

On Whose Terms? Understanding the Global Expansion of
National Oil Companies

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ABSTRACT

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National oil companies (NOCs) have evolved beyond vestiges of an era of resource nationalism and assumed an international presence. Given that NOCs are generally inefficient entities, why do some governments, more than others, allow their national oil companies to make expensive and often risky investments abroad? Instead of directly refuting neorealism or liberalism, I seek to shift the debate towards problems of governance in the energy sector. While agreeing that geopolitical rationales matter, I posit that they serve as political cover for NOCs pursuing their own expansion. While sharing the liberal emphasis on institutional checks, I anticipate how they may be overcome by strategic NOCs determined to secure support for their investments. I argue that the willingness of governments to restrain NOC investments depends on the presence of veto players, whereas their ability to do so depends on the organization of the energy sector. When the energy sector is governed by multiple entities with overlapping jurisdictions, NOCs can exploit coordination problems among them to escape scrutiny for their investments. This weakness is particularly acute in countries without an overarching energy ministry, where energy policy is implemented by informal bargaining among a multiplicity of ministries and agencies. I test this argument quantitatively and explore the underlying mechanisms through case studies of China, India, Russia, Brazil, and Norway.

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Chapter 1

Introduction

In June 2005, a Chinese national oil company, China National Offshore Oil Corporation (CNOOC) made a \$18.5 billion bid to purchase California-based Unocal Corporation, the largest overseas acquisition attempted by a Chinese company. The successful purchase of Unocal, which owns fields in Thailand, Indonesia, Myanmar and the Gulf of Mexico, would have doubled CNOOC's oil and gas output and raised its reserves 79 percent. The high profile bid caused much consternation in the United States, culminating in a Congressional measure to delay any Chinese acquisition of a U.S. oil company by at least 120 days, added to President George W. Bush's energy bill. These roadblocks made CNOOC's offer less attractive, so Unocal's board approved a lower bid from Chevron, the second largest U.S. oil company, on July 19. Congressmen, citing record oil prices and the failure of global supply to keep pace with demand, said the bid for Unocal was a grab for resources by the Chinese government and a threat to national security.

Representative Richard Pombo, a Republican from California who helped to rout the Chinese bid for Unocal, suggested that Washington develop domestic supplies more aggressively: "This is a wakeup call for us ... The more domestic resources that we develop, the less competition there's going to be on the international market." The Cato Institute's Jerry Taylor, who testified before Congress in July, disagreed: "Unocal is a minor actor in world oil markets ... The acquisition was relatively unimportant economically." According to Taylor, the political opposition cheated Unocal shareholders out of higher prices and failed to address any real national security or economic concerns.¹

Neither Representative Pombo's "grab for resources" perspective nor Taylor's "business as

¹"Cnooc Drops \$18.5 Bln Unocal Bid Amid U.S. Opposition," *Bloomberg*, Aug 2, 2005, Available at http://www.bloomberg.com/apps/news?pid=newsarchive&sid=ajw_HHJkvuE4 (Accessed March 26, 2015).

usual” perspective paints a complete picture of the growing internationalization among NOCs. Flying in the face of the former, it is widely known that China sells most of the oil it extracts from foreign reserves on the spot market (ICG, 2008). China National Petroleum Company (CNPC), another Chinese NOC, reports that only 10% of the 30 million tonnes of Chinese overseas equity oil production was shipped back to China in 2005 (Dirks, 2006). On the other hand, while Taylor may be right that Unocal is a minor actor in world energy markets, NOCs are not.

Western private oil companies (POCs) had once claimed dominant ownership of energy reserves in resource rich countries all over the world. Resource nationalism has since reduced their share of the world’s oil and natural gas base to less than 10% (Lewis, 2007). The prime beneficiaries of resource nationalism and the associated expropriations of foreign owned resources have been national oil companies, state controlled oil and gas entities entrusted with managing the national resource endowment.² Though the importance of NOCs in world energy markets is largely attributable to their success at home, many of these NOCs, as CNOOC and CNPC demonstrate, have evolved beyond vestiges of an era of resource nationalism and begun to assume an international presence.

Undeterred by the failed Unocal bid in 2005, NOCs hailing from China, India, South Korea, and Thailand together spent over \$48.8 billion in international acquisitions of energy assets over the next four years. Among this group, the Chinese NOCs were the most aggressive, spending almost \$26.6 billion, followed by Korea National Oil Company (KNOC) with \$10.5 billion. Between March 2010 and March 2012 alone, the Chinese NOCs invested an additional sum of

²NOCs are conventionally defined as state controlled oil and natural gas entities that carry out at least some commercial operations (Victor, Hults, and Thurber, 2012: 4). I offer my own definition in Chapter 2.

\$17.31 billion.³ More recently, CNOOC announced a \$15.1 billion takeover of Canadian oil and gas company Nexen in July 2012, and this time, successfully closed the deal in February 2013.⁴ Existing industrial reports predict that the scale of NOC investments abroad is likely to increase in the coming years (Paik et al., 2007).⁵

While national oil companies can be understood as profit-maximizers expanding abroad in search of business opportunities, they are different from private enterprises in important ways. To begin with, corporate governance of national oil companies is often beset with moral hazard problems, since the NOCs, as state-owned enterprises, know they can rely on government bail-outs (Hartley and Medlock III, 2008). There is a wealth of empirical evidence that NOCs are less efficient at generating revenues than private oil companies (Al-Obaidan and Scully, 1992; Marcel, 2006; Victor, 2007*b*; Wolf, 2009; Losman, 2010; Knutsen, Rygh, and Hveem, 2011). In particular, there is robust evidence that NOCs generate less revenues from any given oil and gas reserves than private oil companies (Eller, Hartley, and Medlock III, 2011). This is not surprising. National oil companies are latecomers to the international scene, and many of the better investments have been taken up by private oil companies. The latter, often under pressure from unforgiving shareholders rather than politicians to make annual replenishments of their reserves, also happen to enjoy advantages in geological and technological expertise, tried-and-tested risk management skills, and vast capital endowments (Coll, 2012; Warshaw, 2012).

³“Asian National Oil Companies (NOCs) - International Operations to Play a Key Role in Ensuring Domestic Energy Security,” *GlobalData*, June 2012.

⁴“CNOOC to buy Nexen for \$15.1 billion in China’s largest foreign deal,” *Reuters*, July 24, 2013, Available at <http://reut.rs/0Tej02> (Accessed March 26, 2015) and “CNOOC closes \$15.1 billion acquisition of Canada’s Nexen,” *Reuters*, Feb 23, 2013, Available at <http://reut.rs/YttvrD> (Accessed March 26, 2015).

⁵“The Changing Face of National Oil Companies (NOCs): NOC and State Strategies Driving Internationalization,” *GlobalData*, September 2009.

These considerations suggest that allowing NOCs to expand abroad is not a safe bet for their governments. They advise risk aversion in approving international investment projects (Losman, 2010: 438). Yet, NOC investments abroad show no signs of abatement (Paik et al., 2007). What is more, a recent study utilizing firm-level outward FDI stocks data spanning 1998-2006 finds that state-owned enterprises are less likely to be deterred from investing in risky business environments characterized by weak rule of law, high expropriation risk or pervasive corruption than privately owned enterprises, because they are more likely to be bailed out by their home governments in case of a bad outcome. And their data come from Norway, one of the more successful examples of NOC governance in my universe of cases (Knutsen, Rygh, and Hveem, 2011).

Thus, my research question can be stated as follows: Given that NOCs are generally inefficient entities, why do some governments, more than others, allow their national oil companies to make expensive and often risky investments abroad?

This project seeks to shed light on the puzzle by theoretically and empirically examining structural variation among the energy sectors of NOC countries. I focus on oil and natural gas among other strategic resources, such as coal, uranium, iron, copper, zinc, and nickel, because most NOCs invest in oil and natural gas, whereas their investments in other types of resources are more variegated (Victor, Jaffe, and Hayes, 2006; Coll, 2012). I focus on upstream operations (exploration, recovery, and production) because the current debate surrounding NOC internationalization largely concerns upstream investments (Marcel, 2006).

This project has three potential contributions. First, it is among the first to theoretically engage a topical issue—NOC internationalization—in the previously neglected area of energy.

As a cursory glance at recent issues of *The Economist* and *Foreign Policy* readily reveals, students of international relations can ill afford to neglect energy and the environment. This project will interrogate what the existing paradigms can tell us and cannot tell us about this timely issue, and probe ways in which theoretical development can advance beyond these limitations.

Second, NOC internationalization, as an empirical phenomenon, is substantively important. The ongoing global scramble for resources, as CNOOC's bid for Unocal demonstrates, has been a cause for concern among policy-makers, and its foreign policy implications are currently the subject of a heated debate among scholars (Downs, 2011; Leung, 2011; Jiang and Sinton, 2011; Gholz and Press, 2010; Leverett, 2009; Victor, 2007*a*; Friedberg, 2006; Klare and Volman, 2006; Downs, 2004). Using systematic empirical analysis, this project offers a new angle on this phenomenon and its implications for policy-makers and practitioners.

Third, examining structural variation among energy sectors is a novel practice and holds much promise for advancing the debate on political control of the economy. While the purpose of this project is to explain international energy policy, future researchers could use structural variation among energy sectors to explain domestic politics. For instance, whether the features of energy sectors I identify as being conducive to NOC investments preclude or facilitate privatization of the oil industry may be of particular interest to political economists (Szakonyi and Urpelainen, N.d.; Warshaw, 2012; Dinc and Gupta, 2011; Bremmer, 2010; Chong, Guillen, and Riano, 2010; World Bank, 1995; Dewatripont and Roland, 1992).

I begin by probing the international relations literature, namely the neorealist and liberal paradigms, for potential clues. Neorealism emphasizes geopolitical goals of states, while liberal-

ism emphasizes competition among political economic actors within domestic institutional contexts as a major determinant of state policy. However, neorealism overlooks the ways in which geopolitical goals of governments could be appropriated by national oil companies in pursuit of their own organizational agendas. Existing liberal theories are correct to emphasize domestic politics, but they do not anticipate how checks and balances could be undermined by strategic national oil companies in the energy sector. To improve upon these explanations, I turn to cross-national variation in the organization of the energy sector.

I argue that the willingness of governments to restrain NOC investments depends on the presence of veto players, whereas their ability to do so depends on the organization of the energy sector. When the energy sector is governed by multiple entities with overlapping jurisdictions, NOCs can exploit coordination problems among them to escape scrutiny for their investments. This weakness is particularly acute in countries without an overarching energy ministry, where energy policy is implemented by informal bargaining among a multiplicity of ministries and agencies. The core intuition is that decentralization, a potential virtue in policy-making, can be a critical weakness in overseeing policy implementation.

I test this argument quantitatively and explore the underlying mechanisms through a series of detailed case studies. This political economy approach helps us understand not only the varying frequency with which countries engage in large scale oil and gas investments abroad, but also the politics among the actors driving the global expansion of NOCs.

Chapter 2

Theory

My theoretical analysis proceeds as follows. First, I illustrate the problem of NOC inefficiency that others have demonstrated empirically. Second, I mine the existing international relations literature, namely neorealist and liberal paradigms, for potential explanations for why some governments allow their NOCs to make expensive and often risky investments despite their notorious inefficiency. The paradigms are useful for deriving and categorizing alternative hypotheses to be tested against my own because they yield relatively obvious, straightforward predictions. Moreover, they help to situate my project in the IR literature and, incidentally, the current debate on NOC internationalization in policy circles. Third, I present a theory of my own that shares the liberal emphasis on domestic politics.

Returning to the motivating question of why some governments, more than others, allow their NOCs to make expensive and often risky investments abroad, it is worth noting that while government consent is not a concept that is easy to quantify, there can be reasonable proxies, such as the frequency and volume of these investments. Given that NOC revenues are highly accessible to and often raided by governments, it would be unlikely that national oil companies invest billions of dollars in foreign assets on a regular basis without the knowledge and consent of at least some segment of the government. Thus, any derivation of theoretical insights from the paradigms, as well as my own theoretical effort, will be directed at identifying variables that make NOC investments more or less likely from the perspective of the government.

To foreshadow, my discussion of the neorealist paradigm examines geopolitical rationales that may outweigh any reservations governments have against entrusting inefficient national oil companies with large scale international energy investments. My discussion of the liberal paradigm

unpacks domestic institutional configurations of governments that may allow NOCs easier access to government support. My own theory, rooted in the liberal tradition, examines mechanisms of governance within the energy sector that may confer NOCs certain advantages in securing support for investments.

Inefficiency of NOCs

According to convention, NOCs are broadly defined as state controlled oil and natural gas entities that carry out at least some commercial operations (Victor, Hults, and Thurber, 2012: 4). I adopt a more specific definition, namely state controlled commercial entities with demonstrated evidence of significant oil and gas upstream (exploration and production) operations (Table 2.1).¹ Though national oil companies are technically government owned entities, the degree of government ownership over NOCs varies across countries (World Bank, 2008). Thus, society typically has more say in governments' major policy decisions than in the day-to-day operations of NOCs.

In historical context, this arrangement made sense. By creating NOCs instead of nationalizing entire oil industries, governments benefited from taxes on continued foreign production and trading, while taking back some of the control over the oil supply and profits. As Klapp describes, “[t]he effect was to keep nationalization within the corporate boundaries of state enterprise and then to use national powers to gain a competitive edge within national markets” (Klapp, 1987: 20). In many cases, NOCs also enabled governments to secure loans from foreign banks to develop drilling technology and expertise—international capital that was tied neither to

¹This is not entirely without precedent. For the universe of possible cases for study, Victor, Hults, and Thurber (2012: 22) similarly examine states that have a state-owned firm that plays a substantial role in the country's hydrocarbon production.

Table 2.1: Countries with national oil companies

Country	NOC
Algeria	Sonatrach
Angola	Sonangol
Argentina	Enarsa
Austria	OMV
Azerbaijan	SOCAR
Bahrain	BAPCO
Bangladesh	Petrobangla
Barbados	BNOG
Belarus	Belorusneft
Bolivia	YPFB
Brazil	Petrobras
Brunei	BNPC
Cameroon	SNH
Chad	SHT
Chile	ENAP
China	CNPC
Colombia	Ecopetrol
Congo	SNPC
Cote d'Ivoire	PETROCI
Croatia	INA
Cuba	Cupet
Denmark	DONG
Ecuador	Petroecuador
Egypt	EGPC
Equatorial Guinea	GEPetrol
France	GDF Suez
Gabon	GOC
Ghana	GNPC
Greece	Hellenic Petroleum
Hungary	MOL
India	ONGC
Indonesia	Pertamina
Iran	NIOC
Iraq	INOC
Italy	Eni
Japan	JOGMEC
Jordan	NPC
Kazakhstan	KazMunayGas
Kenya	NOK

Continued on the next page

Country	NOC
Kuwait	KPC
Libya	NOC
Malaysia	Petronas
Mauritania	SMH
Mexico	Pemex
Morocco	ONHYM
Mozambique	ENH
Myanmar	MOGE
Nigeria	NNPC
Norway	Statoil
Oman	PDO
Pakistan	PPL
Philippines	PNOC
Poland	PGNiG
Qatar	QP
Romania	Romgaz
Russia	Gazprom
Saudi Arabia	Saudi Aramco
Slovak Republic	NAFTA
South Korea	KNOC
South Africa	PetroSA
Sudan	Sudapet
Suriname	Staatsolie
Syria	SPC
Taiwan	CPC
Tanzania	TPDC
Thailand	PTT
Trinidad and Tobago	NGC
Tunisia	ETAP
Turkey	TPAO
Turkmenistan	TurkmenNeft
Uganda	Natoil
Ukraine	Naftogaz Ukrainy
United Arab Emirates	ADNOC
Uruguay	ANCAP
Uzbekistan	Uzbekneftegaz
Venezuela	PDVSA
Vietnam	Petrovietnam
Yemen	YOGC

foreign private investments nor to loans from foreign governments (Klapp, 1987: 57).

The NOCs, however, quickly learned to exploit governments' reliance on them to enhance their own political influence and autonomy, in some cases earning the label, "a state within a state" (Hartley and Medlock III, 2008; Hults, 2012; Victor, 2009; Victor, Hults, and Thurber, 2012). The principal agent model can usefully illustrate the challenges governments face in controlling their national oil companies as an informational problem (Huber and Shipan, 2002; Crawford and Sobel, 1982).

In the first stage of the model, the principal delegates a particular task to an agent. Despite having a preferred outcome, the principal cannot be certain as to which action the agent takes will lead to the preferred outcome. Thus, the principal's act of delegation presupposes a degree of agent discretion. In the second stage, the agent, which has its own preferred outcome and knows exactly which action will lead to which outcome,² takes an action within or outside the bounds of discretion set by the principal. In the third stage, outside factors may or may not allow the principal to monitor and correct the actions of the agent before the outcome is determined. In the former case, an offending agent is punished, and the outcome shifts to the principal's preferred outcome. In the latter case, an offending agent gets away scot free.

In addition to the informational advantage, the nature of state ownership also favors the agent. A moral hazard obtains in NOCs' decision-making because government shareholders cannot credibly commit to letting NOCs go bankrupt. Hartley and Medlock III (2008) define state-owned enterprises by the following criteria: (i) residual ownership claims cannot be transferred

²Though this is indeed an unrealistic assumption, it is but a part of the metaphor intended to shed light on the strategic dynamics at play.

to another party without the firm ceasing to be government-owned, and (ii) the government guarantees debt issued by the firm. Suppose, then, that the government mandates to an NOC the task of maximizing revenues through well managed investments. In order to implement the government's mandate, the NOC will need to adhere to sound investment practices, such as those of successful private oil companies. However, being accountable to politicians rather than private shareholders makes this prospect unlikely, as an NOC can always count on being "bailed out" by the government if it gets into financial trouble (Hartley and Medlock III, 2008).

Not surprisingly, there is a wealth of empirical evidence that NOCs are less efficient than private oil companies (Al-Obaidan and Scully, 1992; Marcel, 2006; Victor, 2007*b*; Wolf, 2009; Losman, 2010; Knutsen, Rygh, and Hveem, 2011). In particular, there is robust evidence that NOCs generate less revenues from any given oil and gas reserves than private oil companies (Eller, Hartley, and Medlock III, 2011). Moreover, a recent study of outward Norwegian FDI stocks from 1998 to 2006 finds that state-owned enterprises, such as Statoil, are less likely to be deterred from investing in risky business environments characterized by weak rule of law, high expropriation risk or pervasive corruption than privately owned enterprises, because they are more likely to be bailed out by their home governments in case of a bad outcome (Victor, 2007*a*; Knutsen, Rygh, and Hveem, 2011). Inefficiencies among NOCs should give pause to all governments entrusting them with managing billions of dollars in potentially risky foreign energy investments. So what political factors can help explain the growth in these NOC investments?

Neorealism

In neorealist scholarship, unitary, rational states are the primary actors in world politics. While many approaches share the state-centric assumption, what distinguishes neorealism is its emphasis on an anarchic international system that forces states, especially major powers, to pursue security and survival as their core interests. Economic development and military effectiveness, which are central to survival, require stable access to oil and gas. Examples in history abound. 10 of the 11 recessions between 1947 and 2001 were preceded by notable oil price increases (Delucchi and Murphy, 2008; Jones, Leiby, and Paik, 2004; Hamilton and Herrera, 2004; Hamilton, 1985). The Roosevelt administration's oil embargo was followed by a desperate Japanese attack on the oil fields of the Dutch East Indies (Sagan, 1988: 898).

Given the importance of oil and gas to state survival, we may advance the theoretical claim that the incentive to preempt potential interruptions of supply outweighs reservations governments may have about the efficiency of national oil companies, rendering them more receptive to NOCs' international expansion (Friedberg, 2006; Klare and Volman, 2006; Kelanic, 2012; Lind and Press, N.d.). In this picture, national oil companies are but extensions of their governments, expanding their national oil and gas base by purchasing reserves abroad.

