Multinational Oil Firms and Host Country Bargaining Power in Latin America

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Abstract

This paper analyzes negotiations between multinational corporations and host states in Latin America in order to determine when states capture a greater share of the rents from oil production. I use data on 4,875 oil contracts between Latin American countries and international oil firms from 2003 to 2014 from the oil and gas consulting firm Wood Mackenzie. I operationalize host country bargaining power by looking at the state share of profits from oil extraction. I develop and then test a formal bargaining model based on sources of bargaining power that others have cited in the existing literature: the technical expertise of the national oil company, the states investment climate, and institutional factors like corruption. The empirical model shows that increased corruption leads to a significantly lower state percent of profits from resource rents, pointing to the central role of institutions in determining the degree to which states benefit from foreign investment in the resource sector.[1]

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1 Introduction

1.1 The Puzzle

Underneath the soil in the Patagonian desert is the Vaca Muerta ("Dead Cow") oilfield, a tight oil and gas deposit with as much petroleum as ExxonMobil's total reserves (EIA 2015, Romero and Krauss [2013]). It is hard to overestimate the importance of Vaca Muerta to the Argentine economy, yet the negotiations surrounding the development of the field remain a puzzle. The resources are being developed by Chevron and a consortium of other multinational oil companies rather than solely or primarily by the state-owned oil company, YPF. Further, the deal that Cristina Fernández de Kirchner, the former president of Argentina, struck with Chevron came shortly after she expropriated YPF from its Spanish host company, Repsol. Kirchner's reversal is even more puzzling because the negotiations included a number of special provisions for Chevron, including an exemption from domestic restrictions on oil and gas prices and permission to sell twenty percent of production abroad without paying export taxes or repatriating profits. In addition, Kirchner intervened in an Argentine Supreme Court case to ensure that Chevron would be allowed to partner with YPF, taking extralegal steps to ensure the partnership would move forward.

I explore three potential explanations for the puzzling fact that Kirchner was willing to accept a seemingly "bad" deal. The first is that YPF lacked the tools to extract oil, given that it required state of the art hydraulic fracturing technology. The second is that Kirchner or other Argentine authorities were engaged in corrupt dealings with oil companies. The third is that Argentina's investment climate declined precipitously and it was simply willing to accept worse deals in order to bolster the economy. This paper examines the relative strength of these three claims.

1.2 Key Findings and Contribution

Broadly, I find that institutional factors have the largest and most important effect on the terms of deals. The findings point to the essential nature of corruption and capture in shaping how and when foreign investment benefits countries in the developing world. In so doing, it

shows that foreign investment may lead to divergence among developing countries, as those with the strongest institutions are those that are best able to harness foreign investment for development.[2] Viz., foreign investment in the extractive industries can lead to significantly different outcomes for the host state and that states vary widely in their ability to capture the rents from resource extraction. This finding is particularly important given the massive increase in foreign investment over the past few decades from less than 200 billion dollars in 1990 to more than 2 trillion today.[3] Moreover, the findings are particularly pertinent given the willingness of states to partner with multinational corporations to extract resources, which had previously been largely under the purview of national oil companies and the important of resource rents to government budgets in the developing world.

I structure the theory of the paper by applying a formal model of bargaining to the negotiations between multinational oil companies and host countries in Latin America. The formal model is centered on three key variables: the impact of the disagreement value (developing the resources with the national oil company), the perceived risk of the investment to multinational oil firms (measured using previous expropriations and the number of investment treaties signed), and the potential for political capture and corruption. The model predicts that all three variables should affect firm deals. I then test the formal models implications using highly disaggregated data on oil fields and oil contracts across Latin America (based on proprietary data from the firm WoodMackenzie). The data is the most comprehensive measure of oil contract data and includes data on the oilfield, the partner, the type of contract, and the profits going to the state and the foreign company.

I focus on multinationals in the oil and gas sector for a number of reasons. Oil and gas – collectively called petroleum or hydrocarbons – drive the global economy. Because it is fungible and globally traded, the price of a barrel of oil reflects supply and demand all around the world. It is the single most traded global commodity (at 1.09 trillion dollars and 15 percent of global trade). I also focus on oil and gas companies because they are among the largest as well as the most politically salient and internationally visible firms. Additionally, current state involvement in the oil industry pits national or semi-national companies against multinational companies in virtually every oil-producing country in the developing world. Moreover, focusing only on one sector reduces differences in capital and

[2]There is a substantial literature on the so-called "race to the bottom", whereby states must compete for FDI by providing the laxest labor standards. See Mosley 2007, "Racing to the Bottom or Climbing to the Top: Economic Globalization and Collective Labor Rights."

[3]http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD

labor-intensiveness that would complicate cross-sectoral analyses. Finally, oil is dominated by a small set of international firms, controlling for variation across technology, firm concentration, and management. Oil is in some ways sui generis, but is comparable to other commodities in that it is capital intensive and has a high fixed cost, has high price volatility, and provides a significant share of government revenues in developing countries.

Because petroleum contracts determine how oil profits are divided, they provide an ideal way to operationalize shifts in bargaining power and thus the conditions under which states are able to demand a greater share of profits from projects developed in conjunction with multinational firms. The results shed light on the sources of power in negotiations between states and firms and allow us to elucidate when states or firms are able to capture the rents from resource extraction (Baldwin). I use proprietary data from the oil and gas consulting firm Wood Mackenzie, which includes detailed oilfield-level data on profit sharing and a host of other economic regulations. The data is the most comprehensive and representative in the industry and is regularly used by energy analysts and oil companies themselves, as well as by other academics studying oil contracts (Stroebel 2012).

The paper has three broad theoretical implications. First, I contribute to the literature on the conditional effect of natural resources by clarifying when states capture a greater share of oil extraction. Second, I unpack the sources of bargaining power between states and multinational corporations, a question central to the dependency theory literature and to the literature within international political economy on regulating firms. Third, the results relate to the literature on the role of the state in an increasingly globalized economy, particularly when states are hamstrung by global market conditions and the behavior of multinational corporations.

2 Understanding the Relationship Between Multinational Corporations and Host Governments

2.1 Existing Examinations of State-Firm Bargaining Power in Latin America

This paper builds on a long academic tradition that examines the impact of foreign firms on Latin American politics. Dependency theory emerged in Latin America in order to explain the regions simultaneous underdevelopment and reliance on international trade, particularly trade driven by multinational corporations. While summarizing such a diverse research agenda necessarily entails a degree of oversimplification, the core assumption of dependency theory was that bargaining power favored developed countries in the core and that deals were exploitative of developing countries the expense of those in the periphery (Moran [1978], Biersteker [1978], Cardoso and Faletto, Frank, Valenzuela and Valenzuela [1978], Barnet and Muller [1974]). I forgo such assumptions and treat the conditions under which deals favor firms as an empirical question (Cohen [2005], Moran [1998], Moran [2002]).

In addition to the contribution that this paper makes to the dependency theory literature, it also has implications for the literature on business politics. Business remains a central part of the political economy of Latin America, yet there has been relatively little recent research on the power of business in Latin America (Karcher and Schneider [2012], Schneider [2013]). While the New Left has been well-studied (Kurt Weyland [2010]) and there is an extensive literature on the impact of neoliberal reforms, multinational corporations have been relatively understudied.[4]

2.2 The Conditional Effects of Resource Rents in Latin America

This article explores the conditions under which states capture a larger or smaller share of oil profits. As a result, it has important implications for the literature on redistributive politics and the new left in Latin America, as the ability of leaders to redistribute depends on their

[4]For example, Kaplan (2013) also examines the relationship between global markets (particularly bond markets for sovereign debt) and the constraining effect on democracies

ability to capture rents from foreign investment (Lindblom [1982], Campello [2013], Kaplan [2013], Campello [2015], Gartzke and Naoi [2011]). It builds on the work of others, most notably Campello [2015], who have pointed to the price of commodities as an important determinant of leaders' ability to redistribute (as well as their popularity). I add additional nuance by examining when states are able to capture a larger share of resource rents, regardless of whether prices are high or low. The results thus have important implications for how rents from natural resources and commodities shape politics in Latin American countries.

Because I focus on natural resources, this research is of central importance for Latin America, which has a long history of reliance on commodities. The development of natural resources was often conducted by foreign firms, and as a result multinational corporations often have deep ties to the economic and political systems of Latin American countries. The extractive industries remain politically and socially sensitive in Latin America, tied to concerns about economic sovereignty and nationalism. Some companies, such as the United Fruit Company, are infamous for their labor abuses and direct role in supporting authoritarian regimes. The very term "banana republic" was coined to describe politically unstable Latin American countries with economies linked to the extractive industries and political systems dominated by foreign (often American) firms. While it's notable that some authors such as Fieldhouse [2000] argue that firms are intrinsically different and less exploitative than they were in the past, antipathy towards multinational corporations is a defining feature of Latin America politics today.

