Abstract

There is a growing literature on how natural resources affect both economic performance and political regimes. In this paper we add to this literature by focusing on how natural resource wealth affects the incentives of governments to uphold contracts with investors in and across sectors. We argue that while all states suffer reputation costs from reneging on contracts, governments in natural resource dependent economies are less sensitive to these costs, leading to a greater probability of expropriation and contract disputes. Specifically, leaders weigh the benefits of reneging on contracts with investors against the reputation costs of openly violating agreements with firms. Our theoretical model predicts a positive association between resource wealth and expropriation. Using a dataset from the political risk insurance industry we show that resource dependent economies have much higher levels of political risk. We also present preliminary secondary data analysis showing that natural resource economies partially compensate for the increased level of political risk by offering corporate tax incentives to firms.
Social scientists have long lamented the detrimental effects of natural resources on host countries. Natural resources can lead to a currency appreciation and thus deindustrialization, support or entrench authoritarian leaders, affect the likelihood and intensity of civil conflict, and have a negative impact on women's employment opportunities and political rights.\footnote{See Weinthal and Jones Luong (2006) for a recent review.} As highlighted by Robinson et al (2006), while many case studies of the natural resource curse find government policy as the main culprit, much of the theoretical work has largely ignored political factors.

While some of the recent theoretical literature linking elites and natural resources has made important advances in understanding the natural resource curse, an important mechanism is largely unexplored. In this project we examine the theoretical link between natural resource endowments and incentives of leaders to renege on contracts with private investors. This increases political risk for firms in the natural resource sectors and all other sectors.

We argue that all leaders weigh the costs of reneging on contracts with investors against the immediate benefits gained from these opportunistic activities. For example, Bolivia's rewriting of oil and gas contracts lead to major changes in the amount of revenues accruing directly to the Bolivian government. Yet these actions have serious reputational costs leading to downgrading of Bolivia's risk ratings and a changing perception in the likelihood of Bolivia upholding contracts. Countries with a reputation for not upholding contracts will receive less investment in the future.\footnote{See Jensen (2006) for a review.}

While all leaders make this cost-benefit calculation, leaders in countries flush with rents from natural resource extraction, such as Chavez in Venezuela, are less sensitive to how government actions affect the international reputation of the government. Thus while Venezuela and Bolivia have been punished by international investors with lower levels of new invest-
ment, the large natural resource rents from the oil and gas industry insulates the government from this retaliation from private investors. More generally, government budgets, central for providing public and private goods necessary for staying in power, are less dependent on foreign investment in regimes with natural resources. Thus while nationalizing foreign investors is a tempting option for all governments, the reputational costs borne by nationalizations are less damaging to leaders in regimes with natural resources. We predict that natural resource endowments, by affecting the incentives of leaders to renege on contracts with private investors, will increase political risks for firms.

This relationship between natural resources and political risk is not limited to reneging on contracts or nationalizing firms in the natural resource extraction industries. Leaders will have weaker incentives to uphold contracts with all types of firms. Thus investors in manufacturing and services are exposed to higher political risks due to the lack of incentives for the government to maintain a good reputation.

This theory provides an indirect mechanism through which natural resources can affect host governments. Not only can natural resources lead to authoritarian leaders or civil conflict, it also makes governments less sensitive to actions that will drive away foreign investment. The lack of development in natural resource dependent economies may be partially due to the lack of incentives for building the rule of law.

In our empirical analysis we explore a novel cross-sectional data set from the political risk insurance industry that prices the costs of purchasing political risk insurance against the threat of nationalization, expropriation, or reneging on contracts that threaten firms. This data provides a number of advantages over existing data sources, specifically in allowing us to directly measure the risks faced by multinational investors. Our results show that natural resources are associated with dramatically increased political risks, even after controlling

\[^3\]These large budgets in natural resource economies can also be translated into higher levels of employment.
for economic and institutional features. Our secondary data analysis explores a confidential firm-level data set on the taxes paid by the foreign affiliates of U.S. multinationals. We find that natural resource dependent countries partially compensate for the high levels of political risk by offering generous tax incentives to firms.

1 Political Risk

Both scholars and politicians have begun to recognize the potential economic benefits of attracting the investment of multinational corporations, foreign direct investment (FDI). Governments can help influence the benefits of foreign investment and harness private capital for development (Moran 1999). Unfortunately, although neoclassical models of international capital predict that international capital should flow from rich countries to poor countries, most foreign investment is between wealthy countries.

While a number of mechanisms can explain the lack of investment in the developing world, one potential culprit is the lack of secure property rights. Property rights are especially important to multinational investors, where investments in production facilities or extractive industries can not be easily disinvested in response to political change. As pointed out by Vernon (1980), although multinationals may negotiate lucrative entry deals before entry, firms can become hostages of the host government. While scholars have criticized the simplistic application of Vernon’s obsolescing bargaining (Malesky 2007), the key point is that when disinvestment is relatively illiquid, multinational investors are exposed to political risks after investment.

As highlighted in the introduction, governments that renege on contracts with multina-

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4 See Jensen (2006) for a review.
6 Blonigen (2005) for a review.
tionals will be punished by multinational investors with lower levels of future foreign direct investment. Yet, despite these costs, scholars have argued that governments still have incentives to renego

tiate, renegotiate, or outright nationalize foreign direct investments. This has led to a large literature on how political institutions can constrain political leaders behavior towards foreign investors. Scholars have examined how political regimes (Harms and Ursprung 2002; Jensen 2003, 2006, 2008; Kenyon and Naoi 2007; Li and Resnick 2003; Busse 2004; Busse and Hefeker 2005), political constraints (Henisz 2002), electoral rules (Garland and Biglaiser 2009), security agreement (Biglaiser and DeRouen 2007) and partisanship (Weymouth and Broz 2007) all affect the risk environment. 

Beyond these domestic factors, scholars have increasingly turned to how international law can constrain nation-states. A number of projects have focused on how bilateral investment treaties (BITs) increase investment by reducing political risks. These studies find conflicting results on the impact of BITs on investment flows. Yet, none of these studies have directly tested the impact of BITs on political risk.

The key point is that multinational corporations often avoid high risk countries, or engage in strategies that limit exposure to country level political risk. Thus political risks can lead to a misallocation of capital, and the structuring of activities for multinationals that limit the positive spillovers of foreign direct investment. Our theory is that the resource curse increases these risks for a firm operating in natural resource dependent countries.

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8 There is also a growing literature on the variations of authoritarian regimes, and how this variation affect economic performance. For example, see Gandhi (2008) and Wright (2008).


10 See Tomz (2007) for an extensive exploration of the role of reputation in international capital markets.

11 Desi, Foley, and Hines (forthcoming) find that multinationals in high risk countries finance their investments from domestic capital, rather than bring in capital from abroad.
2 The Natural Resource Curse

A second literature explores the negative effect of natural resources on economic and political development. While an extensive review of this vast scholarly literature on the natural resource curse is beyond the scope of this paper, we outline a number of important empirical and theoretical relationships between natural resource wealth and political and economic outcomes. These include the link between natural resources and: 1) low levels of economic growth, 2) authoritarian regimes, and 3) political violence.\textsuperscript{12}

The first of these points, the growing consensus linking natural resource endowments to lower levels of economic development and economic growth, has resulted in numerous academic publications and have permeated public policy debates.\textsuperscript{13} One mechanism for this Dutch Disease, named after the deindustrialization associated with the Netherlands natural gas boom, is that natural resources lead to a real exchange rate appreciation, driving exporters out of business. Natural resources can have other economic consequences, such as leading to a lack of economic diversification, decreasing the demand for skilled labor, and having a negative impact on women's employment opportunities.\textsuperscript{14} Macro cross-national empirical regressions generally find a negative association between natural resource endowments and GDP growth rates (Sachs and Warner 1995, 1999).