The sources of these supply threats—the conditions under which such a strategy of resource investments may be justified—are likely to be highly contextual, though a discussion of ideal types may be instructive. The key factors to consider are the conditions of the international energy market and the political scenario in which the threat to supply is envisaged. In an empirical analysis of energy research and development (R&D) across 27 International Energy Agency (IEA)

member countries spanning 1975-2007, Cheon and Urpelainen (N.d.) find that concentration of oil production among Middle Eastern producers and potential risk of military conflict together produce government incentives to invest in energy security.

A powerful producer or a cartel of powerful producers could decide to withhold a vast proportion of the supplies, thereby increasing energy prices. In October 1973, for instance, the Arab members of the OPEC instituted an oil embargo in response to the U.S. involvement in the Yom Kippur War. The historical record suggests that the use of such “oil weapon” can wreak economic havoc on states (Delucchi and Murphy, 2008; Jones, Leiby, and Paik, 2004; Hamilton, 1985; Hamilton and Herrera, 2004). In this project, I assume that such market disruptions may come not only from the Middle East, but also from unfriendly resource rich states or resource rich allies of unfriendly states in any region of the world. A prominent example is Russian “pipeline diplomacy” of withholding natural gas supplies (Victor, Jaffe, and Hayes, 2006).

The purchase of reserves in resource rich countries, therefore, can serve as an insurance against political disruptions of the energy market, as the investor becomes legally “entitled” to the oil and gas in the ground under contractual agreement (Lind and Press, N.d.). It can also shorten the reach of sanctions, as host countries must now weigh the economic and legal costs of sanctioning their major business partners against the political costs of non-participation. In the absence of these investments, the cost-benefit calculus would be easier.

There may also be secondary effects, as growth of investment ties may also spill over to favorable diplomatic relations between two countries, further insuring against embargoes. For instance, China’s \$65 billion oil-backed loans to major producers are partly aimed to deepen re-

lations with their recipients (Downs, 2011). Indeed, there is almost always a diplomatic element to NOC dealings with foreign countries in investments or joint ventures. Linda Makatini, the chairwoman of South Africa's NOC PetroSA, while visiting Egypt with President Jacob Zuma to bolster ties, made the following remark regarding the company's largely unsuccessful \$100 million exploration efforts in Egypt: "As is the business of oil, it did not yield much results for us but it did not stop our appetite for wanting to work in Egypt."³

It is important, however, to recognize what the purchase of reserves can and cannot achieve. The claim that purchasing reserves can effectively reduce vulnerability to naval blockades is on much weaker ground. Oil contracts make little difference when the adversary has dominance over the sea and major supply routes (Friedberg, 2006). There is an argument to be made for the ability to "move around" equity oil in wartime, when access to international markets is blocked and the urgency of refuelling the military far outweighs any transportation costs. Nonetheless, this more limited claim assumes sufficient naval capability to fend off attacks on supply routes.

Japanese wartime strategy, for instance, relied heavily on the assumption that the resources of the Indies could be welded securely to the economy and the needs of the barren homelands, erecting a "Pacific Wall" with which to engage in a war of resolve with the United States (Yergin, 1991; Sagan, 1988). By geographically diversifying their suppliers and reducing their reliance on oil and gas that are transported through strategically vulnerable straits and canals, governments could gain some energy security in wartime, though the measure needs to be implemented as part of a larger naval strategy backed by military force.

³"PetroSA eyes joint venture with Egypt firm," *Reuters*, Oct 20, 2010, Available at <http://reut.rs/1oMTabV> (Accessed March 26, 2015).

From this discussion, two types of governments emerge that are immune to geopolitical rationales for investing abroad. First, none of these arguments apply to governments that are *energy independent*. To be sure, there is no perfect measure for the concept of energy independence, though natural endowment and oil imports are plausible candidates. Natural endowment may overstate the degree of energy independence, since countries that are by no means resource scarce, such as the United States, continue to import oil from other regions, such as the Middle East. Even among OPEC members, Ecuador, Indonesia, Iran, Iraq, Nigeria, and United Arab Emirates import refined petroleum products to meet their domestic needs because they lack the capacity to refine in-house. Non-OPEC countries sitting on at least 1 billion barrels worth of oil reserves, such as Brazil, Egypt, Kazakhstan, Malaysia, Mexico, Norway, Russia, China, and India, also import oil and refined petroleum products.

Imports of oil and petroleum products, while arguably closer to the theoretical concept, may understate the degree of energy independence, since countries may choose to import for reasons of efficiency or strategy, regardless of whether they have the capacity to be energy independent when absolutely necessary. Though these issues will be addressed in my empirical strategy, they do not detract from the intuitive appeal of the following hypothesis:

Hypothesis 1 (Energy independence). *States that are energy dependent are more likely to invest in oil and gas assets abroad.*

Second, none of these rationales for buying up reserves apply to states for which the *possibility of war is remote* and access to the international energy markets is always guaranteed. These states exist in a world more consistent with that of free market economists, who argue that resource

nationalist policies pursued by one state would have no noticeable effect on the energy security of others, as the free market self-adjusts. If China were to “lock up” reserves and direct all of its equity oil homeward, it would only affect patterns of trade rather than the overall consumption, as non-equity oil that China would have purchased elsewhere is freed up for consumption by others (Leung, 2011; Lind and Press, N.d.; Gholz and Press, 2010; Griffin, 2009; Victor, 2007a). Even adverse effects of supply shocks are likely to be, in most circumstances, short-lived, thanks to the self-correcting mechanisms of the market, such as compensating increases in production, privately held inventories, government controlled inventories, and ease of rerouting transportation (Gholz and Press, 2010). If continued access to the international market were guaranteed, buying up reserves would be superfluous.

As Gholz and Press (2010) acknowledge, however, access to these benefits of the free market is not guaranteed for states waging or considering wars. The neorealist emphasis on consequences of anarchy, particularly the notion that states cannot entrust the fate of their existence to tomorrow’s being business as usual, is likely to ring true among these states. Provided that they possess the naval power to protect against blockades or attacks on supply routes, these states can purchase oil reserves to offset potential losses from interrupted market access. In short, countries facing higher risk of war may try their hands in investments abroad, despite the inefficiencies of NOCs, to deny their potential adversaries crucial military advantages in wartime:

Hypothesis 2 (External risk). *States facing greater risk of war are more likely to invest in oil and gas assets abroad.*

Liberalism

Liberal scholarship opens up the black box of states, scrutinizing the preferences of actors on the demand and supply sides of foreign policy (Katzenstein, 1978; Frieden, 1991; Snyder, 1991; Moravcsik, 1997; Narizny, 2007; Cheon and Urpelainen, 2013). On the demand side, the primary actors are societal interest groups. Since policy often has distributive consequences for members of society, special interests lobbies, elites, and other economic groups mobilize to gain access to policy. On the supply side, tenure-seeking bureaucrats and politicians respond to these demands, offering favorable policy in exchange for political support. Taken together, the core underlying logic of the liberal paradigm is domestic competition for political and economic capital among societal groups and government representatives (Klapp, 1987; Frieden, 1994).

From a liberal standpoint, government support for expensive and often risky NOC investments can be explained by the presence of compact, concentrated interest groups logrolling policies that advance their own respective parochial agendas at the expense of the largely diffuse public. By exaggerating the transaction costs necessary for operating in unstable environments abroad, politicians involved in oil and gas investments could fatten their own pockets at the public's expense (Jaffe and Soligo, 2007; ICG, 2008; Downs, 2004, 2011).

A liberal solution to this problem involves properly designed institutions. In his seminal article on the liberal peace, Doyle (1983: 228) draws from Kant: “Republican representation and separation of powers are produced because they are the means by which the state is ‘organized well’ to prepare for and meet foreign threats (by unity) and to tame the ambitions of selfish and aggressive individuals (by authority derived from representation, by general laws, and by non-

despotic administration). States which are not organized in this fashion fail.” I examine two potential pathways by which institutions could restrain rent-seeking pathologies.

First, political participation and competition enable diffuse interests to prevail over concentrated interests. The efficiency enhancing role of political competition has a rich theoretical pedigree in political economy. The Downsian model of democracy envisions two competing candidates, motivated solely by their incentive for office, converging on the position of the median voter on a uni-dimensional policy spectrum (Downs, 1957). The Wittman model introduces parties with their own policy preferences, the pursuit of which they must balance against the prospect of losing the election (Wittman, 1977). The Roemer model builds on both of these earlier works, allowing for multi-dimensional policy competition (Roemer, 2001). Wittman (1995) revisits the subject, arguing that institutions of democratic government, i.e. “political markets,” are in fact no less efficient than economic markets. In competitive political markets, policies harmful to the majority cannot endure, as “political entrepreneurs” will quickly mobilize against them to advance their own careers.

Faith in political competition endures in more recent models of political economy. In Bueno de Mesquita et al.’s (2003) selectorate theory, rent-seeking is a function of the size of the winning coalition, a subset of political participants whose support is necessary for the leader to stay in power. As the size of the winning coalition expands, a politician must shift his policy away from the provision of private goods to that of public goods. Since government leaders can no longer stay in power by sharing their rents with a small group of elites, but actually need votes from the larger population, they must think twice before participating in oil and gas investment arrange-

ments that enrich themselves at the expense of those keeping them in power. Thus, institutional limitations on political competition are to blame for rent-seeking pathologies.

However, there are also reasons to suspect that the relationship between limitations on political competition and rent-seeking is not so straightforward. In Snyder's (1991) typology, rent-seeking is particularly common in a "cartelized" political system, which favors compact groups with concentrated interests. A cartelized system, however, falls somewhere along a unidimensional spectrum between a democratic system characterized by an electoral system with universal suffrage and a unitary political system characterized by a single ruler or a ruling group, possibly with interests that are diffuse and encompassing, rather than concentrated. Under this typology, the positive relationship between limitations on political competition and rent-seeking may become indeterminate or reversed, as we move along the spectrum from a cartelized system to a unitary political system, depending on the preferences held by the ruler or ruling group. With this important caveat in mind, I derive the following hypothesis:

Hypothesis 3 (Political competition). *States characterized by greater political competition are less likely to invest in oil and gas assets abroad.*

Another institutional check on rent-seeking pathologies is the existence of veto players. Following Tsebelis (2002), I define veto players as individual or collective actors whose agreement is necessary to change policies from the status quo. Veto players are defined by the constitution or the political system. Policy stability obtains when significant departures from the status quo are impossible, because veto players are many, characterized by significant ideological distances among them, and internally cohesive. The proposed change from the status quo could be a pro-

posal to allow the NOC to purchase oil and gas assets or participate in joint ventures abroad.

It is notable that Tsebelis's (2002) brand of institutional analysis focuses on policy stability rather than the substantive direction of policy. For instance, the focus is on whether a given proposal to allow an NOC to invest abroad is struck down or not, rather than whether this investment represents the best method of advancing energy security. Moreover, it is worth repeating that policy stability does *not* imply homogeneity of ideological preferences among veto players. They may share a common interest in opposing a particular policy change for vastly different reasons and interests. What we do observe is the absence of policy change, but this seemingly uninteresting status quo may mask fundamental disagreements among veto players regarding the ideal direction of policy.

Nonetheless, we can use the analytical traction gained by focusing on policy stability to derive an intuitive, testable hypothesis. An increase in the number of veto players should serve to block, if not deter, those investment proposals that advance the parochial interests of few at the expense of many, resulting in an overall decrease in the number of investment proposals approved (Perrin and Bernauer, 2010; Hénisz and Mansfield, 2006):

Hypothesis 4 (Veto players). *States with a greater number of veto players are less likely to invest in oil and gas assets abroad.*

Competing Principals Model

Rather than directly refuting neorealism or liberalism, the competing principals model shifts the debate towards problems of governance in the energy sector. While agreeing that geopolitical rationales can bolster NOC investments, it posits that they only serve as political cover for

the underlying organizational interests of NOCs in shaping the implementation of energy policy. While sharing the liberal emphasis on domestic institutions, it anticipates how institutional checks could be overcome by strategic national oil companies in the energy sector.

I argue that the willingness of governments to restrain NOC investments depends on the presence of veto players, whereas their ability to do so depends on the organization of the energy sector. When the energy sector is governed by multiple entities with overlapping jurisdictions, NOCs can exploit coordination problems among them to escape scrutiny for their investments. This weakness is particularly acute in countries without an overarching energy ministry, where energy policy is implemented by informal bargaining among a multiplicity of actors. For instance, even though the parliament, upon closer inspection, may be opposed to certain large scale oil and gas investment projects abroad, NOCs could approach more amenable ministries or agencies in the energy sector to champion their cause.

The core intuition is that decentralization, a potential virtue in policy-making, can be a critical weakness in overseeing policy implementation. This intuition will help us understand not only the varying frequency with which countries engage in large scale oil and gas investments abroad, but also the politics among the actors driving the global expansion of NOCs.

Though the substantive focus of the theory is novel, it is important to acknowledge that the building blocks are drawn from the existing liberal literature, especially its emphasis on domestic institutions. In fact, the model involves a synthesis of Tsebelis's (2002) veto players and Ehrlich's (2008) access points, as I adopt the former concept to characterize institutional checks commonly identified by political scientists, such as the parliament, and the latter to characterize ministries

and agencies in the energy sector that my analysis emphasizes.

The model also requires two assumptions. The first assumption is that the government's contribution to policy outcomes are jointly determined by national institutions, such as the parliament, and governing entities in the energy sector, such as a petroleum ministry. Governing entities in the energy sector can be thought of as intermediaries between the principal (national institutions) and the agent (national oil company) charged with monitoring the agent, though themselves liable to deviations from the preferences of the principal.⁴

The second assumption is that the organization of the energy sector (the number of governing entities), which affects the principal's ability to monitor the agent's behavior, is exogenously determined and unchanging over the course of principal agent interactions. For instance, the government cannot change the organization of its energy sector at will to enhance its bargaining position vis-à-vis the NOC. While this assumption will be explored in the penultimate chapter investigating the origins of centralized and decentralized energy sectors, doing so now would unduly complicate my analysis.

Actors, Preferences, and Interactions

Two types of domestic actors are critical for my theory: national oil companies and governing entities in the energy sector. NOCs, as defined above, are state controlled commercial entities with demonstrated evidence of significant oil and gas upstream operations. Loosely based on Ehrlich's (2008) definition of access points, I define governing entities as representatives of the government in the oil and gas sector that oversee the national oil companies' implementation

⁴This is, of course, a carryover from the principal agent model, which allows the agent to implement policy outside the bounds of discretion set by the principal at the risk of potential punishment.

of energy policy. Governing entities in the energy sector may take on various forms, such as ministries and regulatory agencies.

The number of governing entities in the energy sector, as well as the distribution of power among them, varies across states, and this variation usefully captures the degree to which the implementation of energy policy is *centralized* in a given country.⁵ When there exists only a single governing entity, it alone holds the responsibility for overseeing NOCs' implementation of policies sanctioned by national institutions, and its own political relevance and authority *in the energy sector* do not factor into its decision-making. The existence of multiple such governing entities, however, detracts from a singular focus on monitoring NOCs' implementation of policies sanctioned by national institutions, for both informational and material reasons.

The presence of multiple governing entities can create coordination problems the NOCs can exploit. Often, multiple governing entities in the energy sector are established for the purpose of specialization. For instance, the presence of separate ministries devoted to coal, petroleum, and power may facilitate division of informational labor, each ministry accumulating the expertise necessary to properly govern its subsector of energy. However, this arrangement also has the disadvantage that none of the specialized ministries sees the whole picture. Given the complex interlinkages between the subsectors of energy, the result is the absence of a coherent, long-term national energy strategy, as well as duplication of policy implementation.

From the perspective of the NOC, even the informational gain from specialization can be

⁵The degree of centralization being theorized here is issue area specific. It is possible for policy-making in a particular issue area to be highly centralized while the state as a whole remains decentralized. US foreign policy for raw materials investment, for instance, is characterized by a high degree of autonomy (centralization in my terminology), unusual for a state considered "weak" by IPE scholars. Cf. Katzenstein (1978), Krasner (1978), and especially pg. 44 of Klapp (1987).

exploited. NOCs can use their inherent informational advantage as an implementing agent to influence even the most informed of the governing entities on a given policy. Once the NOC has obtained the stamp of approval from the most “informed” entity, the remaining entities will defer to its judgement given their lack of independent expertise. Collectively, the government entities lose sight of their informational disadvantage due to the false promise of specialization. In the absence of such specialization, the NOCs would face the more difficult challenge of convincing a centralized entity that is keenly aware of its informational disadvantage.

In a decentralized energy sector, governing entities often insecure about their political relevance are also individually susceptible to co-optation by NOCs that offer parochial benefits. These parochial benefits can be political or economic, though economic benefits can be used to enhance political power. For instance, NOCs could offer certain governing entities employment or fuel subsidies for target constituents (Cheon, Lackner, and Urpelainen, 2015; Eller, Hartley, and Medlock III, 2011). Oil profits can also increase ministerial budgets, while corporate ownership, vertical integration, and subcontracting discretion can expand the ministries’ management control within the oil industry (Klapp, 1987: 51). In a centralized energy sector, the lone governing entity is better able to resist such parochial benefits, not only because it is already secure in its political position, but also because it will alone be held responsible for any de facto departures from policies sanctioned by national institutions.

For instance, China dissolved its Ministry of Energy in 1993 and undertook a deliberate proliferation of government ministries and agencies in the energy sector. The expansion of government agencies strengthened government control, but increased the difficulty of coordination

among agencies and often led to duplication of policy implementation (Zhao, 2001). The government, unable to build up independent expertise, also became largely dependent on often self-serving advice from NOCs (ICG, 2008). In Vietnam, on the other hand, the Ministry of Industry (MOI) has overall responsibility for managing the energy sector, including overseeing the state-owned energy companies such as Vietnam Oil and Gas Corporation (Petrovietnam). The MOI is responsible for review and submission to the Prime Minister of master investment plans and approval of all major investment projects (USAID, 2007).

Observable Implications for International Investments

Table 2.2 summarizes the observable implications of the competing principals model. The horizontal dimension captures variation among national institutions in charge of policy-making across countries, whereas the vertical dimension captures variation among governing entities in charge of overseeing policy implementation in energy sectors across countries. The number of veto players (cross checking national institutions), as per *Hypothesis 4*, is proportional to the opposition NOC investments may confront given the inefficiencies associated with NOCs. The number of access points (governing entities in the energy sector) is inversely proportional to the cost of lobbying for NOCs (Ehrlich, 2008).

Thus, four potential scenarios are conceivable. In the northwest quadrant, both veto players at the level of policy-making and access points at the level of overseeing policy implementation are few in number. Following *Hypothesis 4*, when there are not enough veto players, investments that serve parochial interests may proceed unopposed. However, the investments made will be more in line with the preferences of the few but powerful veto players than those of the NOC,

since the limited number of access points makes lobbying costly for the NOC. For instance, it will be difficult for the NOC to convince a ministry of energy, firm in its power and solely responsible for the sector, to implement investment policy at odds with the preferences of veto players. Russia and Vietnam fall under this category.

In the southwest quadrant, veto players at the level of policy-making are few, but access points at the level of overseeing policy implementation are many. As per *Hypothesis 4*, when there are not enough veto players, investments that serve parochial interests may proceed unopposed. This time, the investments made will be more in line with the preferences of the NOC than those of veto players, as the presence of many access points encourages active NOC lobbying. For instance, an NOC can take advantage of competing ministries and agencies with shared responsibilities over the energy sector, exchanging political economic benefits for greater control over its own internationalization. Notably, China and Thailand fall under this category.

In the southeast quadrant, both veto players at the level of policy-making and access points at the level of overseeing policy implementation are many. Following *Hypothesis 4*, when there are enough veto players, there may be opposition against investments that serve parochial interests. However, the presence of many access points affords the NOC an opportunity to circumvent such opposition, and the resulting investments will be more in line with the preferences of the NOC than those of veto players. Since policy stability in Tsebelis's (2002) sense does not imply the absence of disagreements on policy direction, the NOC may find willing audiences among competing ministries and agencies in the energy sector. India falls under this category.

In the northeast quadrant, veto players at the level of policy-making are many, but access

points at the level of overseeing policy implementation are few. As per *Hypothesis 4*, when there are enough veto players, there may be opposition against investments that serve parochial interests. This time, such opposition can successfully restrain investments, since the limited number of access points makes lobbying costly for the NOC. As Table 2.2 is meant to emphasize, this is the only scenario in which the government has both the willingness and the capacity to restrain investments in oil and gas assets abroad. Brazil and Norway fall under this category.

