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# Democracy, Resource Abundance and Growth

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## The Debate

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## Democracy, Resource Abundance and Growth: The Debate

### Abstract

*This paper explores the relationships between democracy, non-renewable resource abundance and economic growth through a selective literature review. The focus is on the resource curse, where dependency on natural resource exports by developing countries is often associated with slow economic growth and oligarchies or dictatorships--not democracies.*

*A review of the economics literature reveals a bias in favor of the natural resource curse as a pervasive phenomenon among developing nations. Stiglitz and Sachs say the extraction process should be carried out by a nationalized entity. Otherwise principal-agent problems cause corruption in capturing the economic rent. Even so, they argue, there are so many pitfalls in escaping the natural resource curse that it is nearly impossible for a developing country to pass most of the rents on to the actual owners, the citizens of the nation.*

*The political science literature, however, contradicts mainstream economics. Luong and Weinthal argue that the best outcome for the ultimate owners of the natural resource is to have the resource developed by a foreign company with the capital to extract the resource. It is only when the state manages the natural resource extraction and marketing that the nation will suffer from the natural resource curse. Dunning, using a game-theoretic approach, argues that the larger the non-resource private sector is, and the more lightly the democratically elected government taxes the elite, the more likely the nation is to remain a democracy and escape the resource curse. Other political scientists, along with some economists, also argue, using econometrics, that democracy, growth, and natural resource dependence may be directly related in the long run. The paper concludes with directions for future research and a few remarks.*

*To anticipate, final remarks focus on how the International Financial Institutions treat natural-resource-dependent developing nations. The nations in this situation with immediate needs such as fighting hunger should not be required to set up offshore funds from their oil or other natural resource proceeds for future generations until the basic needs of the current generation are met.*

## 1. Introduction

This paper is a selective literature review which when started, was expected to be a review of a school of more-or-less unified thought. That is far from the case. There is a sharp debate as to the nature of the resource curse, and the role institutions play in shaping how the curse manifests itself or is avoided by nations. There is also a sharp debate as to the role democracy plays in nations with abundant natural resources and those dependent on natural resource exports. This paper is not an attempt to provide a comprehensive review of the topic. Rather one of its purposes is to highlight some different viewpoints of those working in the field. The paper develops a number of models that are in the literature which help contrast the different viewpoints.

In discussing natural resources, the paper addresses “non-lootable” natural resources that take a substantial amount of capital to extract and that are in finite locations. These natural resources are also usually located in a well defined area that is easily controlled. So, for example, Kimberlite diamonds, deposits of oil and minerals qualify as natural resources for this paper. This is opposed to alluvial diamonds, where any citizen may pick and harvest the diamonds. The natural resources as defined here raise the issue of economic rent, where the profits from extraction are in excess of the costs of labor and capital, plus some normal return to the enterprise (Dunning, 2008).

Case studies are used to illustrate certain points, but are not highlighted here. For excellent and novel approaches to case studies of the Former Soviet Union immediately after the time of its break up, see Luong and Weinthal (2010). For an in-depth evaluation of the development of the politics and democracy in Latin American resource-rich countries, see Dunning (2008). For a review of Russia and Canada, which uses a quite different approach from Luong and Weinthal’s approach, see De Rosa and lootty (2012). See Annex I for a list of selected nations that are abundant in natural resources, the share of exports that are composed of natural resources, and the number of years remaining of extractable supplies assuming a historical extraction rate.

This paper helps bring economic thought on the topic of the natural resource curse up to date. The paper is structured as follows. The paper starts with a section outlining some of the main issues surrounding non-renewable resources. Next is a section that lays out what economists have to say about the natural resources and the natural resource curse. The following section outlines what some in the political science discipline have to say about the natural resource curse and democracy. Following this is a section on some pragmatic solutions posed by the problems raised in the paper. The paper concludes with some directions for future research and a few remarks.

## 2. Non-Renewable Resources and Growth: Theory and Practice

Hotelling (1931) and others (see Richardson, 1975, and Mitchell 2011) developed a theoretical model of natural resource extraction using the neoclassical economics of perfectly competitive markets with perfect foresight. Further assumptions made about a non-renewable resource are that it is in fixed supply, and that the supply, for both the industry and the individual producer, is known. In this case it is treated as any other asset, with the initial price equaling the royalty rate plus extraction costs for the individual producer. As an asset, where risk is known with certainty, the appreciation of the asset is the

real interest rate. Producers are willing to produce so long as the price of the resource is increasing at the rate of interest or above. If the price of the resource is increasing at a rate below the real interest rate, producers will not produce, rather wishing to hold their asset which is appreciating, in the ground, at the real interest rate. For a given non-renewable resource there is a market supply (sum of producers' royalty rates plus extraction costs) and a market demand which will set a market-clearing price at a point in time. Over the long term, the equilibrium price will increase at the real interest rate. As the demand function grows over time, with perfect foresight, the last unit demanded will equal the last unit supplied and the resource will be exhausted. This has given some economists concern that the supply of the resource will not last until an economical substitute is found.

Most empirical studies using over 100 years of data are not consistent with this hypothesis. The trend lines all depend on the beginning and end points chosen for the analysis. The basic Hotelling model assumes a known stock of the resource in question and that extraction technology does not change over time. However, nonrenewable stocks are not known with certainty, there is exploration that changes the size of the stocks, and the extraction technology does change over time, not to mention technology-driven shifts in demand and changes in market structure. Models that are built to account for these differences track price data a bit better but still do not yield good fits. The data appear to be especially affected by the unanticipated changes in stocks and unanticipated changes in technology. While there is no formal test, it does seem as if the stock of natural resources is continually underestimated (Krautkraemer, 1998).

Norway is held up as the example of a country that manages its abundant non-renewable resources well. Norway is rich in oil and natural gas, and is managing it so that it is withdrawn slowly, in the spirit of the Hotelling model, so as to preserve value for future generations. Norway also puts the money from the oil and gas sales in a sovereign wealth fund which is conservatively managed by an independent fund manager. The only time the fund is used is if the government is forced to run a deficit. Norway has a fairly high tax burden on its citizens so the citizens expect and receive many public services—Norway has a credible “tax bargain,” where they get good representation in government for paying a hefty tax bill. The approach with a wealth fund results in almost complete “sterilization” of the oil revenue; this means that the exchange rate is unaffected by the oil revenue. The fund is set up to meet emergencies but primarily to benefit future generations when the oil is depleted.<sup>1</sup>

Hotelling's model is hard to put to rest for developing countries. The IMF has long used the permanent income hypothesis (PIH) to try to get developing nations to limit the amount of natural resources withdrawn on a yearly basis so as to save for future generations. Assuming a country only has natural resources for income, the budget constraint over time is only met when the yearly spending (withdrawals) is limited to the amount that preserves the perpetuity value of the resource wealth—this is the PIH. Using this and some other assumptions the result comes out to be that the rate of resource extraction should equal the real rate of interest, which is based on Hotelling's model. Having this type of conditionality placed on a nation with weak institutions would likely see that the elite will withdraw

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<sup>1</sup> Oil will be depleted in Norway in 14 years, according to some estimates (see Annex I).

more of the natural resource and underreport the amount withdrawn to the IMF in subsequent years, as a possible way to continue collecting their economic rents sooner rather than later.

The IMF has been criticized by its own evaluation department as being too strict on oil- and other natural-resource-producing nations. Traditionally, the IMF solution was to recommend pumping oil or extracting resources in line with the real rate of interest less extractions costs as in the Hotelling model. The new thinking is to take a more context-specific view, taking into account country-specific and institutional circumstances such as the degree of resource dependency, the natural resource reserve horizon, and development needs. This new approach is needed and is more pragmatic. Although not official policy, the new approach to the fiscal frameworks of nations that could be subject to the resource curse is authored by IMF Economists (Baunsgaard, et. al., 2012) and has been applied to a number of resource-rich nations. The new approach is justified because low-income developing nations are capital and credit constrained.