This paper also contributes to the evolving resource curse literature, which has shifted from the Ross-Menaldo debate on whether resources are a "curse" or a "blessing" to a more granular approach on "conditionalist explanation", primarily focusing on the role of institutions (Morrison 2013, 2012 & 2009, Dunning 2008, Luone and Weinthel 2006). This article sheds more empirical light on the conditions under which the possibilities for the state to benefit from resources exist (Ross [2001], Dunning [2008], Karl [1997])[5].

[5]Cf. Michael Ross' book, The Oil Curse: How Petroleum Wealth Shapes the Development of Nations (Princeton University Press, 2012), Dunning Crude Democracy, Subterranean Estates: Life Worlds of Oil and Gas 1st Edition by Hannah Appel (Editor), Arthur Mason (Editor), Michael Watts (Editor)

3 Evaluating the Sources of Bargaining Power

The task of operationalizing bargaining power between states and firms is a difficult one; as Stopford and Strange [1991] note, "how powerful the multinationals have become is a notoriously difficult question to answer." I begin with a review of the sources of bargaining power that others have cited in the literature, with specially attention to the oil industry. For example, Malesky [2009] uses an instrumental variables approach and finds that foreign direct investment has a significant impact on economic reforms in developing countries. Similarly, Desbordes and Vauday [2007] and Weymouth [2012] use data from the World Bank Business Environment Survey, to show when firms are able to extract better deals from developing country governments.[6]

3.1 Framework and Assumptions

It's important to recognize that I am primarily examining *state* bargaining power. This is distinct from, and in some ways conflicting with, bargaining power of different bureaucracies, the legislature, regulatory agencies, and the judiciary. I focus on the state because it is the primary vehicle for redistributing the profits from oil extraction. If a lower-level agency receives a bribe or kickback, this would be a sign of weak state bargaining power (albeit high bargaining power for the agency) and would be considered a form of capture for the purposes of this paper. Further, I focus on the state because the firm may negotiate with other groups, but only as representatives of the state; all contracts are made on behalf of

[6]The intellectual predecessor of modern bargaining models comes from the literature on the obsolescing bargain (Vernon [1971]). That literature analyzed the time inconsistency problem in foreign direct investment. Before the investment, states have an incentive to offer states a deal, but after the deal is made, bargaining power shifts because the firm already has sunk capital and thus faces the threat of expropriation. The obsolescing bargain was seen as particularly applicable to natural resource investments, including oil. However, there has been a widespread call in the academic literature to move beyond the obsolescing bargain approach and to a model of political bargaining between politicians and firms (which Strange describes as "diplomacy"). Some authors have suggested looking more broadly at different sectors in analyzing the time inconsistency problem (Lorraine Eden [2005]), and others still have suggested moving to a network approach (Nebus and Rufin [2010]).

the country as a whole.[7] [8] [9]

3.2 Sources of Bargaining Power: Investment Climate and Expropriation

The investment climate is the first determinant of bargaining power that I examine. If a state has reputation for being a weak investment climate or frequently expropriating, multinational corporations may be less likely to invest or may provide a less generous offer when they do so. I draw these insights from a substantial recent literature on the role of expropriations, particularly in the resource sector. Li (2009) assesses how political constraints on executives differ in democracies and autocracies and how those constraints impede expropriation. Allee and Peinhardt (2006) discuss the role of ICSID cases as a measure of investment protection. Rachel Wellhausen examines the role of expropriation in affecting bond rates for sovereign debt (2015) and Johns and Wellhausen (2015) discuss how companies band together in developing countries to enforce property rights. Eden, Kraay, and Qian (2012) use data from Mike Tomz to examine the relationship between expropriation and default on sovereign debt.

An additional examination of the role of expropriation comes from *Natural Resource Trap: Private Investment Without Public Commitment*, an edited volume of discussions of contracts in the natural resource sector (Hogan and Sturzenegger 2010). The key takeaway of that volume is that states must offer unreasonably attractive contract terms to attract investment

[7]The overall petroleum regime varies widely from state to state and depends on the nature of the contract as well as the strength of the bureaucracy and legal regime. Negotiations often involve ministries of petroleum or natural resources, finance ministries, presidents and legislators. States often also set up management committee or steering committee composed jointly of actors from the host state and firm to manage the production or joint venture. Negotiations are often an opaque process, obscuring the actors involved and their precise roles. The negotiations are considered commercially sensitive and therefore confidential, but vary country to country; within constitutions, laws, regulations, bureaucracies, and the terms of the contract itself (and associated legal teams on both sides).

[8]Finally, calculating divisible income can itself be complicated. While there is the government and contractor take, the contractor take may be subject to corporate taxes. Further, there are often different payment schedules, with cost oil to cover the costs of the project and profit oil after. There are also regressive versus progressive or neutral tax regimes. Some schemes involve flat fees for the oil, joint ventures, or the sale of the land (concessions), production sharing agreement or service contract.

[9]Another potential issue is that I examine states and firms as a dyad, rather than as a network. Other authors have suggested a network model of firm interactions, more than one firm (see studies from Johns and Wellhausen [2015] on oil companies in Russia acting as a group).

but those terms become unsustainable in the long run, creating a cycle of expropriation and renegotiation where the pendulum swings too far to either firms or host countries.[10] [11]

3.3 Sources of Bargaining Power: Technical Expertise

An additional factor that shapes bargaining power is the technical expertise of the host country's national oil company (Tarzi [1991]). It is important to note that national oil companies are distinct from international oil companies in that they are beholden to the state, and thus are required to provide private goods to those in government and social goods to the broader public. For example, many oil companies provide subsidized fuel or must purchase equipment oil from domestic contractors, often with ties to the reigning political party. These obligations may hamper their ability to function as businesses as they become political tools with staff positions taken by those with political connections as opposed to technical skills. It may also result in underinvestment in exploration and new extractive technologies. Beyond that core similarity, national oil companies vary widely in their size, expertise, and technical competence, although NOCs are in general less efficient than their IOC peers.[12] NOCs run the gamut from being paragons of inefficiency to having technology similar to the best international oil companies. Some companies are weaker and lack the technology to extract shale or deepwater oil. We should thus expect that such NOCs will partner with international oil companies to develop those resources, and to offer better

[10]Most of the existing measures of firm power either rely on case studies or perceptions-based survey data rather than actual contract data. The rich set of case studies from Moran [1985] as well as Gereffi [1983] and Evans [1979], provided insight into state-firm dynamics but don't capture cross-temporal, cross firm, or region-wide variation. Others have noted that resources involve high fixed costs and are thus firms in those industries more likely to be politically active (James E. Alt and Johansen [1999], Hennart [2009], Vivoda [2011] (Kobrin [1987])). Kobrin notes that multinational corporations may have four different motivations: market access, resource access, efficiency, or or strategic assets (Dunning [1993]), although examining only the oil sector allows for me to control for differences in firm motivation. States can be tempted to expropriate, which would be an effective take of 100 percent. Competition between states may create a "race to the bottom" where states are willing to accept a smaller and smaller share of resource rents, or if a state has a particularly valuable resource it may create competition among firms to invest. Although negotiations are not strictly zero sum, firms can to a certain extent be incentivized to explore and develop more, oil resources are a relatively fixed asset and are non-renewable. In particular, once extraction has begun, the profits from oil are finite and any profits that do not go to the firm must go to the host country.

[11]For example, Mexico maintains a complete monopoly on oil extraction.However, it's important to note that nationalization has occurred in "waves" and that nearly every country has a national oil company. the decision on whether to create a national oil company.

[12]See David G. Victor, David Hults, Mark C. Thurber Oil and Governance: State-owned Enterprises and the World Energy Supply, 2012, Cambridge University Press.

deals to MNCs.

3.4 Sources of Bargaining Power: Corruption and Institutional Strength

Opportunities for corruption or political capture are also important determinants of bargaining power. There are two reasons that contracts will favor the multinational corporation in the case of high corruption. First, high corruption is likely to be correlated with weak political institutions, meaning that the chances for expropriation or renegotiation will be higher, so the state will make a lower offer. Second, higher corruption creates more opportunities for the firm to capture regulators and politicians and shift contract terms so that they are less favorable to the state. Where suboptimal contracts occur in exchange for kickbacks, I count this is a case of weak state bargaining power. Further, given a limited amount of distributable oil rents, this signals a victory for the MNC, which is able to capture additional resources.

In addition, political institutions are extremely important for determining the effects of multinational firms on policymaking. Firms interact with other international and domestic interest groups within the context of a certain set of institutional factors, including number of parties and number of veto players (Wibbels [2012]). It's also important where and how deals are made; in some cases, as in the CFK example, executives have greater control over how deals are struck and thus more leverage over the terms of the deal. Conversely, in other places more decision makers are involved, particularly legislatures, supreme courts, and bureaucracies that regulate natural resources. [13]

To capture these effects, I control for partisan politics and expect that the ruling party is likely to affect the terms of the deal. Notably, Pablo Pinto (Pinto [2012], Pinto [2010], Pinto [2013]) in *Partisan Investment in the Global Economy* indicates that political party significantly affects flows of FDI, and that left parties are more likely to have higher levels of foreign investment. Whether left parties are able to negotiate more favorable terms is less clear.[14]

[13] In determining the importance of domestic decision-making, Milner [1997] points to the role of the executive (including bureaucracy), legislature and societal interest groups.