In effect, the competing principals model could be considered a qualification of the liberal *Hypothesis 4*. Its prediction is identical to *Hypothesis 4* for countries with centralized energy sectors (northern quadrants), since lobbying is too costly for the NOC to circumvent veto players' potential opposition to investments. However, the competing principals model parts ways with *Hypothesis 4* in predicting generally unrestrained investments for countries with decentralized energy sectors (southern quadrants), as the NOC can plausibly lobby to undermine bids by veto players to restrain its investments.⁶ Thus, a conditional hypothesis is in order.

Hypothesis 5 (Veto players | Centralization). *Conditional on the centralization of their energy sectors, states with a greater number of veto players are less likely to invest in oil and gas assets abroad.*

Condensing the observable implications of the competing principals model into a single hypothesis about the frequency of investments has limits. As Table 2.2 and the foregoing discussion illustrate, each of the four scenarios offers important predictions on whether the government is likely to oppose investments and whether the investments are likely to reflect the preferences of

⁶To be sure, the competing principals model refrains from ranking the three uncolored quadrants of Table 2.2 on the basis of investment frequency because it is unclear whether few veto players, decentralized energy sectors, or both are most conducive to investments. The answer may not be both, as Cheon and Urpelainen (2013) have shown that, albeit in a different context, the impact of lobbying efforts is maximized in the presence of opposition.

the government or the NOC. These implications could best be examined qualitatively through detailed case studies. In that spirit, Table 2.3 maps these observable implications onto actual countries selected on the basis of their frequent investments abroad.

		National Institutions (Veto Players)	
		FEW	MANY
FEW	Not enough veto players to oppose investments, but government remains in control of investments.	FEW	Enough veto players to oppose investments, and government remains in control of investments.
MANY	Not enough veto players to oppose investments, and NOC contests control over investments.	MANY	Enough veto players to oppose investments, but NOC contests control over investments.

Governing Entities in Energy Sector (Access Points)

Table 2.2: Who is in control of investments and when can they be restrained?

National Institutions (Veto Players)	
FEW	MANY
<p><i>State does not oppose investments, NOC weak</i></p> <p>Hungary Italy Japan Kazakhstan Korea Kuwait Malaysia Qatar Russia Vietnam</p>	<p><i>State opposes investments, NOC weak</i></p> <p>Brazil Colombia Denmark Norway</p>
<p><i>State does not oppose investments, NOC powerful</i></p> <p>China Indonesia Thailand United Arab Emirates</p>	<p><i>State opposes investments, NOC powerful</i></p> <p>Austria France India Poland</p>

Governing Entities in Energy Sector
(Access Points)

FEW

MANY

Table 2.3: Observable expectations by country

Chapter 3

Research Design

Given that NOCs are generally inefficient entities, why do some governments, more than others, allow their national oil companies to make expensive and often risky investments abroad? I argue that this phenomenon is best investigated with a mixed-methods approach. In Chapter 4, I statistically examine oil and gas assets purchases and joint ventures of 78 NOC countries spanning 2002-2013 using time-series count models. I find little evidence for conventional hypotheses drawn from the neorealist paradigm or the liberal paradigm. The results are largely consistent with the competing principals model, which emphasizes the organization of the energy sector. Given the limitations to my statistical inference attributable to problems of endogeneity and measurement, I supplement these findings with qualitative case studies in Chapters 5 and 6.

Methodology and Evidence

Given that NOCs are generally inefficient entities, why do some governments, more than others, allow their national oil companies to make expensive and often risky investments abroad? There are formidable methodological challenges to this inquiry. Whether neorealism is right that there are national security concerns at stake, or liberalism is right that rent-seeking elites are involved, statesmen have little incentive to disclose the details or the true motives behind their energy investment policy to a researcher. Moreover, national oil companies tend to be secretive organizations, and their dealings with governments tend to be more secretive still. Cheon, Lackner, and Urpelainen (2015) argue that, in the case of fossil fuel subsidies, governments often find NOCs useful precisely because their finances can often escape the scrutiny of the legislature.

Fortunately, we need not wait for government documents to be declassified or statesmen to divulge their secrets, since energy investments, unlike diplomacy or covert operations, require gov-

ernments to become active participants in a relatively open, international energy market. NOC investments, in particular, are often high-profile due to their sheer scale, and receive widespread coverage from media outlets and business information companies. For our purposes, GlobalData's Oil and Gas E-tracks database contains data on major international mergers and acquisitions and joint ventures in oil and gas assets for 78 NOC countries, spanning 2002-2013.¹

While there is a concern that some investments may fly under the radar of GlobalData and other market watchers, these cases should be trivial, since sellers—more often corporations and private entities than states—have an incentive to widely publicize their assets and potential transactions to obtain the best price the market has to offer. In fact, perhaps for this reason, GlobalData's entries include transactions that are not only completed, but also announced, planned, and rumored. Leveraging world energy markets and their sensitivity to new information, we gain a deeper insight into the national oil companies and their intended operations abroad.

In effect, I tackle the question of motives by revealed preferences, examining *what types of states are more likely to engage in NOC investments than others*. The neorealist and liberal hypotheses from the previous chapter were derived specifically for this purpose. Do energy imports and risk of external conflict predispose a country towards investments in oil and gas assets abroad? Does the intensity of electoral competition or a higher number of veto players predispose a country against investments abroad? While it may seem that this revealed preference approach may not be able to tell us as much about NOCs that do not invest abroad, the same covariates used to explain the variation in frequency of investments could be used to predict NOCs' decision to stay at

¹The data were obtained on May 21, 2013 at Firestone Library, Princeton University. While the actual dataset begins in 1999, NOC investments I examine begin in earnest in the early 2000s.

home. Thus, I include all national oil companies that meet the definition of state controlled commercial entities with demonstrated evidence of significant oil and gas upstream (exploration and production) operations, regardless of whether they invest abroad, as to avoid selecting on the dependent variable.

The limitations of this quantitative exercise will be discussed at length, but it forms the basis for the more in-depth qualitative case discussions to follow. To foreshadow, I use descriptive statistics obtained from the investments data to identify major investor countries for the process-tracing of mechanisms that are the emphasis of the competing principals model.

Statistical Analysis

As I am studying investments over time, my unit of analysis is the country-year. To avoid selecting on the dependent variable, any country with a national oil company, regardless of whether it engages in international energy operations, is included in the analysis. This part of the research design reflects the heterogeneity that exists among NOCs and their functions. For the universe of NOCs, I rely on the World Bank's *A Citizen's Guide to National Oil Companies Part A: Technical Report*, which lists 67 countries with NOCs (World Bank, 2008). Through independent research, I have dropped 2 and identified 13 more that meet the definition of state controlled commercial entities with demonstrated evidence of significant oil and gas upstream operations, bringing the total to 78.² The NOC countries are listed in Table 2.1. Based on this list, I construct a *count variable* that aggregates GlobalData entries of NOC asset purchases and international joint ventures

²I have dropped Peru and Sao Tome and Principe due to the lack of demonstrated evidence of significant oil and gas upstream operations. The additions are Austria, Barbados, Croatia, Denmark, Greece, Hungary, Jordan, Myanmar, Poland, Romania, Slovak Republic, Suriname, and Uruguay.

pertaining to each year.

The use of a count variable is partly based on necessity. The deal values are not available for all NOC transactions, which means that focusing on the volume of investments only would miss crucial instances where home governments approved or considered the outward investments of their NOCs. Nonetheless, an investigation of what the available deal values can tell us, while beyond the scope of this project, is in progress.

I use a multivariate regression framework, assessing the relative explanatory power of the four hypotheses—oil dependence, external conflict risk, veto players, and electoral competition—derived from neorealist and liberal paradigms, as well as the conditional hypothesis representing the competing principals model, across the sample of 78 NOC countries. The statistical analysis is subject to problems of inference, and I seek to address them as follows.

Underlying processes or factors preceding the political mechanisms being theorized, such as geography or history, may predispose certain states to engage in energy assets purchases and joint ventures abroad. To address such selection effects, I rely on *random effects* rather than country fixed effects. While I am interested in controlling for confounding factors, I am not interested in throwing away time-invariant cross-national variation using country fixed effects, especially since most of the liberal variables I am interested in change very slowly if at all over the short span of time under analysis. Moreover, country fixed effects would throw away countries with NOCs that do not invest at all, which is undesirable. Nonetheless, I do implement *regional dummies* in some specifications under the assumption that countries within the same region may share certain characteristics that predispose them toward or against investments. I also address potential

spurious correlation by implementing a time trend to capture omitted temporal variables.

The problem of endogeneity is more pernicious, as some of the alleged drivers of energy investments emphasized by the paradigms, such as oil imports, are just as easily influenced by the investments themselves. I address this problem statistically in two ways. First, I lag all of my explanatory variables by at least two years, though I also run robustness tests with alternative lag structures in the supplementary appendix. Second, I implement a control variable that captures the extent to which a country's oil supply is diversified. If a country pursues a deliberate strategy of diversification among suppliers (hence energy investments affect oil imports), then this control variable should be somewhat sensitive to this dynamic.

I also supplement my statistical results with qualitative cases paying closer attention to the sequentiality of events. To be sure, the problem is not completely resolved. While qualitative analysis may be better positioned to address endogeneity since it is pitched closer to the causal mechanism, the beginning and the end of the narratives I present are constructs themselves, as history could be considered “a continuous stream of interrelated events” (Büthe, 2002).

Case studies

In Chapter 5, I rely on parallel demonstration of theory, using case histories to demonstrate the fruitfulness—the ability to convincingly order the evidence—of a presented theory. Chapter 6 pushes the causal chain back further, investigating the historical sources of variation in the organization of the energy sector.

Selection of cases informed by descriptive statistics can greatly strengthen a research design (Lijphart, 1971). I use descriptive statistics to identify top energy investors (measured by purchase

of assets and participation in joint ventures abroad). Since the cases are chosen on the basis of theory, the number of positive cases does not validate a theory, nor does the number of negative cases falsify it. The case studies, unlike my statistical analysis, cannot establish associations between variables or assign degrees of uncertainty to these estimates.

However, case studies offer two important benefits, one theoretical and the other empirical. First, case studies help illustrate how the theorized mechanisms operate with respect to each historical case. For instance, how does the presence of multiple governing entities in the energy sector provide lobbying advantages for NOCs? In what ways are NOCs able to make use of these advantages to increase government support for their investments abroad? While the case studies themselves may not provide a conclusive test of the causal story, they afford the reader a greater understanding of the causal story itself (Skocpol and Somers, 1980).

Second, case studies bring together qualitative evidence, such as interviews with subjects and a rich array of secondary sources, to empirically address steps along the causal chain left undressed by the quantitative analysis. The binary indicator I construct based on the number of governing entities in the energy sector, for instance, does not capture the actual interactions between NOCs and the governing entities. As will soon become evident, while narrowing the sample to countries with NOCs in the statistical analysis might help implicate NOCs, the causal story would be much more compelling with empirical evidence that NOCs engage in the kind of lobbying behavior my theory suggests. The case studies address this need.

Chapter 4

Statistical Analysis

Dependent Variables

The data cover international mergers and acquisitions and joint ventures in oil and gas assets spanning 2002-2013, obtained from GlobalData's Oil and Gas E-tracks database.¹ Each observation contains a brief description of the deal, date, status, buyer, seller, and for a select number of observations, deal value. I have culled from the dataset of 30,000 observations those upstream oil and gas assets transactions involving 78 national oil companies identified above as a potential buyer or a joint venture participant. GlobalData's entries usefully include transactions that are not only completed, but also announced, planned, and rumored. I am left with 591 relevant assets purchases and 269 joint ventures. Because the deal value is not available for all of the observations, I construct a count variable aggregating entries of an NOC's asset purchases as a buyer and international joint ventures as a participant pertaining to each year.

For the count variable, the panel is fairly balanced, though there are also numerous countries with no investments. To provide a general sense of the variation among NOC countries that are active abroad, Figure 4.1 displays a time-series count for those with 10 or more investments.

Independent Variables

To test *Hypothesis 1*, which predicts that *states that are energy dependent are more likely to invest in oil and gas assets abroad*, I include an oil imports variable, which measures the total imports of crude oil and refined petroleum products for country i in year t . Between oil imports, which may understate countries' energy independence since they may import for reasons of efficiency, and domestic reserves, which may overstate countries' energy independence since they may lack

¹The data were obtained on May 21, 2013 at Firestone Library, Princeton University.

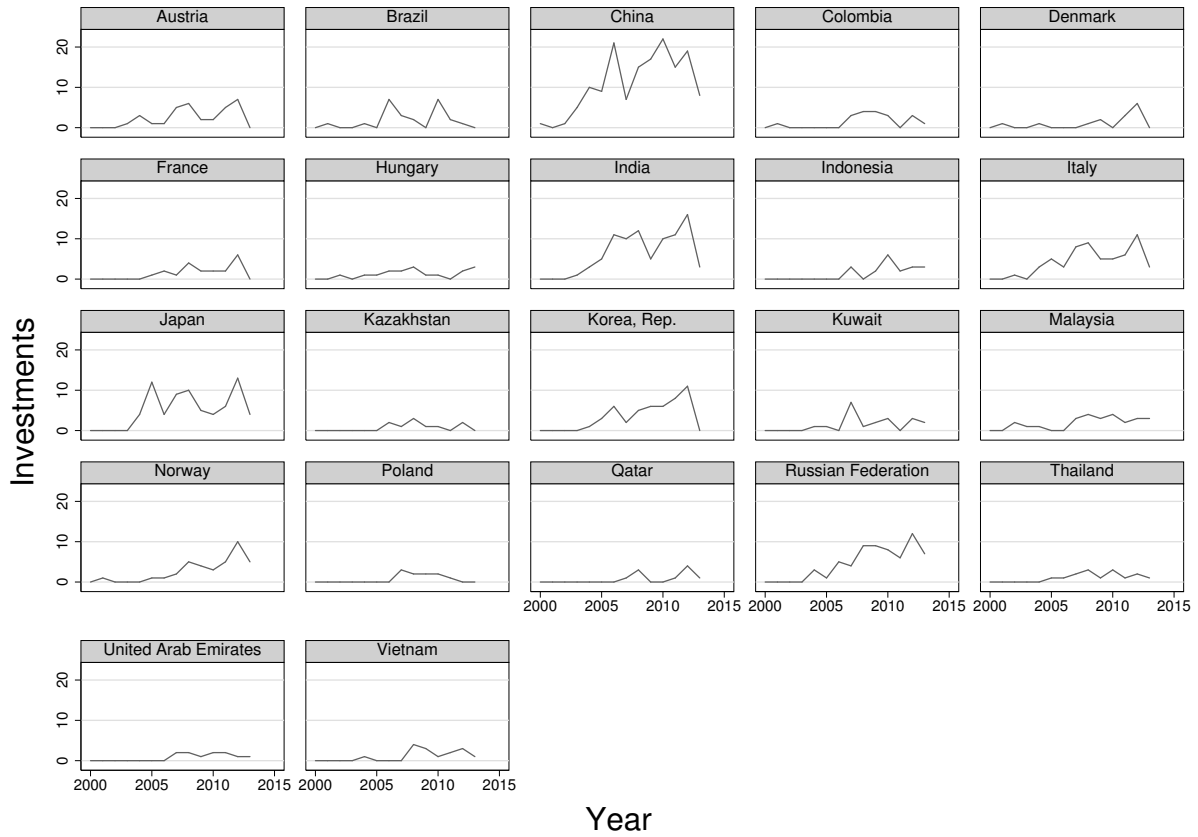


Figure 4.1: Sample of international energy assets purchases and joint ventures over time

the capacity to refine in-house, I choose oil imports because I find the latter problem to be more serious. Nonetheless, I also include unexplored domestic reserves as a control variable. The oil imports data are from the Energy Information Administration in the unit of barrels per day. By aggregating crude oil and refined petroleum imports, this measure captures not only resource poor importers, but also crude exporters that lack the capacity to refine at home. By separately controlling for population, I also ensure that oil imports is a meaningful measure of dependence on foreign oil across countries.

To test *Hypothesis 2*, which predicts that *states facing greater risk of war are more likely to invest in oil and gas assets abroad*, I include an external risk variable, which captures a country's security situation on a 12 point scale, a higher score denoting less risk. Political Risk Group's *International Country Risk Guide* (ICRG) external risk index assesses the risk to the incumbent government from foreign action, ranging from non-violent external pressure, such as withholding of aid and sanctions, to violent external pressure, such as war, based on expert surveys.² Though no perfect measure of war risk exists, this variable usefully exploits the range of specialized knowledge and regional expertise that is currently available. The only drawback is that the data are proprietary, and my access does not extend beyond 2009. I remedy this problem with two additional years of lag. I expand on my use of lags in the description of model specifications below.

To test *Hypothesis 3*, which predicts that *states characterized by greater political competition are less likely to invest in oil and gas assets abroad*, I rely on the political competition variable from the Polity IV project. The variable captures two dimensions of political competition, the de-

²See http://www.prsgroup.com/ICRG_Methodology.aspx for a detailed introduction to the methodology. Accessed on March 23, 2012.

gree to which political participation is regulated through institutions and the degree to which political participation is free from government control—both integral components of the widely employed Polity measure.³ The variable combines the two dimensions to identify ten broad patterns of political competition scaled to roughly correspond with the degree of “democraticness” of political competition within the polity. While conceptualizing something as complex as political competition divorced from the historical and cultural context in which it is embedded risks oversimplification, this variable, both in its careful construction and breadth of coverage, brings us closest to an assessment of increasing levels of political competition and their impact on international investments.

To test *Hypothesis 4*, which predicts that *states with a greater number of veto players are less likely to invest in oil and gas assets abroad*, I rely on the checks variable from the Database of Political Institutions. The checks variable counts the number of veto players in a political system, adjusting for whether they are independent of each other, as determined by the level of electoral competitiveness in a system, their respective party affiliations, and the electoral rules.

To test *Hypothesis 5*, which predicts that *conditional on the centralization of their energy sectors, states with a greater number of veto players are less likely to invest in oil and gas assets abroad*, I created a binary classification of centralized and decentralized energy sectors for all 78 countries included in the sample, and constructed a multiplicative interaction term with checks.

To construct the binary variable, I surveyed the energy sectors of 78 countries in my sample.

³On the first dimension, both one-party states and democracies are said to regulate participation, though they differ in style. The former channels participation through a hegemonic regime, while the latter allows enduring groups to compete for power and influence. Unregulated competition, on the other hand, can often be found in collapsed states, and is characterized by fluid, contentious interactions unencumbered by enduring national political organizations or regime controls on political activity. The second dimension captures the extent to which alternative preferences for policy formation and leadership can be pursued in the political arena (Marshall and Jaggers, 2010).

The defining criterion for decentralization was the existence of multiple governing entities in the energy sector, such as cabinet ministries and regulatory agencies, with potential overlap of authority or coordination problems in energy policy implementation. The most obvious indicator was the absence of an overarching energy ministry. For instance, in China, the National Development and Reform Commission (NDRC) and the State-owned Assets Supervision and Administration Commission (SASAC), among others, share responsibilities for managing NOCs. At the other end of the spectrum, there are centralized energy sectors where one institution has the final say on all matters of energy policy implementation, such as the Ministry of Industry in Vietnam. The original classification can be found in Table 4.1 and the distribution of these different forms of energy sectors across the globe is shown in Figure 4.2.

To be sure, I define centralization in a very specific sense—the presence of a government entity in charge of comprehensive energy policy. Its jurisdiction can span multiple subsectors, such as oil, natural gas, coal, minerals, and electricity, though I focus on oil and natural gas. The existence of higher authorities in government who may also have a say in energy policy does not imply the absence of centralization in the energy sector. For instance, the existence of a planning commission or a president whose broader authority encompasses energy policy neither confirms nor negates the presence of a ministry in charge of energy policy. However, hierarchy is important insofar as some energy policy entities may be shell institutions without substantive decision-making power. Thus, I went beyond inference solely based on organizational charts to account for how the institutions under study interact with each other in practice.