For example, from this author's own experience, the nation of Timor Leste, where 80 percent of the population is poor, has an offshore multibillion dollar oil and natural gas sovereign wealth fund. There is a great deal of controversy over the degree to which the International Financial Institutions (IFIs) and the donor community ought to model the fund after the conservatively managed fund that Norway has. Timor Leste does have weak institutions and the leakage to corruption would be nontrivial if more of the oil and gas revenue was spent on development projects. But over half the population does not have enough to eat. A number of economists, including Jeffery Sachs, are calling for more domestic expenditures out of oil and natural gas revenues in Timor Leste.<sup>2</sup>

The new IMF "unofficial" stance says that the fiscal policy framework should ensure, in this order:

- macro-fiscal stability;
- long-run fiscal sustainability for nations with temporary resource revenue flows so future generations may benefit from the natural resource;
- an accumulation of precautionary savings; and a
- scaling up growth-enhancing expenditures, which should be gradual in the case of limited nations with absorptive capacities and limited institutional capabilities.

The weights tied to each of these factors will be determined by the particular characteristics of the country. Still, the development priorities of the country in question are less important than providing for future generations when the resource seems to have a more limited reserve, according to the IMF paper. The definition of limited reserves would benefit from a more liberal interpretation especially because reserves are often underestimated. This still seems restrictive in the case of nations with big development needs and lack of access to capital markets. Donors need to help expand the developing

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<sup>2</sup> The author worked in Timor Leste in 2005 and again in 2007. Since that time more oil and gas has been pumped beyond the speed for an estimated sustainable income for the fund. Unfortunately, little of that has gone into development. There has been a great deal of suspected fraud; and the government budget execution appears to be for large oil and gas related infrastructure. If current trends continue, depletion could occur in 2018. The Government's budget has grown 245% since 2006, much due to withdrawals from the fund. The impact on poverty reduction has been minimal. (<http://laohamutuk.blogspot.com/2012/10/filling-gaps-in-taxing-times.html>).

nation's absorptive capacity and institutional capability; helping to see that natural resource revenues are used for development purposes; or civil war may prevent the future generations from enjoying the fruit of the natural resource gift.

Humphreys et.al. (2007) recommend that non-renewable resource-abundant nations calculate their national wealth correctly. It is critical to count oil or other natural resource stocks as wealth. Pumping and spending are drawdowns in national wealth and need to be reflected in the depreciation account as well as the government spending account in the GNP accounts. To gauge national well being, it is best to count oil revenues spent by the government minus the drawdown in national wealth, accounted for in the depreciation line item. For this it is best to look at Net National Product (NNP), which is GNP less depreciation, to assess how well a nation is performing.

Yet for most countries non-renewable natural resource abundance brings out the worst in the country's institutions. Even in the U.S. and Canada natural resource abundance can cause perverse behavior that lowers national wealth more than it otherwise would have been lowered, and slows economic growth. The size of the economic rents usually swamps the quality of the institutions and policies in place so that corrupt behavior is nearly impossible to avoid. There is always a principal—agent problem in that the government manages the resource, through either a state-owned company or a privately owned company, as the agent of the people, who are the true owners and the principals.

The potential for corruption and huge resource rents endogenously creates weak governing institutions. To the extent that this is true, since natural resources are in fixed supply, there is a tendency to withdraw and sell the natural resource faster than is optimal for society, specifically for future generations. Politicians with an unstable hold on power will extract faster than is good for society so as to benefit from the economic rent as soon as possible.

Weak, unaccountable resource-dependent nations arise because the government revenues from the natural resource rents are large enough that the nations do not need to tax, or tax heavily, the populace. Because the tax link with the people is broken, the people have more difficulty holding their government accountable for its actions. Some empirical evidence seems to point to an inverse relationship between natural resource dependence and democracy partly as a result of the broken "tax bargain."

## 2.1 Mancur Olson and Regulatory Capture

Mancur Olson's result (1982) that the smaller the interest group the larger influence it has on the state leads to the hypothesis that the companies that capture the rent from the natural resource being extracted will become more powerful during a resource boom. They would then out-compete other special interest groups and be able, through regulatory capture, to extract more rent from the natural resource, and slow growth. This is one of the hypotheses that De Rosa and Ioffe (2012) test in their paper. They also hypothesize that in developing countries where institutions are weaker; this effect will be stronger, where the companies developing the resource will extract even more rent and slow growth by a larger magnitude. Further they hypothesize that the effects of resource dependence reduces the degree of competition in the economy. De Rosa and Ioffe use a data set covering 1996 to 2010 and data on 212 countries. They use a dynamic systems estimator to analyze the data.

De Rosa and lootty find that a resource boom degrades institutional quality and worsens competition. The effect is more muted in developed nations compared to developing nations. Their results are further reinforced by a comparative study of Russia and Canada. Both are endowed with roughly the same resources, but institutional quality is much higher in Canada. They use data from 1995 to 2000 to make this comparative study. Again they return with the same results as the world-wide study; namely the adverse effects are muted in Canada compared to the adverse effects in Russia.

### **3. The Resource Curse: Perspectives from the Economics Discipline**

Most conventional development economists are nearly of one mind about the problems of the “natural resource curse” primarily for developing nations or nations with poor institutional quality. The stylized problems they see are outlined below.

Most economists agree that the first pernicious effect of an abundance of a natural resource is the “Dutch Disease,” where as the natural resource, say oil, is exported, the foreign exchange earned pushes up the value of the real exchange rate, making it more difficult to export other goods. This is named after the discovery, development and export of natural gas in Holland in the 1960s and 1970s.<sup>3</sup> This pushed up the exchange rate and increased the value of the Dutch currency. As a result, the economy of a resource-abundant nation can become dependent on this single export, due to the increase in the value of its currency, to the detriment of all other exporting sectors, and indirectly benefitting the service sectors of the economy. This leads developing nations to become resource-dependent as all other exporting sectors wither away (Collier, 2007; Humphreys, Sachs, and Stiglitz, 2007).

A theory of growth also ascribed to by most economists is named Endogenous Growth Theory. The simplest explanation of this theory is “learning by doing.” In manufacturing, workers learn by doing and are able to suggest both labor-augmenting and capital-augmenting techniques to boost growth. Most economists further believe this applies only to manufacturing, not to natural resource extraction or agriculture. The general conclusion drawn is that natural-resource-abundant nations then become natural-resource-dependent and fall further behind the developed countries that rely on manufacturing and services.

This helps explain why many resource-dependent nations, the economists say, then invest less in education, for two reasons. First, it is not necessary to have a skilled workforce to supply labor to the extractive industries, and second that as the nation falls further behind the developed world, there is less need generally for skilled workers because there is no manufacturing sector (manufactures are imported). Less education leads to slower long-term growth.

Endogenous growth theory taken this way means there is no learning by doing in the extractive, agricultural, or services sectors. Such a strict definition rules out that natural-resource-dependent nations can learn by doing plus invest in downstream processing activities that lead to higher value

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<sup>3</sup> The Netherlands, being a developed nation with high institutional quality, increased productivity (De Rosa and lootty, 1012) in the non-resource-exporting sectors and escaped the “disease” by continuing to have a diversified export base.

exports. Oil refining and other activities can lead to the development of a natural-resource related manufacturing sector which would not be “exempt” from even the strictest interpretation of the endogenous growth theory. The empirical evidence is mixed on this, where some states with abundant natural resources developing both upstream and downstream industries related to the abundant resource, but others do not do such investing.

