0107583
Openness	-0.0000205	0.0006173	-0.03	0.973	-0.0012304	0.0011893
Ethno linguistic Fractionalization	-0.0249866	0.0823223	-0.30	0.761	-0.1863353	0.1363621
Log of Population	-0.0230916	0.0166388	-1.39	0.165	-0.055703	0.0095199
Log GDPPC Con 2005	0.0883388***	0.0308159	2.87	0.004	0.279408	0.1487369
Central Asia	-0.0281618	0.0619841	-0.45	0.650	-0.1496484	0.0933248
Eastern and Southeastern Europe	-0.0721124	0.0571582	-1.26	0.207	-0.1841406	0.0399157
Latin America and Caribbean	-0.0989304	0.0723563	-1.37	0.172	-0.2407461	0.0428853
Middle East and North Africa	-0.037345	0.0659762	-0.57	0.571	-0.166656	0.091966
Sub-Saharan Africa	0.0249053	0.0518865	0.48	0.631	-0.0767904	0.1266009
Constant	-0.043021	0.2657054	-0.16	0.871	-0.5637941	0.4777521
Adjusted R-squared	0.9471					
Wald chi-squared	36824.80					
Prob > chi-squared	0.0000					
Rho	0.0487814					
Observations	575					
Groups	51					

*=p<0.1, **=p<0.05, ***=p<0.01

⁸ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

Openness, however, is not associated with perceptions of corruption in the coal rents model. This differs from the total rents model. Lastly, government consumption spending as a percentage of total consumption spending is not significantly associated with levels of perceived corruption.

None of the coefficients for socio-cultural variables are statistically significant in the coal rents model. The coefficients for ethno linguistic fractionalization, population, and the regional dummies are all insignificant. This suggests that the population size and region of states with coal rents are not related to perceptions of corruption.

The forest rents model (Table 3) is the first statistical model that involves a renewable natural resource. Furthermore, compared to the other types of resource rents examined in this study, forest rents are the least capital intensive and the least capital specific. Therefore, the theoretical model developed in Chapter Five would lead one to expect that forest rents will not be associated with corruption. Not surprisingly, the results from regression model three show that the coefficient for forest rents is not significant.

The measures of institutional influences perform in a manner comparable to the total rents model. The coefficient for Polity is once again positive, demonstrating that a higher degree of democracy is associated with lower levels of perceived corruption. The coefficients for regime durability and the interaction term of regime type and regime durability are not significant.

Economic influences in the forest rents model also behave in a manner comparable to the total rents model. The coefficients for openness and gross domestic product per capita are both positive and significant, suggesting a positive relationship

Table 3: Forest Rents Model⁹

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.9246258***	0.0210227	43.98	0.000	0.883422	0.9658295
Forest Rents	0.0026211	0.0048422	0.54	0.588	-0.0068695	0.0121117
Polity2	0.0088453***	0.003347	2.64	0.008	0.0022854	0.0154052
Regime Durability	0.0009233	0.0008766	1.05	0.292	-0.0007948	0.0026414
Polity*Durability	-0.0001026	0.000083	-1.24	0.216	-0.0002654	0.0000601
Government Consumption	0.0012074	0.0015094	0.80	0.424	-0.001751	0.0041658
Openness	0.000677**	0.0002958	2.29	0.022	0.0000972	0.0012568
Ethno linguistic Fractionalization	-0.0746594*	0.0430005	-1.74	0.083	-0.1589389	0.00962
Log of Population	0.0053826	0.0099921	0.54	0.590	-0.0142016	0.0249668
Log GDPPC Con 2005	0.0489687*	0.0250923	1.95	0.051	-0.0002112	0.0981486
Central Asia	0.0357307	0.0513743	0.70	0.487	-0.0649611	0.1364224
Eastern and Southeastern Europe	0.0153303	0.0507935	0.30	0.763	-0.0842231	0.1148838
Latin America and Caribbean	-0.045842	0.0530118	-0.86	0.387	-0.1497433	0.0580592
Middle East and North Africa	0.0090076	0.0430651	0.21	0.834	-0.0753984	0.0934136
Sub-Saharan Africa	0.0681194	0.0425639	1.60	0.110	-0.0153044	0.1515432
Constant	-0.3357232	0.2569984	-1.31	0.191	-0.8394308	0.1679844
Adjusted R-squared	0.9450					
Wald chi-squared	499176.02					
Prob > chi-squared	0.0000					
Rho	0.0332701					
Observations	1254					
Groups	123					

*=p<0.1, **=p<0.05, ***=p<0.01

⁹ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

with perceptions of corruption. The coefficient for government consumption spending as a percentage of total consumption spending is not significant. Finally, the coefficient for ethno linguistic fractionalization is negative and significant, as expected.

Table 4 presents the results for the mineral rents model. In terms of the theory, mineral extraction, processing, and smelting are definitely capital intensive. The difference is that minerals are not non-renewable. While there are diminishing returns to recycling, many different types of mineral resources are not consumed forever once they are smelted and finished. Theoretically, this means that purchasing recycled metals can be an alternative to buying extracted ore. This may reduce the leverage of those officials who seek to control mineral rich lands to extract bribes. Therefore, the relationship between mineral rents and corruption may not be that strong. The statistical results lend support to the theory. The coefficients for mineral rents is not significant.

The effects of the institutional variables in the mineral rents model display the same pattern as the total rents model. Again, the coefficient for Polity is positive and significant, suggesting a higher level of democracy is associated with lower levels of perceived corruption. The coefficients for the other two institutional variables, regime durability and the regime type-regime durability interaction term are not significant.

The mineral rents model does suggest that economic influences are potentially important to understanding corruption. A higher level of openness and gross domestic product per capita are associated with lower levels of perceived corruption, however government consumption as a percentage of GDP has no demonstrable effect on perceptions of corruption. None of the coefficients for the socio-cultural variables were