A second literature has focused on the negative impact of natural resources on democracy. Numerous recent empirical projects have identified natural resource endowments as entrenching democratic leaders while cross-national empirical analysis has linked natural resource wealth to the persistence of authoritarian regimes and breakdown of democratic gov-


\textsuperscript{13}See Auty (2001) for an extensive treatment of this issue.

\textsuperscript{14}See Alexeev and Conrad (2008) for a review and a new analysis. For a study on how natural resource endowments affect women, see Ross (2008).
ernments. These results are not without contestation, where Alexeev and Conard (2008) argue scholarship has largely overstated the impact of natural resources on both economic growth and political institutions. Dunning (2008) uses a mix of theoretical models, empirical analysis, and case studies to examine the links between natural resources and authoritarian regimes. Dunning finds a complex relationship where natural resources can threaten democracy under some conditions, and support democratic consolidation and survival under other conditions.

Finally, natural resources have also been linked to political violence. Resources can cause the onset of a violent struggle because of their value, and they can allow violence to continue because of their lootability. Most researchers have found a positive and significant relationship between resource dependence and violence (Berdal and Malone 2000; Collier and Hoeffler 2000, 2003; Fearon and Laitin 2003). Humphreys (2005) nuanced empirical findings suggest that natural resources increase the likelihood of civil conflict, but can shorten the duration of political violence, usually by leading to a complete military victory by one side. Ross (2006) finds that resource rents influence both the onset and duration of civil conflict, although with substantial differences across types of resources and their geographic location. Utilizing a new data set on natural resource rents, de Soysa and Neumayer (2007) find little support for mineral rents affecting civil conflict, while energy rents increase the probability of civil war onset.

While this is far from an exhaustive summary of the natural resource curse literature, it provides a representative overview of the existing theoretical and empirical debates. In the next section we argue for an alternative theoretical mechanism linking natural resources and lower levels of development.

\[15\] For example, see Ross (2001) and Jensen and Wantchekon (2004).
3 Natural Resources and Political Risk

The mentioned studies on the link between natural resources, economic growth, authoritarian regimes and political violence most likely lead to indirect impacts of natural resources on the investment environment.

One mechanism linking natural resources and political risk is the relationship between high levels of natural resource dependence and authoritarian regimes. Scholars examining political risk have examined how democratic institutions affect the investment environment. For example, Democratic institutions have been associated with higher levels of foreign direct investment flows (Jensen 2003, 2006) and less acts of expropriation (Li 2009). Recent scholarship has gone beyond this democracy-dictatorship dichotomy. Henisz (2000, 2002) constructs a new measure of political constraints which take into account both the number of veto players and ideological distance between these actors. While democracy is highly correlated with political constraints, it is possible to have unconstrained democracies and highly constrained authoritarian regimes. Jensen (2008) argues that constraints on the executive are the primary factor linking democratic institutions to lower levels of political risk.

Democratic institutions can have a negative impact on the investment environment. Li and Resnick (2003) find that after controlling for the rule of law, democratic institutions reduce foreign direct investment inflows. Li and Resnick (2003) identify one of the main mechanism is that stronger anti-trust protections in democracy regimes can disadvantage monopolistic multinationals. Democratic regimes can lead to unstable policies since elections can lead to time-inconsistent preferences (Rodrik 1991; Pattillo 1996) or incumbents may institute policies to lock in future governments (Persson and Svensson 1989, Alesina and Tabellini 1990). Democratic regimes may also limit the ability to ability of firms to take
advantage of their monopoly position or extract tax concessions (Li 2006). Finally, authoritarian regimes can also protect multinationals from popular pressures that go against the interests of the firm (Huntington 1968, Bornschier and Chase-Dunn 1985, and Oneal 1994). These studies suggest that democratic regime is not always preferred to authoritarian regimes for investors.

Thus one mechanism linking natural resources and the risk environment is the how resources affects democracy and how democracy affects the risk environment, although this mechanism is still controversial and indirect. An alternative mechanism is that relationship between natural resources and political violence. The political violence associated with natural resource wealth can also affect potential multinational investors. Nigh (1985), Enders and Sander (1996), Li (2006b), Jakobsen and de Soysa (2006), Blomberg and Mody (2007), and Jensen and Young (2008) find that political violence has a negative effect on investors, although Loree and Guisiner (1995) and Globerman and Shapiro (2003) find mixed results linking violence and FDI, and Fatehi-Sedeh and Safizadeh (1989), Li and Resnick (2003), and Sethi, Guisinger, Phelan and Berg (2003) find no relationship.

In this paper we sketch out an alternative theory linking natural resources to political risk that focuses on the incentives of political leaders. The weakness of the literature on political regimes and foreign direct investment is that focus on how institutions can constrain political leaders. This assumes that leaders always have the incentives to expropriate investment or renege on contracts with multinationals.

Our paper focuses on the conditions under which governments have the incentive to renege on the contracts with multinationals. The key insight of this paper is how resource endowments affect the incentives of leaders to renege on contracts. The logic is as follows.

In the next section, we develop microfoundations for a political leader, who oversees the investment climate of her country, and a potential foreign investor. We model then their
interaction as a strategic game in which the leader decides whether or not to expropriate and the investor decides whether or not to invest. We discuss how natural resource wealth affects the equilibrium outcome within this strategic environment. In section 5 we explore if there are systematic differences in the risk environment in natural resource dependent countries.

4 A Model of Reputation, Risk and Natural Resources

In this model, we are interested in finding conditions that must be satisfied in order for a leader, $L$, not to expropriate, and a multinational corporation, $C$, to invest in $L$’s country. Once these conditions are expressed, we model the interaction using a strategic game and analyze how the equilibrium behavior changes with respect to an increase in $L$’s natural resource revenue.

4.1 Leader Incentives

For country $A$, let there exist an incumbent leader, $L$, who decides how much FDI to expropriate, and, thereby, how attractive her country is to multinational corporations. A group of foreign investors, upon seeing $L$’s decision, react by expanding or contracting their current level of investment in country $A$.

Assume that $L$ seeks to maximize the government’s revenue. In this paper, we make no assumption about how they intend to use this revenue. They make their decision subject to a cost-benefit analysis of expropriation versus facilitating FDI. Assume that investors also seek to maximize their profits. They decide whether or not to increase investment in country $A$ by analyzing the risk adjusted returns of the investment. We assume that investors can

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16We anticipate, however, that leaders will divide their revenue between public goods and private goods, depending on their electoral constraints, and embezzle the rest for personal gain (it is not necessary for leaders to embezzle).
observe all expropriations and assess the risk adjusted returns of their investment opportunities by observing various investment indicators in a country, including the level of free resources, $R_0$.