[14] See, for example, the classic work Raymond Vernon. 1971. *Sovereignty at bay: the multinational spread*

4 A Formal Model of State-Firm Bargaining

I draw insights from the discussion above to create a formal model that captures the dynamics of state-firm bargaining over oil profits. I model oil contract negotiations as a repeated, non-cooperative, two player game with imperfect information over the division of a fixed asset.

The model is important because it allows me to capture the elements of bargaining that may not be immediately visible. Bargaining processes, particularly over natural resources, are opaque and it is important to systematically understand the forces that are present in the existing contracts. In particular, we only see contracts that are maintained or renegotiated, but those contracts exist in the shadow of the determinants of bargaining power discussed above. Further, we cannot directly observe corruption nor simply the "threat" of expropriation. We also do not see contracts where no deals were made.

The game is an adaptation of a standard Rubinstein (1982) bargaining model, modified to describe the negotiations over oil contracts.[15] The game is modeled with two players. Player A is the international oil company (IOC)[16] and player B is the the host country. They bargain over an infinitely divisible good X such that $X_A + X_B \leq X$, which here represent the profits from oil. Utility functions, U_i for the players are $U_A(X_A)$ and $U_B(X_B)$; these utility functions are strictly increasing and concave for both players, meaning that each party wants the maximum possible share of profits.

The host country has a discount rate δ, so that players value a proposal of present rents (X_1) and future rents (X_2) as $U_A(X_1)$ and $U_A(\delta X_2)$. Countries can have either a high discount rate, δ_H or a low discount rate δ_L. The IOC does not know the country's discount rate, but the country can signal that it has a low discount rate via expropriating or renegotiating less frequently.

First, nature determines the oil resources (X), the oil price in that round (p_i), and whether the country has a high or low discount rate (δ). In the first round, no contract exists for that oilfield. The oil company moves first to present an offer, but knows that it must be in a range that will be accepted instead of the disagreement value. I assume that both parties

of U.S. enterprises

[15] Adapted from Mccarty and Meirowitz. See also Rubinstein, Ariel. Perfect Equilibrium in a Bargaining Model. Econometrica Vol. 50, No. 1 (Jan., 1982), pp. 97-109

[16] I assume that IOCs are identical and that the most competitive firm is negotiating.

know the disagreement value (either leaving oil in the ground or using the state owned oil company). In order to make the negotiations non-trivial, I assume that the international oil company extracts more efficiently or at a lower cost than the national oil company; the term λ represents the relative efficiency of the national oil company compared to the IOC, s. t. $0 < \lambda < 1$ (note that relative value of λ increases if the IOC is more efficient (although I assume all IOCs have the same efficiency) or if the NOC is less efficient). The IOC assesses the risk of the investment based on previous expropriations, then offers a percent (ω) of the future rents.[17]. The oil company can make either a high ($\omega_H X > \lambda X$ or low offer $X\omega_L < \lambda X$. X_1 captures the country's and company's (commonly known) expectations about value of oil in present rounds, X_2 captures the expected value of oil in future rounds future rounds. At the end of the first round, if the deal is accepted, the IOC receives X_{A1} and the host country receives X_{B2}

At the beginning of the second and all subsequent rounds, nature again acts to determine oil price (p_2) and the conditions in the non-petroleum economy. Each round, a percent, ζ, is extracted from the well until no oil remains; thus, in every round, $X_{n+1} = \zeta X_n$.

The country has three choices: leave the contract as is, renegotiate the contract (bearing a transaction cost C_R to do so by receiving a higher take $\omega_R s.t. \omega_R > \omega$) or expropriate (bearing a cost, C_E of lost investment, s. t. $C_E > C_R$ from a decrease in the value of other wells in the future as well as from other lost investments, while the firm bears the cost C_I from lost investments).[18] This process continues until the field is expropriated or no oil remains.

It is important to note that there are two branches to the game: one with corruption and one without. When observing contract terms, we do not know whether there was corruption or not. However, the terms for contracts will be lower (i. e. $\omega_C < \omega_N C$), and firms will bear a cost B, changing the final payoffs.

There are several potential equilbria in the model. The first is that of no contracts between states and oil companies. This could occur because IOCs offer too low of a percentage

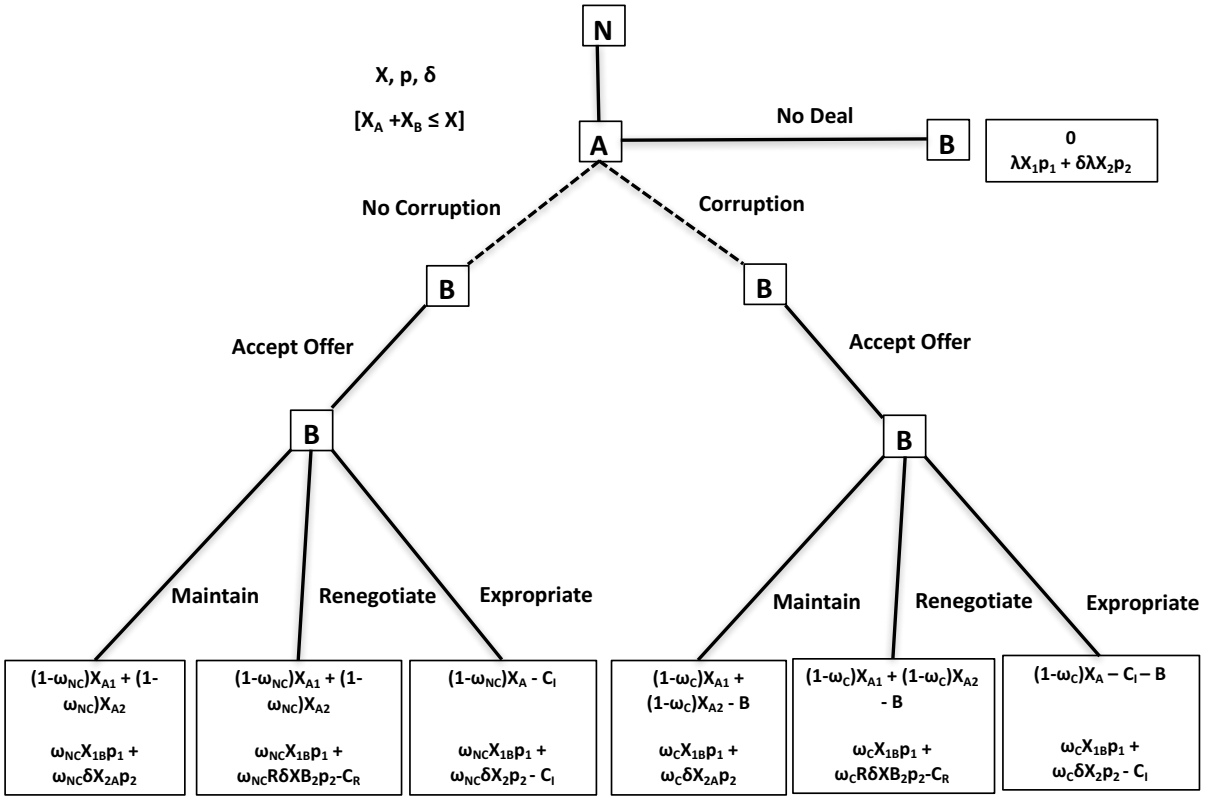
[17]Some of the risk is outside of control of the state, lying in the (highly volatile) price of oil and in the geology itself

[18]It's important to note that individual oilfields cannot be seen in isolation. Negotiations on a field take place in the shadow of previous negotiations, not just about that oilfield or solely the oil industry, but the county's investment profile overall (Although Mosley notes that investors often use "heuristics").

because they expect a high probability that expropriation will occur. This can also occur if the national oil company is highly competent or if the conditions of the non-petroleum economy are strong as well.

A separate equilibrium exists at maintaining the contract. In this equilibrium, the state does not renegotiate or expropriate. The state values the continued flow of oil more than the short-term benefit of renegotiation or expropriation.

Renegotiation and expropriation are not equilibria but represent transitional states. If the state renegotiates or expropriates, IOCs offer a lower amount, which could lead to future offers being rejected and an equilibria of no contracts. In reality, many countries end up offering partial compensation to offset expropriation and return to cooperation with companies. In this case, there would be a return to the "maintain" equilibrium.



4.1 Comparative Statics

A few conclusions stand out from the comparative statics. First, the host country only accepts when at least one of the 3 options of maintain (π_M), expropriate (π_E), or renegotiate(π_R) is higher than the reservation deal, $\lambda X_1 p_1 + \delta\lambda X_2 p_2$. The firm, anticipating this, will only offer a deal higher than $\lambda X_1 p_1 + \delta\lambda X_2 p_2$.