Table 4: Mineral Rents Model¹⁰

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.9278682***	0.0211536	43.86	0.000	0.886408	0.9693284
Mineral Rents	-0.0020306	0.0018669	-1.09	0.277	-0.0056896	0.0016284
Polity2	0.0084535**	0.0033541	2.52	0.012	0.0018796	0.0150273
Regime Durability	0.0007608	0.0008742	0.87	0.384	-0.0009526	0.0024741
Polity*Durability	-0.0001283	0.000083	-1.55	0.122	-0.000291	0.0000344
Government Consumption	0.0016724	0.0015753	1.06	0.288	-0.0014151	0.00476
Openness	0.0005323*	0.0002865	1.86	0.063	-0.0000292	0.0010939
Ethno linguistic Fractionalization	-0.0396114	0.0416355	-0.95	0.341	-0.1212155	0.0419927
Log of Population	0.0006435	0.0098992	0.07	0.948	-0.0187587	0.0200456
Log GDPPC Con 2005	0.05799***	0.0207754	2.79	0.005	0.017271	0.0987089
Central Asia	-0.0010199	0.053715	-0.02	0.985	-0.1062994	0.1042596
Eastern and Southeastern Europe	-0.0101269	0.0492248	-0.21	0.837	-0.1066056	0.0863519
Latin America and Caribbean	-0.0653345	0.05143	-1.27	0.204	-0.1661353	0.0354664
Middle East and North Africa	0.007309	0.04096	0.18	0.858	-0.0729712	0.0875891
Sub-Saharan Africa	0.0528193	0.0408802	1.29	0.196	-0.0273045	0.1329431
Constant	-0.3240802	0.230544	-1.41	0.160	-0.7759381	0.1277778
Adjusted R-squared	0.9462					
Wald chi-squared	1.16e+06					
Prob > chi-squared	0.0000					
Rho	0.0343497					
Observations	1276					
Groups	126					

*=p<0.1, **=p<0.05, ***=p<0.01

¹⁰ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

significant in the mineral rents model.

The remaining two natural resource rent models are both non-renewable. These models are presented in Tables 5 and 6. The first is the natural gas rents model. Like coal, natural gas is a non-renewable resource. This could give leverage to those in control of property rights to extract bribes. Furthermore, the extraction and refining of natural gas is capital intensive and the capital is largely asset specific. As a result, firms engaged in natural gas might be sensitive to policy and more likely to accede to demands for bribery. The results from the regression model show that the coefficient for natural gas rents are indeed negative and significant, suggesting that natural gas rents are associated with higher levels of perceived corruption.

Like many of the previous resource rent models, higher levels of democracy are again associated with lower levels of perceived democracy in the natural gas rents model. Again the regime durability and the interaction variable between regime type and regime durability are insignificant.

However, economic variables perform in a different manner than the total rents model. The coefficient for gross domestic product per capita is positive and significant, suggesting that higher levels of wealth per person is associated with less corruption. Unlike the total rents model, however, a higher degree of openness is not significantly related to lower levels of perceived corruption. Government consumption again fails to achieve statistical significance. Lastly, none of the socio-cultural variables are statistically significant.

The final resource rent model is the oil rents model (Table 6). The theoretical

Table 5: Natural Gas Rents¹¹

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.9217238***	0.0217521	42.37	0.000	0.8790905	0.9643572
Natural Gas Rents	-0.00166**	0.0007576	-2.19	0.028	-0.0031449	-0.0001751
Polity2	0.0071272**	0.0032881	2.17	0.030	0.0006827	0.0135717
Regime Durability	0.0005753	0.007875	0.73	0.465	-0.0009681	0.0021187
Polity*Durability	-0.0001164	0.0000848	-1.37	0.170	-0.0002826	0.0000499
Government Consumption	0.0023471	0.0020048	1.17	0.242	-0.0015822	0.0062765
Openness	0.00496	0.0003301	1.50	0.133	-0.000151	0.001143
Ethno linguistic Fractionalization	-0.0669748	0.0588305	-1.14	0.255	-0.1822804	0.0483309
Log of Population	-0.0034937	0.11148	-0.31	0.754	-0.0253433	0.0183559
Log GDPPC Con 2005	0.0742981***	0.0214037	3.47	0.001	0.0323476	0.1162485
Central Asia	-0.0082627	0.0541625	-0.15	0.879	-0.1144192	0.0978938
Eastern and Southeastern Europe	-0.0376209	0.0442842	-0.85	0.396	-0.1244164	0.0491746
Latin America and Caribbean	-0.0821441	0.0510682	-1.61	0.108	-0.182236	0.0179478
Middle East and North Africa	-0.151465	0.0483307	-0.31	0.754	-0.109873	0.07958
Sub-Saharan Africa	0.0357208	0.0433535	0.82	0.410	-0.0492505	0.1206922
Constant	-0.3366698	0.2301312	-1.46	0.143	-0.7877187	0.1143791
Adjusted R-squared	0.9494					
Wald chi-squared	89009.21					
Prob > chi-squared	0.0000					
Rho	0.039055					
Observations	1081					
Groups	97					

*=p<0.1, **=p<0.05, ***=p<0.01

¹¹ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

perspective behind the relationship between oil rents and levels of corruption is nearly identical to the natural gas model. The only difference is that the global economy is much more reliant on oil than natural gas. Therefore, the level of scarcity of oil compared to natural gas is much greater. The effect of oil rents on the level of perceived corruption should be greater than that of natural gas rents. The results of the regression model confirm this expectation. The coefficient for oil rents is negative and significant, suggesting the higher the level of oil rents, the higher the level of perceived corruption.

The institutional variables do not perform as expected in the oil rents model. The coefficient for Polity is significant and positive. The coefficient for the interaction term is significant but negative. This suggests that long standing democratic regimes are more likely to be corrupt than long standing autocratic regimes. This is an unexpected finding. A possible explanation is that long standing semi-democracies (ranging from a Polity2 score of 1 to 5) could be driving this relationship. Additional research is necessary to fully understand this relationship.

There is continuity between the total rents model and the oil rents model in terms of the performance of economic variables. The coefficient for openness is significant and positive. The coefficient for gross domestic product per capita is statistically significant and is associated with lower levels of perceived corruption. Like the total rents model, the coefficient for government consumption is not significant, while the coefficients for the socio-cultural variables are also insignificant except of the regional dummy variable for sub-Saharan Africa. Again, states in sub-Saharan Africa are less likely to be corrupt than states in the omitted category (Asia Pacific).