On the whole, we assume that investors regard an increase in free resources as creating a more lucrative investment climate. There are several ways to justify this. Among them, we consider two: the ability to offer lower corporate tax rates and the increase in demand of investors with resource-intensive operations. Regarding the latter, it is likely that some firms will view additional natural resources as bolstering the investment opportunity. Oil and mining firms, for example, prefer not to mine in resource-barren countries. Other firms, such as those in the manufacturing sector, may be indifferent. We also assume, however, that $C$ is a sophisticated actor: if an increase in natural resources leads to higher political risk, we expect $C$ to be aware of it. In other words, if investors believe that $L$ perceives an increase in investor demand, they will expect $L$ to be less constrained by maintaining a safe investment climate, and thus, will expect an increase in political risk. They balance this risk against how natural resources affects the attractiveness of the host country, or more generally their expected risk adjusted returns of their investment. For many firms, the increase may be slight in comparison to the expected gain. For others, it may be significant. Going forward, we assume that an increase in natural resources has a net positive effect on how investors view the potential returns to their investment, although the risk adjusted returns may decrease.

Let $T$ be the total amount of government revenue, $I_0$ be the cost of attracting and maintaining FDI, and $\alpha$ be the rate of return on the FDI. $I_0$ costs may vary from country to country, including building infrastructure for investment, marketing costs for targeted investment promotion activities, and fiscal incentives for investment. We envision $\alpha$ as a composite of tax revenue from the international corporations and income tax revenue from
the public.\textsuperscript{17} If $L$ decides to facilitate FDI, they receive:

$$T - I_0 + \alpha I_0$$ (1)

Next, let $R_{\text{exp}}$ and $z_{\text{exp}}$ be the amount of free resources and amount of targetable\textsuperscript{18} goods they gain from expropriation, respectively. If $L$ decides to expropriate, they receive:

$$T + R_{\text{exp}} + z_{\text{exp}}$$ (2)

By subtracting equation (2) from (1), we find the total cost of facilitating FDI (or, equivalent, the gain from expropriation):

$$R_{\text{exp}} + z_{\text{exp}} + I_0(1 - \alpha)$$ (3)

Here, $R_{\text{exp}} + z_{\text{exp}}$ represents the opportunity cost created by not expropriating FDI. Thus, we see that expropriation will become profitable when equation (3) is less than or equal to zero. Rearranging, and solving for $\alpha$, we find that the rate of return, $\alpha$, must obey the following constraint:

$$\alpha \geq 1 + \frac{R_{\text{exp}} + z_{\text{exp}}}{I_0}$$ (4)

The leader must also consider the future loss of investment that results from investors observing expropriations. We assume leaders may not be able to recover by simply not expropriating in the next period.\textsuperscript{19} Specifically, we say that the loss of investment will continue

\textsuperscript{17}We allow for the possibility that FDI increases the domestic productivity of workers, raising incomes, thus generating more income tax revenue for a given tax rate.
\textsuperscript{18}We denote a targetable good as any good whose primary value is in redistribution, directly after expropriation, to a targeted set of the selectorate. These goods may have little value outside of the redistribution.
\textsuperscript{19}See Tomz (2007) for work on the dynamics of reputation in relation to sovereign defaults.
for $n$ investment periods, depending on how deterred investors are. We also assume that, although the contraction of investment may extend over multiple periods, the contraction itself may be small, depending on how egregious the expropriations were and how lucrative the investments are in country $A$. We denote $f(I_0, R_0)$ as the function that determines how large the contraction is, where $I_0$ and $R_0$ indicate level of expropriations and resource wealth at time of the decision, respectively. Thus, $L$ faces a decision problem where the more they expropriate, the more foreign investment, $f(I_0, R_0)$, will be deterred from entering in the future. Formally, we describe the future investment, $F$, as follows:

$$F = \delta f(I_0, R_0)(\alpha - 1) + \delta^2 f(I_0, R_0)(\alpha - 1) + \cdots + \delta^n f(I_0, R_0)(\alpha - 1) + 0...$$  \hspace{1cm} (5)

where $n$ is the number of periods in which FDI is contracted and $\delta$ is $L$’s discount factor for future investment. With $0 \leq \delta \leq 1$, we can re-express equation (5) as the sum of $n$ terms of a geometric progression:

$$F = f(I_0, R_0)(\alpha - 1)\frac{\delta(1 - \delta^n)}{1 - \delta}$$  \hspace{1cm} (6)

With this new cost, equation (3) becomes:

$$R_{exp} + z_{exp} - F + I_0(1 - \alpha)$$  \hspace{1cm} (7)

and equation (4) becomes:

$$\alpha \geq 1 + \frac{R_{exp} + z_{exp} - f(I_0, R_0)(\alpha - 1)\delta(1 - \delta^n)}{I_0}.$$  \hspace{1cm} (8)

Solving for $\alpha$ and simplifying, we find the following inequality condition:
\[ \alpha \geq 1 + \frac{R_{\text{exp}} + z_{\text{exp}}}{I_0 + f(I_0, R_0)^{(1-\delta^n)}_{1-\delta}} \]  

Let \( s_\delta = \frac{\delta(1-\delta^n)}{1-\delta} \). Notice that \( s_\delta \) is the sum of the geometric progression \( s_\delta = \delta + \delta^2 + \ldots + \delta^n \). Now, equation (9) becomes:

\[ \alpha \geq 1 + \frac{R_{\text{exp}} + z_{\text{exp}}}{I_0 + f(I_0, R_0)s_\delta} \]  

In equation (10), we see that as \( R_{\text{exp}} + z_{\text{exp}} \) increases, the minimum \( \alpha \) for which the incumbent to facilitate investment, at level \( I_0 \), must be higher. As \( n \) increases, on the other hand, we see that the inequality constraint decreases. We also notice that \( s_\delta \) is strictly monotonic with \( \delta \), \( \forall \delta \) s.t. \( 0 \leq \delta \leq 1 \), which we assume by construction. Thus, as \( \delta \) increases, the constraint on \( \alpha \) decreases. Lastly, because \( f(I_0, R_0) \propto \frac{1}{R_0} \), we see that as free resources increase, the inequality constraint on \( \alpha \) increases as well. In other words, for any level of investment, an increase in natural resources provides a leader more incentive to expropriate. In subsection (4.4), we discuss how the increase affects a leader’s behavior in equilibrium. Now we consider the decision of the foreign corporate investor, \( C \).

### 4.2 The Investor Decision

Thinking about the investor’s incentive compatibility, let us first assume that our investor is the average investor over a range of large, small, manufacturing, and natural resource-intensive corporations. Let \( V \) denote the amount \( C \) invests in \( L \)’s country and let \( \gamma \) denote the rate of return on that investment (if not expropriated). We envision \( \gamma \) as a composite of the attractiveness of the host country for the proposed investment project and the level of
corporate taxation. As with $\alpha$, we assume that $\gamma \geq 1$\(^{20}\). Here, we focus on the attractiveness of the host country and use $R_0$ as a proxy. It is likely that some firms will view an increase in natural resources as bolstering the investment opportunity. Other firms, such as those in the manufacturing sector, may be indifferent. Going forward, we assume that an increase in natural resources has a net positive effect on how investors view the opportunity. Later, we discuss how our hypothesis relates to this assumption. Lastly, we use $V_p$ to denote the part of the original investment, $V$, that is left over after a partial expropriation. Notice that $V_p \rightarrow V$ when $L$ expropriates close to nothing and 0 when almost full expropriation occurs.