Table 4.1: Energy sector classification

Country	Sector	Governing Entities
Algeria	Centralized	Ministry of Energy and Mines
Angola	Centralized	National Directorate of Petroleum (Ministry of Petroleum)
Argentina	Centralized	Secretariat of Energy (Ministry of Federal Planning, Public Services and Infrastructure)
Azerbaijan	Centralized	Ministry of Industry and Energy
Bahrain	Centralized	National Oil and Gas Authority
Bangladesh	Centralized	Ministry of Power, Energy and Mineral Resources
Barbados	Centralized	Energy Division (Ministry of Finance, Economic Affairs and Energy)
Belarus	Centralized	Ministry of Energy
Bolivia	Centralized	Ministry of Hydrocarbons and Energy
Brazil	Centralized	Ministry of Mines and Energy
Brunei Darussalam	Centralized	Energy Division at the Prime Minister's Office
Cameroon	Centralized	Ministry of Mines, Industry and Technological Development
Chad	Centralized	Ministry of Energy and Petroleum
Chile	Centralized	Ministry of Energy
Colombia	Centralized	Ministry of Mines and Energy
Congo, Rep.	Centralized	Ministry of Hydrocarbons
Cote d'Ivoire	Centralized	The Ministry of Mines, Petroleum Resources and Energy
Croatia	Centralized	Ministry of Economy (MINGO)
Denmark	Centralized	Danish Energy Agency (Minister for Climate, Energy and Buildings)
Ecuador	Centralized	Ministry of Non-Renewable Natural Resources
Egypt, Arab Rep.	Centralized	Ministry of Petroleum
Equatorial Guinea	Centralized	Ministry of Mines, Industry and Energy
Gabon	Centralized	Ministry of Mines, Oil and Hydrocarbons
Ghana	Centralized	Ministry of Energy
Greece	Centralized	General Directorate for Energy (Ministry of Environment, Energy and Climate Change)
Hungary	Centralized	Ministry of National Development
Italy	Centralized	Ministry of Economic Development
Japan	Centralized	Agency for Natural Resources and Energy (Ministry of Economy, Trade and Industry)
Jordan	Centralized	Ministry of Energy and Mineral Resources
Kazakhstan	Centralized	Ministry of Oil and Gas (previously Ministry of Energy and Mineral Resources)
Kenya	Centralized	Ministry of Energy
Korea, Rep.	Centralized	Ministry of Trade, Industry, and Energy (Ministry of Knowledge Economy)
Kuwait	Centralized	Supreme Petroleum Council
Libya	Centralized	Ministry of Petroleum
Malaysia	Centralized	Economic Planning Unit
Mauritania	Centralized	Ministry of Petroleum, Energy, and Mines
Mexico	Centralized	Ministry of Energy
Morocco	Centralized	Ministry of Energy and Mines
Myanmar	Centralized	Ministry of Energy
Nigeria	Centralized	Department of Petroleum Resources (Ministry of Petroleum Resources)
Norway	Centralized	Ministry of Petroleum and Energy
Oman	Centralized	Ministry of Oil and Gas
Pakistan	Centralized	Ministry of Petroleum and Natural Resources
Philippines	Centralized	Department of Energy
Qatar	Centralized	Ministry of Energy and Industry
Russian Federation	Centralized	Ministry of Energy
Slovak Republic	Centralized	Section of Energy (Ministry of Economy)
South Africa	Centralized	Department of Energy (formerly part of Department of Minerals and Energy)
Syrian Arab Republic	Centralized	Ministry of Petroleum and Mineral Resources
Taiwan	Centralized	Bureau of Energy (Ministry of Economic Affairs)
Tanzania	Centralized	Ministry of Energy and Minerals
Trinidad and Tobago	Centralized	Ministry of Energy and Energy Affairs
Tunisia	Centralized	Directorate General for Energy (Ministry of Industry and Energy)
Turkmenistan	Centralized	Ministry of Oil and Mineral Resources
Uganda	Centralized	Ministry of Energy and Mineral Development, Petroleum Authority
Uzbekistan	Centralized	Cabinet of Ministers (Ministry of Finance, headed by by President)
Venezuela, RB	Centralized	Ministry of the People's Power for Petroleum and Mining (MENPET)
Vietnam	Centralized	Ministry of Industry
Yemen, Rep.	Centralized	Ministry of Oil and Mineral Resources

Umbrella entity or acronym in parentheses

Country	Sector	Governing Entities
Austria	Decentralized	Federal Ministry of Economy, Family and Youth, Österreichische Industrieholding AG (OIAG)
China	Decentralized	State Council (Large Enterprise Industry Commission within the State Council), State Development Planning Commission (Department of Investment, Department of Foreign Financing Utilization), State Economic and Trade Commission (Department of Industrial Policy, Department of Sectoral Planning, Sectoral Associations), Ministry of Land and Resources, Ministry of Foreign Trade and Economic Cooperation, China Energy Investment Corporation, China International Engineering Consulting Corporation, China Development Bank
Cuba	Decentralized	Advisory Council in Energy Matters (Ministry of the Economy and Planning), Industry and Energy Commission within the Parliament (National Assembly of People's Power), Council of State
France	Decentralized	Department of Energy and Climate (Ministry of Ecology, Sustainable Development, Transport and Accommodation and the Ministry of Economy, Finance and Industry), Bureau Exploration-Production des Hydrocarbures (BEPH), Bureau de Recherches Géologiques et Minières (BRGM), General Council of Economy, Industry, Energy and Technology (Minister of the Economy, Ministry of Ecology, Sustainable Development, Transport and Accommodation), Energy Regulatory Commission
India	Decentralized	Energy Coordination Committee, Power and Energy Division of India's Planning Commission (Prime Minister), Ministry of Petroleum and Natural Gas, Ministry of Commerce and Industry, Ministry of Finance, Ministry of External Affairs
Indonesia	Decentralized	Ministry of Energy and Mineral Resources, BPMigas (later replaced by SKK Migas)
Iran, Islamic Rep.	Decentralized	Supreme Energy Council (chaired by President, with participation from Ministers of Petroleum, Economy, Trade, Agriculture, and Mines and Industry, among others), Ministry of Petroleum
Iraq	Decentralized	Kurdistan Regional Government, Iraqi Oil Ministry
Mozambique	Decentralized	Ministry of Mineral Resources, National Petroleum Institute (INP), Council of Ministers
Poland	Decentralized	Department of Oil and Gas (Ministry of Economy), Department of Energy (Ministry of Economy), Ministry of Treasury, Energy Regulatory Authority (ERO), numerous central and local government administration bodies
Romania	Decentralized	National Agency for Mineral Resources (NAMR), Romanian Energy Regulatory Authority (ANRE), Ministry of Economy, Trade and the Business Environment
Saudi Arabia	Decentralized	Ministry of Petroleum and Mineral Resources, Supreme Council for Petroleum and Minerals
Sudan	Decentralized	Ministry of Finance and National Economy, Ministry of Petroleum
Suriname	Decentralized	Ministry of Natural Resources, Ministry of Finance, Surinamese Planning Agency, Central Bank of Suriname
Thailand	Decentralized	Ministry of Finance, Energy Policy and Planning Office (Ministry of Energy), National Economic and Social Development Board, National Energy Policy Council, Department of Mineral Fuels, Oil Stabilization Fund (Ministry of Energy)
Turkey	Decentralized	General Directorate of Energy Affairs (Ministry of Energy and Natural Resources), General Directorate of Petroleum Affairs, Energy Markets Regulatory Authority, State Planning Organization
Ukraine	Decentralized	Cabinet of Ministers, Ministry of Energy and Coal Industry
United Arab Emirates	Decentralized	Seven Emirates
Uruguay	Decentralized	National Department of Energy and Nuclear Technology (Ministry of Industry, Energy and Mining), Planning and Budget Office (OPP)

Umbrella entity or acronym in parentheses

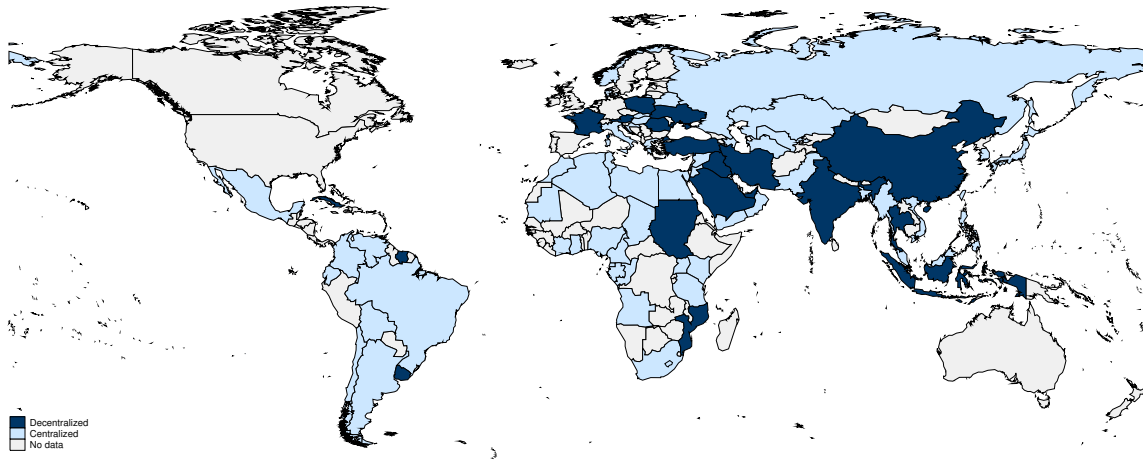


Figure 4.2: Global distribution of centralized and decentralized energy sectors

Control Variables

I implement the following set of controls to address potential omitted variable bias.

I include a control for unexploited domestic oil reserves. While the inclusion of oil reserves, as a measure of resource wealth and energy independence, may seem an alternative test of *Hypothesis 1*, I include it as a control variable that could be associated with both the dependent variable (investments) and one of the key independent variables (oil imports). One obvious reason that NOCs pursue expansion abroad may be that they do not have sufficient business at home, suggesting a negative association between investments abroad and domestic reserves. On the other hand, countries with abundant reserves are likely to import less oil, suggesting a negative association between domestic reserves and oil imports. The crude oil reserves data are in billions of barrels and obtained from the Energy Information Administration.

I control for wealth because countries with greater wealth may be more inclined to invest in oil and gas assets abroad. The NOC may have an easier time making the case for investments, and

the government itself may harbor greater ambitions for its NOC abroad (Marcel, 2006). I control for these effects using GDP per capita. The data are from the World Development Indicators in constant USD, 2005 prices. Given its positively skewed distribution, I log transform GDP per capita to improve the fit of the model.

In order to supplement the use of oil imports data as one of the key explanatory variables, I control for population. Oil imports need to be considered in proportion to size of the economy, for which population is an apt proxy. The data are from the World Development Indicators. Given its positively skewed distribution, I log transform population to improve model fit.

To account for potential endogeneity between variables such as oil imports and investments abroad, I include a variable that captures the extent to which country i 's energy supply is diversified (Cohen, Joutz, and Loungani, 2011). Based on bilateral oil trade data obtained from the United Nations Statistics Division (UNSD)'s Commodity Trade Statistics Database, which preserve the identities of the importer and the exporter, I am able to construct for every country i a time varying indicator as follows:

$$HHI_{i,t} = \sum_J \left(\frac{M_{ij,t}}{M_{i,t}} \right)^2$$

where $M_{i,t}$ is country i 's total imports of oil from all its supplier countries J at time t . $M_{ij,t}$ represents imports of oil from an individual supplier country j to country i at time t . In effect, the HHI is the sum of the squares of each supplier j 's share of country i 's total oil imports. The more concentrated country i 's oil supply, the higher the value of the index. The maximum value of the index is achieved when there is only one supplier j . Assuming that states pursue a

deliberate strategy of oil supply diversification, this variable may capture some of the endogenous effect investments may have on oil imports.

I also include a time trend consistent with the conventional wisdom that international oil and gas assets investments intensified over the 2000s.

Alternative Explanation: Regulatory agency only

The presence of a regulatory agency may influence the government's capacity to monitor the NOC's investments, as well as insulate them from the vagaries of domestic politics. As a much simpler alternative to the energy sector classification above, this variable only indicates the presence or absence of a particular agency charged with regulating the oil or gas sector. It ignores the presence of other governing entities in the energy sector, such as ministries, that may potentially compete against the regulatory agency.

Including this analysis makes for a more rigorous test of *Hypothesis 5*, as the competing principals model must demonstrate added value in considering not only the existence of a regulator but also its competitors in characterizing the energy sector. The universe of regulatory agencies is included in the data description section of the supplementary appendix. Among the 78 NOC countries, I identified 44 regulatory agencies in the oil or gas sector.

Model Specification

Given the count distribution of the data and evidence of overdispersion, I choose to implement a negative binomial model (Greene, 2005, 2008; Hilbe, 2011). The negative binomial model introduces latent heterogeneity to the standard Poisson model, allowing the conditional variance and

the conditional mean to differ. We begin by writing:

$$E[y_i | \mathbf{x}_i, \epsilon_i] = \exp(\alpha + \mathbf{x}'_i \beta + \epsilon_i) = h_i \lambda_i$$

where \mathbf{x}_i represents the vector of covariates and $i = 1, \dots, N$ indexes the N observations in a random sample. $\lambda_i = \exp(\alpha + \mathbf{x}'_i \beta)$ is a component of the original Poisson model, and the latent heterogeneity, $h_i = \exp(\epsilon_i)$, is assumed to have a one parameter gamma distribution, $G(\theta, \theta)$ with mean 1 and variance $\frac{1}{\theta} = \kappa$;

$$f(h_i) = \frac{\theta^\theta \exp(-\theta h_i) h_i^{\theta-1}}{\Gamma(\theta)}, h_i \geq 0, \theta > 0$$

As is the case with errors in a linear regression, the nonzero mean of ϵ_i will be absorbed in the constant term of the index function. The resulting conditional Poisson specification differs from the original Poisson specification in its inclusion of $\exp(\epsilon_i)$:

$$\text{Prob}[Y = y_i | \mathbf{x}_i, \epsilon_i] = \frac{\exp[-\exp(\epsilon_i) \lambda_i] [\exp(\epsilon_i) \lambda_i]^{y_i}}{\Gamma(1 + y_i)}$$

$$\lambda = \exp(\alpha + \mathbf{x}'_i \beta), y_i = 0, 1, \dots$$

The unconditional density, conditioned only on \mathbf{x}_i , is obtained by integrating ϵ_i out of the joint density. Before doing so, we use $h_i = \exp(\epsilon_i)$ to rewrite the conditional density as

$$\text{Prob}[Y = y_i | \mathbf{x}_i, h_i] = \frac{\exp(-h_i \lambda_i) (h_i \lambda_i)^{y_i}}{\Gamma(1 + y_i)},$$

$$\lambda = \exp(\alpha + \mathbf{x}'_i \beta), y_i = 0, 1, \dots$$

Upon integration, the unconditional density is as follows:

$$\text{Prob}[Y = y_i | \mathbf{x}_i] = \frac{\Gamma(\theta + y_i) r_i^\theta (1 - r_i)^{y_i}}{\Gamma(1 + y_i) \Gamma(\theta)},$$

$$r_i = \frac{\theta}{\theta + \lambda_i},$$

$$\lambda_i = \exp(\alpha + \mathbf{x}_i \beta),$$

$$\theta > 0, y_i = 0, 1, \dots, i = 1, \dots, N$$

β is a vector of coefficients for the independent variables and control variables. The dependent variable Y is the count of international purchases and joint ventures in oil and gas assets by country i . For the neorealist paradigm, I expect the coefficient to be positive for oil imports and negative for external risk, both of which should be statistically significant. For the liberal paradigm, I expect the coefficient to be negative and statistically significant for both political competition and checks (in the absence of the interaction variable). For the competing principals model, I expect the interaction term to be negative.

A key modelling choice is the application of lags to all variables on the right hand side (R.H.S.) of the regression equation. Substantively, it is plausible that the alleged drivers of investments in oil and gas assets abroad, such as oil imports, external conflict risk, veto players, and political competition, have slow, long-term effects rather than immediate, short-term effects. An intermediary stage of bargaining exists between a country's initial development of interest in purchasing

an additional energy asset and the successful conclusion of a deal. First, given the sheer scale of these transactions, there are likely to be internal deliberations, democratic or otherwise, within the interested country concerning the utility of the assets. Second, it takes at least two parties to agree upon and conclude an asset transaction or a joint venture, so there may be back-and-forth bargaining among the interested countries, often in the form of an auction.

This is obviously a stylization, and the length of the bargaining period may also vary depending on the institutional configurations of the parties involved. Nonetheless, the point, that there is a time lag between the development of an interest in purchasing an asset and the conclusion of a deal to that effect, still stands. I choose to lag most variables on the R.H.S. of the equation by two years, though I experiment with different lag structures in the robustness section of the supplementary appendix to demonstrate that the substance of my findings is not contingent on this particular modelling choice.

The time lags also serve practical purposes, as they help to ameliorate concerns of endogeneity and reduce inefficiency imposed by a constraining variable. First, by applying lags, I strengthen my case against the potential criticism that investments are driving my explanatory variables, such as oil imports. Second, because my access to the ICRG external risk data does not extend beyond 2009, I choose to apply a four year lag on this particular variable rather than throwing away valuable information.

As hinted earlier, I deliberately include in my empirical analysis countries whose NOCs do not invest abroad. Excessive zeros, however, could contribute to overdispersion, biasing parameter estimates and underestimating standard errors. Moreover, there is a possibility that the as-

sumption made earlier—the same covariates used to explain variation in frequency of investments also help predict NOCs' decision to stay at home—could prove erroneous. To address these concerns, I also estimate zero-inflated negative binomial models, which allow investment and non-investment decisions to arise from two separate processes. I present my results for these analyses in the robustness section of the supplementary appendix.

The summary statistics and the correlation matrix can also be found in the data description section of the supplementary appendix.

Findings

The main results are presented in Table 4.2. Model 1 begins with the standard set of controls—oil reserves, GDP per capita, and population—and the following models successively introduce additional controls: Model 2 introduces regional dummies to account for characteristics shared by countries within the same regions, Model 3 introduces a variable that measures a country’s concentration of oil suppliers to capture potential endogeneity between investments and oil imports, and Model 4 introduces a time trend.

In interpreting these results, it is important to note that the substantive effect of a variable cannot be fully discerned by examining the regression output alone. Calculation of incidence rate ratios and the associated standard errors is necessary. Nonetheless, some details stand out.

There is little evidence for the neorealist hypotheses. Surprisingly, the coefficients for oil imports contradict expectations of *Hypothesis 1*, and are only weakly significant for the third and strongly significant for the fourth. Though multiple interpretations are possible, it seems plausible that heavy importers reach a point of diminishing returns in sending their NOCs abroad to secure additional reserves and sources of supply. Oil imports and NOC internationalization become substitutes rather than complements.

While the coefficients for external risk across the first three models are in the direction expected by *Hypothesis 2*, they are statistically insignificant. The hypothesis that conflict risk increases pre-emptive energy investments is eminently plausible, but these findings suggest that it does not hold true in practice.