Table 6: Oil Rents Model¹²

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.9029485***	0.025503	35.41	0.000	0.8529636	0.9529335
Oil Rents	-0.0041498***	0.001498	-2.77	0.006	-0.0070858	-0.0012138
Polity2	0.0056815*	0.0032239	1.76	0.078	-0.0006373	0.0120003
Regime Durability	0.0008195	0.0007951	1.03	0.303	-0.0007388	0.0023779
Polity*Durability	-0.0001474*	0.0000847	-1.74	0.082	-0.0003135	0.0000186
Government Consumption	0.0025331	0.0016917	1.50	0.134	-0.0007826	0.0058489
Openness	0.0006006*	0.000331	1.81	0.070	-0.0000481	0.0012493
Ethno linguistic Fractionalization	-0.0341542	0.0585999	-0.58	0.560	-0.1490079	0.0806994
Log of Population	-0.0018229	0.0106256	-0.17	0.864	-0.0226487	0.019003
Log GDPPC Con 2005	0.1079842***	0.0313314	3.45	0.001	0.0465757	0.1693927
Central Asia	-0.007537	0.0478116	-0.16	0.875	-0.1012489	0.086172
Eastern and Southeastern Europe	-0.0408432	0.0449231	-0.91	0.363	-0.1288908	0.0472045
Latin America and Caribbean	-0.0699765	0.0489702	-1.43	0.153	-0.1659563	0.0260033
Middle East and North Africa	0.0137178	0.0460956	0.30	0.766	-0.0766278	0.1040635
Sub-Saharan Africa	0.0877484*	0.0524387	1.67	0.094	-0.0150296	0.1905264
Constant	-0.6040522**	0.2608393	-2.32	0.021	-1.115288	-0.0928166
Adjusted R-squared	0.9501					
Wald chi-squared	193658.11					
Prob > chi-squared	0.0000					
Rho	0.04146					
Observations	1099					
Groups	100					

*=p<0.1, **=p<0.05, ***=p<0.01

¹² See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

The previous six models utilized resource rents measures to operationalize a state's reliance on natural resources for economic output. Another way to measure the reliance of a state on natural resource exports is to examine the export portfolio of a state. Two measures were available through the World Bank: fuel exports as a percentage of total merchandise exports and ores and metals exports as a percentage of total merchandise exports. These two measures were employed along with the covariates used in models 1 – 6. The results of these trials are presented in Tables 7 and 8.

The first export model captures the relationship fuel exports and corruption (Table 7). In terms of the theoretical perspective of this study, fuel exports should behave in a similar manner as coal rents, natural gas rents, and oil rents. Fuel exports are inherently non-renewable. Furthermore, the extraction and processing of fuel exports require significant capital investments. Therefore, fuel exports should be associated with higher levels of perceived corruption. The results of the regression model confirm this relationship. As one can see in Table 7, the coefficient for fuel exports is negative and significant.

None of the institutional variables are significant. In this sense, the fuel export model behaves much like the oil rents model. The economic variables, however, perform much in the same way as they have in many of the other models. The coefficient for openness is close to the threshold of significance ($p < 0.107$). The coefficient for gross domestic product per capita is positive and significant. Again, this finding points to openness and higher levels of wealth per person being associated with lower levels of perceived corruption, *ceteris paribus*.

Table 7: Fuel Exports Model¹³

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.8858579***	0.0282579	31.35	0.000	0.8304735	0.9412423
Fuel Exports	-0.0022327***	0.0007575	-2.95	0.003	-0.0037174	-0.0007479
Polity2	0.0031309	0.003537	0.89	0.376	-0.0038014	0.0100632
Regime Durability	0.0006648	0.0009017	0.74	0.461	-0.0011204	0.0024321
Polity*Durability	-0.0001071	0.00091	-1.18	0.239	-0.0002854	0.0000712
Government Consumption	0.0025889	0.0028477	0.91	0.363	-0.0029924	0.0081703
Openness	0.000549	0.000341	1.61	0.107	-0.0001194	0.0012174
Ethno linguistic Fractionalization	-0.0484594	0.051511	-0.94	0.347	-0.1494191	0.0525002
Log of Population	-0.0042453	0.0126754	-0.33	0.738	-0.0290886	0.0205979
Log GDPPC Con 2005	0.1313477***	0.0394155	3.33	0.001	0.0540949	0.2086006
Central Asia	-0.0165389	0.0712227	-0.23	0.816	-0.1561328	0.123055
Eastern and Southeastern Europe	-0.0556053	0.0557899	-1.00	0.319	-0.1649515	0.0537409
Latin America and Caribbean	-0.091878	0.056232	-1.63	0.102	-0.2020907	0.0183347
Middle East and North Africa	-0.0002178	0.0529215	-0.00	0.997	-0.103942	0.1035064
Sub-Saharan Africa	0.1034502*	0.0568492	1.82	0.069	-0.0079722	-0.02148726
Constant	-0.6505405**	0.3264856	-1.99	0.046	-1.29044	-0.0106405
Adjusted R-squared	0.9420					
Wald chi-squared	52675.20					
Prob > chi-squared	0.0000					
Rho	0.0458516					
Observations	1065					
Groups	108					

*=p<0.1, **=p<0.05, ***=p<0.01

¹³ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

Table 8: Ore and Metals Exports Model¹⁴

	Coef.	Panel-corrected Std. Err.	z	p< z	95% Conf. Interval	
Corruption Perception	0.9067237***	0.0250469	36.20	0.000	0.8576328	0.9558147
Ores and Metals Exports	0.0007633	0.0006638	1.15	0.250	-0.0005377	0.0020643
Polity2	0.0073445**	0.0035675	2.06	0.040	0.0003523	0.0143368
Regime Durability	0.0007579	0.0009296	0.82	0.415	-0.0010641	0.0025798
Polity*Durability	-0.0001129	0.0000909	-1.24	0.214	-0.0002911	0.0000653
Government Consumption	0.0037072	0.0026678	1.39	0.165	-0.0015216	0.0089359
Openness	0.0006366*	0.0003433	1.85	0.064	-0.0000362	0.0013093
Ethno linguistic Fractionalization	-0.0808438	0.0497719	-1.62	0.104	-0.1783949	0.0167072
Log of Population	-0.004903	0.0118304	-0.41	0.679	-0.0280902	0.0182842
Log GDPPC Con 2005	0.0857653***	0.0305397	2.81	0.005	0.0259086	0.1456219
Central Asia	-0.0384888	0.0704671	-0.55	0.585	-0.01766017	0.0996241
Eastern and Southeastern Europe	-0.0442199	0.0550573	-0.80	0.422	-0.1521302	0.0636904
Latin America and Caribbean	-0.099223*	0.0557589	-1.78	0.075	-0.2085085	0.0100625
Middle East and North Africa	-0.0120944	0.050516	-0.24	0.811	-0.111104	0.0869152
Sub-Saharan Africa	0.0666345	0.0469404	1.42	0.156	-0.0253669	0.1586359
Constant	-0.3859561	0.2662232	-1.45	0.147	-0.907744	0.1358319
Adjusted R-squared	0.9425					
Wald chi-squared	54794.21					
Prob > chi-squared	0.0000					
Rho	0.0376715					
Observations	1081					
Groups	108					

*=p<0.1, **=p<0.05, ***=p<0.01

¹⁴ See Appendix for states included in the model. Asia and Pacific are the omitted reference categories.