Let $R$ be the total amount of firm profits. If $C$ decides to invest $V$, they receive:

$$R - V + \gamma V_p$$

If $C$ decides not to invest, they receive $R$. By subtracting equation (11) from this, we find the total cost of investing in country $A$:

$$V - \gamma V_p$$

As above, we set equation (12) $\leq 0$ and solve for $\gamma$. Simplying, we find:

$$\gamma \geq \frac{V}{V_p}.$$ \hspace{1cm} (13)

Thus, $L$ and $C$ will invest at level $I_0$ and $V$, respectively, if the inequality constraints for $\alpha$ and $\gamma$ are satisfied. To underlie this logic, we simply assume that $L$ and $C$ will invest in something if it is profitable.

In equation (13), we see that as $V$ increases, the minimum $\gamma$ for which $C$ invests, at level $I_0$, must be higher: as the cost of investment goes up, so must the return on that investment,\(^{20}\)If not, no investment takes place.
if \(V_p\) stays the same. As \(V_p\) increases, on the other hand, we see that the inequality constraint decreases: as the amount *not* expropriated increases, the return on the investment need not be as high. Lastly, because \(\gamma \propto R_0\), we see that as free resources increase, the inequality constraint on \(\alpha\) increases as well. In other words, for any level of investment, an increase in natural resources provides an investor more *incentive* to invest: if amount invested increases without a change in \(V_p\) or if the amount expropriated increases, \(C\) still may profit more with the vaulted \(\gamma\). In section (4.4), we discuss how the increase affects an investor’s *behavior* in equilibrium.

Before we discuss the interaction between \(L\) and \(C\), we briefly review the incentives that will condition their behavior. In deciding whether or not to expropriate, \(L\) considers how valuable the goods become upon expropriation \((R_{exp} + z_{exp})\), how profitable they are as investments \((\alpha)\), how expensive it is to court and maintain those investments \((I_0)\), the size and duration of the contraction that follows an expropriation-provoked loss in reputation \((f(I_0, R_0)\) and \(n\), respectively), and their discounting of future versus present profits \((\delta)\). The foreign investor, on the other hand, does not face a reputational cost if they do not invest. In deciding whether or not to invest, \(C\) considers the size of their investment \((V)\), the amount of their investment which is expected to survive expropriation \((V_p)\), and the rate of return on that part \((\gamma)\), which depends on corporate tax rates and on the attractiveness of the host country for the investment \((R_0)\). With this summary in mind, we proceed to a simple model of the interaction between \(L\) and \(C\).

### 4.3 A Strategic Game with Risk, Reputation and Resource Wealth

Consider a strategic game with two players, \(L\) and \(C\), in which \(L\) decides between expropriating fully \((E)\), partially \((E_p)\),\(^{21}\) or not at all \((\neg E)\), and \(C\) decides between investing \((I)\)

\(0 < E_p < E\). As such, \(f_p \in (0, f)\), \(I_p \in (0, I_0)\), and \((R_{exp} + z_{exp})_p \in (0, R_{exp} + z_{exp})\).

\(^{21}\)
Figure 1: A two player strategic game, in which a foreign investor (C) chooses whether or not to invest and a political leader (L) choose at what level to expropriate that investment.

and not (¬I). We assume that L pays a cost, c, for courting investors to play the game in the first place. Other than this cost, payoffs are determined by the equations (7) and (12) above. The game is depicted in figure (1) and analyzed below.

Looking at figure (1), we analyze C first. If C does not invest, they receive nothing, no matter what L decides. If they choose to invest, however, we see that their payoff preferences are as follows: (¬E, I) ≻ (E_p, I) ≻ (E, I). Above we assume that γ ≥ 1. With this assumption, we see that C always prefers to invest if L selects ¬E. If L selects E, on the other hand, C will always prefer not to invest (V > 0, by construction). If L selects E_p, C’s decision depends on how much of their investment is left after the expropriation, V_p. Specifically, C will only invest when −V + γV_p ≥ 0 or, equivalently, when γ ≥ \frac{V}{V_p}, where 0 < V_p < V.

L’s incentives are more complex. If C chooses not to invest, L is indifferent: they receive −c. If C chooses to invest, their preferences vary based on the rate of return from facilitating FDI (−I_0 + αI_0), the value of the expropriation (R_{exp} + z_{exp}), and the size/duration of the cessation of investment that follows the expropriation (f(I_0, R_0) and n, respectively). Specifically, L chooses:
where $[1] = R_{exp} + z_{exp} - F - c$, $[2] = (R_{exp} + z_{exp})_p - F - I_p + \alpha I_p - c$, and $[3] = -I_0 + \alpha I_0 - c$.

Searching for equilibria, we find four (in pure strategies). When we restrict our attention to those in which $C$ invests, only two remain: $(E_p, I)$ and $(\neg E, I)$. Notice that no equilibrium exists where $C$ invests and $L$ expropriates fully. Substituting $[1], [2]$ and $[3]$ with their functional forms, and solving for $f_p(I_p, R_0)$, we can re-express the necessary conditions for $L$ to select $E_p$ and $\neg E$ as:

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\begin{cases}
E & \text{if } f_p(I_p, R_0) \geq \frac{\beta + (I_p - I_0)(\alpha - 1)}{(\alpha - 1)s_\delta} \\
E_p & \text{if } f_p(I_p, R_0) \geq \frac{\beta + (I_p - I_0)(\alpha - 1)}{(\alpha - 1)s_\delta} \\
\neg E & \text{if } f_p(I_p, R_0) \leq \frac{\beta + (I_p - I_0)(\alpha - 1)}{(\alpha - 1)s_\delta}
\end{cases}
$$

where $\beta = R_{exp} + z_{exp}$. With these conditions, the equilibrium assessment is described as follows:

$\text{Equilibrium 1: } (E_p, I)$ if $\gamma \geq \frac{V}{V_p}$ & $f_p(I_p, R_0) \geq \frac{\beta + (I_p - I_0)(\alpha - 1)}{(\alpha - 1)s_\delta}$

$\text{Equilibrium 2: } (\neg E, I)$ if $f_p(I_p, R_0) \leq \frac{\beta + (I_p - I_0)(\alpha - 1)}{(\alpha - 1)s_\delta}$

Equilibrium 1 and 2 provide the conditions necessary to speculate on, in this strategic game, when we should expect expropriation to accompany investment.

At this point, we have demonstrated a logic for how expropriation can accompany in-

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22Notice that $f_p \rightarrow f$, $I_p \rightarrow 0$ and $(R_{exp} + z_{exp})_p \rightarrow (R_{exp} + z_{exp})$. 

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vestment. We find two equilibria in which investment takes place; one in which the foreign
investor invests and the leader does not expropriate and the other in which the foreign in-
vestors invests despite the leader’s partial expropriation. As expected, no equilibrium exists
in which $C$ invests and $L$ expropriates their entire investment. In the next section, we proceed
to show how an increase in natural resources effects the outcome supported in equilibrium.