Taken together, while these results may be underwhelming from a neorealist perspective, they

Table 4.2: Empirical analysis of investments with random effects 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.145 (0.098)	-0.147 (0.101)	-0.189* (0.102)	-0.285*** (0.102)
External risk (t-4)	-0.058 (0.062)	-0.054 (0.062)	-0.070 (0.066)	0.037 (0.066)
Polity competition (t-2)	-0.121** (0.054)	-0.087 (0.058)	-0.118* (0.063)	-0.083 (0.055)
Checks (t-2)	0.045 (0.029)	0.041 (0.029)	0.042 (0.031)	0.018 (0.027)
Centralization (t-2)	0.956** (0.450)	1.091** (0.463)	0.990** (0.488)	0.512 (0.451)
Interaction	-0.271*** (0.104)	-0.262** (0.107)	-0.225** (0.111)	-0.103 (0.104)
Oil reserves (t-2)	-0.009* (0.005)	-0.010** (0.005)	-0.012** (0.005)	-0.008* (0.004)
GDP pc (log) (t-2)	1.490*** (0.194)	1.460*** (0.215)	1.558*** (0.258)	1.129*** (0.187)
Population (log) (t-2)	1.203*** (0.165)	1.169*** (0.163)	1.237*** (0.190)	1.053*** (0.145)
Africa		-0.318 (0.573)	-0.786 (0.620)	-0.878 (0.540)
Americas		-0.268 (0.511)	-0.362 (0.541)	-0.638 (0.493)
Asia		0.440 (0.482)	0.405 (0.504)	0.267 (0.440)
HHI (t-2)			-0.131 (0.488)	
Trend				0.127*** (0.017)
Observations	716	716	638	716

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.3: Incidence rate ratios for empirical analysis 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	0.865 (0.085)	0.864 (0.087)	0.828* (0.085)	0.752*** (0.076)
External risk (t-4)	0.944 (0.058)	0.948 (0.058)	0.933 (0.062)	1.038 (0.068)
Polity competition (t-2)	0.886** (0.048)	0.916 (0.053)	0.889* (0.056)	0.921 (0.051)
Checks (t-2)	1.047 (0.031)	1.042 (0.030)	1.043 (0.032)	1.019 (0.027)
Centralization (t-2)	2.602** (1.170)	2.976** (1.377)	2.691** (1.314)	1.668 (0.753)
Interaction	0.763*** (0.080)	0.769** (0.083)	0.798** (0.089)	0.902 (0.094)
Oil reserves (t-2)	0.991* (0.005)	0.990** (0.005)	0.988** (0.005)	0.992* (0.004)
GDP pc (log) (t-2)	4.439*** (0.862)	4.305*** (0.924)	4.751*** (1.226)	3.093*** (0.579)
Population (log) (t-2)	3.332*** (0.551)	3.219*** (0.524)	3.445*** (0.653)	2.866*** (0.417)
Africa		0.728 (0.417)	0.455 (0.282)	0.416 (0.224)
Americas		0.765 (0.390)	0.697 (0.377)	0.528 (0.261)
Asia		1.553 (0.749)	1.500 (0.755)	1.305 (0.574)
HHI (t-2)			0.877 (0.428)	
Trend				1.135*** (0.019)
Observations	716	716	638	716

Exponentiated coefficients; Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

are not entirely surprising to those who argue that energy security is not at the heart of the push for internationalization among national oil companies.

Nor is there robust support for the liberal hypotheses. While the coefficients for political competition across the four models are in the direction predicted by *Hypothesis 3*, only two of them are significant, one of which is weakly so. Had they been more strongly significant across the board, they would have posed a challenge to the competing principals model, since altering a variable at the policy-making stage, such as increasing the difficulty of staying in office, would have been sufficient to restrain NOC internationalization.

The non-negative coefficients for the checks constituent term contradict *Hypothesis 4*, at least for countries with decentralized energy sectors (the centralization binary indicator set to zero). However, they do not contradict *Hypothesis 5*. Institutional checks, in countries with decentralized energy sectors, are unable to restrain investments. This is broadly consistent with the theoretical claim that NOCs can circumvent opposition to investments from national institutions by exploiting coordination problems among governing entities in decentralized energy sectors.

The task remains to examine the impact of institutional checks in countries with centralized energy sectors. Interestingly, the evidence lends fairly strong support to *Hypothesis 5*, the competing principals model. The interaction term between checks and centralization is negative as expected and strongly significant across three of the four models. Consistent with *Hypothesis 5*, institutional checks at the national level and centralization of the energy sector mutually reinforce each other in restraining NOC investments. While the statistical significance diminishes somewhat for Model (4), the coefficient remains in the expected direction. The loss of signifi-

cance for Model (4) is less surprising in light of Figure 4.1, which shows evidence of an upward, albeit non-monotonic, trend spanning the 2000s for some of the countries under analysis.

The substantive effect can best be articulated using incidence rate ratios (IRR), presented in Table 4.3. IRR is a ratio based on the rate or incidence of counts. It can also be thought of as a ratio comparing two ratios, each representing the incidence of counts having some characteristic out of a population of subjects from which the counts are a part. Given an IRR of 1, the interpretation is that the former incidence is equally likely as the latter incidence. In our case, we would be comparing the incidence of counts given two different values (before and after a marginal increase) of the explanatory variable of interest. Incidence rate ratios (Table 4.3) can be obtained by exponentiating the original coefficients (Table 4.2). For instance, the exponentiated coefficient for polity competition under Model (1) is 0.886, suggesting that a unit increase in polity competition is associated with a 11.4% ($1 - 0.886$) decrease in oil and gas investments.

Incidence rate ratios for multiplicative interactive terms can be obtained using the formula:

$$IRR = \exp(\beta_1 + \beta_3 x)$$

where β_1 represents the coefficient of the constituent variable we seek to increase marginally, β_3 represents the coefficient of the interaction term, and x represents the value at which the remaining constituent variable is to be held constant.

Based on Model (2) estimates, among countries with decentralized energy sectors, an additional unit of checks is associated with a 4 percent increase in the incidence of investments, though the effect is not statistically distinguishable from 0 at the 90 percent confidence level. Consistent

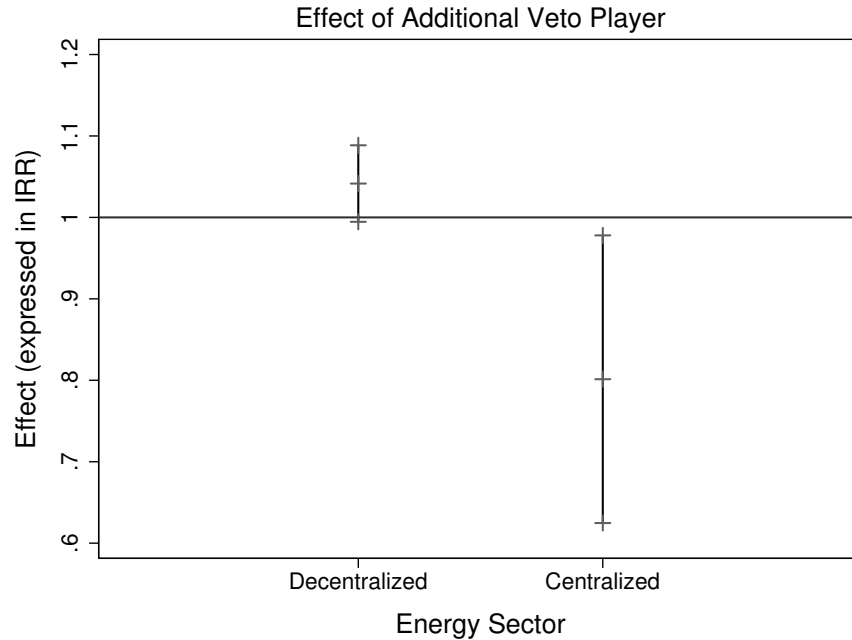


Figure 4.3: Marginal effect of a veto player increase on the incidence of investments under decentralized (centralized) energy sectors with associated uncertainty

with *Hypothesis 5* however, among countries with centralized energy sectors, an additional unit of checks is associated with a nearly 20 percent decrease in the incidence of investments, and the effect is statistically distinguishable from 0 at the 90 percent confidence level. This is a substantively large effect given that most countries in my sample fall within the range of 1 to 5 on the checks score. The difference in substantive effects is shown in Figure 4.3.

For the control variables, the coefficients for domestic oil reserves are negative and statistically significant across all four models, though two of them are only weakly significant. When countries already possess significant oil reserves at home, their NOCs do not seem to go abroad seeking to purchase more. On the other hand, when countries lack indigenous oil reserves, their NOCs may go abroad in search of more business.

As expected, the coefficients for GDP per capita are positive and statistically significant across all models. Consistent with the extant literature, the evidence suggests that wealthier countries are more inclined to invest in oil and gas assets abroad (Victor, 2007a; Marcel, 2006). NOCs may have easier access to government funding because of the overall wealth, as well as greater international ambitions the governments harbor for their NOCs.

The coefficients for population are also positive and statistically significant across the four models as expected. This is not surprising, as country size needs to be taken into account in my cross-national analysis. The trend variable is positive and statistically significant, consistent with the notion that investments in energy assets abroad have increased over the last decade. Interestingly, none of the regional variables are significant.

Overall, these results reinforce the chief prediction of the competing principals model, namely that institutional safeguards at the national level and centralized energy sectors together restrain NOC investments and joint ventures abroad.

Alternative Explanation: Regulatory agency only

I consider an alternative to the centralization of the energy sector emphasized by *Hypothesis 5*. The competing principals model gives no special status to oil or gas regulatory agencies, and considers them among many other governing entities, such as ministries, that may share responsibility for energy sectors across countries. However, if substantively similar results can be obtained based on the presence of a regulatory agency alone (as a substitute for centralization), then a much more parsimonious theory would be ideal. If the test fails to arrive at results similar to those presented earlier, it would strengthen my case for considering more than the existence

of a bureaucratic agency in characterizing an energy sector.

The results are presented in Table 4.4. Similar to the main results, we find scant support for either the neorealist paradigm or the liberal paradigm. The coefficients for oil imports are not in the expected direction. The coefficients for the external risk variable are in the expected direction for the first three models, but not for the fourth. With the exception of oil imports for the trend model, none are statistically significant. While the coefficients for political competition are in the expected direction, only two are weakly significant.

The most important difference between these results and the main results, however, is that the presence of a regulatory agency, in contrast to centralization, does not have the same restraining effect on investments when interacted with the number of veto players. Though further theoretical and empirical research is necessary, the results suggest that the presence of a regulatory agency, under certain conditions, may even encourage investments.

In short, these results suggest that the presence of a regulatory agency alone does not help veto players restrain investments in oil and gas assets abroad.

Robustness Tests

In the supplementary appendix, I subject my statistical results to an array of robustness checks. They demonstrate that my main substantive results remain strong across dozens of specifications.

First, I address the concern that excessive zeros may contribute to overdispersion by implementing zero-inflated negative binomial models. I model the decision not to invest separately, using the variables associated with the two paradigms without centralization or the interaction term suggested by the competing principals model. While the statistical significance diminishes

Table 4.4: Empirical analysis of investments with regulatory agencies 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.115 (0.097)	-0.120 (0.100)	-0.156 (0.101)	-0.280*** (0.101)
External risk (t-4)	-0.058 (0.062)	-0.053 (0.061)	-0.073 (0.067)	0.032 (0.065)
Polity competition (t-2)	-0.108* (0.057)	-0.069 (0.063)	-0.123* (0.069)	-0.078 (0.059)
Checks (t-2)	-0.360** (0.173)	-0.369** (0.179)	-0.297 (0.187)	-0.115 (0.161)
Regulatory agency (t-2)	-1.112** (0.518)	-1.146** (0.533)	-0.661 (0.581)	-0.369 (0.519)
Interaction	0.396** (0.171)	0.401** (0.178)	0.331* (0.186)	0.130 (0.161)
Oil reserves (t-2)	-0.010** (0.005)	-0.011** (0.005)	-0.012** (0.005)	-0.009* (0.005)
GDP pc (log) (t-2)	1.409*** (0.194)	1.373*** (0.215)	1.430*** (0.242)	1.102*** (0.184)
Population (log) (t-2)	1.191*** (0.162)	1.139*** (0.161)	1.163*** (0.179)	1.028*** (0.144)
Africa		-0.210 (0.546)	-0.677 (0.589)	-0.789 (0.527)
Americas		-0.324 (0.505)	-0.441 (0.516)	-0.634 (0.489)
Asia		0.432 (0.467)	0.312 (0.471)	0.285 (0.436)
HHI (t-2)			-0.127 (0.480)	
Trend				0.127*** (0.017)
Observations	716	716	638	716

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

somewhat, the results remain consistent with my central findings.

Second, I rerun my main analysis experimenting with varying lag structures for all R.H.S. variables. Beginning with no lag, I successively apply an additional year of lag up to four years. The findings from the main results—weak or inconsistent support for neorealism and liberalism overshadowed by strong evidence for the competing principals model—continue to hold.

Third, I successively interact the centralization variable with all R.H.S. variables except the regional dummies. As expected, the interaction term between checks and centralization stands out, though the substantively significant interaction between oil imports and centralization, as well as that between oil reserves and centralization, is also subject for future research.

Fourth, I introduce various time trends to check against spurious correlation and omitted temporal variables. I experiment with regional time trends, allowing temporal trends to vary among regions. Given the evidence of a non-monotonic trend among some countries in Figure 4.1, this is a necessary test. The coefficients for the interaction term remain in the correct direction, while the statistical significance diminishes as expected. The significance of oil imports under the trend specifications is interesting, suggesting a potential interaction with time.

Fifth, I experiment with various measures of oil supply diversification to address the potential claim of endogeneity, especially given that oil imports could be a function of investments. The Herfindahl-Hirschman index is weighted using ICRG's political stability measure for two of the models, whereby unstable supplier countries are weighed more heavily for one, and stable supplier countries are weighed more heavily for the other. The coefficients for the interaction term remain in the correct direction, though the significance somewhat diminishes when stable

supplier countries are weighted more heavily.

Sixth, I successively exclude major regions of the world from the sample, from Africa, Americas, and Asia, to Europe. When the model excludes Asia, the coefficient for the interaction term flips signs, and it becomes statistically insignificant. Though the direction of the coefficient remains in the correct direction when excluding Africa, it becomes insignificant. These results point to two regions that play a fairly large role in my statistical findings.

Seventh, I present the results with polity score instead of veto players. Since I am interested in institutional features of states, others may ask whether a generic regime type variable could substitute for veto players and achieve the same effect of restraining investments. Not surprisingly, the direction of the coefficient remains the same, though the substantive effects are notably weaker. My findings suggest that, while there may be overlaps, there is something unique about veto players that a generic regime type variable does not quite capture.

Eighth, I present the results with a control for transparency of the regime. Given that national oil companies seem to be organizations shrouded in obscurity, perhaps it is governments that lack transparency to begin with that are more likely to engage in NOC investments abroad. To test this conjecture, I introduce a binary control for transparency based on the Freedom House classification of free and not (or partially free) countries. While I do observe a negative and statistically significant effect across three models, it does not diminish my central findings.

Ninth, I present the results with a control for tariffs. To address the argument that a general mercantilist orientation among some states could help explain NOC investments in oil and gas assets, I introduce a control variable based on the weighted mean applied tariff data from the

World Bank. Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country. Given the prevalence of missing data, I employ multiple imputation based on linear regression. I find that tariffs are in fact negatively associated with investments, though only weakly significant in two specifications. My central findings remain robust.

Tenth, I present the results with ICRG's External Risk variable replaced by an updated Political Risk variable. As explained above, part of the rationale for lagging External Risk by four years is that my access to the ICRG database does not extend beyond 2009. I have obtained ICRG's Political Risk data—not External Risk, which is a component of Political Risk—that extend to 2013. Thus, I replace External Risk (t-4) with Political Risk (t-2) to demonstrate that my substantive findings do not change. The Political Risk variable (higher values denoting less risk) is positively associated with investments across all four models, though the magnitude is small.

Eleventh, I present the results with the United Arab Emirates coded as centralized. In the main analysis, I coded the United Arab Emirates as decentralized because the nation does not have a centralized energy body of its own. However, sectoral organization is centralized for some of the individual Emirates: Abu Dhabi has the Supreme Petroleum Council, while Dubai has the Supreme Council of Energy. Thus, I recode the UAE as centralized to demonstrate that my findings are not dependent on this ambiguous case.

Chapter 5

Cases

In this chapter, I supplement the statistical results of the previous chapter with case studies. Statistical analyses of investments and joint ventures found greater support for the hypothesis derived from the competing principals model than the hypotheses derived from either the neo-realist paradigm or its liberal counterpart. The quantitative evidence found thus far is sufficient to warrant further investigation of *Hypothesis 5*. Case studies can contribute to our understanding by clarifying the theorized causal story with illustrations and bringing together qualitative evidence that the mechanisms theorized actually influence policy debates and outcomes.

The table representing *Hypothesis 5* and its observable implications for selected countries, first shown in Chapter 2, is reproduced here for the reader's convenience (See Table 5.1). As mentioned in Chapter 3, I focus on countries with 10 or more oil and gas assets purchases or joint ventures abroad for the case studies. This is not to say that countries not undergoing NOC internationalization are less important. The primary purpose I have set for case studies, as part of my research design, is not to test the validity of the hypotheses themselves, which has been the subject of the previous chapter, but to present illustrations of and evidence for the theorized mechanisms based on highly relevant cases.

The case studies will seek to uncover in greater detail the mechanisms underlying NOC lobbying of government entities. As explicated in Chapter 2, the governing entities in the energy sector mediate the relations between national institutions (principal) and national oil companies (agent). The investments of NOCs can be restrained under two conditions—when there are cross-checking national institutions in the first place to potentially oppose the investments and there is a single, capable governing entity in the energy sector monitoring the NOCs, accountable for

		National Institutions (Veto Players)	
		FEW	MANY
Governing Entities in Energy Sector (Access Points)	<i>State does not oppose investments, NOC weak</i>	Hungary Italy Japan Kazakhstan Korea Kuwait Malaysia Qatar Russia Vietnam	Brazil Colombia Denmark Norway
	<i>State does not oppose investments, NOC powerful</i>	China Indonesia Thailand United Arab Emirates	Austria France India Poland
	MANY		

Table 5.1: Observable expectations by country

the agent's deviations from the preferences of the principal. When either component is missing, NOC investments are likely to proceed unabated.

The case studies of China, India, Russia, and Brazil will illustrate each of the scenarios in Table 5.1, chosen on the basis of their importance as emerging economies. The choice of BRIC countries has the added benefit of allowing for variation on the neorealist and liberal variables. China is a net importer with few veto players, while India is a net importer with many veto players. Russia is a net exporter with few veto players, whereas Brazil represents a net exporter with many veto players. I also choose to examine Norway due to its prominence as a model of petroleum governance. If *Hypothesis 5* can yield useful insights in each of these cases, then my argument becomes stronger.

In the Chinese case, I illustrate how the lack of cross-checking national institutions allows NOC investments to proceed unopposed, and the absence of a centralized Energy Ministry since 1993 makes NOC lobbying of governing entities much less costly. The National Development and Reform Commission (NDRC) and the State-owned Assets Supervision and Administration Commission (SASAC), both of which are general purpose institutions, share the responsibility for the energy sector and the approval of major overseas projects of NOCs. Chinese NOCs can influence energy policy most directly by providing self-serving information to the NDRC. If the NDRC is swayed, then the remaining governing entities in the energy sector follow suit, given their lack of independent expertise. As predicted by *Hypothesis 5*, not only do investments proceed unopposed in the absence of veto players, but the largely decentralized energy sector allows them to proceed on the NOC's terms, not the government's.

Does the picture change with the introduction of cross-checking national institutions? We turn to India. The Indian case illustrates how, even in the presence of cross-checking national institutions, NOCs can take advantage of a decentralized energy sector to circumvent their influence. Governing entities in the Indian energy sector include a plethora of ministries (Petroleum and Gas, Coal, Nonconventional, and Power) that resemble “different countries at work,” the Energy Coordination Committee, the Planning Commission, and various other cabinet committees. Though there are cross-checking institutions to potentially veto NOC investments, ministries complain that the NOC sometimes charges ahead on international deals and, after completing three quarters of the groundwork, calls them in for help. As predicted by *Hypothesis 5*, though investments sometimes receive scrutiny from veto players, NOCs can exploit the decentralized energy sector to impose their preferences.

A centralized energy sector alone, however, does not change the situation either. In the Russian case, a centralized energy sector ensures that investments proceed on the government’s terms, not the NOC’s. However, the absence of cross-checking national institutions and the enormous concentration of authority in the Kremlin allow internal divisions within the executive to powerfully shape energy policy. NOC investments, and their commercial operations, become instruments of competing factions, and this dynamic often plays itself out in competitive buyouts and bidding wars between Rosneft and Gazprom. Consistent with *Hypothesis 5*, while the absence of checks and balances allows NOC investments to proceed unopposed, the investments reflect the preferences of the powerful (though conflicted) central government rather than those of NOCs.