Like some of the other models, the sub-Saharan Africa regional dummy variable is positive and significant. Again, states in sub-Saharan Africa are more likely to be less corrupt than the omitted region. The coefficient for Latin America and the Caribbean approaches the threshold for significance ($p < 0.102$) and is negative. Latin American and Caribbean states may be more corrupt than the omitted region.

The second export model is the ores and metals exports model (Table 8). The relationship between ores and metals exports and corruption is hard to predict. While capital intensive and asset specific, ores and metals rents are not non-renewable resources and are, in general, not as scarce. Therefore, they may not be a systematic relationship between these exports and corruption. The results from the regression show that ores and metals exports are not systematically related to perceived levels of corruption, as suggested by the coefficient

Of the institutional independent variables, the coefficient for the Polity is positive and significant. A higher level of democracy is again associated with lower levels of perceived corruption. The economic variables perform as expected. Openness and gross domestic product demonstrate the same relationship as they have in most of the models. A higher degree of openness and a higher average wage are associated with lower levels of perceived corruption. The coefficient for Latin American and Caribbean states is negative and significant, suggesting that states in this region are more likely to have higher levels of perceived corruption compared to the omitted region.

Summarizing the Results

With all the models covered, it is now possible to make comparisons across the models. Table 9 presents the findings for various covariates across the different models. The table shows the number of times a covariate achieved statistical significance (by level of significance). The study draws upon this table to review the hypotheses. In particular, this study uses these results to examine whether the statistical findings lend support to each hypothesis.

Table 9: Statistical Significance Counter

Levels of Significance	p< 0.1	p< 0.05	p< 0.01	Total
Total Rents	0	0	1	1
Coal Rents	0	1	0	1
Forest Rents	0	0	0	0
Mineral Rents	0	0	0	0
Natural Gas Rents	0	1	0	1
Oil Rents	0	0	1	1
Fuel Exports	0	0	1	1
Ores and Metals Exports	0	0	0	0
Polity2	2	4	1	7
Regime Durability	0	1	0	1
Polity*Durability	1	0	0	1
Government Consumption	0	0	0	0
Openness	3	2	0	5
Ethno linguistic Fractionalization	1	0	0	1
Log of Population	0	0	0	0
Log GDPPC Con 2005	1	0	7	8
Central Asia	0	0	0	0
Eastern and Southeastern Europe	0	0	0	0
Latin America and Caribbean	1	0	0	1
Middle East and North Africa	0	0	0	0
Sub-Saharan Africa	0	0	0	0

Hypothesis One: Capital intensive and non-renewable natural resource endowments should demonstrate a positive association with perceptions of corruption.

Hypothesis Two: A greater reliance on fuel exports relative to total exports should be associated with higher levels of corruption.

After reviewing the results of the statistical models, this study provides data in support of hypothesis one and two. Coal rents, natural gas rents, oil rents, and fuel exports all demonstrated a clear relationship with perceptions of corruption, while forest rents, mineral rents, and ores and metals exports did not. This finding shows that capital intensity may not matter. Rather, the primary driver of corruption may be the non-renewable nature of energy rents and exports.

Why might this be? Actors on both sides of a corrupt exchange are well aware of the eventual fate of coal, natural gas, and oil extraction and production. These resources are non-renewable and have a short time horizon. This can alter the incentive structure in which bureaucrats, politicians, and private actors interact within. Knowing that the resource will eventually be depleted, bureaucrats and politicians may be more willing to solicit and accept bribes. This could be out of self-interest or out of a desire to make sure that some of the money to be made from these resources will make it back to their communities.

Another explanation may be found on the firm side. Anticipating high profit margins in the long term, with energy demands increasing every year, firms may be

willing to pay out bribes to any state actor that can increase their likelihood of obtaining a permit or to obtain ownership of an energy resource. Considering the profits at stake, firms may be willing to pay absorbent bribes. The size of the bribe could change the likelihood of a bureaucrat or a politician to accept it or decline it.

Granted, the decision for a bureaucrat to defect depends on other variables as well. The probability of getting caught and the subsequent punishment involved could be a strong influencing agent against corruption. The moral or ethical standards of an individual bureaucrat or politician also matter in this regard. Hypothetically, there may be agents that are simply incorruptible. The existence of these rents, however, can alter the incentive structure for all actors, making corruption on average more likely.

Hypothesis Three: Higher levels of democracy should be associated with lower levels of corruption.

Hypothesis Four: The interaction variable of democracy and regime durability, with higher scores being related to long standing democracies and lower scores being associated with long standing autocracies, should have a negative effect on corruption.

Analysis of Table 9 shows that the Polity measure of regime type is significant in seven out of eight models. Therefore, this study provides fairly robust evidence in support of hypothesis three.

There are many theoretical reasons why democracy should reduce levels of perceived corruption. The first reason relates to the function that democracy performs. Democratic systems of government place pressure on public officials to be accountable or they will be disciplined at the polls. Corruption and the negative consequences attributed to it can and should serve as a reason for a polity to become disaffected and vote out officials that are seen to be corrupt. Elections can also give incentives to politicians to discipline or clean up bureaucracies that are viewed as being corrupt.

Aside from the mechanical aspects of democracy, there are associated characteristics of democratic regimes that can be associated with lower levels of corruption. Freedom of the press is an important political right in democratic systems. A free press can investigate corruption and expose it without fear of retribution. Therefore, the more press freedoms, the more likely corruption can be exposed and corrected.

Being accountable to the people, democratic regimes are also more likely to have more transparency. This could include maintaining a system for entering documents and information into public record. This enables interactions between agents and firms to be open to scrutiny. Public hearings and open bidding processes are other examples of types of transparency that can make corruption easier to identify and expose.

Unlike hypothesis three, hypothesis four should be rejected. Statistical evidence does not support a relationship between regime type and regime durability and levels of perceived corruption. Theoretically, there may be no link between regime durability and corruption. While a great deal of the variation in corruption is explained by the level of corruption the previous year, this may have nothing to do with the longevity of a regime.

Rather, the relationship could have more to do with the underlying incentive structures and expectations of behavior that exist within a bureaucracy or an industry. It is quite possible that linkages between a given regime and bureaucracy or industry may be weak, such that one does not have much of an impact on the other.

Hypothesis Five: Higher levels of openness should be associated with lower levels of corruption.

Hypothesis Six: Higher levels of government consumption spending as a percentage of total consumption spending should be associated with higher levels of corruption.

Hypothesis Seven: A higher gross domestic product per capita should be associated with lower levels of corruption.