The IOC also makes an offer based on the expected value of the oil and its expected probability that the country will expropriate (P_E) or demand a change in contract terms (P_R) or maintain the contract (P_M). The firm offers something such that $p_M((1-\omega)X_{A1} + (1-\omega)X_{A2}) + P_R((1-\omega)X_{A1} + (1-\omega_R)X_{A2}) + P_E((1-\omega)X_A - C_I) > 0$.

Rearranging: $(1-\omega)[P_M((X_{A1} + X_{A2})] + P_R(X_{A1} + X_{A2}) + P_E((X_{A1} - C_I/(1-\omega)] > 0$

The country continues the contract instead of renegotiating when: $\omega X_{1B} p_1 + \omega\delta X_{2A} p_2 > \omega X_{1B} p_1 + \omega_R \delta X_{B2} p_2 - C_R$ and $\omega\delta X_{2A} p_2 > \omega_R \delta X_{B2} p_2 - C_R$

and continues the contract instead of expropriating when: $\omega X_{1B} p_1 + \omega\delta X_{2A} p_2 > \omega X_{1B} p_1 + \omega\delta X_2 p_2 - C_E$ $\omega\delta X_{2A} p_2 > \omega\delta X_2 p_2 - C_E$

The firm only offers a high deal when the expected value of the investment is higher than the expected value of the investment (it will not offer a deal where it expects a loss). The firm therefore offers the host country a better when the outside option is better, and offers the host country a worse deal if it expects that the probability of renegotiation or expropriation is high, or where the losses from those acts are high. The contract is self-enforcing if renegotiation or expropriation would result in net losses for the host country.

Note that the foreign company only engages in corruption when the cost, B, of corruption is less than the expected increase in rents from a higher take (ω_C). Note again that when viewing contracts, we do not know if terms are lower because of corruption or a weak outside option.

The country is more likely to continue to maintain the contract when:

- The cost of renegotiation or penalty to expropriation are high.

- ω for renegotiation is only marginally larger than ω for maintaining.
- ω is already relatively high.
- The price of oil remains constant or is falling (higher chance of expropriation when price is high or expected to increase).
- The host country has a discount rate (δ), as demonstrated by frequently expropriation or contract changes.
- More oil has been extracted from the well (overall value of well is lower, shadow of future less).
- Fixed costs of investment are lower.

5 Hypotheses

Translating the results of the casual mechanisms discussed above yields the following hypotheses:

H1 Risk and Discount Rate: *Countries with higher discount rates will receive a lower share of resource rents; countries with lower perceived risk of renegotiation and expropriation will receive a higher share of resource rents.*

H2 Disagreement Value: *A state with a higher disagreement value (better outside option) will receive a higher share of resource rents.*

H3 Corruption and Political Capture *States with more corruption will be more likely to receive a lower share of resource rents.*

6 Variables and Data

The dependent variable, $Deal_{itj}$, is an index of the terms of the oil contracts for oilfield j in year t in country i. This data comes from Wood Mackenzie ("WoodMac"), an oil and gas consulting firm. The WoodMac data is available from 2003 to 2014 and is the most comprehensive in the industry. WoodMac uses a detailed underlying model that contains proprietary data on all country-field-company specific data and a tax simulator that controls for a range of other variables. The data varies considerably, even for the same oilfield. While complete expropriation is relatively rare, the contract terms frequently change and renegotiations occur regularly.

The data includes information on the host country, the name of the oilfield, the foreign company developing the field and its percent of ownership, and the type of contract (production sharing agreement, operator). The data is purely fiscal and does not include any information on special concessions that accompany the oilfield, including domestic content requirements, labor and environmental regulations, and technology transfer requirements. Contracts include not only terms about how to divide the funds, but a host of other special provisions and non-fiscal benefits to the state, including local content laws (laws that require a certain percent of production equipment be produced domestically), partnership or technology transfer laws, wage setting for domestic or foreign workers, land grants for extraction and pipelines, environmental regulations, and domestic market obligations. I do not have comprehensive data on these other conditions, which are an important supplement to the fiscal element of contract negotiations.

There are three factors that make this data unique. First, it captures changes over time, so we can see how the state share of profits varies with changes in oil prices. Second, the data is extremely detailed at the subnational level and is available across many regions and states, providing a more diversified measure of bargaining power rather than one measured at a single location. Finally, the contracts capture negotiations over a fungible asset, which makes them substantially more comparable than negotiations over more unique assets like textiles or electronics.

The profit share is calculated by dividing the total profits from oil flowing to the state by the overall profits from the oilfield. Because I am measuring profit, I am controlling for

much of the variation in cost and quality of oil.[19]

Only a small number of countries in Latin America are major producers of oil, and among those, Venezuela, Mexico, Brazil are by far the largest producers in the international stage.[20] However, smaller Latin American countries may be more reliant on oil in absolute terms, including Colombia, Ecuador, Bolivia, Belize, and Suriname. Conversely, some countries, such as Chile, Paraguay, Uruguay, and most of central America, has little to no oil. Notably, Costa Rica, El Salvador, Guyana, Honduras, Nicaragua and Panama have no or minimal domestic oil production and no National Oil Companies. Because I am focusing on oil-producing countries, they are dropped from the analysis.

	more than 5 % GDP from oil	less than 5% GDP from oil
$>$ 2 bbl	Mexico, Brazil, Venezuela	Argentina
$<$ 2 bbl	Colombia, Ecuador Bolivia, Belize, Suriname	Chile, Paraguay, Uruguay, most of central America

The number of contracts per country is as follows: Venezuela: 3840, Brazil: 3300, Colombia: 3060, Argentina: 3036, Ecuador: 1368, Peru: 948, Bolivia: 708, Mexico: 384, Chile: 156, Suriname: 48

I subset the data to only those years in which oil is extracted from the well, which reduces the total number of contracts from 17,736 to 4,875.

Unfortunately, I can only present summary statistics from the WoodMac data in this paper, given its proprietary nature. Per the details of the non-disclosure agreement, the data may only be accessed from a remote server and only final statistical results may be presented in this paper. The R code will be posted online along with instructions for how to contact WoodMackenzie and sign a data access agreement in order to replicate the models.

The share of profits flowing to the state ranges from a less than ten percent to more than eighty percent, as shown in the following summary statistics:

[19]The value of oil is affected by its geographical position, including whether oil is surface, shallow surface, deepsea. Some is lighter (leads to higher quality products, including more gasoline) and some is sweeter (less sulphurous). Different grades are priced differently as they yield different products and often require more processing. However, using profit rather than revenue control for many of these differences.

[20]According to the BP Statistical Review, Venezuela had 298.3 billion barrels of oil in 2013, Mexico had 11.1, and Brazil had 15.6

Min.: 0.1076
1st Quartile: 14.4100
Median: 21.4200
Mean: 25.0100
3rd Qu.:31.8500
Max.: 86.9600

There are three primary independent variables: Investment Risk & Host Country Discount Rate (H1), and the Value of Disagreement Option (H2), and Political Capture and Corruption (H3).

I operationalize the discount rate by looking at the number of outstanding ICSID (International Centre for Settlement of Investment Disputes) cases. Countries with a higher discount rate are more likely to expropriate, capturing short term benefits at the cost of long-term losses in investment. Since ICSID cases are public, they also capture the host country's reputation as a more risky or less risky investment location. Past contract abrogation is an important proxy for future contract abrogation.

I also use an additional measure of the risk of investment: the risk of expropriation (contract risk) from ICRG (International Country Risk Guide). The rating spans from 1 to 4, with 4 being the least risky. The ICRG guide is also a useful measure because it is a commercially available a used by investing companies to assess the risk of expropriation.[21]

I also use the Investor - State Dispute Settlement Data (Wellhausen 2016) as an alternative measure of expropriation and the broader investment environment. The Wellhausen data is the most comprehensive dataset on investment disputes, and includes data from International Centre for Settlement of Investment Disputes (ICSID), the International Chamber of Commerce (ICC), the Stockholm Chamber of Commerce (SCC), the Permanent Court of Arbitration (PCA), the London Court of International Arbitration (LCIA), regional arbitration centers, and ad hoc tribunal. The data ranges from 1990 to 2015.[22] As a fourth alternate measure, I also use the number of BITs that the country has signed. I present measures with all four results in the appendix.

[21] http://www.prsgroup.com/wp-content/uploads/2012/11/icrgmethodology.pdf

[22] Wellhausen, Rachel L. 2016. Recent Trends in Investor-State Dispute Settlement. Journal of International Dispute Settlement 7(1): 117-135. *http://www.rwellhausen.com/data.html*.

The disagreement value (outside option) involves the strength of the non-petroleum economy as well as the ability of the country to develop the field using the national oil company. To capture this variable, I use the technical expertise of the oil company.

For technical capacity, I use cumulative historical oil extraction (starting in 1980) from the BP. This captures familiarity with modern oil extraction and is widely available and comparable and captures a logic of "learning by doing". The maximum is 91,780 and the minimum is 80 million barrels. The data allows me to measure accumulated expertise that comes from extracting large amounts of oil over years and decades.