There are several principal-agent problems; the government is the agent for the people who are the principals because they are the ultimate owners of the resource. What is good for the agents is not necessarily good for the principals, particularly without transparency in government and the natural resource sectors; the agents have all the incentives to behave in a corrupt manner to gain wealth at the expense of the public. When the government invites in a private corporation to help develop the resource, still more principal-agent problems arise. The corporation has its own agents (the managers) and principals (the owners). This creates an ever-more complex web of problems because of the search to maximize rents by each group for each group.

When a number of corporations are invited in to bid on developing the natural resource, the managers of the corporations know more about the extraction business and are able to negotiate with the government on unequal terms.<sup>4</sup> As Humphreys, Sachs, and Stiglitz (2007) point out, the highest bidder may not actually be the highest bidder, but the only company which has found a way to avoid environmental cleanup costs. Humphreys, Sachs, and Stiglitz argue for public ownership of the resource extraction process, in part to avoid the principal-agent problems inherent in inviting in a private foreign firm, and in part to avoid the unequal bargaining power of foreign corporations.

Developing the extraction of the natural resource leads to a more unequal distribution of income. The corruption and legitimate inflow of high rental incomes creates an “elite” within the country with interests at variance with the general public. This and the problems of managing the people in the producing region often lead to civil strife (Bannon and Collier, 2003). People in the producing regions, such as in Nigeria’s delta region, may believe they are not receiving a fair share of the proceeds, while bearing all of the environmental costs of extraction. In some locations there is forced out-migration, while in others there is forced in-migration because workers are needed to extract the natural resource. These types of forced migrations will create ethnic tensions and can also lead to civil strife.

Most economists also agree that variations in price, extraction rates, and payment schedules are often the cause of extreme volatility for government budgets. Because the public usually has high expectations of the government (assuming the government owns and is extracting the natural resource), this leads to the government needing to maintain a high level of expenditures. During downturns in revenue due to this volatility, and other factors, the nation will need to borrow. And indeed many of the well-endowed, natural resource-dependent developing nations are also experiencing high levels of debt.

Another characteristic of nations with rich resource bases and strong extraction rates is capital flight. Capital flight is on the part of the government elite who are benefitting from the corruption that is

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<sup>4</sup> The World Bank has just established a fund for African nations to engage-world-class negotiators for a more level playing field for natural resources (World Bank home web page, press release October 5, 2012).

fuelled by the natural resource rents. The elite take their money out of the country (tied to how contracted, see Humphreys, Sachs, and Stiglitz pg 35-40). Capital flight of ill-gotten economic rents is common and impoverishes the nations with poor institutional quality and abundant in natural resources.<sup>5</sup>

The elites created by natural resource wealth, and in states with weak institutional quality, move their governments toward autocracies. These autocratic economies grow more slowly than their comparable democracies. The reason found is that resource-rich exporters tend to underinvest in their economies, and invest in big projects with low returns or no returns. One such investment is in their militaries. According to Humphreys, Sachs, and Stiglitz (2007) oil exporters spend between 2 and 10 times more than other countries do on their military. Civil wars are more likely to occur in resource-rich countries than others; if the natural-resource rents simply accrue to the government elite in power, this gives incentives to groups out of power to make a grab for power.

Van Der Ploeg speculates that the countries which industrialized first also had strong institutions and that those countries that remained underdeveloped had weak institutions. When resources were exploited at a later stage in underdeveloped countries this led to rent seeking, corruption, and civil strife. Van Der Ploeg offers some empirical evidence generated by Sachs and Warner (1997) to back this up. They find, in a series of cross-country data for 1970-1990 that countries that are more open grow faster, and that countries that accept the rule of law also grow faster than the average. But they also find that the degree of resource dependence is a strong drag on growth. (See van Der Ploeg, 2011 for an extensive review of the economics literature).

These regressions are the foundation of much of the stylized facts of the elements of the resource curse. Van Der Ploeg cautions about omitted variables bias and endogeneity. Real GDP growth per capita may be endogenous to resource dependence, and omitted variables may include changes in education levels and the value of the natural resource reserves. Regressions run by others show that these are all important issues for the natural resource curse. Other specifications also show that the degree to which natural resource dependence slows growth depends on the regression specification chosen.

Panel data covering 91 developing countries over the period 1970 to 2000 found that point-source natural resources hold back democratic and institutional development. Cross-country and panel data results are sensitive to changing the number of countries and the time period covered. The data may not allow for the separation of international trade, institutional development, or financial development because these are all highly correlated. The results from a large number of empirical studies are mixed.

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<sup>5</sup> The argument is a serious one for many extractive governments and their societies. During the boom years for the resource price, the government extracts a great deal of rent, some goes to the elites and some is spent on society to show that they are benefitting as well. Oftentimes these expenditures are a big state house or other national monument. When the price of the resource crashes, the government borrows from the IFIs or multinational banks to pay the elites and keep up domestic spending. The debt taken on to pay the elites which is then spirited out of the country is termed odious debt, and when proven, not required to be repaid to the lender. The logic is that the lender knew that some of the loan was being siphoned off to pay off the elites, which supported the capital flight and impoverished the nation. See Ndikumana and Boyce (2011).

### 3.1 Persistence of Mainstream Thought

Williamson (2011) is typical of mainstream thinking in economics. He takes the industrial revolution as exogenous as he does the opening of global trade in the 19<sup>th</sup> century. He uses trade and GDP data to group nations into the industrialized center and poor periphery. Since then, in the following century, he documents the great divergence between the globe's rich industrialized core and the poor, commodity-oriented periphery. Trade benefits both groups of countries. Williamson (2011) shows that trade benefitted the core more than the periphery in a causal manner.

Williamson documents three causal forces to explain this great divergence between the core and the periphery. The first is that through specialization, the core became more industrialized and the periphery more dependent on primary products (including what has been referred to as natural resources in this paper). Using the theory of endogenous growth, that means the industrial core would and did grow faster as new technology development and diffusion spread more quickly than it did to the poor periphery.

The second causal force is that the global trade boom caused the nations in the periphery to have more unequal distributions of incomes among its member states. Rich elites arose that owned the natural resources that were enjoying the export boom relative to more inclusive societies in the core nations. These oligarchies in the poor periphery nations were rent-seeking and suppressed other forms of economic growth. The argument goes that the core did not develop such oligarchies.<sup>6</sup>

The third causal force is that the periphery, by specializing in commodity exports, became very influenced by commodity price volatility and Williamson shows this was bad for growth. This was worse in many countries in the periphery which had specialized in one or two commodities for export. This force would be uncontested by most of the authors covered in this paper.

Williamson also discusses the great convergence that Rodrik (2011) sees in the decade of the 2000s. Developing countries are moving away from commodity dependence and into labor-intensive manufacturing and thus stepping up on the growth curve. But whether or not this convergence is permanent or temporary is subject to speculation.

### 3.2 Some Policy Implications

Humphreys, Sachs, and Stiglitz (2007) argue that the sizes of the rents are almost always totally corrupting and aggravates the principal-agent problems in at least two ways when the private sector is involved in owning and developing the natural resource: 1) government (agent) vs. populace (principal) and 2) managers of oil companies in the host country (agents), managers in the headquarters nation (more agents) and the owners (principals). For the problem of cheating they cite two cases in US:

- Reagan's mass oil land leasing program that led to land that was leased so fast only a few companies benefitted and benefitted from low prices; and

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<sup>6</sup> Acemoglu and Robinson (2011, 2012) would be sympathetic to such an argument. They are not reviewed here because their definition of institutions is confused and the book contains numerous historical factual errors.

- a case in Alabama where the company did a cost-benefit analysis of overinflating costs of oil sold to the government by just a few cents and they were caught by the State and prosecuted successfully.