Brazil and Norway are cases where there are many veto players and centralized energy sec-

tors. A robust web of cross-checking national institutions, in combination with a powerful energy ministry, ensure that rogue NOC behavior does not go unpunished. Despite the presence of regulatory agencies in each of these countries, such as National Agency of Petroleum and Natural Gas in Brazil and the Norwegian Petroleum Directorate in Norway, neither of the agencies challenges the respective energy ministry's authority, serving mostly technical advisory functions. Consistent with *Hypothesis 5*, these are countries that have both the willingness and the capacity to restrain the investments of NOCs should they deem them contrary to their interests.

5.1 China

Conventional Wisdom

For the first case study, we return to the motivating example that opened the project, the case of China. China is a net oil and gas importer with few veto players to check against rent-seeking. Both neorealist and liberal paradigms suggest rampant NOC investments abroad. Indeed, a large body of works in the literature, as well as common wisdom in the policy circles, lends support to these arguments.

China became a net oil importer in 1993. This status is expected to continue into the future, although a proper assessment is difficult because Chinese official projections have a history of underestimating demand. Other projections tell us that about 65 percent of China's oil would be imported in 2020, and three-quarters in 2030 (IEA 2008) (Jiang, 2012: 386). Thus, students of international security often point to China's rapid economic growth and escalating demand for resources to explain the overseas expansion of its NOCs (Lind and Press, N.d.; Friedberg, 2006).

Friedberg (2006) cites Chinese policy-makers who single out the threat to China's energy

supply routes posed by American naval power. Based on their interviews with policy-makers, Lind and Press (N.d.) argue that while China will remain vulnerable to energy cutoffs in times of extreme crisis, a strategy of resource nationalism pays off in various ways: Better deals may secure supplies during oil shocks, and embargoes and policies of resource nationalism have raised the bar for those seeking to wield the oil weapon.

Others, such as ICG (2008) and Downs (2007), deny that China is “locking up” resources of the world in a bid to enhance its energy security. Instead, their political economy accounts suggest that rent-seeking arrangements between politicians and national oil companies help explain the profusion of Chinese investments in oil and gas assets abroad. This explanation is more consistent with the fact that China only brings back 10% of its equity oil home (Dirks, 2006).

While these explanations may each hold a grain of truth, there are substantial limitations to both. First, not all importers of oil and gas end up investing billions of dollars in potentially risky energy investments abroad. Thus, China’s status as an oil importer is an insufficient explanation. Nor do all countries with fewer veto players exhibit rent-seeking pathologies. For greater analytical traction, we must go beyond these variables. Second, neither theoretical explanation offers a strategic role for national oil companies, although the liberal explanations hint at this possibility through anecdotes. How do national oil companies interface with their home governments in determining international energy investments? That is the subject to which we now turn.

Historical Overview of Energy Sector

NOCs first emerged in China following two government reforms in 1982 and 1988. Many of these NOCs were created to carry on certain functions of existing government ministries as com-

mercial entities, often replacing the ministries themselves in the process.

The first to emerge was the China National Offshore Oil Corporation (CNOOC), incorporated in January 1982 and authorized by the State Council to assume the overall responsibilities for the exploitation of oil and gas resources offshore in cooperation with foreign partners. In February 1983, the State Council established the China Petrochemical Corporation (Sinopec) to replace the Ministry of Petro-Chemistry (Liao, 2014: 5).

In a deliberate effort to improve performance of state enterprises, the central government in 1988 abolished the Ministry of Petroleum Industry, which dated back to 1955, and assigned its assets and responsibilities to the newly created China National Petroleum Company (CNPC), alongside similar reforms in other sectors, such as coal and nuclear power. This put CNPC in charge of not only operations (onshore and shallow water oil and gas exploration and production, as well as overseas cooperation) but also some regulation that MPI had previously overseen, such as setting standards for the petroleum industry (Jiang, 2012: 387).

In consultation with the State Council, which devised the country's central economic plans, CNPC was in charge of long-term planning, including control over investment decisions within China and overseas. The planning bureau of CNPC was in charge of business strategy planning and production planning (including regulation of inputs and outputs from the oil industry) in conjunction with the State Planning Commission (SPC) and State Economic and Trade Commission (SETC) (Jiang, 2012: 387).

Despite the increased influence of national oil companies, centralized control over the sector, as I define it, initially prevailed in the late 80s. In February 1988, a government decision

requested that Sinopec still be under the control of the State Council. The Ministry of Energy was established to replace the Ministries of Coal, Petroleum and Nuclear. The Ministry of Water Resources and Power was replaced by the Ministry of Water Resources (Liao, 2014: 5).

However, the dismantlement of the Ministry of Energy in 1993 was a decisive shift in the direction of decentralization. China undertook a deliberate proliferation of government ministries (bringing back the Ministry of Coal Industry and the Ministry of Power Industry) and corporations in the energy sector. The expansion of governing entities may have strengthened government control, but it also increased the difficulty of coordination and often led to duplication of policy implementation. The government, unable to build up independent expertise, became largely dependent on often self-serving advice from NOCs (Zhao, 2001) (Liao, 2014: 5).

There were numerous efforts to increase coordination following 1993, though the energy sector remained decentralized. In 1998, 10 government ministries directly linked with industries, such as the Ministries of Coal, Chemistry and Metallurgy, were all downgraded to vice-ministerial level Bureaus (including the State Bureau of Petroleum and Chemical Industry) and were put under the administration of the State Economic and Trade Commission (SETC) (Liao, 2014: 5).

In 2003, in reforms led by Premier Wen Jiabao, the SETC was replaced by three government institutions—the National Development and Reform Committee (NDRC), the State Assets Supervision and Administration Commission (SASAC) and the Ministry of Commerce (by merging the Ministries of Domestic Trade and Foreign Trade and Economic Cooperation) (Liao, 2014: 5). In this arrangement, the NDRC assumed responsibilities for the approval of NOCs' investments both at home and overseas. At ministerial ranking, SASAC, directly under the States Council,

was to handle all the central enterprises (*yangqi*) owned by the central government, performing investor's responsibilities, as well as supervision and management of their assets. The Ministry of Commerce was in charge of energy imports and exports. As confirmed by my interviews with Chinese officials from SASAC and the chief economist of CNPC, these governing entities would be central to overseeing various facets of NOC operations (Liao, 2014: 5).

Yet it seems that centralization proved elusive. In that same year, Beijing also established an Energy Bureau within the NDRC to exert greater control over the energy sector by examining industrial projects and supervising energy-affiliated activities. But with only 30 staff members, the Energy Bureau clearly lacked authority, mandate and capacity to pursue the designated duties. In fact, its bureaucratic ranking was lower than those of NOCs (Liao, 2014: 6).

On May 27, 2005, the National Energy Leading Group (ELG) was established, headed by Premier Wen Jiabao, involving 13 other government ministers. The Leading Group assumed duties for the development of blueprints, energy exploitation, energy conservation and international cooperation. Subordinate to the ELG, a National Energy Office (NEO) (vice-ministerial rank) was formed to oversee macro energy growth trends, organize research, and aid the leading group's administration. Comprised of 24 members, the NEO was led by Ma Kai (Director of the NDRC), Ma Fucai (former General Manager of CNPC who resigned after a gas-field accident that killed 243 people in 2003) and Xu Dingming (Director of NDRC's Energy Bureau) (Liao, 2014: 6). However, the call for an Energy Ministry did not cease.

The 11th National People's Congress (NPC) in March 2008 formed a vice-ministerial National Energy Administration (NEA) under the NDRC, replacing the ELG and the NEO. Headed

by Zhang Guobao, Vice Director of NDRC, the NEA assumed responsibilities for drafting and carrying out energy policies and regulations (Liao, 2014: 6). The fact that new entities had to be formed with an NDRC chair at the helm suggests that the NDRC, while undeniably powerful, still felt the need to further solidify its authority in the energy sector.

On January 27, 2010, the National Energy Commission (NEC) was established, headed by Premier Wen Jiabao and Vice Premier Li Keqiang, involving 21 additional ministers. The high-profile NEC was viewed as a “super-commission” to demonstrate the central leaders’ commitment to energy issues. The NEC’s duties were to help enhance NEA’s authority and to facilitate coordination between government departments over energy policy-making (Liao, 2014: 7).

Nonetheless, Li Junfeng from the NDRC Research Institute for Energy, for instance, held that the NEC was still a policy coordinator and an Energy Ministry was needed for China’s energy governance. During the 12th National People’s Congress, the idea of establishing an Energy Ministry resurfaced but failed again (Liao, 2014: 7).

Organizational Overview of Energy Sector

Taking stock of these governing entities, it is safe to say that authority is divided among several government agencies. The agency with the most power is the National Development and Reform Commission (NDRC), which controls the planning of long term energy development, the setting of energy prices, and the approval of investments in domestic and international energy projects. The NDRC has at least seven offices that oversee the oil sector, among them the Energy Bureau.

There are other government agencies engaged in oil policy, such as the Ministry of Land and Resources, which is in charge of surveying natural resources, including oil and natural gas, and

grants licenses for exploration and production. Another is the Ministry of Commerce, which is in charge of issuing licenses for the import and export of oil, as well as for promulgating regulations for foreign firms investing in China's energy markets and for Chinese firms investing in foreign energy markets. There is also the Ministry of Finance, which makes tax and fiscal policies that promote the energy objectives of the central government (Li, 2010: 157). The Ministry of Foreign Affairs (MFA) supports the NOCs in their attempts to acquire opportunities in trade and investment abroad. This is part of the MFA's larger mission to promote commercial relations with other countries. The MFA also tries to ensure that the deals pursued by the NOCs do not undermine other foreign policy objectives (Li, 2010: 157).

Since the leadership recognized both the need for more effective institutional structural authority, as well as the resistance of influential stakeholders to any changes that would diminish their power, the Energy Bureau was established in 2003 under the NDRC and the Energy Leading Group (ELG) and its administrative body, the State Energy Office (SEO) were created in 2005.

The establishment of the Energy Bureau during the 2003 National People's Congress (NPC) was a compromise between several important players in China's energy bureaucracy, including the energy companies and the NDRC. The ability of the Energy Bureau to manage effectively China's energy sector has been limited by a lack of manpower, financial resources and political influence. What is more, since it is an agency within the NDRC, the Energy Bureau lacks the power to coordinate among other politically influential players, such as the state-owned energy companies and other ministries (Li, 2010: 158).

The creation in 2005 of the Energy Leading Group (ELG) under the State Council led by

Premier Wen Jiabao and the State Energy Office (SEO), which reported directly to the premier himself, showed that the leadership, in agreement with many energy experts and officials, was dissatisfied with the state of energy sector governance, as the NDRC did not have the ability to coordinate energy policy with other interests such as the MFA. The balancing of the interests of the various stakeholders remains the most challenging aspect of changing the organization of the energy sector (Li, 2010: 157-8).

Energy Policy in Disarray

Consistent with the predictions of the competing principals model, NOC investments proceeded unopposed, and the decentralized energy sector allows the preferences of commercially driven NOCs, rather than those of the government, to drive the investments. China is the most frequent investor in foreign oil and gas assets in my data sample, and state firms, such as CNPC, Sinopec, and CNOOC dominate the policy process. They have been able to exploit institutional weaknesses, resulting in a fragmented energy policy driven by company objectives rather than a comprehensive national strategy (ICG, 2008: 5).

To illustrate how decentralization matters, overseas energy investments was a major sticking point for the governing entities at the time of the ELG's creation. Li (2010: 158) suggests that there has in fact been a degree of enmity between the MFA and the NDRC, as well as between the MFA and the NOCs. Chinese diplomats from the MFA have often complained that they do not find out about investments made by China's NOCs until after the fact. These complaints are grounded in the diplomatic corps' concerns about the impact of NOC investments on larger foreign policy objectives. In response to the concerns of the MFA, Hu Jintao held a Politburo

meeting to discuss the country's energy situation in November 2004. At this meeting, the Politburo members decided to form a leading group and a leading group office for energy.

Against this backdrop, the Chinese leadership established the ELG and the SEO in order to determine how to restructure the bureaucracy and reduce the influence of energy firms. Since China's top leaders thought that a ministry would probably become another layer of bureaucracy controlled by vested interests, they decided to form a leading group to address problems as they arise rather than a full-blown ministry. The importance and power of the ELG is substantial and boasts among its ranks some of China's most powerful officials (Li, 2010: 159).

The ELG is not, however, involved in the day-to-day running of the energy sector. The responsibilities of the primary government and Party positions of the ELG members prevented them from routinely getting involved in conflicts of interests that hamper energy policy formulation, whether such conflicts arise within the government or between the government and the state-owned energy companies (Li, 2010: 159). Thus, the ELG could not be but a superficial corrective to a deeper, sectoral issue. As the subsequent establishment of National Energy Administration (NEA) would demonstrate, the ELG was unable to solve the problems of energy sector management, such as inadequate institutional capacity to coordinate conflicting interests and the problematic influence of NOCs in energy policy-making (Downs, 2006).

NOCs Exploit Government

The decentralized organization of the energy sector has not only hampered the leadership's efforts to coordinate among opposing interests, and but it has also permitted NOCs' commercial incentives, rather than a comprehensive national strategy, to drive energy policy (Li, 2010: 156).

Indeed, the NOCs could be so powerful that the State Energy Office was made a “corporate-driven think tank,” at times. The NOCs also enjoyed substantial autonomy in business operations, such as deciding what to do with their profits and to whom to sell their oil products. The government could not inspect NOCs’ activities partially due to information asymmetry, but many analysts also point to the agents’ political influence (Downs, 2006: 21) (Liao, 2014: 9).

Specifically on the international dimension, although the media coverage of the Chinese NOCs’ overseas expansion has focused on energy security as the main motivation, it is in fact the companies’ desire for reserves and profits that are driving the expansion. China’s NOCs, like all other oil companies, need to acquire new reserves to replace old ones. They have limited opportunities to do so at home. What is more, exploration and production (E&P) has always been the most profitable aspect of the oil industry. This fact is particularly salient for China’s NOCs, as they have incurred heavy losses in their refining and marketing operations due to increases in crude oil prices and state subsidies for diesel and gasoline (Li, 2010: 162).

Even more interesting is how these commercial motives came to be cloaked in arguments about energy security. In 1991, the CNPC announced that one of its three main strategies was the internationalization of its operations. The CNPC’s first overseas investment was the purchase of a stake in an oil sands development project in Alberta, Canada, which was sponsored by the United Nations. Only after China’s oil companies had begun to invest overseas, did the idea arise that acquiring equity in oil abroad enhances China’s energy security. Once the link was made between equity in foreign oil and energy security, China’s NOCs were quick to use the latter as a reason for paying a premium on certain assets, often in bidding wars among the NOCs

themselves (Downs, 2006: 39) (Li, 2010: 170).

In fact, the Chinese leadership was initially skeptical of CNPC's decision to invest abroad. The top leadership believed that China's increasing oil imports were a makeshift solution to a problem that could best be solved by increasing domestic oil exploration and production. The leadership also feared that investments abroad would provide opportunities for the NOCs and their executives to accumulate wealth at the state's expense. The government came around to the idea as oil imports increased and the CNPC became more profitable overseas. By 1997, the "Going Abroad" strategy had the support of mainstream industrial, academic, and government circles, and was reinforced by the energy crisis of 2003-2004 (Downs, 2006: 39) (Li, 2010: 171).

In their unrelenting commercial ventures, China's NOCs have bid directly against each other for oil assets (Downs, 2006: 39) (Li, 2010: 165). According to former chief financial officer Mark Qiu, CNOOC's investments, while driven by commercial considerations, are also part of a competition among the NOCs to obtain economic and political benefits from the state. Whenever CNOOC obtains foreign oil assets, the company gains influence with key energy officials and access to capital from state-owned banks. Each acquisition makes it easier to obtain support for subsequent acquisitions. This is particularly salient for CNOOC, which does not have the same political clout of CNPC or Sinopec. A Chinese consulting firm has stated that, "here in China, CNOOC's real enemies are CNPC and Sinopec. The little brother among the three has to have more assets to have a louder voice." Thus, while competitive bidding among Chinese NOCs does not enhance China's energy security, it is consistent with the NOCs' parochial interests (Downs, 2006: 36) (Li, 2010: 172).

That is why the Chinese leadership has advised the NOCs, time and time again, not to compete against each another for overseas projects. In 2005, Zeng Qinghong, the top ranked member of the Secretariat of the Central Committee, stated in the party publication, *Study Times*, that Chinese companies should coordinate their foreign investments and avoid competing with each other. Reports suggest that the government has unsuccessfully tried to direct CNPC, Sinopec, and CNOOC to invest in different geographical areas (Downs, 2006: 39) (Li, 2010: 172).

Zeng also advised Chinese companies investing abroad to consider China's political and diplomatic strategies, not just their own economic benefit, and to keep a low profile when bidding on projects. The Ministry of Commerce echoed this sentiment, warning NOCs to keep a low profile on bids as to avoid paying a "China premium" abroad by stirring up controversies like the Unocal bid. Jiang Zemin, China's former president, has encouraged China's NOCs to make more investments in developing countries that are on good terms with China, including countries in Central Asia and Africa (Downs, 2006: 39) (Li, 2010: 172).

To be sure, China's NOCs, namely CNPC, CNOOC, and Sinopec, do engage in different investment strategies driven by their respective histories, capabilities, and corporate objectives. Although they all seek diversification of their investments, they have different propensities for risk, profit targets, assessments of future world oil prices, and, to a more limited extent, geographical focus. CNPC wants to expand in Kazakhstan and the Sudan, areas where its larger operations are located. Sinopec, which was as a refining and marketing company until the late 1990s, lacks experience in exploration and production, so it casts its net widely. CNOOC has focused on Asia and Africa (Downs, 2006: 40) (Li, 2010: 173).

Nonetheless, Sinopec, CNPC, and CNOOC have considerable influence in the energy sector, as they possess the political, financial, and human resources the governing entities in the energy sector simply lack. They experienced a marked increase in power during the time when Zhu Rongji was in charge of China's economy (1993-2003), and the abolition of the Energy Ministry in 1993 could not be overlooked as a permissive cause (Li, 2010: 172).

5.2 India

Conventional Wisdom

For the second case study, we take up India, an oil consumer with many veto players to check against rent-seeking. While the neorealist paradigm suggests rampant NOC investments abroad, the liberal paradigm suggests restraint.

India's economic growth rate has remained above eight percent per annum from 2005 to 2010 with the exception of 2008, and remained at or above five percent per annum from 2011 to 2013.¹ This growth, in turn, has been fueling demand for larger quantities of energy. India's primary energy consumption has grown 80 percent between 2000 and 2012, from 13.333 quadrillion btu to 23.916 quadrillion btu, making it the fourth largest energy consumer in the world.² By 2030, the country is expected to overtake Japan and Russia and become the third largest global consumer of energy after China and the United States (Madan, 2010: 4). The increasing demand for oil is mainly due to the expansion of the transportation sector, especially the growth in the number of motor vehicles. Nearly one million units were added to the roads in Delhi during 2000–2004,

¹The latest statistics are obtained from the World Bank available at <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG> (Accessed March 26, 2015).

²The latest statistics are obtained from the Energy Information Administration available at <http://www.eia.gov/countries/country-data.cfm?fips=in#tpe> (Accessed March 26, 2015).

from 3.4 million units to 4.2 million units, and the number of registered motor vehicles in Tamil Nadu soared from 4.6 to 8.6 million units during the same period (Hong, 2009: 378).

India imported over 75% of its crude oil requirements in 2006-07, compared with about 50% in 1997-98. This rapid increase in import dependency is likely to continue because India's oil demand has grown dramatically and, despite significant new domestic exploration efforts, domestic production has remained flat around 33 million metric tonne per annum (Carl, Rai, and Victor, 2008). With only 0.4 percent of the world's proven oil reserves and 0.6 percent of proven gas reserves, domestic supply of oil and natural gas—projected to account for almost one-third of consumption by 2030—will not be able to keep up with demand (Madan, 2010: 4).