As an alternative measure, I use the number of employees (from the Osiris database of companies). The measure is widely available and comparable for all companies, unlike extractive ratios, total extraction, profit margin, stock price, and research and development, which are available only for a small set of companies (Johannes Stroebel [2003]). While the number of employees is an imperfect proxy for technical expertise, as jobs may be used as a form of political patronage, it is the most widely available and reliable figure.

I also run further alternative models where I use the age of the company as the measure of technical expertise as well as the age of the company (since the most recent nationalization) as an additional measure, as technical expertise accumulates over time. A fourth measure is the Moody's credit rating of the national oil company.

I measure corruption using the Corruptions Perceptions Index from Transparency International.[23]. The index reflects the views of observers from around the world, including experts living and working in the countries and territories evaluated. The index is is a composite index, created by polls and the opinion of country experts. It ranges from 1 to 10, with 1 most corrupt and 10 least corrupt. In 2014, Uruguay was the least corrupt, at 7.3, and Venezuela was the most corrupt at 1.9. Across the time range of my analysis, most Latin American countries range from 4 to 6.

I use two additional measures of risk as alternatives to the corruption index. First, I use Henisz's (2011) measure of political constraints on the executive. The dataset is noted as "an endeavour to measure political constraint, that is, to identify underlying political structures

[23]Transparency International defines it as "The Corruption Perceptions Index ranks countries and territories based on how corrupt their public sector is perceived to be. It is a composite index a combination of polls drawing on corruption-related data collected by a variety of reputable institutions

and measure their ability to support credible policy commitments." The index ranges from 0 to 1 and is expertly coded by the author.

A third alternative operationalization of corruption is the ICRG measure of overall political risk. It should be noted that this measure partially overlaps with contract risk.

To account for the fact than an IOC operates at different stages of the process, I control for the percent of the field owned by the IOC I also put in a dummy for the type of agreement (PSA, operator agreement, joint venture) [24]. I also include a dummy for whether the company is a foreign national oil company rather than private company and I control for the foreign ownership (parent equity in factor). I also include for the number of years that the oilfield has been operational to control for the stage of the oilfield.

The price of oil affects the value of the pie to be distributed, and thus the returns to expropriation or investment. Therefore, I control for price, as bargaining power may be affected by higher or lower prices. Data on oil prices comes from the BP Statistical Yearbook (I use both Brent as the benchmark price). There are substantial changes in contract terms from year to year, country to country, and field to field, leading to variability to exploit.

Because contracts are not a one-shot game, I control for the number of existing oil contracts. This captures the strength of the previous relationship and the cost of losing future investment. I also control for oilfield age, as fields yield different amounts of oil at different stages of different, as well as different costs and profits. Later-stage fields may be more subject to the obsolescing bargain and the technologies necessary for extraction may be different at different stages of extraction.

To control for partisan politics, I use ideology data from Baker (2016). The data uses expert coding to rate Latin American presidents along a left-right scale according to their party affiliation. I use the ideology score of the ruling party in the same year as the contract[25].

I also control for a number of other fundamental economic factors: per capita GDP (in current US dollars) and unemployment (percent, total for labor force, International Labor Organization estimate) and for Resource dependence (percent of GDP from oil rents,

[24]The unit of analysis is the oilfield rather than the state, as contracts are done on case-by-case basis and each is different – different geology, age, companies– even if taking place in same national context

[25]See data at http://spot.colorado.edu/ bakerab/elections.html

from World development Indicators). I measure inequality via the (Gini Index) Inequality, similarly, points to the possibility of capture. In high inequality environments, elites are more likely to make bargains that benefit themselves, perhaps via special provisioning, or triple alliances. Thus, I also control for inequality. I also control for oil reserves. [26]

7 Model

The full model is as follow:

$$Deal_{itj} = \alpha_{it} + \beta_1 * Oil_t + \beta_2 * X_{it} + \beta_3 * Oil_t * X_{it} + \epsilon_{itj}$$

Where X_{itj} is a matrix of economic and political controls for country i in year t for oilfield j. I also include country and year fixed effects. Standard errors are clustered by state. I use Gary King's Amelia II package in R to impute missing data.

I also include interaction terms $\beta_3 * Oil_t * X_{it}$ in some models, to account for heterogenous effects of high and low prices.

Although the data is partially imputed with Amelia II, I also run the data with only complete cases to ensure the results are consistent. Additionally, I run several robustness checks with a mixture of different variables. These results are shown in the appendices.

[26] Proven reserves (in thousand million barrels, from BPs Annual Statistical Review) "Source of data - The estimates in this table have been compiled using a combination of primary official sources, third-party data from the OPEC Secretariat, World Oil, Oil and Gas Journal and an independent estimates of Russian reserves based on official data and Chinese reserves based on information in the public domain. They note that total proved reserves of oil - Generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions. The data series for total proved oil does not necessarily meet the definitions, guidelines and practices used for determining proved reserves at company level, for instance as published by the US Securities and Exchange Commission

8 Results

The first models, which contains various measures of technical expertise, show the strong effects of corruption on government take. Corruption is significant and has the expected sign in all but one of the non-interaction models. Thus, there is significant support for **H3**. Leftist governments receive better deals (support for the claim by Pinto (2012 et passim) and the effect is large and significant. Expropriation is of mixed significance in these models, and most of the other variables are insignificant or change signs.

In table 2, the measures of technical expertise show mixed and sometimes insignificant effects, and in some the effect is the opposite of the expected sign; for example, cumulative production actually has the opposite of the expected sign. Older companies do receive better deals, and the Moody's rating is insignificant. Again, ideology has a statistically significant and relatively large effect in all models. Relatively few of the control variables are significant except for GDP per capita.

Summarizing the first two tables, there is some evidence for effect of expropriation, but the term is not significant in all the models, and the signs are sometimes in the opposite of the expected direction. Another measure of the discount rate, economic growth, is significant in only some of the models, and the signs are as expected.

In the risk models without interaction terms, all the measures of expropriation are significant but some have the opposite of the expected sign. Cumulative production is significant, although the sign is the opposite of what would be expected, as countries that have more production get worse deals. The coefficients for ideology are again large and significant. Contracts with other Latin American companies result in worse deals. GDP per capita has a large and statistically significant effect, but the other control variables are not consistently significant.

In the interaction model, expropriation and ICSID cases have the expected sign. The ICRG Contract risk rating and BITs have the opposite of the expected sign. All are significant at the 99 percent level. Corruption has a statistically significant and extremely large effect in all models. Ideology is again significant in all models, with a relatively large effect. Very few other controls are significant.

Summarizing the resuls above, there is only mixed support for **H1** and **H2**.

The institutional strength models in tables 5 and 6 show that only corruption is significant in the non-interaction model, but political risk, political constraints, and corruption are all significant in the interaction model (and with the expected signs). The effect sizes are also extremely large relative to the other variables. Cumulative production has a significant effect, but it is the opposite of the expected sign. Company age has a statistically significant and large effect, as older companies receive better deals. More exiting contracts leads to worse deals, and higher inequality leads to better deals (opposite of the expected sign). GDP per capita is also significant, but few of the other control variables are consistently significant. Higher reserves and higher oil prices also lead to better oil prices for host states. In the interaction term, we also see that states receive better deals when the field is older, which is support for the obsolescing bargain hypothesis.

In the simple model with fewer terms, corruption has a large and statistically significant effect on contract terms, and in the expected direction. A 1 point improvement on the 10-point corruption scale leads to a 6 percent increase in the state share of oil rents. Expropriation again increases the share of rents going to the state, and cumulative production is small but significant.

8.1 Robustness Checks

I run several robustness checks to verify the strength of the results above.

Table 8 shows the results when outliers are excluded (those contracts that are over 90 percent or less than 10 percent). This model shows that corruption has a strong effect. Cumulative production is significant, but with the opposite of the excepted sign. Expropriation is significant, but the effect is small. The effect of ideology is consistent with the other models.

I also run models excluding Brazil and Venezuela. In three of the four models, corruption is significant and has the expected sign. Cumulative production changes signs and is sometimes insignificant. The risk term (the ICRG contract risk rating in this model) is strongly significant and has the expected sign. As with previous models, leftist governments receive

a larger share of profits.

I also show a model that includes the smaller, unimputed dataset. The effect of corruption holds and the results are consistent with the other models.

9 Discussion

The key finding in the models is that institutional factors have a major impact on the state share of oil rents. Broadly, this paper emphasizes the central importance of political institutions in shaping natural resource contracts. Where institutions are weak, states capture a smaller share of the rents of resource extraction. This finding is important for scholars of multinational corporations and bargaining theory more generally, as well as those who are interested in the resource curse and impact of natural resources on politics.