4.4 The Effect on Risk of an Increase in Natural Resources

We now analyze how an increase in natural resources effects the conditions for our two
equilibria.

We begin by assuming that $L$ and $C$ are in equilibrium 2, in which $C$ invests and $L$ does
not expropriate. Recall that as $R_0$ increases, $f_p$ decreases. Thus, we see that as $R_0$ increases,
$L$ gets closer to the inequality’s lower bound. As $R_0$ increases further, the inequality binds,$f_p = \frac{(R_{exp} + z_{exp}) + (I_p - 1)(\alpha - 1)}{(\alpha - 1)(\frac{z}{\gamma'})}$, and $L$ becomes indifferent to $E_p$ and $\neg E$. If the increase in $R_0$ is any larger, the threshold is breached and $L$ prefers $E_p$. Simultaneously, as $L$ becomes
more likely to expropriate with an increase in $R_0$, $C$ becomes more willing to invest should
$L$ choose $E_p$; if $R_0$ increases, so does $\gamma$, and thus $\gamma \geq \frac{V}{V_p}$ is more likely to be satisfied. For $C$, too, there will be an increase in $R_0$ which will be large enough to make them want to
invest, rather than not invest, when $L$ selects $E_p$. Thus, if $L$ and $C$ belong to equilibrium 2,
an increase in natural resources can justify a switch to a new equilibrium, where $C$ invests
despite $L$’s partial expropriation.

If $L$ and $C$ are equilibrium 1, we see a similar story. In the partial expropriation equi-
librium, we know that the $f_p$ and $\gamma$ conditions are satisfied for $L$ and $C$, respectively. Any
increase in $R_0$ will push them both further away from these thresholds, increasing their in-
centives to occupy this equilibrium rather than $(\neg E, I)$. For $L$, this will continue until $f_p$
becomes so low as to make a full expropriation preferable. Once this lower bound is reached,
however, there exists no equilibrium in which $C$ invests: there is no such rate of return, $\gamma$, that will entice $C$ to invest upon full expropriation. Thus, in equilibrium 2, an increase in natural resources can further root $L$ and $C$ in the partial expropriation equilibrium, but it will never justify a switch to an equilibrium in which $C$ invests despite $L$’s full expropriation.

Earlier, in sections 4.1 and 4.2, we showed that an increase in natural resources shifts the incentives of both a country’s leader and it’s potential foreign investors. In section 4.3, we modeled their interaction and asserted several equilibria. In this section, we used comparative statics to show that an increase in free resources can also change the behavior of both foreign investor and leader, altering the outcome that is supported in equilibrium. For countries, otherwise similar, with drastic differences in their stock of free resources, our logic predicts a corresponding difference in the political risk that a foreign investor faces in each country. Below, using a dataset from the political risk insurance industry, we test this prediction. We show that resource dependent countries indeed have much higher levels of political risk.

4.5 The Effect on Corporate Taxes

Before proceeding to the empirical analysis, we lay groundwork for an additional consequence of the logic above. Specifically, if we assume that some investments are more valuable to the government than other investments, and thus governments are willing to selectively use policy to attract this type of investment, we expect to observe the seemingly odd pairing of a demand driven increase in political risk and, simulatenously, targetted efforts to attract investment, such as tax breaks.

As highlighted earlier, the existence of natural resources may increase the attractiveness of the host country for some investors (specifically investment in natural resource extraction). This leads, via the mechanism above, to an increase in political risk, which is borne by all
investors. Thus, some sectors receive the full benefit while paying only part of the cost. Up to this point, we have stopped here. We assumed, for simplicity, that no sector is inherently more important to a country's leaders than any other. In reality, this is often not true, and in this section we release that assumption, allowing some sectors to be more vital than others. This fits with recent work, such as Pinto and Pinto (2008), that explores government incentives to promote different types of investment.

_Vital_ firms may come from any sector in the economy, but some sectors are more conducive than others. For example, some sectors foster long-term investment, collaboration on public-works projects, and greater employment opportunities for the national workforce. Manufacturers, for example, often rely on national vendors for component parts, use local transport routes daily, and offer employment to the local workforce. Although this may be true of some firms in the natural resource sector, we assume that this is not generally the case. On the contrary, firms that significantly base investment decisions on natural resource wealth, are more likely to exit when resources deplete, to mine in isolated areas, and to rely less on public-works projects and local employment. Unfortunately, for sectors that do not directly benefit from $R_0$, paying the cost of higher risk, they have less incentive to invest in country $A$. Thus, to keep them investing at similar levels, $L$ must offer additional incentives. One such incentive is a tax break.

It is common knowledge that $L$ elevates the importance of some sectors over others, but $L$ cannot credibly commit to expropriate the vital sectors less. On the contrary, such sectors may be seductive to expropriate if they are of vital importance to the government.$^{23}$ $L$ must, instead, incentivize investment by offering more concrete benefits. Tax breaks offer a way to target particular firms, with concrete benefits, over time. Other types of assistance may include a reduction in export tariffs or an increase in other types of subsidies. For simplicity,

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$^{23}$See Kobrin, 1984
we consider tax breaks as a proxy.

The impact of tax breaks on the equilibrium conditions may be complex, however. Tax breaks lower $L$’s return on facilitating FDI, $\alpha$, giving them more incentive to expropriate. As political risk increases, further tax breaks are necessary, and the cycle continues until the optimal level of tax breaks and expropriation is reached. Herein resides an additional mechanism for how natural resource wealth affects political risk. We theorize lucrative as a direct mechanism, creating an increase in demand that increases incentive to expropriate. Tax breaks, on the other hand, provide an indirect mechanism, independent of natural resource wealth, but co-dependent with levels of expropriation. Thus, when natural resources increase, there is a direct as well as a multiplicative effect on the increase of political risk, depending on how ‘vital’ the sector and how much it is burdened by the increase in political risk.\footnote{Notice that if either are zero, this indirect mechanism becomes irrelevant.}

Although this section provides only a sketch of the logic, it suggests that it may not be surprising to observe, simultaneously, higher levels of political risk and lower tax rates. It also offers an alternative mechanism by which political risk increases in countries with natural resource wealth. Below, in section 6, we offer preliminary empirical support for this hypothesis.

5 Empirical Analysis: Political Risk Insurance Data

In the previous sections we outline our theory of how natural resource endowments lead to systematic increases in the levels of expropriation risk. Our key comparative static is that increases in natural resource rents, ceteris paribus, will lead to overall increases in political risk. This includes increased political risks for firms both in the natural resource sectors, and
in other unrelated sectors. Our central point is that natural resource wealth dramatically decreases the incentives of governments to uphold contracts with multinational firms.

To directly test the relationship between natural resource wealth and political risk requires data that captures risk of expropriation. Currently there is a small number of datasets that are utilized by scholars to measure the rule of law or level country risk. These include risk ratings such as Euromoney, Institutional Investor, the Economist Intelligence Unit, International Country Risk Guide, Moody’s, Political Risk Services, and Standard and Poor’s. The majority of these ratings are either general risk ratings or ratings for sovereign bonds. Only the International Country Risk Guide provides direct measures of risks of expropriation, and this measure has been criticized for the subject and non-transparent generation of these ratings.\textsuperscript{25} We propose an alternative measure of political risk that directly measures expropriation risk. This data, political risk insurance ratings, directly measure perceptions of the types of political risks facing firms.