Humphreys et. al. (2007) argues that privatization increases the scope (opportunities and incentives) for corruption through four mechanisms:

- Reduce competition;
- a way to channel funds to favorites (best in transition and developing economies which are unable to access the international capital market);
- the government elites provide favorites with inside information about the value of what is sold, and
- whether the government will enforce terms asymmetrically among winning companies.

They argue that privatization is not more efficient for four reasons:

1. Without long run secure property rights the company goes for fast extraction rates of the natural resource (depriving citizens' future generations of their fair share);
2. Without long run secure property rights, the incentive by the company to make complementary investments is reduced (not helping to fight the Dutch Disease);
3. Without long-run secure property rights, lenders are reluctant to finance the complementary investments; and
4. It pays to take the money out of the country instead of reinvesting locally for each market participant so it is not later seized (stifling long run economic growth) (Humphreys, Sachs, and Stiglitz, pg. 34-35).

Humphreys et. al. (2007) gives a lurid description of what happened in the former Soviet Union, when the new nations were pushed by the IMF to privatize quickly. As a result, the countries privatized natural resource assets at too low a price, and most important, there were no strong institutional structures in place to moderate corrupt behavior. For example, without good institutions:

1. There is no legal or good corporate governance;
2. Advocates of rapid privatization claim that rule of law would evolve as the owners of the resources would demand it. Not so, and Stiglitz says he proved it in a 2005 article;
3. Without the financial infrastructure, the firms could not get the capital needed to improve resource extraction efficiently; and
4. Privatizations evolved before the development of effective tax institutions so the government could not collect taxes on those with the resources (Humphreys, Sachs, and Stiglitz, pg. 37).

#### **4. Research from the Political Science Discipline**

Luong and Weinthal (2010) show that the outcome for a nation in terms of the "natural resource curse" may or may not occur depending upon the ownership structure allowed for the natural resource extraction and the endogenously determined fiscal regime which follows the ownership decision. They

build an innovative model to show that natural-resource abundant developing nations can escape the curse.

Luong and Weinthal's model begins with a government whose objective is to stay in power. Conditional on staying in power are the availability of alternative sources of revenue, the availability of the natural resource rental income, and the level of distributional conflict. The availability of alternative sources of revenue is "high" if there is a developed commodity export that does not require a large capital investment, and the export of the commodity is capable of providing enough government revenue to maintain the status quo. Otherwise the availability of alternative sources of revenue is "low." The level of distributional conflict is based on conflict over distributing political and economic patronage--the possibilities of secessionist movements or civil war. This means there is a need to distribute extra revenue to troubled areas or groups in short order. If the need is high, then distributional conflict is classified as "high," if it is low then the classification is also "low."

The types of ownership of the natural resource extraction are given as follows: S1 is state owned with government control; S2 is majority state owned but with some foreign ownership; P1 is privately owned by domestic corporations; and P2 is privately owned by foreign corporations (see Table). The government's preferences on ownership are highest for S1, next for S2, next for P1 and lowest for P2. The ranking reflects the influence the government has on the extractive industry. If the availability of alternative sources of revenue is high, and the potential for distributional conflict is low, then the state will choose S1. This state ownership is acceptable under these conditions because there is no need for the extractive industry to produce revenue in a large amount or very quickly. If the degree of alternative revenue is low, and the potential for distributional conflict is low, then the government will choose S2. S2 will allow a more rapid generation of revenue and yet still remain under state control. If the degree of alternative revenue is high and the degree of distributional conflict is also high the government will select P1. Domestic private institutions will still leave the government in more control, but it is more efficient than S1 so it will generate the needed revenue and foreign exchange reserves to help deal with the distributional conflict. When the degree of alternative revenue is low and the level of distributional conflict is high, the government will choose P2. That is because the government will need cash in a hurry to deal with the distributional conflicts. This is the government's least preferred option because it has the least control over foreign private ownership of the natural resource.

Dealing with the principal-agent problem in the model, there is a triad of owners, and they are direct or indirect. Also important are transaction costs which are a function of asymmetric information, of shifting resources from one group to another. Start with S1, state ownership and control. Direct claimants are the governing elites and the state enterprise bureaucrats, while the domestic population is the indirect claimant. Here the government elites and enterprise bureaucrats are the agents and the domestic population is the principal. This determines the nation's fiscal structure.

For example, with S1 there will be a weak (or narrow) fiscal regime. A weak fiscal regime is defined as one that gets its revenue from primarily natural resources, and indirect or implicit taxes, as well as a system of expenditures that is suboptimal. The expenditures are to mollify the population and let them see how the natural resource revenue is being spent, oftentimes on big, unproductive "White Elephant"

type of projects and subsidies. With less asymmetric information and with the state elites and bureaucrats being the only agents, that means high societal expectations (society’s desire to capture their share of the rents), and so on the expenditure side we see widespread subsidies, massive public works or “national prestige” projects, and the government as employer of first resort. This fiscal system is defined and thus endogenous to the type of ownership structure. And this case results in the natural resource curse to which most economists ascribe.<sup>7</sup>

**Table I: Claimant Status and Different Ownership Structures**

<b>Ownership Structure</b>	<b>Direct Claimants</b>	<b>Indirect Claimants</b>
S1	Governing Elites + Enterprise Bureaucrats	Domestic Population
P1	Domestic Private Owners	Governing Elites + Domestic Population
S2	Foreign Investors + Governing Elites	Governing Elites + Domestic Population
P2	Foreign Investors	Governing Elites + Domestic Population

From: Luong and Weinthal (2010) pg. 11

With P1, the direct claimants are domestic private owners and indirect claimants are governing elites and the domestic population. There are higher transactions costs for moving money between the direct claimant (domestic private owners, i.e., the agent) and the indirect claimants (the governing elite--an agent--and the people, the principals). This will give a strong (more broad) fiscal system with a tax system that is stable and broad based, that relies on direct taxation like an income tax and corporate earnings or profit taxes. Under this ownership structure, the tax needs to be broad-based because the indirect claimants do not know how much the domestic private owner is making in rents from the resource extraction. This ownership structure will also promote a system of expenditures that encourages transparency and stability. This will match the popular perception that the government plays a minimal role in distributing the oil royalties or revenues. Because of this fact, the people will not expect the government to be a big spender and attempt to take care of most needs. The U.S., Canada, and Australia all fit the P1 profile.

With P2 (Private foreign ownership in excess of 50%) or S2 (State majority ownership but foreign control over operations), foreign private operation (allows Production Sharing Agreements)<sup>8</sup> the effects on fiscal operations and structure change over time. Because different actors gain and lose prominence on the

<sup>7</sup> The ownership structure is in direct contradiction with what is recommended by Humphreys et. al. (2007).

<sup>8</sup> Production Sharing Agreements or PSA’s are where the host government contracts with a foreign oil company to undertake exploration and production, and in return for carrying the initial risk, to oil company gets to keep a share of the production (Luong and Weinthal, 2010, page191). The Iraqi Kurds negotiated a PSA with Exxon-Mobil in 2011.

international arena over time, the relationship changes over time. This produces “hybrid” fiscal regimes because the foreigners are limited to the mineral sector. So their fiscal burden is limited to the minerals sector. But because the ownership structure changes as the international arena changes, Luong and Weinthal (2010) break history into three periods.

During the 1900 - 1960 time period the international oil market was dominated by a small number of large oil companies often referred to as “the Majors.” The costs of asymmetric information between the companies and the governing elite was small because a contract template was used, but societal expectations were low because of the low share of oil revenue going to government elites. The Majors had the power in the negotiations. As a result, the fiscal structure which dominated in producing countries was what favored the foreign oil companies. The Majors preferred a minimalist approach and stable tax and spending regimes. Fixed royalties were paid to the governing elite in exchange for the oil. There were no requirements about corporate social responsibility spending by the majors. Nor were governments keen to advertize the royalties through big spending programs to show off to the public. Since the public was unaware of the transactions between the Majors and the Government social expectations were low. Consequently, public expenditures were low and tax collections of the populace low as well.