The findings of the various statistical models provide support for hypothesis five and seven. A higher degree of openness was associated with lower levels of perceived corruption in five of the eight models. A higher level of gross domestic product per capita was associated with lower levels of corruption in all eight of the models. Nevertheless, hypothesis six cannot be confirmed based upon the statistical evidence.

Openness is associated with lower levels of corruption. The more open an economy is to trade, the more it is exposed to international prices. If corruption is

internalized as a cost of business, this cost will be reflected in the price of a good. Therefore, *ceteris paribus*, a “clean” good should be priced at a lower level than a “dirty” good. Over time, firms that are engaged in corruption should be out priced by more efficient competitors. This could vary based upon market structure, however. Under conditions of perfect competition, this would certainly be the case. In market structures in which the firm has more market power, like oligopoly or monopolistic competition, this effect may be mitigated or not as pronounced. Cartel style practices, such as those of OPEC member states and diamond firms, could mitigate the effect of openness through their influence on the supply of goods.

A higher level of gross domestic product per capita influences the underlying incentive structure that exists within an economy to engage in corruption. Higher per capita income tends to be associated with higher wages. A higher wage level, in general, should reduce the incentive to engage in corruption by reducing the relative payoff. Granted, much of this depends on the probability of getting caught and the punishment associated with getting caught. Yet gross domestic product per capita can also offer insight into state capacity. A higher level of gross domestic product per capita reflects a larger tax base from which a state can procure resources. These resources can be mobilized to create a more capable and powerful state. This capacity could be reflected in a state having adequate monitoring capabilities with respect to enforcing the law and policing relations between state officials and firms.

Based on the findings of this study, it appears that higher levels of government spending are not associated with higher levels perceived corruption. While a larger pool

of government consumption may increase the opportunities to engage in graft, the likelihood of an actor doing so may depend more on the opportunity cost and the probability of getting caught, which captured in the gross domestic product per capita measure.

Hypothesis Eight: A higher level of ethno linguistic fractionalization should be associated with higher levels of corruption.

Hypothesis Nine: A larger population should be associated with higher levels of corruption.

Hypothesis Eleven: States located in Eastern and South Eastern Europe should have higher levels of corruption due to the transition from state socialism to market capitalism.

Hypothesis Twelve: States located in Latin America and the Caribbean should have higher levels of corruption due to the region's common history with neopopulist modes of rule.

Hypothesis Thirteen: States located in Northern Africa and the Middle East should have higher levels of corruption due to the region's common history with sultanistic modes of rule.

Hypothesis Fourteen: States located in Sub-Saharan Africa should have higher levels of corruption due to the region's common history with neo-patrimonial modes of rule.

Based upon the findings of this study, the data do not provide support for hypotheses eight through fourteen. The socio cultural measures, ethno linguistic fractionalization and population size, are not statistically related to perceptions of corruption in enough of the statistical models to suggest confirmation. The regional dummy variables are not significant in enough models to confirm hypotheses ten through thirteen. The coefficient for the regional dummy variable for sub-Saharan Africa was significant in three of the eight statistical models, but the relationship was in the opposite direction. While the comparative literature did not suggest a basis for higher levels of corruption in Asia Pacific outside of autocratic practices (which is captured by the Polity measure for regime type), the Asia Pacific region may not serve as an adequate omitted category for comparison. Future studies may benefit from including OECD states and using OECD member states as the omitted category.

Theoretically, ethno linguistic cleavages in a given society can provide a basis from which identity is formed. If these cleavages are strong and meaningful, interactions between groups may be infrequent and fraught with mistrust. At the aggregate level, this could lead to a situation in which group favoritism corrupts state policy. Specifically, bureaucrats or politicians may utilize their positions of power or authority to skew the distribution of goods or services.

The ability to do so, however, is primarily a function of other interceding factors. First and foremost is the regime type. Democratic systems of government and their associated characteristics can prevent systematic discrimination from developing. The first characteristics are a free press and free speech. As covered above, these allow such corrupt and discriminating activities to be identified and corrected. Another characteristic of democratic systems of government is equality under the law. Democracies typically embrace a rational-legalistic position which separates the individual from the office they hold. This is usually mandated by law with punishments for violation.

The ability of ethno linguistic fractionalization to influence corruption is also dependent upon the overall wealth of a state, which can be operationalized by using gross domestic product per capita. First, a wealthier state is likely to have greater capacity to enforce the law, which will change the opportunity cost of engaging in corrupt or discriminatory practices. Second, a higher gross domestic product per capita is bound to be associated with a higher wage level throughout the state. State bureaucrats are likely to benefit from that as well. A higher wage level can alter the incentive structure of engaging in a corrupt act for reasons explained above. Lastly, to engage in discriminatory corruption it is necessary to have a pool of goods and services to distribute from. Therefore, ethno linguistic fractionalization can be interceded by the size of government spending and the availability of rents.

The population size of a country was thought to influence the incentive structure facing a bureaucrat or politician wanting to engage in a corrupt act. A larger pool of people depending on the goods or services increases the potential profit that can be made

from engaging in corruption. Much like ethno linguistic fractionalization, the underlying incentive structure is influenced by other factors. The ability of population size to influence levels of corruption is also relative to the level of poverty. In a state with a large population but a low level of wealth, the incentive to engage in corruption may very well be enhanced. In a state with a large population and a high level of wealth, on the other hand, the incentive structure may not be changed at all.

As stated above, the results for the regional dummy variables were not consistent enough to provide support for hypotheses ten through thirteen. Regime characteristics may indeed play an influencing role on the culture of politics and the behaviors and norms that develop within bureaucracies and political systems. However, the evidence from this study suggests that other factors have a stronger relationship with perceptions of corruption. Higher levels of democracy, trade openness, and gross domestic product per capita all have the ability to reduce many of the negative aspects of neo-patrimonialism, neopopulism, sultanistic rule, and the transition to a market economy from state socialism. Democratic governance, over time, can make a regime more accountable to the needs of the enfranchised population. This, along with the press freedoms and transparency associated with democratic governance, can provide the populace with a mechanism to undermine the clientelistic networks that lay at the heart of neo-patrimonialism, neopopulism, and sultanistic rule. Trade openness, through the pressure of the price mechanism, can reduce the ability of corrupt firms, if the cost of corruption is internalized into the price of a good, to remain competitive.

Conclusion

The statistical models from this chapter show that non-renewable natural resources are statistically related to higher levels of perceived corruption while controlling for other relevant variables. This confirms the main theoretical expectation of this study. Furthermore, this study finds that a higher level of democratic governance, trade openness, and gross domestic product per capita are all associated with lower levels of perceived corruption. Taken together, these variables show that incentives structures, most of which can be considered economic incentives, seem to have the most influence over levels of perceived corruption.