Political risk insurers include major insurance companies such as Chubb and Lloyd’s of London, companies that specialize in political risk such as Sovereign, and government owned agencies such as the U.S. Government’s Overseas Private Investment Corporation (OPIC) provide risk insurance products to multinational corporations investing abroad. While multinationals can insure their businesses from natural disasters, theft, or even kidnapping, political risk insurance is distinct from these other products. Political risk insurance is designed to guard against political events that threaten the operations of multinational investors, including: 1) government’s expropriating the assets of multinationals, canceling of contracts, or other government activities that threaten the assets or income streams of multinationals (called expropriation/breach of contract risk), 2) the threat of war or political violence affecting (political violence) 3) or restrictions on the firm’s ability to expatriate funds (transfer

\textsuperscript{25}See Hoti and McAleer (2005) for an analysis.
risk). Our theoretical model only makes predictions on the government activities that fall under expropriation/breach of contract risk, and thus we only focus on this type of risk insurance.\footnote{Jensen and Young (2008) find that natural resources have little impact on political violence risk.}

As argued by Jensen (2008), using political risk insurance data has a number of distinct advantages over previous risk measures. First, political risk insurance data allow us to directly measure political risk and isolate expropriation risk from other types of risk. Another advantage is that these measures are built by market actors attempting to maximize profits by properly pricing and allocating resources based on the level of political risk. Although these measures aren’t generated in a market the same way stock prices are determined through trading since the pricing of political risk contracts are confidential, the political risk insurance industry has a number of feedback mechanisms that allow for some degree of price convergence across insurers. Political risk insurers (underwriters) develop political risk contracts and utilize brokers to interface with clients. These brokers convey information about competitors pricing to insurers.\footnote{See Jensen (2008).}

The political risk data we use to test our model comes from ONDD, the Belgian Export Credit Agency. This agency provides traditional export credit insurance (insuring payment for exports) and forms of investment insurance. We chose this data on ONDD pricing of foreign direct investment insurance for five reasons. First, ONDD makes this data publicly available via their website. Second, this data is disaggregated by type of political risk insurance (expropriation/breach of contract risk, transfer risk, and war/political violence risk). Third, after interviewing plant location consultants, I found that ONDD political risk insurance data is utilized for evaluating risks (and protecting against risk). One of the largest multinational investment location consultancies, IBM-Plant Location International, uses this
specific data to evaluate political risks. Even if a firm does not purchase ONDD political risk insurance, major investment location consultants utilize their data for evaluating political risk. Fourth, interviews with political risk insurance brokers reveal price convergence across agencies, thus ONDD prices should be relatively similar to the prices charged by other agencies. Finally, the head of the ONDD also serves as the head of the OECD’s country rating service and is the price leader in export credit insurance.

ONDD categorizes countries into seven risk groups. Countries with the highest risks are coded 7 and countries with the lowest risk are coded 1. Countries received separate scores for expropriation risk, transfer risk, and war risk. For the remainder of this paper we focus on expropriation risk/breach of contract risk.

ONDD produces these measures by utilizing a quantitative method that includes fixed weights of a set of variables for expropriation risk. ONDD analysts meet four times a year to update the country risk ratings. Each country is reviewed at least once a year in one of the four quarterly meetings based on the country’s geographic region. Countries that are not in the region under review can be added to the agenda in cases of political change that requires a reevaluation. Countries are then assigned a rating on a 1-7 scale based on a quantitative model and then are reevaluated based on qualitative evidence, making up to a one point correction to the risk rating.

The key independent variable is a measure of country-level natural resource dependence. There is a vibrant debate on how to properly measure natural resources endowments. In political science and economics, numerous projects have utilized the data on natural resources exports as a percentage of GDP (or merchandise exports). Ross (2006) is especially critical of this operationalization, where measuring natural resources as a percentage of GDP has a number of drawbacks. One obvious problem is that countries that resource dependence is measured as a percentage of GDP, where poor countries are more likely to be coded as
A second criticism is that focusing on natural resource exports can lead to misleading conclusions. Numerous countries engage in the trading and transport of natural resources (oil, gems, etc), thus export natural resources, yet their produce very few of these products. Countries that trade or process natural resources can be erroneously coded as natural resource dependent.

Finally, most theoretical arguments, including our own, focus on how natural resource rents affect economic or political development. Some natural resources may provide very few rents to the government. For example the rents from oil production vary dramatically, not just by the world price of oil, but also to the costs of extraction.

To measure natural resources we employ a number of different variables informed by this debate. The main variable measuring natural resource endowments is energy and mineral rents data from Hamilton and Clemons (1999). This variable measures the total amount of natural resource rents per capita by calculating the prices of natural resources produced minus the production costs.

There are two obvious limits to this data. First, this dataset doesn’t include information on diamond rents, one of the commodities often associated with the natural resource curse. Second, the Hamilton and Clemons data focus on existing natural resource rents, while there are arguments that future natural resource rents can also influence government activity. For example, Ross (2005) argues that ability of governments to borrow against natural resource deposits, or ”booty futures,” is a mechanism through which natural resource endowments can affect politics even in the absence of natural resource production.

To address these issues and examine the robustness of our results, we utilize a number of alternative measures. The first measure, which comes from Lujala et al (2005), takes on a
value of 1 if the country is a major diamond producer and 0 otherwise. The second, from Fearon and Laitin (2003), takes on a value of 1 if a country is a major oil exporter, and 0 otherwise. As a final robustness test of our results, we utilize Humphreys’ (2005) data on oil reserves.

We use a relatively small number of control variables for the regression and note the robustness of the results to alternative measures. Although there are a number of studies that explore the determinants of political risk ratings, few studies explicitly explore the determinants of expropriation risk. Many of these studies focus on country credit ratings, such as Euromoney or Institutional Investor Ratings. These ratings model the risk of sovereign default as function of financial, economic, and political risks. Although there may be common factors associated with sovereign default and expropriation, the theoretical mechanisms are distinct.

Thus, our empirical test only includes variables that are theoretically related to this specific type of political risk. Control variables include the level of development (\(GDPPC\)) and economic growth (\(Growth\)). Higher levels of economic development are associated with lower levels of expropriation and contract disputes. Economic growth according to Jodice (1980, 192), "Expropriation is a reasonable response to economic discontent which is directly linked to the operations of foreign firms in the national economy.” In periods of low economic growth, politicians have the incentive to redistribute income from foreigners to domestic citizens. We also include regional dummy variables for Western Europe, Latin America, Sub-Saharan Africa, North Africa and the Middle East, Eastern Europe and the Former Soviet Union, Asia, and Oceania.