The finding that institutional weakness has an outsized impact on resource contracts dovetails with the theories that other have proposed about the effects of resource contracts. Institutional weakness undermines the ability of the state to control negotiations or extraction of weakness. It also creates environments where different part of the state– oil ministers, legislators, regulators, employees in the national oil company– are caught in a bad equilibrium defined by lack of coordination and an inability to negotiate cohesively. It thus seems unsurprising that foreign oil companies are able to capture better deals amid the chaos, either through bribes, capture, or simply because the state lacks the ability to negotiate as a single entity. When corruption is high, the stat has a low ability to use assets for public goods. In fact, NOCs (as well as energy and oil ministries) have often been described as "states within a state" for their tendency to maintain separate budgets, seek gains for their organization, and unwillingness to share profits.

Corruption could also be serving as a proxy for the ownership structure of assets. Corruption could also capture the ownership structure of assets and lead to selection in that more institutionally weak countries allow in foreign investors, both because of corruption and because of weak technical expertise (although it should be noted that I am controlling for the type of contract).

As other have noted, the effect of the resource curse is not about resources themselves, but about the ways firms interact with states and how capital flows and taxed and regulated. The fact that weak institutions prevent the state from capturing a greater share of the benefits of investment should thus come as little surprise. It also points to the devastating effects of weak institutions, although it is heartening that the push for transparency in oil contracts may improve institutions. However, this paper is important not only because it investigates the resource curse but also investment. It points to the role of weak fiscal and regulatory institutions as hallmarks of state's inability to benefit from investment within its borders.

The finding that expropriation has a mixed and even positive effect on host country contract terms is prima facie puzzling, yet the existing literature offers several explanations. One potential explanation for the finding that expropriation increases contract terms other authors have pointed to the fact that expropriation does not always lead to the negative consequences that it is hypothesized to have. For example, Wellhausen (2013) notes that host countries and multinational corporations often reconcile and re-initiate investment after taking. Wellhausen (2015) also notes that expropriation could even be perceived as positive, if it strengthens the macroeconomic conditions in the host country. Finally, it is possible that expectations regarding expropriation in general are not meaningful for contract negotiations, and that negotiators only care about the possibility of expropriation in the oil and gas sector, which may not be perfectly correlated with broader risk of expropriation.

Another surprising result is the lack of importance of technical variables. The measures of the technical expertise of the company are often insignificant or have the opposite of the expected sign, providing a deeply counter-intuitive finding. It seems that institutional variables are more essential and that the problem of negotiating oil contracts is not only or primarily a technical one. Thus, MNCs comparative advantage does not seem to be as more technically advanced extractors.

Interestingly, leftist governments consistently receive better deals. Although this was not a primary hypothesis of this paper, it provides strong support for the central idea of Pinto (2012) that leftist governments favor greater foreign investment.

In short, the story of why some countries seem to capture more of the investment in the borders seems to be an institutional story, rather than a technical or reputational one. Further research is needed to unpack why technical expertise is not important, and to expand

this research to other regions to see whether the effects are common across the developing world.

10 Conclusion

This paper is an effort to re-evaluate the conditions under which states in the developing world receive larger or smaller shares of the profits from investment by multinational corporations in the extractive industries. It is also an important examination of the bargaining power of multinational firms, as measured by the terms of petroleum contracts between oil firms and host states in Latin America.

This paper is the first cross-national analysis of the bargaining power of host countries based on real-world contract data. It provides insight into the relative importance of some of the well-known drivers of firm bargaining power. In particular, I have shown that corruption has the largest importance in determining host country bargaining power. The outside option for the host country– the technical expertise of the national oil company– is also a major driver of bargaining power, whereas the host country's investment riskiness and reputation for expropriation have weaker effects and the strength seems to depend on the model specification. The results have important implications for the dependency theory literature and the literature within international political economy on regulating multinational corporations, for which finding an objective measure of firm power has been an essential but elusive quest. The results also have implications for the resource curse literature by showing when states receive a greater share of profits from natural resources. Finally, the results are particularly pertinent for the literature on redistributive politics in Latin America, as leftist leaders are often constrained by the available rents from commodities. Overall, the results elucidate which characteristics of host countries allow them to craft deals that are more favorable to their interests in the inherently conflictual negotiations with multinational corporations. Future analyses should focus on other extractive industries, particularly in mining, and expanding the measure of firm bargaining power beyond only fiscal measures. Comparing contracts in Latin America with contracts in Africa and Asia will also provide insight into whether there is significant variation by region. Finally, given that this work is focused on relatively recent negotiations, additional research should focus on how firm power has shifted over a longer time frame. Much work remains to be done to understand how and

when firms are able to influence deals in their favor.

11 Appendix

Table 1: Technical Expertise Models (non-interaction), Includes Year and Country Controls

	Dependent variable:			
	government.take			
	(1)	(2)	(3)	(4)
Expropriation	−0.005	0.156***	0.061	0.037
	(0.059)	(0.049)	(0.046)	(0.050)
Employees	−131.944***			
	(30.237)			
C.Production		−0.0003***		
		(0.0001)		
CompanyAge			0.319***	
			(0.085)	
Moodys				0.403
				(0.335)
Corruption	−2.852***	6.096***	3.726***	3.831***
	(0.662)	(0.951)	(0.883)	(0.897)
Ideology	−2.135***	−1.208***	−1.366***	−1.486***
	(0.083)	(0.110)	(0.107)	(0.151)
GDPPerCap	−0.252	−0.700***	−0.829***	−0.771***
	(0.207)	(0.161)	(0.161)	(0.162)
EconGrowth	0.170**	0.187***	0.051	0.051
	(0.066)	(0.068)	(0.066)	(0.071)
Gini	0.263***	0.245***	0.204***	0.230***
	(0.050)	(0.048)	(0.047)	(0.051)
Unemployment	0.566***	0.379***	0.168	0.099
	(0.130)	(0.138)	(0.133)	(0.140)
OilReserves	0.050***	0.010	−0.010	−0.006
	(0.007)	(0.008)	(0.008)	(0.008)
LatinAmCom	−2.099	−3.452**	−17.173***	−3.580**
	(1.679)	(1.656)	(3.989)	(1.662)
Brent	0.020	0.101***	0.040	0.013
	(0.029)	(0.032)	(0.029)	(0.030)
FieldAge	−0.042	−0.078	−0.055	−0.048
	(0.095)	(0.093)	(0.093)	(0.094)
Constant	37.439***	41.009***	38.181***	37.051***
	(1.811)	(1.889)	(1.794)	(1.821)
Observations	4,875	4,875	4,875	4,875
R^2	0.570	0.585	0.583	0.582
Adjusted R^2	0.567	0.582	0.580	0.579
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 2: Technical Expertise Models (including interactions, Year, Country Controls)

	Dependent variable:			
	government.take			
	(1)	(2)	(3)	(4)
Expropriation	−0.755***	−0.398***	−0.428***	−0.918***
	(0.083)	(0.089)	(0.077)	(0.102)
Brent	−0.148***	0.083	−0.190***	−0.199***
	(0.054)	(0.083)	(0.053)	(0.055)
Employees	189.216***			
	(43.652)			
C.Production		−0.0001		
		(0.0001)		
CompanyAge			0.551	
			(0.713)	
Moodys				4.554***
				(0.627)
Corruption	2.854	11.215***	13.138***	5.993***
	(2.124)	(2.325)	(2.023)	(2.284)
Ideology	−3.123***	−2.561***	−3.159***	−4.039***
	(0.200)	(0.218)	(0.194)	(0.238)
EconGrowth	0.354**	0.525***	0.271*	0.238
	(0.156)	(0.159)	(0.158)	(0.155)
Gini	−0.087	0.007	−0.152	0.254
	(0.149)	(0.149)	(0.143)	(0.156)
Unemployment	1.630***	0.717**	0.671**	−0.009
	(0.272)	(0.310)	(0.299)	(0.311)
FieldAge	1.242***	1.149***	1.168***	1.175***
	(0.298)	(0.297)	(0.297)	(0.296)
GDPPerCap	−0.793***	−0.596***	−0.534***	−0.356**
	(0.214)	(0.174)	(0.169)	(0.170)
Brent:Employees	−1.599***			
	(0.266)			
Brent:CompanyAge			−0.006	
			(0.022)	
Brent:Moodys				−0.048***
				(0.007)
Brent:Corruption	−0.042*	−0.087***	−0.085***	−0.028
	(0.022)	(0.022)	(0.021)	(0.023)
Constant	37.534***	39.122***	39.891***	38.162***
	(2.060)	(2.070)	(2.161)	(2.067)
Observations	4,875	4,875	4,875	4,875
R^2	0.598	0.602	0.601	0.604
Adjusted R^2	0.595	0.599	0.597	0.601

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Risk Models (non-interacted), Year and Country Controls