Chapter Seven

Policy Implications and Conclusions

This study has demonstrated that there is some merit to the resource curse, although the curse may not be as robust as it has been made out to be. Through the literature review on the resource curse theory, it is clear that studies have found that a reliance on natural resource earnings does have a negative relationship with economic growth. The findings in the literature are so consistent that a formal test of this relationship was not necessary for this study.

With regard to the relationship between corruption and natural resource endowments, the findings of this study partially confirm the resource curse theory. Consistent with what was expected by this study, perceptions of corruption are related to the more capital intensive and non-renewable resources. Coal rents, oil rents, natural gas rents, and fuel exports all demonstrate a significant relationship with perceptions of corruption at the systemic level. The less capital intensive and renewable natural resources demonstrate no statistical relationship with corruption.

What are the broader implications of these findings? Citizens and policy makers alike should pay close attention to the institutions and structures that regulate capital intensive and non-renewable industries. Specifically, mechanisms should be in place to minimize the ability to engage in corrupt behavior. One such strategy has been adopted by Norway since the discovery of hydrocarbons in the late 1960s. When designing the institutions that would manage the oil sector, Norway specifically separated the commercial side, the policy side, and the regulatory side of the industry from one another

(Thurber, et. al., 2011). The strength of this reform is that it separates the various powers from one another, making it more difficult to corrupt the sector as a whole. If just one aspect became corrupt, the other two can work to correct this problem. Democratic institutions and a professional bureaucracy work to reinforce this arrangement. Whether this arrangement would survive in an autocratic regime or with an underdeveloped bureaucracy is unknown. This is due to the many challenges facing developing states. Norway has the legal institutions and the resources to implement and monitor such a division of labor within the bureaucratic structures that govern the hydrocarbon industry. Furthermore, the state government is already rated as clean by Transparency International and the state does embrace the Weberian model of an ideal, rational-legal bureaucracy. Implementing this strategy without taking into account the differences in state capacity and enforcement could be problematic. The core finds of this study are that micro-level incentive structures have the greatest influences on outcomes related to corruption

Another possible strategy to combat corruption in the non-renewable resource sector is to design institutional mechanisms to promote openness and transparency. After all, corruption thrives in situations with information asymmetry. There are several points in the relationship between a state and a firm engaged in the non-renewable sectors that require scrutiny. The first point is the bidding and licensing process that a firm must go through to obtain the right to explore or extract. The second point is during the creation of the contractual arrangement between the firm and the state. The third point is during revenue management, revenue collection and revenue distribution. The fourth point relates to the governance structure of the bureaucratic structures charged with monitoring

the industry.

The Extractive Industries Transparency Initiative (EITI) represents an avenue states can pursue to aid in this endeavor. Founded in 2003, EITI is a multi-stakeholder initiative that involves states, multinational firms, state owned enterprises, international financial organizations, and civil society groups interested in increasing transparency in the extractive sector. This initiative is voluntary and enables independent verification of dealings within the extractive sector of a state (Al Faruque, 2006:70-73). Twenty states are currently members, though this study does not test to see whether membership in EITI is effective in reducing perceptions of corruption.

Lastly, the statistical findings of this study offer insights into how to combat corruption in the extractive sector of the economy. First and foremost, the extractive sector should be exposed to democratic oversight and the scrutiny of a free press. Second, the sector should be open to competition. Third, we should ensure that bureaucrats working in the sector responsible for governance of the extractive sector are well compensated to reduce the incentive to engage in corruption. The statistical models of this study suggest that these strategies should help to lower corruption over time.

There are limitations to these findings, however. Based on the findings of this study and based upon theoretical reasoning, the greatest predictor of perceptions of corruption in a given state is the level of perceived corruption in the previous year. Therefore, a long term view is required to provide the maximum amount of leverage on the research question. This study attempts to make use of the best data available, but coverage of the CPI only runs from 1994 until the present day. As more data is collected,

this study can be replicated to retest the various hypotheses.

A second limitation of this study is an inability to completely trace the causal relationship between wealth and corruption. There is a circular relationship between the two concepts. Corruption reduces economic growth. Low levels of economic development increase corruption. This creates a vicious cycle in which states can get trapped in a poverty/corruption trap. How can scholars and policy makers properly address this problem? Reducing corruption in the relevant bureaucratic structures seems to be the most cost effective strategy. If a bureaucracy in a given state could be cleaned up, it could shape the expectations of firms and citizens over time. An independent monitoring system, perhaps implemented by an impartial nongovernmental organization, may be able to assist in this endeavor.

A third limitation to this study is that the model can only be applied to sectors that are capital intensive and involve non-renewable resources facing an increasing demand curve. Natural resources seem to be the only goods that can be described in this manner. These resources are then inputs to the creation of other goods and services. Therefore, this theoretical model can only be adequately applied in the primary sector of the economy. The consequences of the corruption that occurs in these sectors does have an impact in the broader economy, but this model cannot predict and assess those impacts.

Key questions still remain about the resource curse, however. This opens up opportunities for further research. First, how does the number of firms in a sector interact with perceptions of corruption? Does having more firms in a sector make corruption worse or does it lessen corruption? Theoretically, having more firms in a given sector

should reduce the leverage of each individual firm within the sector due to reduced market power. This study did not incorporate data on the number of firms in a sector and could be strengthened by doing so. Second, how does the ownership of the firms affect corruption? Are state owned firms or private firms more likely to produce higher levels of perceived corruption? State owned enterprises and private firms could operate under a different system of logic, therefore changing the manner in which they interact with bureaucracies. A coding system for determining the degree of state ownership versus private ownership could be incorporated into this study to shed light on this relationship. Do foreign firms behave differently than domestic firms? Foreign firms are less accountable to the host state, thereby reducing the costs of engaging in corruption. Again, data may be available to incorporate this into the paper and test whether foreign or domestic firms have a different impact on the overall level of perceived corruption. Each of these questions could provide an excellent opportunity for scholars to tease out more nuances.