To estimate the impact of democracy and political risk pricing categories we estimate

\[\text{see Hoti and McAleer (2005) for an analysis.}\]
the following ordered probit model:

\[
    \text{Risk} = \alpha + \beta_1 \text{Democracy} + \beta_2 \text{GDPPC} + \beta_3 \text{Growth} + \beta_4 \text{Europe} + \beta_5 \text{LatinAmerica} \\
    + \beta_6 \text{SSAfrica} + \beta_7 \text{NAfrica} + \beta_8 \text{EE/FSU} + \beta_9 \text{Asia} + \beta_{10} \text{Oceania} + \epsilon_i \tag{17}
\]

The dependent variable is the ordinal measure of the disaggregated ONDD expropriation risk price category for 2004. This measure ranges from 1-7 (lowest risk to highest risk). The key independent variable is Democracy, utilizing the standard measure of political regimes from the Polity IV dataset (Marshall and Jaggers 2000) where democracy is an ordinal variable from 0 (low democracy) to 20 (highest democracy score). We also include controls for the log of GDP per capita in 2003 and economic growth in 2003, both from the World Bank’s World Development Indicators 2005. In all models we include regional dummy variables to control for region specific determinants of political risk.

In Table 1 we present the results. In five of the six regression natural resources is a robust predictor of political risk (expropriation/breach of contract). Only model 5 fails to achieve statistical significance, where the value of diamond deposits is an insignificant predictor of political risk. The results for the other five regressions are remarkably robust to alternative specifications, including adding measures of political institutions, dropping outliers and dropping OECD countries from the sample.\(^{30}\)

Presenting the substantive impact of ordered probit results is best achieved by calculating the probabilities that a country would be in a given risk category. Using the results from model 6, we simulate the substantive impact using Clarify.\(^{31}\) These simulations give us probabilities of countries falling into each of the seven categories. The substantive impact of natural resource endowments on risk are enormous. Moving from the minimum level of

\(^{30}\)Results available from author.

\(^{31}\)Tomz et al 2003.
## Determinants of Expropriation Ratings

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
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<td>(0.042)</td>
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<td>(0.047)</td>
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<td>Reserve</td>
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<td>(1.018)</td>
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<td>(1.015)</td>
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<td>(1.032)</td>
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<td>0.31</td>
<td>0.31</td>
<td>0.30</td>
<td>0.32</td>
<td>0.31</td>
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</table>

Table 1: The dependent variable in all regressions is the ONDD political risk rating for expropriation/breach of contract risks. Ordered probit with robust (Huber-White) standard errors in parentheses. ***=p<0.01, **=p<0.05, *=p<0.10
natural resources (0) to the maximum (9.35) reduces the probability of being in one of the three lowest risk categories by 43%. Numerous countries in the data set are at this minimum and a number of countries are clustered close to the maximum. A less extreme example is a movement from the mean level of resource dependence (0.31) to the maximum reduces the probability of being in these three lowest risk categories by 31%. A final simulation examines how Benin’s risk rating (resource dependence of 0.353) would decrease given natural resource dependence equivalent to Nigeria (4.824) and Angola (5.349). Benin’s probability of being in one of the three lowest risk categories would drop by 22% and 24% respectively.

These empirical results are consistent with our theory presented in this paper. Countries with large endowments of natural resource wealth are associated with dramatically higher levels of political risk. These results are consistent across a number of measures of natural resource wealth.

6 Empirical Analysis: Corporate Taxation

Our second set of empirical tests explores the relationship between natural resource wealth and the taxation of firms. Our theoretical model points to the potential co-existence of foreign direct investment despite threats of expropriation. For firms in the natural resource industry, resource endowments can draw in investments, increasing the attractiveness of the country for extractive investment. For firms not affiliated with the natural resource sector, government policy, specifically reductions in corporate taxation can partially compensate for increased political risk. Thus our prediction is straightforward, firms that invest in countries with large natural resource endowments are likely to receive generous tax concessions. To test this hypothesis we utilize firm level data from the United State’s Bureau of Economic Analysis.
The United States Bureau of Economic Analysis (BEA) collects data on the investment activities and operations of U.S. foreign affiliates every year through a survey of firm level activities for all firms above a minimum asset, sales, or income threshold.\textsuperscript{32} Every five years the BEA conducts a more comprehensive survey including a larger number of questions and a larger number of firms. This survey data is believed to be of high quality since all firm-level data is confidential. The BEA aggregates this firm-level data by country and industry and releases this data to the public through a number of publications. This data may be shared with other agencies for the purpose of improving statistics, but this data is not shared with government agencies to collect taxes, enforce regulations, or make policy. Firms are required to report data to the BEA and there are monetary penalties for non-compliance. Thus the BEA benchmark survey data collected every five years is the highest quality firm-level data that covers essentially the complete universe of U.S. investments abroad.

The BEA has a program that allows a limited number of academic researchers access to the firm-level data for research purposes. Access is granted (strictly at the Bureau’s discretion) under a program that permits selected researchers to work on site as unpaid, special sworn employees of the Bureau. To conduct this research project we were granted access to the BEA firm level data as a sworn employee of the Bureau.

We utilize a number of variables from the 2004 BEA Benchmark survey (the most recent Benchmark survey), but the key piece of information is the foreign affiliates’ reports on the total dollar value of taxes paid to the host government. This data isn’t disaggregated by the jurisdiction of the tax authority in the country (national, state/province, local, etc.) although it does differentiate the types of taxes (corporate, indirect taxes, etc.) paid by the firm.

\textsuperscript{32}This reporting is mandatory under the International Investment and Trade in Services Survey Act. The threshold for the 2004 Benchmark survey is $10 million.
This universe of U.S. firms includes over 22,000 foreign affiliates, including 524 newly established or acquired affiliates. While this data is considered one of the highest quality data sources on multinational activities, scholars utilizing this data for research purposes have been careful to organize and clean the data for comparability across firms. First, while annual BEA surveys include both recorded and "estimated" data for firms, the BEA benchmark surveys have more extensive reporting requirements, minimizing the use of estimated data. By using only the 2004 Benchmark we only utilize reported data. All U.S. foreign affiliates with sales, assets, or net income of over $10 million are required to report to the BEA.

Second, BEA foreign affiliate data includes firms in all industries. While this diversity of sectors and industries can be an asset for the empirical analysis, scholars using this data have been careful to exclude firms operating in banking and finance due to non-comparable nature of these firms. Specifically, the assets of firms in financial sector could include stocks and bonds held by the bank that are from third countries. This isn’t comparable to the assets of a multinational in the manufacturing industry that has invested in plant, property and equipment. Following convention, we exclude the financial sector from my analysis.

Finally, although compliance with all questions on the BEA survey are mandatory for all foreign affiliates, there is the possibility of a foreign affiliate leaving a question blank, which is recorded as a zero. Thus the BEA data makes no distinction between non-response and

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33 This descriptive data is from Mataloni and Yorgason (2006).
34 The benchmark survey has much more extensive reporting requirements, including a lower minimum size threshold for reporting. In some cases data will be estimated in the benchmark data, including cases of when a firm fails to report an item or if the report is of dubious quality. The BEA also has slightly different reporting requirements based on the size of the firm. In the 2004 benchmark survey, majority-owned affiliates with assets, sales, or net income greater than $150 million were required to file on the long form; majority-owned affiliates with assets, sales, or net income between $25 million and $100 million, and all minority-owned affiliates with assets, sales, or net income greater than $25 million, were required to file on the short form; and affiliates with assets, sales, or net income between $10 million and $25 million were required to file on the mini form. I discuss the implications of these different forms when I outline my dependent and independent variables.
35 For example, see Desai et al (2004c).
36 Also, strict security policies prohibit downloading software, such as imputation programs.
true zeros. As highlighted earlier, compliance with BEA benchmark surveys are mandatory for firms, and the Department of Commerce follows up with parent companies that do not respond or provide responses that are flagged as potentially inaccurate.\textsuperscript{37} This doesn’t negate the possibility of non-response, but it should lead to some skepticism regarding the possibility that non-responses are driving all of these zeros.