1960-1990 is the second period considered by Luong and Weinthal. In the industry, this period saw the rise of small foreign oil companies. This eroded control of the Majors and changed the balance of power between the government and the companies. Small foreign oil companies facilitated the formation of OPEC in 1960. Luong and Weinthal invoke Raymond Vernon’s (1971) theory of the obsolescing bargain, where the balance of power shifts to the government away from the foreign oil company. S2 and P2 will have different levels of social spending, with more social spending under S2. Under S2, even private foreign investors are likely to have engaged in some private social philanthropy in host country. Under P2, society had fewer expectations for government social spending because the state had relinquished control of the oil.

1990-2005 is the third period analyzed by Luong and Weinthal. Foreign investors’ fiscal burden went up during this period (due to pressure from International Financial Institutions (IFIs) and International Non-Governmental Organizations (INGOs)) due to spending on corporate social responsibility (CSR). This also makes the foreign investors more interested in the state’s expenditures, and also transparency. That is because the investors do not want to see their CSR undermined. This is considered the best outcome for the people of the state. Outside the mineral sector, pressures from INGOs and IFIs mean that the state is most likely needs to improve social welfare and reduce poverty.

In sum, Luong and Weinthal argue that the distinct fiscal regimes that are generated come from the type of ownership structure that is adopted. The ownership structure which is chosen generates information asymmetries, and societal expectations, which influence what is expected of the government so the government reacts and these forces determine the fiscal system. For the hybrid choices of ownership, the power relations that influence how such institutions change over time determines how the fiscal system is shaped over time.

## 4.1 Transaction Costs

Transaction costs are a function of information asymmetries in the Luong and Weintal model. The national government elites and the companies create institutions to minimize these costs, or influence the actual design of these institutions. When interests are aligned between actors such as the state oil company and the government elite, as in S1, transaction costs are low, because the fiscal authorities and the oil company people are from essentially the same group. So the nations in this situation get weak fiscal regimes; the need to tax the population is small while those involved in the oil sector and the government elites are able to keep what they want. Society expects big things because the government as their agent has complete control over the natural resources. Those “big things” are often delivered by way of big projects and subsidies, inefficient ways of supporting the public. The public also believes that under S1 that the state should be the source of most economic activity. As a result the state supports the manufacturing sector to prop up domestic employment. In doing so, the government often does not invest enough in the National Oil Company (NOC) which can cause it to be increasingly inefficient.

Under P1, the domestic oil company is interested in profit maximizing. Government and the domestic oil company support a system of broad taxation, so that at least some tax burden falls on the oil sector, often including an income tax and a corporate profits tax. Here, the transactions costs are higher so the government will want a broad-based corporate tax to capture tax revenue from the domestic oil company as well as other sectors of the economy. Society will not expect the government to support them to the degree under S1 because the government is also an indirect beneficiary through royalty payments, and corporate taxes. The public expects some inequality and does not expect the government to take care of their every need. Because the government can tolerate more inequality in society, the government is more likely to establish a Natural Resources Fund to invest its savings from the resource-rich sector offshore.

Societal expectations have increased universally over the 20<sup>th</sup> century. The state as an agent is seen as owing the most to the people (principals); as a result it becomes politically risky to impose direct taxes, especially under S1. So the state uses indirect taxes and implicit taxes, such as multiple exchange rates, public purchases of agricultural commodities, sales taxes, and VAT taxes. Under S1, society also expects the state to be the provider of most economic activity and manufacturing and/or agriculture become subsidized sectors. The nation’s impulse is to adopt import substitution policies. This can be observed in Myanmar today, as it manages a large set of gas deposits with a State oil and gas company.

With P1, domestic private ownership generates lower societal expectations because the agent is now a private company. This means the nation receives a strong fiscal system three ways. Society expects benefits not from distribution (oil money goes to the domestic private natural resource company) but through redistribution. Society demands a tax system that taxes the domestic natural resource company through a broad-based corporate income tax. The Government supplies such a system because it needs to explicitly tax the domestic natural resource company. Because society realizes that the government is not a direct owner of the resource, they expect a redistributive role from the government, but the public does not attempt to seek rents from the government. As a result the government elites have no incentive to build big white elephants or act as the employer of first resort.

Under P1, society recognizes that not all oil revenue goes to state therefore it is less risky for the state to tax the population along with the domestic natural resource company. The governing elite needs more cash to stabilize the budget because it does not have complete control over oil revenues. Thus the people and businesses get a direct and broad based tax system. Society does not expect that the government will provide most of the economic activity. This reduces incentives for import substitution strategies, as the public will not be expecting that manufacturing or agriculture will be protected by the government.

Under S2 and P2 the natural resource is developed with private foreign investors. Producers are only partially constraining and partially enabling of government elites because the foreign sector only has influence on the natural resources sector. These are hybrid systems and are thus more under the influence of the trends in the international political economy of resource markets. However the transaction costs are high because the information asymmetries are the highest under these two regimes.

#### **4.2 Some Formal Empirical Work for Luong and Weinthal Hypothesis**

The authors build a discrete choice model where the dependent variable is choice of ownership structure. Because the government is a sovereignty maximizer, it will weigh the consequences of each natural resource ownership structure in terms of how much and how fast foreign exchange will be collected. The key explanatory variables are the amount of alternative revenue sources, and earners of foreign exchange, as well as the expected degree of distributional conflict. When alternative revenue is high and distributional conflict low the government will adopt S1. But S1 develops the minerals more slowly due to restricted flow of foreign capital and technology. This is known as the resource curse. When the degree of alternative revenue is low and distributional conflict is high, the government goes for P2. When alternative revenue is low and distributional conflict is low, the nation will adopt S2. When alternative revenue is high and distributional conflict is high, the government will adopt P1. The rank ordering of the variables is S1, S2, P1, and P2. This reflects the order of preference for the government elite with S1 being most attractive and P2 being least attractive.

The data set is panel data for the late 1800s to 2005, with an average of 49 observations per country. Countries were ranked on the size of their oil reserves known at the time of the observation. Data on petroleum reserves were available dating back to 1952. This seems inconsistent: how can data go back to the 1800s when there are only 49 annual observations and ends in 2005? The top 50 nations in terms of oil reserves were used in the empirical work. Oil reserves are used because oil exports (used incorrectly in other studies) already represent resource dependency and are determined after the decision on ownership structure has been made.

The results show that the two key variables are significant and robust: alternative revenue and distributional conflict. The ownership structure lagged was significant and robust, while the OPEC effect is significant and robust. The variable measuring if the nation was a previous colony was also significant. The fit of the regressions is good. The variable measuring polity is not significant, so a democracy or autocracy does not determine ownership structure. The conclusion the authors come to is that oil-rich nations are not cursed by their wealth, but by the ownership structure they choose to undertake.

There are problems with the empirical work. First, the results are presented as ordinary least squares (OLS), which are biased and inconsistent with a bounded dependent variable. The authors say they present the OLS results because they are easier to understand, and that they have run Logit regressions that correct for these problems. Moreover, the authors claim results are essentially the same for the two types of specifications. The authors should have included the Logit results in an appendix.

Even accepting their regression results at face value, the results depict is the choice of ownership structure. Their case for fiscal systems that rely on ownership is heuristic. The logic and examples are compelling, but it would have been good to see some empirical work on this aspect in their book.