As per the neorealist hypothesis, energy security has found its way to the top of the policy agenda, and Indian companies and officials are increasingly looking abroad to meet India's energy requirements (Madan, 2010: 4) (Ishida, 2007: 12). Seeing its domestic oil production leveling off while expecting a future increase under the New Exploration Licensing Policy (NELP), India has launched and revamped its strategy of participation in overseas upstream oil and gas operations. Relevant government agencies have been cooperating in this respect (Ishida, 2007: 14). While ONGC produces only a small amount of the world's energy and controls a small portion of global reserves, it figures as a central entity in this global search for energy by one of the fastest growing consumers of oil and gas in the world (Madan, 2007: 5).

The liberal hypothesis also seems plausible. Outward investments are not proceeding apace without institutional safeguards. Indeed, the urgency of energy security in India is in fact channeled through institutions. The Ministry of External Affairs (MEA) has created an Energy Secu-

ity Unit “to support India’s international engagement through appropriate and sustained diplomatic interventions.” For its part, the Ministry of Petroleum and Natural Gas (MPNG), which oversees India’s NOCs, has established an International Cooperation division to devise an international strategy, gather information on “countries of relevance,” organize India’s participation in bilateral and multilateral forums, and liaise with the MEA and Indian embassies and high commission abroad (Madan, 2010: 11). The MPNG has also teamed up with the MEA to set up the “Standing Advisory Committee on Oil Diplomacy for Energy Security” to consider improving energy security through the promotion of investment in overseas upstream oil and gas operations (Ishida, 2007: 15). As will soon become evident, however, neither the neorealist account nor the liberal one tells the whole story.

Historical Overview of Energy Sector

In 1955, the government established the Oil & Natural Gas Directorate (ONGD) under the Ministry of Natural Resources and Scientific Research upon cabinet approval. In October 1955, a directive specified that the public sector dominate exploration and production and have a monopoly over setting up new refineries. ONGD, however, would not have exclusive exploration rights in the country, and foreign companies would continue to be welcome (Madan, 2007: 11).

In 1956, the Indian government elevated the directorate to a commission, intending to give it additional power and flexibility. A year later, the government made the renamed Oil and Natural Gas Commission (ONGCom) a statutory commission with additional financial powers. While the purpose of upgrading the directorate had been to give it greater autonomy from the ministry, this autonomy was more theoretical than real because the commission continued to have lim-

ited financial and administrative powers, and the Indian government still controlled purchasing decisions and personnel management (Madan, 2007: 12).

Nonetheless, Oil and Natural Gas Corporation (ONGC), as the commission later came to be called, benefited tremendously from its special status as India's trusted custodian of oil and gas reserves, enjoying a near monopoly in this sector for almost four decades from 1955 to 1995. During those years, ONGC also functioned as the de facto regulator in the oil and gas sector, and the government depended heavily on ONGC for coordinating energy activities (Rai, 2012: 753). But changing economic priorities and soaring domestic demand for oil and gas in India have significantly altered the dynamic of ONGC's relationship with the government. Through a series of reforms since the mid-1990s, the government has increasingly tried to maintain an arm's-length relationship with ONGC. ONGC is exposed to more competition in the sector than ever before, and it has also lost its regulatory function (Rai, 2012: 753).

Distancing itself from ONGC has not meant a reduced role for the government in the oil and gas sector, and it maintains a dominant market share. The administrative apparatus concerned with energy policy, however, is far more decentralized, as evident in the dismantlement of the energy ministry in 1992 (Zissis, 2007) (Friedman and Schaffer, 2009: 3). Since then, four different ministries have been directly involved in India's energy policy—the Ministry of Power, the Ministry of New and Renewable Energy, the Ministry of Petroleum and Natural Gas, and the Ministry of Coal. ONGC comes under the purview of the Ministry of Petroleum and Natural Gas (MPNG), which is responsible for overseeing the exploration and production of oil and natural gas; refining, distribution, and marketing of petroleum products; and the conservation,

import, and export of oil and natural gas (Madan, 2007: 25). While the MPNG is authoritative in domestic exploration and production of oil and gas, there is no oversight of the NOC by an overarching entity that sets energy policy.

In some ways, this represented a return to historical norm. In the 1950s, there were arguments about which agency ONGCom should be housed in, with some bureaucrats arguing that the directorate's role was similar to operating a mine and should be located in either the Ministry of Production or the Ministry of Commerce and Industry. Later, the Ministry of Natural Resources and Scientific Research, which successfully gained control of the directorate, clashed with the Planning Commission and the Finance Ministry, claiming that they interfered in its operations, while not giving the directorate the priority and funds it deserved (Madan, 2007: 41).

The Planning Commission and the Finance Ministry, with their broader responsibilities, did not think the directorate deserved those resources. This back and forth had a significant impact on ONGCom's operations at the time. The Natural Resources Ministry's quest to prove to its bureaucratic antagonists wrong was a significant reason for urging ONGCom to emphasize deep drilling even though it had limited resources to do so. The ministry needed a major success quickly to prove to naysayers, especially within the government, that India had reserves of oil and natural gas. These bureaucratic battles, in different shapes and forms, continue today, and have been known to cause delays. Numerous governing entities interface with ONGC on the basis of their administrative or financial control over the NOC (Madan, 2007: 41).

Organizational Overview of Energy Sector

The Indian government is very influential in the energy sector, yet there is a high level of institutional fragmentation. The government's aim of keeping energy companies under state tutelage and of steering the whole sector is often frustrated by its inability to properly coordinate among the relevant ministries and agencies. Indeed, Betz and Hanif (2010: 15) observe a certain activism on the part of the government in creating ever more entities concerned with energy policy. In July 2005 the prime minister established an Energy Coordination Committee to meet demands for more consistency. In 2006 the Planning Commission inaugurated a working group for the Eleventh Five Year Plan's energy program comprising eight panels and covering nearly every aspect of energy policy. These efforts have not been successful.

"India has yet to develop a coherent policy," says Sumit Ganguly, who adds that the four main ministries of Coal, Petroleum and Natural Gas, Nonconventional Energy Sources, and Power act like "different countries at work." Several other government agencies, including the Planning Commission and Department of Atomic Energy, play a role in energy policy. Tanvi Madan says there are common policy goals, but the lack of integration causes problems with implementation (Zissis, 2007) (Madan, 2006: 16). Even within ministries, the emphasis tends to be on specific and limited policies rather than a long-term, integrated strategy. A former minister once remarked that his job was "to make policy for next year" (Hong, 2009: 385).

Each of the ministries is headed by a union minister (who is a member of the cabinet) and usually has a deputy, the minister of state. These ministers are almost always members of the ruling coalition and have to be elected members of either the upper or lower houses of the Indian

Parliament. The leadership of the ministries also includes a secretary, the senior-most bureaucrat in that ministry. The post is usually assigned to a career civil servant, who is technically appointed by the cabinet. In reality, his or her appointment can be fairly dependent on the associated minister (Madan, 2006: 24).

The Ministry of Petroleum and Natural Gas (MPNG) oversees exploration and production of oil and natural gas, refining, distribution, and marketing of petroleum products, and the conservation, import, and export of oil and natural gas. It also has administrative control of the state-owned oil and gas companies including Oil and Natural Gas Corporation (ONGC), Gas Authority of India Limited (GAIL), Indian Oil Corporation (IOC), and Oil India Limited (OIL). The MPNG tends to be the most coveted of the energy-related ministries among potential ministerial candidates (and coalition members). Some analysts say that it is a high-profile posting. Others refer to it as a “party fundraising machine” (Madan, 2006: 25).

The Directorate General of Hydrocarbons (DGH), which could be described as the regulator of the upstream sector, also falls under this ministry, as does the Oil Industry Development Board (OIDB), which provides financial assistance (in the form of loans and grants) to the industry. The central government provides the funds that OIDB distributes from the cess (a term for tax) that is collected from firms producing oil domestically. The Petroleum Planning and Analysis Cell (PPAC, formerly the Oil Coordination Committee) within the ministry administers subsidies, and is responsible for analysis and forecasting related to the oil sector (Madan, 2006: 25).

A number of other related ministries have authority that touches upon energy related decisions. The more directly related agencies are the Ministry of Heavy Industries and Public Enter-

prises and the Ministry of Commerce and Industry. Also involved are the Ministry of Finance, the Ministry of External Affairs (MEA), the Ministry of Environment and Forests, the Ministry of Railways, the Ministry of Shipping, the Ministry of Road Transport and Highways, the Ministry of Water Resources, and the Ministry of Science and Technology (Madan, 2006: 25).

One of Jawaharlal Nehru's most important legacies was to institute centralized planning through the Planning Commission of India. At one time the Commission was centrally important in shaping Indian economic policy. Today, the prime minister remains the chairperson of the Commission, which also has an appointed deputy chair, who for all intents and purposes runs the Planning Commission (Madan, 2006: 25). Neither the Planning Commission nor the Prime Minister's Office has the executive power to implement an integrated energy policy. The power to implement lies with the Ministries. Consequently, the policy pronouncements made by the commission can influence but they cannot bind (Mehta, N.d.: 14).

The role and clout of these ministries and the Planning Commission vary over time, depending on who leads them, how close that person is to the prime minister or the governing party's coalition's leaders, and the personal interests of the prime minister. Decisions emanating from these entities stem from a number of the imperatives mentioned above, but they also depend on other factors, such as the political parties the ministers belong to (or owe their position to), their personalities, and the processes involved (Madan, 2006: 25).

There is consensus among the Indian political parties that India has an energy problem. An insightful observer pointed out that there is also, in effect, a political consensus on energy policy. When parties are in the opposition, it is easy to make noise about prices and geopolitics. When

they come to power, the realities of India's energy and economic needs hit them, and they realize that their options are limited. This is especially true in the case of the two major national parties—the Bharatiya Janata Party (BJP) and the Congress party—that have led coalitions over the last few years. There might be different emphasis on issues like privatization, for example, which the BJP tends to favor more than Congress. But the general trend in terms of how they approach energy solutions tends to remain the same.³ What the parties actually do depends on the kind of coalitions they have. The parties that support but remain outside of a government tend to be more vocal and sometimes less realistic about potential solutions (Madan, 2006: 26).

The realities of domestic politics, social economic concerns, and policy-making processes have complicated the development of a clear, long-term strategic framework for energy development and exploration overseas. Analysts point out that India needs to develop a holistic energy policy that meshes into an overall strategy domestic policies and reforms in the energy sector, foreign policy, national security, economic development and environment concerns (Hong, 2009: 385).

To be sure, the ministries can and do call together ad hoc meetings. Recently, for example, the MEA brought together the energy-related ministries and departments to discuss energy initiatives abroad. The joint MEA-MPNG task force offers another example of this type of cooperation. It was created by the ministries in preparation for the petroleum minister's January 2006 visit to China, during which the two countries signed a number of memorandums of understanding

³Parliamentary shifts can have somewhat more of an impact on who leads companies like ONGC. Given what amounted to one-party rule for a large part of independent India's existence and most executives' backgrounds as career officials, party affiliation was not a consideration for appointments. Since 1989, however, executives appointed by one administration have occasionally been eased out by the next, among them S.P. Wahi (1981-1989) and Subir Raha (2001-2006). Incoming ministers often wanted to influence appointments of key positions and/or believed the chiefs to be too attached to the previous government. But the replacements were also meant to clip the wings of executives who were perceived as too powerful. Senior company officials, in turn, have gotten better at being on good terms with a broad range of political parties (Madan, 2007: 45).

(MoUs). However, these instances of cooperation are ad hoc and inconsistent (Madan, 2006: 27).

Energy Policy in Disarray

The government's keen interest in equity oil abroad has rejuvenated the interests of Indian companies in overseas exploration and production (Carl, Rai, and Victor, 2008). National oil companies have been at the forefront of India's energy efforts abroad, purchasing stakes in overseas exploration and production companies and in oil and gas blocks. Over the last few years, ONGC Videsh Limited (OVL), a subsidiary of Oil and Natural Gas Corporation, alone spent over \$7 billion on more than three dozen assets in 18 countries, including Brazil, Colombia, Iran, Libya, Myanmar, Nigeria, Russia, Sudan, Syria, Venezuela, and Vietnam (Madan, 2010: 5,9).

Beginning with "virtually nothing" in 2001, OVL has accumulated billions of dollars in assets thanks to interest-free loans from ONGC. It also plans to "tie-up" 60 million tons of oil and gas production overseas by 2025 (Carl, Rai, and Victor, 2008). India has also agreed in principle with the major oil-producing Gulf countries like Saudi Arabia, Kuwait and the United Arab Emirates to develop long-term strategic relationships in the energy sector, involving supply of crude oil, upstream and downstream joint ventures, refineries, petrochemical industries and marketing (Hong, 2009: 384).

Joining OVL in exploring beyond India's borders are a number of other corporations, including some of the country's other major state-owned companies such as OIL, which has investments, often in conjunction with India's largest downstream company IOC, in Gabon, Iran, Libya, Nigeria, and Yemen. GAIL, India's largest gas transporter, distributor, and marketer, also has interests abroad, including stakes in China Gas Holdings, in compressed natural gas retailing

companies in Egypt, and in blocks in Myanmar and Oman (Madan, 2010: 9).

OVL's upstream operations thus far provide little basis for optimism. Nearly all of OVL's production comes from properties already discovered at the time OVL entered the project or subsequently discovered by the project operator. Besides having secured a large number of exploration blocks, OVL has had little success in international projects based on its own technical competence (Rai, 2012: 796). Being successful in today's bidding wars for prospects in locations with low political risk requires the technical competence to assess the risk-reward scenarios. Many of the exploration blocks acquired by OVL are in the "very high risk" category, a portfolio that is particularly ill suited for OVL's technical skills (Sinha and Dadwal, 2005: 523) (Rai, 2012: 797).

To some extent, this is the parent's fault. Most of OVL's manpower is drawn from ONGC, which has a lackluster record even at home, where it has been the main upstream player since the 1960s. Offshore exploration and deepwater projects have not exactly been ONGC's strong suit (Carl, Rai, and Victor, 2008). A 2006 report by the DGH showed that of the forty-seven blocks, including on land and offshore, awarded to ONGC at the time, the company had not made any discoveries. All thirty-two wells that ONGC drilled in those blocks turned out to be dry. In a few deep water exploration blocks for which ONGC was the highest bidder, the DGH recommended to the MPNG not to award them to ONGC (Rai, 2012: 771).

The government remains largely convinced that oil production owned by Indian companies, whether at home or abroad, enhances energy security by securing supply (Carl, Rai, and Victor, 2008). Estimates suggest that only 25 percent of India's oil needs could be met even if all of its companies' overseas assets were producing oil. In fact, the Indian government, concerned about

the company being distracted from its domestic operations, does not want ONGC to aim for more than one quarter of its production to come from abroad (Madan, 2007: 51).

NOCs Exploit Government, Though Not Unopposed

From ONGC's point of view, its overseas efforts reflect a desire to both expand supply and enhance revenue. Even detractors acknowledge that, at the very least, this policy has been providing better returns for companies like ONGC than their investments at home (Madan, 2007: 53). Interestingly, when asked about how the companies fit into the quest for Indian energy security, the chief of a major state-owned company replied that it would be a question best answered by the petroleum minister (Madan, 2006: 41).

From the Indian government's perspective, while the acquisition of upstream assets abroad is definitely not the "silver bullet" that will single-handedly take care of India's energy security needs, it is a "necessary but not sufficient" element of India's energy security strategy. While acknowledging that these efforts will be of little help in a real crisis, government officials assert that India must pursue every possible option to diversify and supplement sources of supply. Thus for the time being, with more than U.S. \$270 billion in foreign exchange reserves, the Indian government has given OVL the green light (Madan, 2007: 53).

The government and ONGC both want to increase returns and production. The government wants ONCG to hone its domestic exploration and production skills—its "core competence"—to ensure reliable access to energy at affordable prices. ONGC, while paying lip service to energy security, has been seeking a higher rate of return wherever it may be found, even if it involves attempts at integration and diversification of investments away from exploration and production

(Madan, 2007: 76). MPNG disapprovingly asserts that the company keeps trying to find easy returns. Officials wryly note that ONGC is a risk-averse company in a risky business—investing in refineries, for example, when there was a capacity shortage, without considering the medium to long term implications of a capacity glut (Madan, 2007: 77).

Appraising the NOCs' performance during an assessment of progress on the tenth Five Year Plan, the Planning Commission disapprovingly noted that the NOCs were haphazardly trying to become "integrated oil companies on the strength of public funds at their disposal." The report further noted that such an approach offered no "strategic advantage" and led to "suboptimal investments." The Planning Commission advised MPNG to either restructure and consolidate the companies into vertically integrated companies, or alternatively "to mop up surpluses generated by the oil companies to limit suboptimal investment patterns" (Madan, 2007: 77).

The Indian government, declining to exercise the former option, attempted the latter by demanding high dividends from the companies. This has also been one of the motivations for the government's decision in July 2007 to allow ONGC and other NOCs to invest up to 30 percent of their reserves in mutual funds operated by state firms. The government also has other ways of reining in ONGC's diversification efforts, such as emphasizing exploration and production in government-specified financial outlay for the company (Madan, 2007: 78).

Nonetheless in day-to-day technical operations, the government's role has been limited, especially after ONGC received its *navratna* status. Even if it wanted to intervene in ONGC's operational decisions, MPNG often lacks the technical ability to do so. It serves ONGC's purposes, however, to let it appear more often than not that the ministry officials are the ones giving

direction (Madan, 2007: 38). Even DGH, India's upstream regulator charged with overseeing ONGC's exploration and production work, has limited oversight. ONGC sometimes tries to circumvent the regulator's authority by appealing to MPNG to allow it to re-bid on blocks it has previously had to surrender. Even though the ministry was heavily involved in formulating the rules that DGH enforces, it sometimes overrules DGH in support of ONGC (Madan, 2007: 40).

In energy investments abroad, it is usually OVL (not the government) that comes up with the proposals for acquiring stakes or assets, though occasionally Indian embassy officials recommend possible opportunities. While OVL no longer requires prior approval from the Reserve Bank of India, proposals for any project above \$45 million, which means essentially every proposal in the oil and gas business, has to be approved by an empowered committee of secretaries and then the cabinet committee on economic affairs (Madan, 2007: 53).

This approval process has teeth. In 2005, OVL lost a bid to acquire assets in Ecuador producing 75,000 barrels per daily when the Indian government did not let it raise its bid of \$1.4 billion. In December 2005, the government also blocked OVL from acquiring a 45 percent stake in Nigeria's Akpo field expected to begin production in 2008 on security grounds, and CNOOC picked it up. Recently, OVL did not bid on blocks in Nigeria ostensibly because of a lack of attractive fields on offer, but analysts point out that the Nigerian government was offering preferential terms and blocks. The decision to stay away probably had more to do with the Indian government's reservations about security, along with the concern that a new government taking over in Nigeria might not respect contracts signed by its predecessor (Madan, 2007: 53).

It is difficult to fault the government for being cautious. For example, there have been reports

of work delayed at one of OVL's Sudanese blocks for security reasons. The Indian government also imposes commercial conditions, which require that OVL only invest in projects where it can at least get an internal rate of return of 12 percent—a requirement that OVL is lobbying to get reduced. Government officials insist that these procedures are intended to prevent OVL from getting carried away and overbidding for projects (Madan, 2007: 54).

Nonetheless, while the approval process may help OVL avoid some potentially bad investments, it cannot turn OVL into a successful investor. A number of OVL's bids have been submitted without offers of aid or investment or with offers that pale in comparison to those from other countries. In Angola, for example, China promised development assistance totaling \$2 billion, whereas India offered to undertake a \$200 million rail project. There is a dearth of clear guidelines surrounding acquisitions among Indian authorities, and the lack of a more rigorous and regular assessment process to decide which projects to undertake and which to offload is a subject of criticism (Madan, 2007: 74).

This issue has become more salient with some of OVL's existing projects running into trouble or stalling. Its plans to get equity gas from Sakhalin-1, for example, have been dashed with Gazprom's announcement that gas from the project would go to domestic consumers in Russia. OVL has also been waiting for two years for the Iranian government to give it the development rights for the Jufeyr field and the 10 percent stake in the Yadavaran field that Iran had promised the company. A critic noted that such problems are only likely to increase since OVL rarely has an exit strategy or contingency plan (Madan, 2007: 74).