As a final check against non-response we randomly selected fifty foreign affiliates and examined their paper forms, focusing on the reported foreign income taxes. In three cases I found non-responses to the foreign income tax question, and in all three cases the firms also left a number of other questions blank, including skipping the question on the ”cost of goods sold.” Thus, for the empirical analysis, we assume that all foreign affiliates with values of zero for costs of goods sold and zero values for foreign income taxes represent non-responses. In most cases the firms represent holding companies that are not directly engaged in production activities and should not be pooled with the other firms in the sample.\textsuperscript{38}

We present a straightforward empirical test of the relationship between natural resource wealth and levels of corporate taxation. For simplicity, we focus on instances of complete exemption from corporate taxes, but we note our results are robust to testing using the log of dollars in taxation as the dependent variable. In Models 7 and 8 we code instances of complete exemptions from corporate taxation as a 1, and any taxes paid as zero, modeling using a cross-sectional logit in Stata 11.

In Model 7 we include a limited set of country-level control variables, including the log of GDP per capita and the highest statutory marginal tax rate, both from the World Bank

\textsuperscript{37}The BEA has accounting staff that specialize in specific parent firms. The staff checks the quality of the data by comparing the data of foreign affiliates from the same parent firm. A second level of quality checking is done at the country level, where research staff compares the reporting of foreign affiliates activities by multiple parents but in a single host country.

\textsuperscript{38}Most of there firms reporting zero costs of goods sold are in the finance industry (holding companies). The data cleaning routine of excluding this industry excludes these holding companies.
<table>
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<tr>
<th>Resource Rents and Corporate Tax Exemptions</th>
<th>Model 7</th>
<th>Model 8</th>
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<tr>
<td>Log Rents</td>
<td>-0.021***</td>
<td>-0.022***</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.006)</td>
</tr>
<tr>
<td>IGDPpc</td>
<td>-0.051***</td>
<td>-0.043***</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>-0.007***</td>
<td>-0.006***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Zero Income</td>
<td>1.160***</td>
<td>1.226***</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Parent Assets</td>
<td>.</td>
<td>-0.009</td>
</tr>
<tr>
<td></td>
<td>.</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Affiliate Assets</td>
<td>.</td>
<td>-0.057***</td>
</tr>
<tr>
<td></td>
<td>.</td>
<td>(0.010)</td>
</tr>
<tr>
<td>PPE/Assets</td>
<td>.</td>
<td>-0.037</td>
</tr>
<tr>
<td></td>
<td>.</td>
<td>(0.052)</td>
</tr>
<tr>
<td>Local Sales</td>
<td>.</td>
<td>-0.151***</td>
</tr>
<tr>
<td></td>
<td>.</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Industry Dummies</td>
<td>Yes.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.332</td>
<td>0.397</td>
</tr>
<tr>
<td></td>
<td>(0.340)</td>
<td>(0.383)</td>
</tr>
<tr>
<td>N</td>
<td>12,992.</td>
<td>12,005.</td>
</tr>
<tr>
<td>PsuedoR²</td>
<td>0.13</td>
<td>0.14</td>
</tr>
</tbody>
</table>

| Table 2: Probit coefficients. Robust standard errors in parentheses. *=p<.1 **p<.05 ***=p<.01 |

World Development Indicators. Following Jensen (2008), we expect that countries with higher levels of economic development and countries with higher marginal tax rates are less likely to provide tax incentives. We also include a firm-level control for foreign affiliates that are unprofitable. While firms may strategically manipulate profits to minimize their tax burden, a large number of firms in the data set have reported profits, but zero tax payments. We also include a set of sectoral dummy variables. Our control variable takes a value of 1 if the affiliate has pre-tax profits that are less than or equal to zero. Our key explanatory variable is our measure of the log of natural resource rents from Hamilton and Clemons.
(1999).

In the second regression, Model 8, we include robustness tests that include firm-level control variables. We include measures of the size of the parent firm (log of parent assets), the size of the foreign affiliate (log affiliate assets), and the liquidity of the investment project defined as fixed assets as a percentage of total assets (PPE/Assets). Following Jensen (2008) we also include a measure the percentage of sales that are exported, versus the percentage of sales that are exported. This final measure explores how firms that don’t compete with domestic firms are provided tax incentives. The empirical results are consistent with our theoretical model. Countries with large levels of natural resource rents are much more likely to provide tax incentives to firms.

7 Conclusion

In this paper we explore an alternative mechanism through which natural resources can affect the political and economic environment. We argue that natural resource rents can distort the incentives of incumbent politicians, leading to actions that may deter future foreign investment. Specifically, we find that high levels of natural resource wealth decrease the incentives for politicians to uphold contracts with private investors, leading to higher levels of political risks.

We formalize this intuition through a strategic game between foreign investors and domestic governments that relies on very few assumptions. This formalization provides for a transparent theory and comparative statics that helps us understand the complex patterns of investment and government expropriations across the world. This model illuminates the changing incentives of governments after an increase in resource rents, and provides an explanation for the continued investment in some countries despite increases in political risk.
Our empirical analysis tests two parts of our model. First, we show through the use of political risk insurance ratings that countries with larger natural resource endowments have substantially higher levels of political risk. Second, we show through the use of firm-level data that host governments partially compensate for these higher levels of political risk by offering generous tax incentives to firms.

Our theory and empirical analysis leaves open a number of important questions for future research. First, we do not directly address the credibility of tax incentives offered by host governments and how this relates to political risk. Ironically, by increasing the tax incentives offered to foreign firms, this can also increase the incentives of the government to expropriate investors. For example, a manufacturing firm that is offered 15 years of zero taxes on profits may provide very few benefits to the host government. Thus, by offering compensation for the high level of political risk, the government can also be increasing the political risk for firms. We believe that this is a complex dynamic and may explain why many natural resource dependent economies, despite the resources to offer generous tax incentives, can not induce major increases in foreign direct investment.

Second, we ignore how political institutions both shape the incentives of political leaders and constrain the behavior of incumbent actions. Our model provides broad insights on how natural resource rents affect the incentives of political leaders. This model can serve as a starting place to further examine the relationship between resource rents and politics.

Despite these open questions, we believe this project makes an important contribution in furthering our understanding of the natural resource curse. Our project highlights how natural resource rents distort the incentives of incumbent governments, leading to less incentive to uphold contracts with private investors. This can help both explain the relationship between natural resources and lower levels of economic growth, and the direct relationship between resource rents, politics, and foreign direct investment.
A References


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A Appendix

Note.

Proofs of Section 4.1.
Proofs of Section 4.2.
Proofs of Section 4.3.
Proofs of Section 4.4.