Even though they did extensive empirical work using the nations from the globe that is discussed above; they based their primary field work on the events following the breakup of the Soviet Union. Specifically, they look at 1999-2005 for five oil-rich new nations: Russia, Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan. Luong and Weinthal are quite compelling with their case studies, except for Russia post-2005. Russia adopted P1 during 1999-2005, but then reverted to nationalizing many of the domestic oil companies under Putin.

Still Luong and Weinthal make a valuable contribution by showing that the choice of ownership structure is not automatic, that it has domestic consequences, and that one of the consequences is the shape of the fiscal system. They also make a very strong case that falling into the resource curse is not automatic; only those nations choosing state ownership and control (S1) fall into what the economists call the resource curse where the abundance of a natural resource leads to slower growth. They give a very good model of how this can occur with the government elite acting as sovereignty maximizers subject to the constraints of alternative export earning abundance, and the expected distributional conflicts. It is interesting to note that Luong and Weinthal come out showing that governments which adopt P2, complete foreign ownership and control of the natural resource, end up generating the highest rates of economic growth.

### **4.3 Democracy: A Political Science Perspective**

Political scientists have come up with different results regarding democracies and resource booms. Dunning (2008) tested for the relation between oil rents and democracy and finds that democracy is not hurt by petroleum booms, and even that democratic political stability increased in some countries during the booms. Haber and Menaldo (2011) find results showing that where petroleum wealth and natural resource wealth do not damage democracies, and may even make them stronger. Luong and Weinthal make heuristic arguments that are less convincing than Dunning's or Haber and Menaldo's works.

Dunning (2008) develops a game theoretical approach to the problem of democracies in resource-rich countries. His basic game starts with one country, two players, one commodity/sector, and two steps. The two groups are the poor democratic majority and the rich elite. The sector is the oil sector. In move one, the democratic majority sets policy, step two it is the elite who decides whether to stage a coup. There are expected costs to staging a coup (e.g., death, imprisonment, exile, etc.). Dunning sets the costs of a coup as exogenous. In deciding whether to stage the coup, the rich elite weigh the benefits

against the costs. Democracy in Dunning's model is Schumpeterian in that it is procedural-minimum, with emphasis on the formal institutions that regulate electoral competition and participation; in other words an election between competing leaders.

Once in power the democratic majority must decide on economic policy, they set the tax and determine the distribution of the rent from the oil. If the tax is small on the rich elite, and the redistribution of the resource rent is adequate, there likely will be no coup. If the tax on the rich elite is large or the distribution of the rents from the sale of the oil is inadequate for the elite, they will stage a coup. If the rich elite support a successful coup, then there are payoffs to rich and poor under authoritarianism, relatively favoring the elite. If the rich elite do not decide to support a coup, then there are different payoffs to the rich and poor under democracy, relatively favoring the poor but by a small margin.

Dunning then introduces non-resource sectors which are aggregated and named the private sector. This carries with it private wages, private profits, and private wealth. Dunning also makes the decision to try to make a coup more complex. Now the rich elite must consider the expected future costs and benefits of the coup choice. Further, the opportunity for a coup is not an every-day opportunity.

Ultimate tax policy depends on the rich elite; if the democratic majority sets tax rates that the elite does not like, then they can have a coup and reset the tax rates. The ability to control the distribution of the rents is also a key benefit that comes with control of the state. The rents may be so attractive that the elite mounts a coup to collect on the rents. Basically, conflict over distribution of rents may lead to authoritarianism. But tax policy is also important.

Anticipated taxation on the rich elite may trigger a coup. So, democracy is a way for political equality, but not to increase economic equality. With resource wealth, there is less need for the democracy to tax the elite on private wealth or private income, reducing the incentive to have a coup against democracy. After a successful coup, a direct effect of an authoritarian regime is to redistribute some of the rents to the poor majority from a resource boom so as to retain power. The indirect effect is a desire to keep the private tax rate low as a disincentive for a coup because the resource rents fund the government and the elite.

In an authoritarian regime, elites may respond to mobilization from below that threatens their hold on power by repressing the masses. But repression is costly and could fail. Democratization may be a preferable solution to being deposed through a revolution. Again the effects of the resource boom on democracy may cut two ways. Living under a democracy in a resource-rich country means an opportunity cost to the elite (consumption of the rents), but also might reduce the expected future tax burden on private activity.

Dunning cites three effects of how authoritarianism may exist over democracy:

- the "rentier" effect where oil revenues are large enough to distribute an adequate amount to relieve social pressures that otherwise may lead to greater accountability;
- the "repression effect," where the resource wealth may allow authoritarian regimes to spend more on internal security and so block the people's aspirations for more democracy; and

- the “modernization effect,” where resource-led growth does not lead to more education or specialization and thus fails to bring about democracy.

He assumes, for illustrative purposes, a two-country model, one with a high resource-to-GDP ratio, one with a lower resource-to-GDP ratio, and both have high resource-to-revenue ratios, i.e., both are “rentier” states. High-resource to GDP ratio means “resource dependent,” lower resource to GDP ratio means “resource abundant.” His key results are these: with resource abundance and an unequal distribution of wealth and income for the private sector, the elite will not want a coup because the resource rents go to the populace while the tax on the private sector remains small (the elite have most of the private sector); but with resource dependence and an equal or smaller private sector, the elite will want a coup because the resource rents are the only major game in town and they have a relatively smaller share of what exists in the private sector. A resource dependent nation will have a small private sector; hence the likelihood of a coup by the elite goes up, other things equal.

For the empirical work, one important measure of equality of the private sector is the industrial capital share; payments to capital as a proportion of industrial value added in non-resource manufacturing sector. The assumption is that the higher the share of capital in the non-resource manufacturing sector, the more “unequal” the share of the elite in the private sector, meaning that in resource-abundant economies, the elite will want a democracy. In a resource-dependent nation, the outcome is somewhat indeterminate, depending on the degree of inequality in the smaller private sector; the higher the inequality, the less likely a coup, and the more likely a democracy. His empirical work supports the workings of his model, especially for Latin American nations.

Dunning makes two assumptions: the two sectors are isolated from each other, and that there is no effect of the Dutch Disease. Also there is no examination of the long-run distribution of rent in the game. The three assumptions help clarify the outcomes of the game. If the Dutch Disease was allowed, the natural resource sector would crowd out the private sector as defined for the model. Resource-abundant nations would become resource-dependent as relative to natural resource exports to GNP rose and the private sector shrank. This would lead to more authoritarian outcomes. However, if the Dutch Disease led to growth in sectors such as the service sector, then the tendency to authoritarian regimes would be muted. The form of ownership can matter. For example, when concentrated in the domestic elite which owns and controls the resource, then a resource boom unambiguously causes the elites to oppose democracy.

Haber and Menaldo (2011), using time series and panel data for their econometrics, find that natural resource reliance may well be positively associated with democracy. Their measure of democracy is the standard one used in the literature: the Combined Polity 2 score from Marshall and Jaggers (2008). For measures of the resource boom they use a measure of fiscal reliance and a measure of total resource income.

They make a number of good points. For example, many institutionally weak states were weak prior to the discovery of oil or other non-lootable natural resources. The issue of causality plagues the econometrics done regarding the natural resource curse. And institutional quality is difficult to

measure, and no one so far has come up with an adequate measure of the phenomenon. Thus, econometrics must deal with time-invariant, country-specific variables and omitted variables.

Their approach is to use time-series methods that evaluate the long-run effect of resource reliance on regime type. To do so, they constructed a data set that goes back to 1800 in some cases and 1900 in others; all series ending in 2006. Thus unlike many other studies reviewed by van Der Ploeg (2011), datasets are not truncated to begin at 1960. They use cointegration to establish if there is a structural relation between resource reliance and regime types. Then they use error-correction models to test the statistical significance of that relationship once the cointegration indicates there is a relationship. Thus they avoid problems of causality and have the best econometric approach of the papers in this review article. "Our results indicate that oil and mineral reliance does not promote dictatorship over the long run. If anything, the opposite is true," (Haber and Menaldo, 2011, pg. 25).