	Dependent variable:			
	government.take			
	(1)	(2)	(3)	(4)
Expropriation	0.164***			
	(0.049)			
BITs		0.643***		
		(0.200)		
ICRGContract			3.477***	
			(0.534)	
ICSID				0.590***
				(0.183)
CumulativeProduction	−0.0003***	−0.0005***	−0.0003***	−0.0005***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
CompanyAge	0.373***	0.355***	0.428***	0.355***
	(0.085)	(0.085)	(0.085)	(0.085)
Corruption	5.896***	3.757***	3.647***	3.757***
	(0.950)	(0.939)	(0.900)	(0.939)
Ideology	−1.205***	−1.283***	−1.451***	−1.283***
	(0.110)	(0.106)	(0.108)	(0.106)
GDPPerCap	−0.744***	−0.912***	−0.967***	−0.912***
	(0.161)	(0.154)	(0.154)	(0.154)
EconGrowth	0.159**	0.132*	0.148**	0.132*
	(0.068)	(0.069)	(0.068)	(0.069)
Gini	0.242***	0.170***	0.202***	0.170***
	(0.048)	(0.047)	(0.046)	(0.047)
Unemployment	0.416***	0.405***	0.267*	0.405***
	(0.138)	(0.139)	(0.141)	(0.139)
OilReserves	0.008	0.032***	0.020***	0.032***
	(0.008)	(0.007)	(0.007)	(0.007)
LatinAmCompany	−19.368***	−18.494***	−20.121***	−18.494***
	(3.991)	(3.989)	(3.980)	(3.989)
FieldAge	−0.082	−0.061	−0.093	−0.061
	(0.093)	(0.093)	(0.093)	(0.093)
Constant	42.124***	40.392***	41.194***	40.392***
	(1.902)	(1.936)	(1.892)	(1.936)
Observations	4,875	4,875	4,875	4,875
R^2	0.586	0.586	0.589	0.586
Adjusted R^2	0.583	0.583	0.586	0.583
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 4: Risk Models (interaction), Year and Country Controls

	Dependent variable:			
	government.take			
	(1)	(2)	(3)	(4)
Expropriation	−0.398***			
	(0.088)			
BITs		−4.789***		
		(0.413)		
ICRGContract			11.941***	
			(1.753)	
ICSID				−4.241***
				(0.383)
Brent	0.080	1.042***	0.248***	0.978***
	(0.083)	(0.099)	(0.080)	(0.105)
C.Production	−0.0001	0.001***	−0.0004***	0.001***
	(0.0001)	(0.0002)	(0.0001)	(0.0002)
Corruption	10.410***	22.597***	18.009***	23.858***
	(2.330)	(2.120)	(2.207)	(2.561)
Ideology	−2.621***	−2.460***	−3.261***	−2.490***
	(0.218)	(0.216)	(0.251)	(0.220)
EconGrowth	0.457***	0.151	0.402**	0.240
	(0.159)	(0.158)	(0.158)	(0.157)
Gini	0.057	1.161***	−0.496***	1.034***
	(0.149)	(0.171)	(0.159)	(0.169)
Unemployment	0.664**	0.253	0.721**	0.219
	(0.310)	(0.305)	(0.315)	(0.306)
Expropriation:Brent	0.007***			
	(0.001)			
BITs:Brent		−0.003***		
		(0.001)		
ICRGContract:Brent			−0.084***	
			(0.021)	
ICSID:Brent				−0.002***
				(0.001)
Brent:CumulativeProduction	−0.00000***	−0.00001***	0.00000	−0.00001***
	(0.00000)	(0.00000)	(0.00000)	(0.00000)
Constant	40.136***	41.313***	38.218***	41.931***
	(2.082)	(2.084)	(2.075)	(2.084)
Observations	4,875	4,875	4,875	4,875
R^2	0.604	0.609	0.605	0.607
Adjusted R^2	0.600	0.605	0.601	0.603

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5: Institutional Strength Models, non-interaction

	Dependent variable:		
	government.take		
	(1)	(2)	(3)
Expropriation	0.128***	0.030	0.031
	(0.047)	(0.046)	(0.056)
C.Production	−0.0005***	−0.0005***	−0.0004***
	(0.0001)	(0.0001)	(0.0001)
CompanyAge	0.391***	0.414***	0.416***
	(0.085)	(0.086)	(0.085)
Corruption	5.893***		
	(0.991)		
PolConstraints		−0.557	
		(1.927)	
PoliticalRisk			−0.013
			(0.094)
Ideology	−1.150***	−1.410***	−1.413***
	(0.109)	(0.101)	(0.101)
GDPPerCap	−0.715***	−0.516***	−0.499***
	(0.163)	(0.160)	(0.190)
EconGrowth	0.085	−0.0003	−0.004
	(0.069)	(0.069)	(0.069)
Gini	0.329***	0.482***	0.489***
	(0.061)	(0.057)	(0.094)
Unemployment	0.333**	0.303**	0.292**
	(0.136)	(0.140)	(0.138)
OilReserves	0.119***	0.166***	0.168***
	(0.022)	(0.021)	(0.029)
LatinAmCompany	−19.703***	−19.604***	−19.613***
	(3.993)	(4.007)	(4.007)
Brent	0.154***	0.168***	0.167***
	(0.033)	(0.033)	(0.033)
ExistingContracts	−0.139***	−0.156***	−0.157***
	(0.018)	(0.018)	(0.018)
FieldAge	−0.066	−0.056	−0.057
	(0.093)	(0.094)	(0.094)
Constant	41.489***	41.479***	41.459***
	(1.907)	(1.917)	(1.916)
Observations	4,875	4,875	4,875
R^2	0.586	0.583	0.583
Adjusted R^2	0.583	0.580	0.580

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6: Institutional Strength Models (Interactions), Year and Country Controls

	Dependent variable:		
	government.take		
	(1)	(2)	(3)
Expropriation	-0.601^{***}	-0.481^{***}	0.011
	(0.084)	(0.087)	(0.104)
Brent	0.184^{***}	0.371^{***}	-0.147
	(0.063)	(0.074)	(0.099)
C.Production	-0.00005	-0.0003^{***}	0.001^{***}
	(0.0001)	(0.0001)	(0.0001)
PolConstraints	34.176^{***}	43.739^{***}	
	(5.025)	(5.402)	
Corruption	5.047^{***}	14.346^{***}	19.099^{***}
	(1.252)	(2.320)	(2.589)
PoliticalRisk			-1.338^{***}
			(0.173)
Ideology	-2.737^{***}	-2.908^{***}	-2.774^{***}
	(0.213)	(0.215)	(0.216)
EconGrowth	0.334^{**}	0.488^{***}	0.355^{**}
	(0.151)	(0.154)	(0.156)
Gini	0.319^{***}	0.068	0.666^{***}
	(0.074)	(0.091)	(0.104)
Unemployment	0.005	0.062	0.605^{**}
	(0.292)	(0.291)	(0.303)
FieldAge	1.072^{***}	1.184^{***}	1.068^{***}
	(0.294)	(0.295)	(0.295)
CompanyAge	0.458^{***}	0.427^{***}	0.350^{***}
	(0.084)	(0.084)	(0.084)
GDPPerCap	-0.822^{***}	-0.899^{***}	-0.265
	(0.178)	(0.178)	(0.202)
OilReserves	0.057^{**}	0.030	0.128^{***}
	(0.025)	(0.026)	(0.031)
Brent:Corruption		-0.101^{***}	-0.138^{***}
		(0.021)	(0.024)
Brent:PolConstraints	-0.418^{***}	-0.512^{***}	
	(0.062)	(0.065)	
Brent:PoliticalRisk			0.012^{***}
			(0.002)
	(0.003)	(0.003)	(0.003)
Constant	37.720^{***}	38.308^{***}	39.821^{***}
	(2.071)	(2.070)	(2.073)
Observations	4,875	4,875	4,875
R^2	0.607	0.609	0.609
Adjusted R^2	0.604	0.606	0.605
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 7: Simple Model

	Dependent variable:
	government.take
Expropriation	0.164^{***}
	(0.049)
CumulativeProduction	-0.0003^{***}
	(0.0001)
CompanyAge	0.373^{***}
	(0.085)
Corruption	5.896^{***}
	(0.950)
Ideology	-1.205^{***}
	(0.110)
GDPPerCap	-0.744^{***}
	(0.161)
EconGrowth	0.159^{**}
	(0.068)
Gini	0.242^{***}
	(0.048)
Unemployment	0.416^{***}
	(0.138)
OilReserves	0.008
	(0.008)
LatinAmCompany	-19.368^{***}
	(3.991)
Partner	-1.465^{***}
	(0.346)
Parent.equity.in.company....	-0.037^{***}
	(0.007)
ExistingContracts	-0.128^{***}
	(0.018)
FieldAge	-0.082
	(0.093)
Constant	42.124^{***}
	(1.902)
Observations	4,875
R^2	0.586
Adjusted R^2	0.583
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 8: Exclude Outliers (Under 10 percent take, Over 90 percent take)