In closing, the resource curse theory should be revised. Based on the findings of this study, the resource curse theory would be more appropriately named a fuel curse theory. Coal rents, natural gas rents, oil rents, and fuel exports were the only rent measures to have consistent findings with respect to corruption. This is due to two primary factors. The first is asset specificity. These industries are capital intensive and asset specific. This makes firms in these sectors extremely sensitive to state policy as they cannot simply transfer capital from one industry to another. Second, these resources are non-renewable and have a fixed quantity. As energy demands continue to grow and

supply continues to diminish, the price will continue to increase unless alternative sources of energy capable of meeting demand are developed. In light of this reality, actors in these industries are able to take advantage of the scarcity of the resource to extract bribes. The ability to do so is, according to this study, primarily a function of the existing incentive structure. Reducing corruption, therefore, is related to changing the incentive structure faced by actors in that arena.

The resource curse is not a permanent problem that natural resource rich state must endure forever. Rather, sound policy and public scrutiny can work to mitigate this curse and ensure that the citizens of resource rich states can benefit from their resource endowments. Economists and political scientists alike can make a meaningful difference in the lives of many of the world's peoples by joining this endeavor and working to promote non-renewable sectors that are efficient, transparent, and incorruptible.

Appendix

Descriptive Statistics

Table A1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Corruption Perception	1719	3.40395	1.476763	0.4	9.4
Total Rents	2569	10.80973	18.98548	0	214.4921
Coal Rents	850	0.5346659	1.421448	0	22.93144
Forest Rents	2319	1.822632	3.152807	0	47.45462
Mineral Rents	2569	1.010284	3.563341	0	54.16282
Natural Gas Rents	1731	3.152331	12.00562	0	173.2019
Oil Rents	1754	8.832046	16.40206	0	105.95
Fuel Exports	1810	17.91296	29.00962	0	99.73948
Ores and Metals Exports	1897	8.358205	15.2242	0	86.53964
Polity2	2361	1.797543	6.438339	-10	10
Regime Durability	2409	16.60399	18.22518	0	97
Polity*Durability	2361	2.911055	205.176	-970	920
Government Consumption	2596	13.04276	9.283947	0.9	67.19
Openness	2696	84.21693	44.84393	1.8	433.05
Ethno linguistic Fractionalization	2850	0.4783032	0.2492972	0	0.9302
Log of Population	2804	15.33619	2.105447	9.125653	21.01901
Log GDPPC Con 2005	2596	8.207052	1.203956	5.080162	11.82269
Central Asia	2960	0.0513514	0.2207507	0	1
Eastern and Southeastern Europe	2960	0.1114865	0.3147868	0	1
Latin America and Caribbean	2960	0.02043919	0.4033247	0	1
Middle East and North Africa	2960	0.1273649	0.3334376	0	1
Sub-Saharan Africa	2960	0.3087838	0.4620698	0	1

Regional Dummy Assignments

Central Asia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan,

Turkmenistan, Uzbekistan

Eastern and Southeastern Europe: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Estonia, Kosovo, Latvia, Lithuania, Macedonia, Malta, Moldova, Montenegro, Romania, Russia, Serbia, Slovakia, Slovenia, Ukraine

Latin America and the Caribbean: Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela

Middle East and North Africa: Afghanistan, Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, Yemen

Sub-Saharan Africa: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Brazzaville), Congo (Kinshasa), Cote d'Ivoire, Djibouti, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Model One

Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo (Brazzaville), Congo (Kinshasa), Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Gabon, Gambia, Georgia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, Sri Lanka, Sudan, Suriname, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Two

Albania, Algeria, Argentina, Bangladesh, Bhutan, Botswana, Brazil, Bulgaria, Cameroon, Chile, China, Colombia, Congo (Kinshasa), Croatia, Egypt, Estonia, Georgia, India, Indonesia, Iran, Israel, Kazakhstan, Kyrgyzstan, Laos, Macedonia, Malaysia, Mongolia,

Morocco, Mozambique, Nepal, Niger, Pakistan, Peru, Philippines, Romania, Russia, Slovakia, Slovenia, South Africa, Tajikistan, Tanzania, Thailand, Togo, Ukraine, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Three

Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo (Brazzaville), Congo (Kinshasa), Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Gabon, Gambia, Georgia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, Sri Lanka, Sudan, Suriname, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Uganda, Ukraine, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Four

Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo (Brazzaville), Congo (Kinshasa), Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Gabon, Gambia, Georgia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Laos, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Slovakia, Slovenia, Solomon Islands, South Africa, Sri Lanka, Sudan, Suriname, Swaziland, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Five

Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bolivia, Botswana, Brazil, Bulgaria, Cambodia, Cameroon, Chile, China, Colombia, Congo (Brazzaville), Congo (Kinshasa), Costa Rica, Cote d'Ivoire, Croatia,

Cuba, Cyprus, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Gabon, Georgia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Libya, Lithuania, Macedonia, Malaysia, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Nigeria, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, South Africa, Sri Lanka, Sudan, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Six

Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bolivia, Botswana, Brazil, Bulgaria, Cambodia, Cameroon, Chad, Chile, China, Colombia, Congo (Brazzaville), Congo (Kinshasa), Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Gabon, Georgia, Ghana, Guatemala, Haiti, Honduras, India, Indonesia, Iran, Iraq, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Libya, Lithuania, Macedonia, Malaysia, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, South Africa, Sri Lanka, Sudan, Syria, Tajikistan, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Turkmenistan, Ukraine, United

Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Seven

Albania, Algeria, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chile, China, Colombia, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Gabon, Gambia, Georgia, Ghana, Guatemala, Guinea, Guyana, Honduras, India, Indonesia, Iran, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait, Kyrgyzstan, Latvia, Lebanon, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, South Africa, Sri Lanka, Sudan, Suriname, Swaziland, Syria, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Uganda, Ukraine, United Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

Model Eight

Albania, Algeria, Argentina, Armenia, Azerbaijan, Bahrain, Bangladesh, Belarus, Benin, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chile, China, Colombia, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador,

Estonia, Ethiopia, Gabon, Gambia, Georgia, Ghana, Guatemala, Guinea, Guyana,
Honduras, India, Indonesia, Iran, Israel, Jamaica, Jordan, Kazakhstan, Kenya, Kuwait,
Kyrgyzstan, Latvia, Lebanon, Lithuania, Macedonia, Madagascar, Malawi, Malaysia,
Mali, Mauritania, Mauritius, Moldova, Mongolia, Morocco, Mozambique, Namibia,
Nepal, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea,
Paraguay, Peru, Philippines, Qatar, Romania, Russia, Rwanda, Saudi Arabia, Senegal,
Singapore, Slovakia, Slovenia, South Africa, Sri Lanka, Sudan, Suriname, Swaziland,
Syria, Tanzania, Thailand, Togo, Trinidad and Tobago, Tunisia, Uganda, Ukraine, United
Arab Emirates, Uruguay, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe

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Education

University of Nevada, Las Vegas
Master of Arts in Political Science
Comparative Politics and International Relations
Las Vegas, NV
August 2013
4.00 GPA

University of Nevada, Las Vegas
Bachelor of Arts in Political Science
Bachelor of Science in Secondary Education
Minor in Economics
Las Vegas, NV
May 2011
3.66 GPA

Research Experience

Monitoring and Evaluation Researcher
The Brookings Institution
May 2013 – Present
Las Vegas, NV

Project: Brookings-Rockefeller Project on State and Metropolitan Innovation

- Research Nevada's implementation of its new economic development plan.
- Interview stakeholders in the Governor's Office of Economic Development.
- Interview stakeholders in Nevada's regional development authorities.
- Identify and examine the networks created to assist in Nevada's development.
- Attend meetings involving stakeholders.
- Create survey instruments and analyze results.
- Produce reports on a regular basis.
- Participate with conference calls to stay up to date with the project.
- Attend meetings with colleagues to review findings and collaborate on methodology.