They find that the following countries remained a democracy during a resource boom: Jamaica, Lithuania, Netherlands, Norway, Papua New Guinea, and Trinidad and Tobago. Some of these countries are consistent with high institutional quality, others are not. Some are difficult to believe, for example their measure of democracy improved by one standard deviation in Algeria, Angola, Iran, and Kyrgyzstan. And some countries democratized during or after a resource boom, including: Botswana, Ecuador, Mexico, Mongolia, Peru, Russia and Venezuela. Some of these, for example, Russia, might have given a different result of the data set had not ended in 2006. They found that Estonia and Namibia remained at the threshold of democracy during a resource boom. Haber and Menaldo claim these 19 countries were potentially blessed by the natural resource boom. Further testing by them reduces the list of beneficiaries to 13 nations. In general, they find no evidence of the resource curse as defined by deterioration in democracy during a resource boom. This flies in the face of the established wisdom.

## 5. Some Solutions

Most recently, in the U.S., new rules have been implemented where the natural resource companies listed on the U.S. stock exchange will be required to publish all payments to foreign governments in excess of \$ 100,000. The EU is considering similar rules. These rules, once in force, will do a great deal in improving the transparency of the natural resource industry. This, of course, leaves the door open for unlisted companies to develop natural resources in a non-transparent manner (*The Economist*, September 1 – 7, 2012).

As another countermeasure to the resource curse, nations and companies can become members of the Extractive Industries Transparency Initiative (EITI). The EITI is a voluntary coalition of companies, governments and civil society established to ensure that natural resources are used to benefit all people in the nation. EITI sets a standard for companies to report what they pay, and for countries to report what they receive. There are five sign-up requirements for the EITI Board to determine if a country is a plausible candidate as a preliminary move to full membership. They include:

- regular publication of all natural resource payments by companies to governments, and all revenues accruing to governments from natural resource extraction;
- payments and revenues are to be subject to independent audit;
- payments and revenues are to be reconciled by an independent administrator; this is extended to all involved companies, including State Owned Enterprises, and civil society must be actively engaged as a participant in the design;
- monitoring and evaluation of this process; and
- the results must contribute to the public debate.

An expressed purpose of the EITI is to combat corruption that goes hand-in-hand with natural resource extraction in most developing countries. There are 35 member countries including Azerbaijan, Ghana, The Kyrgyz Republic, Liberia, and Mali (EITI, 2012).<sup>9</sup> The IFIs strongly recommend that recipient countries which are resource dependent join the EITI.

Humphreys, et. al. (2007) suggest a number of factors that will mitigate the adverse consequences for resource-reliant states. If a nation is going to engage an international oil company (IOC), it is important to condition the deal with the IOC on future prices and other economic factors. For example, in the past the oil companies made sure they were protected if oil prices fell, but collected the extra profit (rents) when oil prices went up. This is a dangerous situation for the developing country involved because there will be political tension when oil prices go up and the nation does not get part of the windfall. There may be a push for nationalization of the oil company in that country. Or even worse, civil war. Thus by making the contract with an IOC or even a NOC which is forward-looking, these issues can be avoided. A contract that splits future gains and losses between the government and the oil company will go a long way to reducing national stresses.

Humphreys et. al. (2007) recommends that the nation tailor the auction design to the context. Countries need to increase the level of competition between companies. Sometimes use of a sealed bid approach is best and sometimes other auction forms are better. Not using an auction, but an administrative process, is less transparent and more likely to cause corruption.

They recommend the use of bonding to protect against environmental damage. Under such a requirement, companies are required to post bonds in anticipation of future cleanup costs. If this is not done the country is often left with the cleanup costs to cover out of its own resources. If this cleanup includes taxpayer funds, it will lead to national tensions that are relatively easy to avoid.

Humphreys et. al. also recommend stabilizing national expenditures so there is no need to go into debt when resource prices are low or payments are late. They and many others recommend that the earnings from natural resources be used for investment rather than consumption to avoid the Dutch Disease and to reflect that the state is using its wealth productively. This type of investment could and should include investment in education. Earnings need to be invested in financial and physical capital,

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<sup>9</sup> See the EITI website at [www.eiti.org](http://www.eiti.org)

such as infrastructure. Investing collected resource rents in alternative export sectors, such as agriculture, can also help offset the disadvantage of the Dutch Disease.

They and others recommend that such states take steps to avoid inequities. One avenue is to decentralize the expenditures to the sub-national bodies through regional infrastructure investments or simply distributing cash to the sub-national bodies. The distributive repercussions of unequal distribution of natural resource rental income need to be ameliorated. These consequences include national tensions and civil strife. Luong and Weinthal would claim that the governments are aware of the potential for these problems and that this would influence their choice of companies to develop the natural resources in the first place—either NOCs or IOCs and with varying degrees of government control.

Humphreys et. al. (2007) recommend as do others that natural resource-dependent states strengthen state-society linkages. They strongly believe in the importance of the citizen tax bargain, so they say the state should tax citizens so the citizens will hold the state accountable. Without accountability to the people, there is no democracy. Dunning (2008) takes a different view and claims that resource rents take the pressure off society too tax the elite, leading to more democratic outcomes.

Humphreys, Sachs, and Stiglitz (2007) also recommend that natural resource-dependent states get the services of skilled negotiators. A big problem is that oftentimes nations are bargaining with IOCs that have a wealth of knowledge and negotiating skills that are superior to those of the resource-rich nation (see footnote 6). Humphreys et. al. recommend that the international community develop a pool of skilled negotiators who should be paid on commission for how well they do for each natural-resource-rich country on a case-by-case basis. Luong and Weinthal would argue that the governments in question are not so uninformed and are able to get the expertise to bargain on a level playing field.

Humphreys et. al. (2007) recommend strengthening institutions before privatization. This recommendation sounds good. But government elites and state-owned oil companies can find enough ways to take revenue from the resource extraction as a private company could otherwise extract under a wide range of institutional development.

Humphreys et. al. (2007) goes on to recommend that in negotiating contracts, to identify provisions for renegotiation ahead of time. This seems to miss that the largest risk is the risk of expropriation. For protection against expropriation foreign investors can get political-risk insurance at subsidized rates from the Multilateral Investment Guarantee Agency (MIGA) of the World Bank Group.

They also recommend avoiding complex contracts. From an “all else equal” position, they recommend a royalty system where royalties are set as a percentage of total production, compared to bonus bidding. They further point out that if the royalty is too high it can reduce the firm’s incentive to invest in resource extraction ex post. They recommend evaluating contracts on the basis of the incentives they generate and their performance under different scenarios before they are signed. Further, they recommend making the timing of the payments a function of the ability of the state to bear risk. For a developing country this may mean paying as soon as possible after extraction. And finally to ensure

against oil risk, a country should hold onto oil reserves, either as Bangladesh held onto gas reserves until 2007, or by using slower extraction rates.

Humphreys, Sachs, and Stiglitz (2007) and other economists go so far as to prescribe that nations with weak institutions should leave their natural resources in the ground. This is unrealistic advice given the incentive in any nation to develop its natural resource, especially a nation with weak institutions. Two examples stand out where the resources were left in the ground.