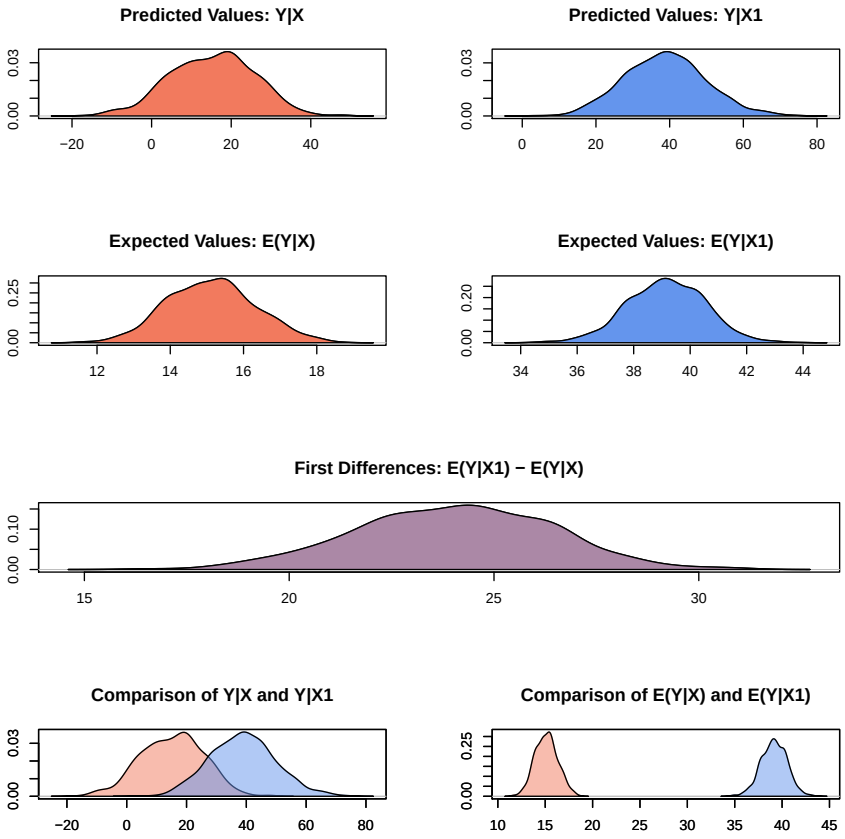
	Dependent variable:	
	government.take	
	(1)	(2)
Expropriation	0.159***	0.079*
	(0.047)	(0.047)
C.Production	−0.001***	−0.0004***
	(0.0001)	(0.0001)
CompanyAge	0.375***	0.380***
	(0.085)	(0.084)
Corruption	6.037***	5.383***
	(0.971)	(0.977)
Ideology	−1.090***	−1.003***
	(0.108)	(0.109)
GDPPerCap	−0.579***	−0.929***
	(0.165)	(0.162)
EconGrowth	0.181***	0.042
	(0.067)	(0.069)
Gini	0.398***	0.248***
	(0.059)	(0.061)
Unemployment	0.330**	0.308**
	(0.136)	(0.137)
OilReserves	0.143***	0.088***
	(0.021)	(0.022)
LatinAmCompany	−18.813***	−19.383***
	(3.918)	(3.927)
Partner	−1.023***	−1.379***
	(0.343)	(0.342)
Parent.equity.in.company....	−0.019***	−0.038***
	(0.007)	(0.007)
ExistingContracts	−0.127***	−0.154***
	(0.018)	(0.018)
FieldAge	0.101	−0.034
	(0.090)	(0.092)
Constant	43.833***	41.071***
	(1.828)	(1.883)
Observations	4,087	4,843
R^2	0.620	0.567
Adjusted R^2	0.617	0.564
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 9: Excluding Brazil and Venezuela

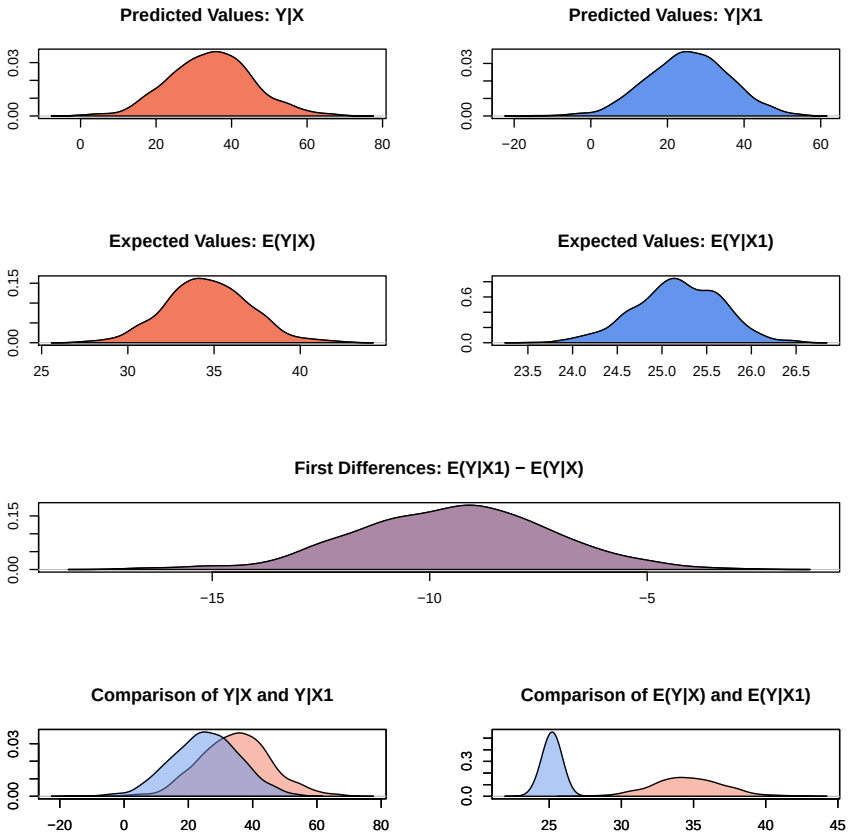
	Dependent variable:			
	government.take			
	(1)	(2)	(3)	(4)
ICRGContract	0.505	14.486***	3.114***	13.962***
	(0.583)	(1.860)	(0.557)	(1.842)
CumulativeProduction	−0.0005***	−0.0003**	0.00001	0.0003***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Corruption	3.284***	21.736***	1.180	6.043***
	(0.934)	(2.684)	(1.045)	(2.273)
Ideology	−1.256***	−2.894***	−1.876***	−3.849***
	(0.107)	(0.283)	(0.107)	(0.268)
GDPPerCap	−0.551***	0.105	−0.699***	−0.009
	(0.182)	(0.191)	(0.194)	(0.212)
EconGrowth	0.327***	0.363	0.072	0.199
	(0.113)	(0.434)	(0.073)	(0.155)
Gini	−0.141**	−2.095***	0.154**	0.056
	(0.071)	(0.208)	(0.066)	(0.095)
Unemployment	−0.067	1.801***	0.125	−0.713**
	(0.151)	(0.411)	(0.160)	(0.307)
OilReserves	−0.006	0.104**	0.041*	−0.088***
	(0.035)	(0.041)	(0.023)	(0.026)
LatinAmCompany	−0.014	−0.094	−2.462	−0.675
	(1.826)	(1.862)	(1.814)	(1.832)
Brent	0.050	−0.335***	−0.008	0.048
	(0.031)	(0.084)	(0.030)	(0.064)
Corruption:Brent		−0.187***		−0.001
		(0.031)		(0.024)
Constant	37.377***	36.507***	36.100***	34.066***
	(1.915)	(2.095)	(1.952)	(2.152)
Observations	3,945	3,945	4,454	4,454
R^2	0.607	0.627	0.584	0.600
Adjusted R^2	0.604	0.623	0.581	0.597
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 10: Unimputed Models

	Dependent variable:	
	government.take	
	(1)	(2)
ICRGContract	−1.460**	13.158***
	(0.738)	(2.678)
C.Production	−0.001***	−0.001**
	(0.0002)	(0.0003)
Corruption	2.919**	18.482***
	(1.394)	(3.275)
Ideology	−1.193***	−2.700***
	(0.143)	(0.445)
GDPPerCap	−0.422	2.109***
	(0.505)	(0.643)
EconGrowth	0.048	0.187
	(0.092)	(0.239)
Gini	−0.271**	−2.184***
	(0.135)	(0.256)
Unemployment	1.678***	2.839***
	(0.411)	(0.511)
OilReserves	1.117***	1.036***
	(0.123)	(0.194)
LatinAmCompany	−1.885	−4.063**
	(1.919)	(1.973)
Brent	0.125***	−0.670***
	(0.041)	(0.162)
Partner	−1.812***	−1.872***
	(0.475)	(0.463)
ICRGContract:Brent		−0.118***
		(0.033)
CumulativeProduction:Brent		−0.00000
		(0.00000)
Corruption:Brent		−0.277***
		(0.042)
Constant	34.040***	36.480***
	(2.460)	(2.588)
Observations	2,927	2,927
R^2	0.569	0.592
Adjusted R^2	0.564	0.587
Note:	*p<0.1; **p<0.05; ***p<0.01	



A 1-point improvement corruption leads to a 20-25 point increase in the share of rents going to the host country.



An increase in the political risk from 40 to 60 leads to a 10 percent reduction in the share of rents going to the host country.

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