Principal Investigator
UNLV Political Science Department
Aug 2011 – Aug 2013
Las Vegas, NV

Thesis: On the Merits of Resource Curse Theory

This study uses a large-N, cross sectional time series to investigate the relationship between resource rent abundance and corruption. Data coverage for the corruption model ranges from 1994 to 2012. The study finds that the relationship between resource rents and corruption is dependent upon the capital intensity of the labor and the scarcity of the resources. Fuel related resources have the strongest correlation with corruption, controlling for other determinants of corruption identified by the literature.

Research Experience (continued)

Strategic Plan Graduate Research Assistant
UNLV Political Science Department

Jul 2012 – May 2013
Las Vegas, NV

- Served as the primary research assistant for the UNLV Political Science Department.
- Conducted in depth research on the entry strategies, labor practices, and business models of six Chinese firms in Latin America.
- Compiled consumer price index data for Mexican cities from 1970 to present.
- Built a data set for United States military deployments in all countries around the world.
- Compiled data on Mexican auto exports from 2000 to present.
- Compiled data on bauxite contribution to GDP in Guyana from 1990 to present.
- Collected data and created charts and graphs for “Immigration and the Contours of Nevada’s Latino Population.”

Teaching Experience

High School Mathematics Course
Del Sol High School

Pre-Algebra
Jun 2013 – Jul 2013

- Developed lesson plans for a condensed six week summer school course.
- Provided direct instruction and concept modeling to students.
- Increased student comprehension of several mathematical concepts.
- Created testing instruments.

Undergraduate Political Science Course
University of Nevada, Las Vegas

Introduction to American Politics
Nov 2012 – Dec 2012

- Lectured in three sections on the philosophical foundations of capitalism, supply and demand curves, aggregate supply, aggregate demand, financial markets, goods markets, price setting, wage setting, the deficit, and the financial crisis of 2007.

Undergraduate Political Science Course
University of Nevada, Las Vegas

The American Presidency
Aug 2011 – May 2012

- Graded all of the quizzes that were given in the course.
- Proctored all examinations.
- Kept records on the participation grades and quiz grades of the students.
- Held office hours for students that needed additional guidance on the material.
- Covered the course for five weeks while the instructor recovered from surgery.

Teaching Experience (Continued)

Undergraduate Political Science Course
University of Nevada, Las Vegas

Natural Resource Policy
Aug 2011 – May 2012

- Graded all of the weekly assignments and the quizzes that were given in the course.
- Proctored all examinations.
- Kept records on the weekly assignments and the quizzes.
- Assisted with field trips to Red Rock Canyon, Hoover Dam, and Zion National Park.
- Held office hours for students that needed additional guidance on the material.
- Covered the course for five weeks while the instructor recovered from surgery.
- Oversaw a field trip to Hoover Dam while the instructor recovered from surgery.

Undergraduate Political Science Course
University of Nevada, Las Vegas

Survey of Political Theory
Jan 2012 – May 2012

- Uploaded all texts needed for the class on the e-reserve system.
- Proctored all examinations.
- Held office hours for students that needed additional guidance on the material.
- Compiled data on what political theory courses were being taught at top tier political science programs in the United States.

Undergraduate Political Science Course
University of Nevada, Las Vegas

Late Modern Political Theory
Jan 2012 – May 2012

- Uploaded all texts needed for the class on the e-reserve system.
- Summarized two works by Immanuel Kant for the benefit of students.
- Proctored all examinations.
- Held office hours for students that needed additional guidance on the material.

Undergraduate Political Science Course
University of Nevada, Las Vegas

Introduction to American Politics
Apr 2012

- Lectured in two sections on the philosophical foundations of capitalism, supply and demand curves, aggregate supply, aggregate demand, financial markets, goods markets, price setting, wage setting, the deficit, and the financial crisis of 2007.

Undergraduate Political Science Course
University of Nevada, Las Vegas

Early Modern Political Theory
Aug 2011 – Dec 2011

- Uploaded all texts needed for the class on the e-reserve system.
- Surveyed all recent scholarship on the texts covered in class.
- Proctored all examinations.
- Held office hours for students that needed additional guidance on the material.

Work Experience

Senior Ambassador

Jan 2007 – Aug 2011

UNLV Career Services Department

Las Vegas, NV

- Maintained the UNLV Careerlink data base.
- Networked with employers in the Las Vegas community.
- Processed payments for the UNLV Career Day and the UNLV Fall Marketplace.
- Compiled end of the year reports for the Student Services Cluster.
- Analyzed data for office traffic, library use, employment rates and wages for graduating students.
- Provided guidance to students on resume, cover letter, and curriculum vitae writing.
- Responsible for creating the work schedule and hiring new student workers.
- Conducted regular inventories on office supplies.
- Responsible for ordering all office supplies.
- Maintained the computer lab and processed all work order requests.

Extracurricular Activities

Political Science Department Representative

Aug 2012 – May 2013

Graduate and Professional Student Association

Las Vegas, NV

- Sat in on all meetings of the Graduate and Professional Student Association.
- Member of the Faculty Senate Fiscal Affairs Committee.
- Member of the Graduate and Professional Student Research Forum Committee.
- Member of the Government Relations Committee.

Achievements and Awards

UNLV Access Grant - 2011, 2012, 2013

Dean's Honor List - 2007, 2008, 2009, 2010, 2011

Praxis II Principles of Learning Test Achievement Award - 2011

Praxis II Social Studies Content Knowledge Achievement Award - 2011

Golden Key International Honour Society - 2010

Outstanding Customer Service and Administrative Support - 2009

Computer Skills

Microsoft Office products, Open Office products, SPSS, STATA