Botswana was able to avoid the discovery of Kimberlite diamonds (those found in geographically specific underground sites) for decades until it gained its full independence from being a UK Protectorate. The Botswanans feared that mining would attract a more severe form of colonization and hence the local state forbade any mining activity until independence. Since independence, Botswana has developed a strong set of institutions. Botswana has long been held up as the exception to the “rule” of the resource curse by economists. Bangladesh was also long cited as a nation that had decided not to develop its natural gas and to save it for future generations. It was only in 2007 the nation invited in major energy companies which, along with state-owned enterprises, developed many of its gas fields. Bangladesh, however, is an unusual case; it is a democracy with some weak institutions. Whether or not the democracy will survive is another question. Bangladesh may now suffer some of the same symptoms of the resource curse depending upon the type of fiscal system it establishes.<sup>10</sup>

## 6. Remarks and Directions for Future Research

Democracy and non-renewable resource abundance are not natural mates in developing countries according to much research, but not all research. Some authors have argued that democracy and resource abundance can coexist and this comes primarily from the political science community. However, the most thoughtful work reviewed here suggests that only in special cases will democracy be the outcome of the game in a resource-dependent state (Dunning 2008). Luong and Weinthal argue that there is a possible relation between Democracy and natural resource abundance but find no evidence that the two are related over panel data. Haber and Menaldo (2011) are the strongest to conclude that “...oil and mineral resources reliance does not promote dictatorship over the long run. If anything, the opposite is true. These results hold even when we search for a host of conditional effects suggested by the literature,” (pg. 25).

Most mainstream economists would say that it is highly unlikely that a developing country with a well endowed natural resource industry, such as oil, would be a democracy. Humphreys, Sachs, and Stiglitz (2007) argue strongly that developing nations dependent on natural resources are unlikely to have democratic states. They use the argument of the broken “tax bargain” as well as other arguments to support this position. They show that the pattern of weakening democracies and increased oil production has been a problem even in the US. The work of De Rosa and Ioffe also suggest the curse in

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<sup>10</sup> Luong and Weinthal would say that by inviting in independent foreign oil companies, the country will get a hybrid fiscal system and avoid the worst of the curse.

terms of a weaker democracy and slower growth. So clearly this is an area for future research given that the main research teams disagree strongly.

For the most part, natural resource-dependent states grow more slowly than their counterparts. But it seems that a number of developing countries are getting on the right track for long-term high growth. Dani Rodrik (August 2011) finds that attracting and allowing manufacturing industries and modern services to grow is the way developing nations are able to boost growth and achieve unconditional convergence with the growth rates of developed nations. He believes that institutions in developing countries have been improving. Yet much of the economic growth in the last decade in developing countries has come from the boom in commodity prices, which likely is not sustainable.<sup>11</sup> Rodrik points out that dependence on natural resource exports makes it all the more difficult to get countries to move their factor inputs into the “right sectors” and says this is another manifestation of the resource curse.

Luong and Weinthal (2010) raise a number of questions for further research. Does the nature of the company developing the oil (or other natural resource) really make a difference in the way nations will grow? Luong and Weinthal say that nations where the government manages the resource extraction are the ones most likely to fall into the curse. Yet Humphreys, Sachs, and Stiglitz (2007) argue that the developing nation should use a nationalized company to develop the natural resource for the best outcome. Who is correct? This is an area for future research.

Luong and Weinthal put forward a heuristic argument that states’ fiscal systems will depend on which corporate structure and government ownership of extracting the natural resource is chosen, based on four case studies of the Former Soviet Union. This needs empirical testing. It is crucial to recommend the type of company to extract the resource which will pose the least risk to the resource-rich nation.

Humphreys, Sachs, and Stiglitz (2007) give some useful mechanisms that developing countries can use to at least mute the natural resource curse’s effects on growth. Their recommendation of using a nationalized oil company is of doubtful merit, especially in light of Luong and Weinthal’s research. Their other recommendations do have merit, based on the author’s experience.

Small interest groups, operating in well-developed democracies with high institutional quality, will erode that institutional quality to some extent when there is a natural-resource boom in those nations which are dependent on natural resource exports. The research of De Rosa and Ito (2012) suggest that the erosion in institutional quality will be more severe in developing nations dependent on natural resources. This is due to regulatory capture where the natural-resource interest group becomes more powerful during a natural resource boom. The natural resource interests are able to capture their regulators through a number of devices allowed by the extra money their lobbying groups get as a result of the resource boom. Through regulatory capture, the natural resources industry is able to keep more of the economic rent from the boom, weakening democracy and slowing growth.

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<sup>11</sup> The natural resource boom would be unsustainable except there are many experts who are saying it is real scarcity driving up commodity prices this time. “The experts” have seen real scarcity push up prices many times. Prices for metals are 11% lower in 2012 compared to a year earlier while oil prices are only 7.9% higher in 2012 than a year ago as of September 15, 2012.

The IMF and the IFIs more generally ought to loosen demands that the developing nations follow the permanent income hypothesis and form large offshore oil funds when there is hunger and a high degree of poverty in these nations. These organizations ought to allow the developing countries to spend more of their natural resource wealth to alleviate poverty now, and this will benefit future generations by preventing stunting, at a minimum. There are numerous other ways where investing in the developing nation now will improve the conditions for future generations, regardless of access to capital or credit.<sup>12</sup>

The overall picture that emerges is that there is a relationship between institutional quality and natural-resource dependence. There is some threshold at which good institutional quality can turn natural-resource-dependence into broad based sustained economic growth over the long term. These countries are most likely to be democracies. Below that threshold, poor institutional quality among nations that depend on natural resource exports leads to the natural resource curse and all that entails, including slower economic growth. A push for the right kind of technical assistance from international aid organizations to develop stronger institutions which will be accepted by the elites is needed for these nations.

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<sup>12</sup> This is in spite of what happened in Timor-Leste. With good guidance from the IFI's and developed-country governments as well as careful technical assistance some of the worst excesses can be avoided.

Annex I  
Selected Nations and Resources

Nation	Resources	Resource Exports as a	
		Percentage of Total Exports (Average 2006-2010)	Years of Reserve*
Algeria	Oil	98	35
Angola	Oil	95	20
Azerbaijan	Oil	94	32
Bahrain	Oil	81	17
Bolivia	Gas	5	20
Botswana	Diamonds	66	19
Brunei	Gas	96	...
Cameroon	Oil	47	...
Chad	Oil	89	34
Chile	Copper	53	27
Congo, Rep. of	Oil	90	18
Dem. Rep. of Congo	Minerals and Oil	94	11
Ecuador	Oil	55	34
Equatorial Guinea	Oil	99	17
Gabon	Oil	83	41
Guinea	Mining Products	93	...
Guyana	Gold and Bauxite	42	...
Indonesia	Oil	10	27
Iran	Oil	79	135
Iraq	Oil	99	150
Kazakhstan	Oil	60	60
Kuwait	Oil	93	114
Libya	Oil	97	80
Mali	Gold	75	...
Malaysia	Oil	8	31
Mauritania	Iron Ore	24	64
Mexico	Oil	15	10
Mongolia	Copper	81	...
Nigeria	Oil	97	66
Norway	Oil	62	14
Oman	Oil	73	20
Papua New Guinea	Minerals and Petroleum	80	...
Peru	Minerals	8	35
Qatar	Gas	88	144
Russia	Oil	50	49
Saudi Arabia	Oil	87	76
Sudan	Oil	97	38

Suriname	Minerals	11	...
Syrian Arab Republic	Oil	36	22
Timor Leste	Oil	99	...
Trinidad & Tobago	Gas	38	10
Turkmenistan	Oil	91	150
United Arab Emirates	Oil	41	100
Venezuela	Oil	93	227
Vietnam	Oil	14	43
Yemen	Oil	82	43
Zambia	Copper	72	26

Asterisk indicated estimates based on average rates of extraction between 2006 and 2010.

Baunsgaard, Thomas, et. al. (2012)

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