Neither the approval process nor failed investments have deterred OVL, however. It is moving

ahead abroad, learning on the job and attempting to change and adapt to make its bids more competitive. It has formed partnerships with other domestic and foreign companies, both from the public and private sectors (Madan 2007, 54). As hinted above, it more often than not takes the lead in proposing projects in various countries. So much so that government ministries complain that OVL sometimes tends to charge ahead on deals and, after completing three quarters of the groundwork, calls them in for help (Madan, 2007: 56).

At the same time, it is clear that with its control of the approval process, the Indian government has the final say, which means that ONGC finds itself constrained by the government's broader foreign policy priorities and security concerns. This may not be much of an issue for ONGC. A senior company official remarked that India's foreign policy, on balance, does not hinder ONGC because its mantra of "no permanent allies, lots of good friends" allows the company to cast a fairly wide net for potential business partners (Madan, 2007: 56).

5.3 Russia

Conventional Wisdom

The third installment of the case studies examines Russia, an oil producer with few veto players to check against rent-seeking. For Russia, the neorealist hypothesis suggests little motivation for oil and gas investments abroad, while the liberal hypothesis would not be surprised to find investment arrangements that advance parochial interests. Given that Russia has a centralized energy sector, the competing principals model makes a prediction identical to the liberal hypothesis.

In Russia, the oil and natural gas sector is on the upswing. Historically, large export revenues lifted the foreign exchange reserves of Russia, which amounted to more than \$350 billion at the

end of 2006. Moreover, oil and gas exports as a share of total exports increased from 37% in 1994 to 63% in 2006. There are also concerns about too much reliance on oil and gas. Political economists argue that Russia has become a country with progressing “Dutch disease”—when a sharp inflow of foreign currency, following developments such as the discovery of large oil reserves, leads to currency appreciation, making the country’s other products less price competitive on the export market (Victor, 2008: 23).

Russia’s resource wealth also plays a central role in politics. Currently about half of the federal budget revenues are from the oil and gas trade (Victor, 2008: 23), and the potential for massive rents from oil and natural gas production has been bad news for Russia’s sectoral governance. This is familiar territory for students of the oil curse literature, which has largely focused on the relationship between oil wealth and poor governance (Karl, 1997; Luong and Weinthal, 2010; Ross, 2012). However, in the following sections, I will examine this phenomenon through the lens of government-NOC interactions, illustrating how the absence of veto players and a centralized energy sector allow competing factions within the executive, each associated with an NOC, to profoundly shape Russia’s domestic and international energy policy.

Historical Overview of Energy Sector

In 1991, the Russian Federation inherited from the Soviet Union jurisdiction over major oil fields and control over the transport and export of oil and gas. But the oil sector it inherited was in disarray—oil exports were constrained by the capacity limitations of the old Soviet pipeline system, and the oil fields were aging. The leadership of the newly democratized Russia saw privatization as the only way to attract much needed investments. Thus, in 1992, a presidential decree

provided for voucher auctions of formerly state-owned facilities in the gas sector. The decree established Gazprom as a joint stock company focused on gas and also created several oil-focused companies, such as Lukoil, Yukos, Surgutneftegaz, and Rosneft (Victor and Sayfer, 2012: 661).

In 1995, faced with an escalating budget deficit at 20% of the country's GDP, the government rolled out a shares-for-loans scheme, which auctioned blocks of government shares in certain joint stock companies, including five of Russia's oil giants, to a group of Russian commercial banks for cash. To be sure, Gazprom was not included, as Prime Minister Viktor Chernomyrdin did not want to introduce competition that might weaken his control, and Gazprom was not yet considered a commercially viable enterprise (Victor and Sayfer, 2012: 661).

Gazprom was not the one to complain. The Russian government was already unable to control the gas giant either formally, as most of the 38% of state shares were managed by Gazprom itself, or informally, as Gazprom was a very successful lobbyist. The government, particularly the Ministry of Fuel and Energy, was loyal to the company, and there were few attempts to change the situation (Victor and Sayfer, 2012: 661). This was the era of private business tycoons, the so-called "oligarchs," in the energy sector and beyond.

The rise of Putin in the 2000s saw a significant expansion of the state's role in owning and managing industrial assets, particularly in the "strategic sectors" of the economy, such as power generation, aviation, oil, and finance. Increasingly, policy seems to have been focused less on market reforms than on tightening the state's grip on the "commanding heights" of the economy. The state-owned share of Russia's equity market capitalisation rose from just 20% in mid-2003 to 35% in early 2007 (Tompson, 2007: 1). The growth of the state has been most pronounced in the

energy sector. In 2003, NOCs accounted for about 16% of crude production. By early 2007, that figure had exceeded 40% and was still rising (Tompson, 2007: 3).

The state's increased presence in the economy coincided with the consolidation of political power in the Kremlin. Following the organizational chaos of Boris Yeltsin's presidency, the Kremlin regained a virtual monopoly over Russian politics and began to function as a unitary institution. The values, preferences, and disposition of its chief are therefore a key driver of policy. With so much authority concentrated in the Kremlin, factionalism, personality clashes, and bureaucratic scuffles within its walls became "exponentially more significant" in determining policy (Bremmer and Charap, 2006: 84).

The executive's interventions in the economy exacerbated this internal friction by greatly increasing the possibilities for financial gain available to officials. In effect, Putin's consolidation of political power partially backfired. The executive branch may have all the authority, but divisions within it have limited the president's direct control. Although other institutions and the private sector are now largely irrelevant, disputes between Kremlin factions, rather than directives from the president, often determine major policy outcomes (Bremmer and Charap, 2006: 84).

The battle between the Kremlin's factions, the technocrats and the *siloviki*, is most publicly visible in the jockeying for position between Russia's energy "state champions," Gazprom and Rosneft. Technocrats, like Dmitri Medvedev and Alexei Miller, control Gazprom. The *siloviki*, like Igor Sechin and Sergei Bogdanchikov, are in charge at Rosneft. The *siloviki* won a recent battle by blocking a merger of the two companies. But the technocrats overcame *siloviki* obstructionist tactics to swallow up another oil firm, Sibneft. The ongoing rivalry adds to an un-

certain investment climate and undermines the government's ability to clarify the ground rules for foreign investors and coordinate efforts to increase energy efficiency. According to Bremmer, a worrying pattern has emerged: Putin issues statements intended to clarify official policy, and rival Kremlin factions quickly take actions that undermine his credibility (Bremmer, 2005: 2).

To an outside observer, it has been nothing short of the lone Kremlin show. The Kremlin sought to take over Surgutneftegas, Slavneft, at least half of TNK-BP, and the remains of Yukos, using the state giants Rosneft and Gazprom as vehicles for consolidation. The benefit of rolling up the sector, the argument runs, was that the Kremlin could more easily control two consolidated oil and gas companies than many regional and private companies (Victor and Sayfer, 2012: 665). The reality is that the Kremlin is a house divided against itself.

Following the "renationalization," the technocrats, also known as the "St. Petersburg team," controlled almost 60 percent of oil production and nearly all of Russian gas production. After taking Gazprom under state control, Vladimir Putin signed amendments to a federal law allowing the government to have a controlling interest in the gas monopoly, by holding 50 percent plus one share, while controlling the sale of Gazprom's shares to foreign investors (Victor and Sayfer, 2012: 665). To control as much of Russia's energy revenues as possible, Rosneft and other *siloviki*-controlled companies are determined to extend their influence in the energy sector through strategic acquisitions of smaller oil and gas firms. Some *siloviki* have indicated a preference for a single state controlled energy giant, incorporating all of Russia's major oil, gas, and electricity companies into one holding (Bremmer and Charap, 2006: 90).

Caught between the middle are the oligarchs, private business magnates whose influence had

peaked during Yeltsin's presidency and declined significantly under Putin's. The most iconic statement of the end of their era was the arrest on October 25, 2003 of the richest man in Russia, Mikhail Khodorkovsky, the head of Russia's largest oil company, Yukos. Khodorkovsky was subsequently sentenced to eight years in jail for tax evasion. One could not ask for a more vivid illustration of the limits of business independence in Russia (Rutland, 2009: 3). Once Rosneft swallowed up the biggest private oil company in Yukos and Gazprom bought Sibneft, the Kremlin's factions had gained control over a third of Russia's oil reserves and almost all of Russia's gas reserves and pipelines. The private sector was the loser (Victor, 2008: 52).

Organizational Overview of Energy Sector

When Putin came to power, the new administration sought to re-nationalize the energy sector and opened hunting season on Russia's tycoons. One of the first steps consisted of ministerial change. In May 2000, the government restructured the Ministry of Fuel and Energy and shifted many of its responsibilities to other state institutions. For example, the responsibility for allocating quotas, which ultimately determined which wells were used for production and the revenues their firms earned, shifted to a special commission controlled by the vice prime minister. By March 2004, massive ministerial reforms were complete. All federal ministries came under the direct jurisdiction of the president, and nine federal ministries were placed under the prime minister's jurisdiction, including the former Ministry of Fuel and Energy, which was renamed the Ministry of Industry and Energy (Victor and Sayfer, 2012: 664).

Interestingly, the Putin administration moved to separate the ministerial bureaucrats who determined the "interests of the state" from those in the Federal Energy Agency (FEA) who

implemented these interests. Under this new arrangement, the Ministry of Industry and Energy was responsible for issuing resolutions and orders that design policy, but it no longer had the right to make specific decisions, such as issuing licenses for a particular activity. Supervisory and control functions passed to the FEA, including the direct management of state-owned energy enterprises (Victor and Sayfer, 2012: 664).

The transfer of implementation powers to the FEA was not an accident, as it is considered the stronghold of the *siloviki* faction in the energy sector (Bremmer and Charap, 2006: 87). Arguably, the FEA would function as the de facto energy ministry, responsible for using and controlling the federal budget's funds for implementing strategic energy projects—construction of pipelines and terminals, coordination of public companies' collaboration with private companies, and joint ventures between Russian and foreign enterprises (Tkachenko, 2007: 173).

The Ministry of Industry and Energy adapted to its diminished role in the energy sector. Although the Ministry had become a “Queen of England’ only without the money” by 2004 (Victor and Sayfer, 2012: 664), it found other ways to stay relevant. For instance, the Minister of Industry and Energy from 2008 to 2012, Viktor Khristenko, had previously served in several governments both as a Minister and as a Deputy Prime Minister. He brought to the table extensive contacts within foreign governments and the Russian business community he had developed during his tenure as a Deputy Prime Minister responsible for Russia's energy sector. Thus, the Ministry worked with NOCs in negotiations with foreign governments (Tkachenko, 2007: 173).

In 2005, the Ministry teamed up with Gazprom during the drawn out negotiations with Ukraine on the conditions for the transit of Russian gas to European customers and the pricing of

gas deliveries to the Ukrainian market. The ministry also partnered with the national monopoly Transneft, which controls practically all oil pipelines in Russia. All new pipeline projects had to be developed together with the Ministry and officially approved by the Minister. The Ministry also maintained technological and economic expertise for the energy sector's investment projects, making propositions for improving the use of major oil pipelines, pipelines for oil products, and electrical grids (Tkachenko, 2007: 173).

There is also a Ministry of Natural Resources, which elaborates the state policy and legal control instruments in the sphere of exploration, utilization, reproduction and protection of Russia's natural resources. There are two notable institutions in the ministry's structure. The first one is the Federal Agency for the utilization of mineral wealth, which is responsible for the geological research, economic and financial evaluation of new mineral resources, and the organization of auctions for the right to utilize Russia's mineral wealth. The agency issues licenses for the exploration of minerals and proposes the exact rate of payments to regional budgets for the utilization of their mineral deposits (Tkachenko, 2007: 173). The second institution within the ministry is the Federal Service for Surveillance in the use of natural resources. This service, among its other functions, issues state licenses for exploration of mineral resources offshore, and the construction of offshore pipelines in Russia's territorial waters and the continental shelf (Tkachenko, 2007: 173).

While these ministries are indeed the workhorses of the government in the energy sector, and there are accounts of bureaucratic turf-fights among them (Zavanova, 30), the ultimate authority to make and implement decisions, as the following section will demonstrate, does not seem to

rest in the hands of the ministries. Rather, the central locus of decision-making seems to be the Kremlin and its competing factions, one manifestation of which is the empowerment of the Federal Energy Agency, the *siloviki's* chief governing entity in the energy sector (Bremmer and Charap, 2006: 87).

Hyde and Jekyll Energy Policy

The line between NOCs and ministries is frequently blurred. Representatives of ministries are often appointed to the boards of the very companies they regulate, leading to a conflation of regulatory and commercial functions. There is no clear separation of sectoral policy and ownership. Sometimes the state effectively vests regulatory functions in state companies like Gazprom, such that a major firm may find itself regulating its rivals, with all the conflicts of interest that such an arrangement entails (Tompson, 2007: 9) (Rutland, 2009: 14).

For instance, a major issue in the drawn out bid to reform the subsoil law was the shift from a license-based system to a contract-based system of subsoil use. The introduction of civil law agreements to regulate subsoil use would establish more stable and clearer rules between the state and business for the award and regulation of subsoil use rights and add greater transparency to the rights and responsibilities for both sides (Adachi, 2009: 1397).

Within central government, a number of ministries were engaged in the subsoil law reform. The ministry in charge of licenses for subsoil use was the Ministry of Natural Resources (MNR). Keen on retaining its influence, MNR wanted to continue the existing license-based system rather than shift to a new system based on civil law (Adachi, 2009: 1399). The Ministry of Economic Development and Trade (MEDT), more concerned about the investment climate, insisted on a

complete transition from a license-based system to a legal regime for subsoil regulation based on civil law agreements between state and subsoil users (Adachi, 2009: 1399). When the Ministry of Industry and Energy was created, it supported the new subsoil law, maintaining that the introduction of civil law agreements would be an increased incentive for investors to undertake exploration, except where subsoil use was associated with national security (Adachi, 2009: 1400).

The reform process, however, ended with the triumph of Gazprom and Rosneft, state champions that were less interested in the subsoil regime establishing a level playing field and more interested in securing for themselves the largest oil and gas reserves in the country without having to compete with outsiders such as foreign investors (Adachi, 2009: 1401). President Putin and Prime Minister Fradkov agreed that “now the state companies should be in charge of distributing entry tickets for the best fields.” It is clear that both companies regard international majors only as their technical and financial partners (Poussenkova, 2007: 46) (Adachi, 2009: 1409).

With so much power vested in them, NOCs have become the embodiment of Russian sectoral policy—lacking in both transparency and efficiency. The “directive” system for building consensus on the positions to be adopted by state representatives at board meetings of these giant enterprises is cumbersome and often results in delayed decisions (Tompson, 2007: 9). The contradictions and delays that afflict government decision-making also affect the corporate decision-making of the companies it controls (Tompson, 2007: 8).

The failed merger between Gazprom and Rosneft and the scandals connected with it raise many questions concerning the specifics of the strategic decision-making at the very top in Russia. The conflict between Rosneft and Gazprom revealed “profound contradictions” between differ-

ent factions in the presidential administration, represented by Dmitriy Medvedev, the Chairman of Gazprom who is considered a technocrat, and Igor Sechin, the Chairman of Rosneft with *siloviki* ties. Medvedev insisted on a complete acquisition of Rosneft by Gazprom and also emphasized the need for Yugansk to remain an independent state company, while Sechin lobbied for an independent Rosneft that would own Yugansk (Poussenkova, 2007: 68).

The planned merger was derailed after months of backroom maneuvering, but the government went ahead with a complex plan to buy 10.7 percent of Gazprom shares in order to raise the state holding to 51 percent, using a loan to be paid off with a public offering of \$7.5 billion of Rosneft stock. Gazprom was compensated for its failure to take over Rosneft by being allowed to buy independent gas producer Norgaz and Roman Abramovich's Sibneft, the fifth largest oil company, in November 2005. Gazprom paid \$13 billion for 73 percent of Sibneft shares, close to a market price (Rutland, 2009: 13).

Though Rosneft and Gazprom signed an agreement on November 28, 2006, consolidating a strategic partnership that would be valid up to 2015 (Poussenkova, 2007: 70), it seems less likely to be a contract about partnership than a nonaggression pact between rivals.⁴ It is perhaps an attempt to heal the rift between the two Russian state energy giants that has been slowing investment in the development of new fields. This is only the companies' second attempt at cooperation after their planned merger unraveled in 2005 (Victor, 2008: 52).

The competition between Gazprom and Rosneft has been particularly fierce in East Siberia and the Far East. Despite being a coordinator of all gas activities in the East of Russia, Gazprom

⁴There is also a view that this temporary truce is a political decision. Vladimir Putin needs to mitigate at least the economic rivalry of the groups surrounding him on the eve of the 2008 elections, since a complete peace between the opponents in the foreseeable future is unlikely. Apparently, the president himself insisted on this compromise between the competing political groups (Poussenkova, 2007: 71).

had few valuable assets there. By contrast, the Eastern positions of Rosneft were traditionally strong, and it declared this region an area of its strategic interests. It is not surprising therefore that Gazprom and Rosneft had been competing for many subsurface plots in the Irkutsk region and in Krasnoyarsk Krai that were auctioned off, and in many cases Rosneft snatched the victory from the gas giant by overpaying for the subsurface plots (Poussenkova, 2007: 70).

Gazprom wanted Rosneft's share in Sakhalin-1 and buy gas that was produced within the framework of the project and made a similar proposal to ExxonMobil. However, Rosneft was not willing to let Gazprom join Sakhalin-1 (Poussenkova, 2007: 69). In 2004, Rosneft stated that it was investigating opportunities to participate in the new contest for the Kirinskiy block of Sakhalin-3 over the shoulders of Gazprom, which was vitally interested in expanding its presence in the gas sector of the Russian Far East (Poussenkova, 2007: 58).

The growing international ambitions of these companies are likely to further strain their relations. Rosneft, once an easily overlooked company even in the confines of Russia, now aims to catch up with global players like ExxonMobil and BP. Though there is a sizable gap remaining in terms of revenues and market capitalization, it is closer to the majors in terms of reserves. It needs to expand its activities worldwide to become a global major. Toward this end, acquisitions of assets and formation of partnerships, both upstream and downstream, in countries like Kazakhstan, Algeria, and even China, have been critical (Poussenkova, 2007: 47, 48, 51, 80). Part of this expansion also involves becoming a major gas company, and Gazprom stands in the way, figuratively and literally (Poussenkova, 2007: 70).

Not to be beaten, Gazprom is shifting investments away from its core activity, domestic ex-

traction and production, not unlike its counterpart in India, ONGC. There are concerned voices in the government unhappy about the company's investment policy, arguing that its attention should be focused on avoiding a gas shortfall. Gazprom is intent on becoming a global energy giant, with significant interests in oil and power, upstream and downstream, at home and abroad. Gazprom's position is that if it focuses only on production it will end up like the Middle East oil companies and never become a global player (Victor, 2008: 43).

Competing Factions Exploit NOCs

It is generally known that Russian NOCs are run for the benefit of corporate insiders and their patrons in the state administration (Tompson, 2007: 9). As mentioned above, government "oversight" of the companies is achieved through the placement of members of the executive branch on corporate boards, in some cases as chairmen. Many of these board members are drawn from Putin's own entourage. In July 2004, for instance, Putin's deputy chief of staff Igor Sechin replaced Economic Development and Trade Minister German Gref as chairman of Rosneft (Rutland, 2009: 14). In this sense, the NOCs and their government sponsors are indistinguishable.

Neither fully independent of the state, but not fully part of it either, NOC decision-making is opaque and hidden from public view, brokered in smoke-filled rooms between the executives and government officials. On the surface, these companies are run on a commercial basis, reporting profits and losses, paying dividends to shareholders, adopting international accounting standards, and floating their own shares abroad. But they also obey state mandates conveyed behind closed doors (Rutland, 2009: 14). This lack of transparency on the part of NOCs, as well as the concentration of power in the Kremlin as an institution, has turned the attention of analysts

to the factions pulling the strings from behind the scenes.

Although the Kremlin factions likely number between 2 and 10, depending on how one defines them, Bremmer believes there are 3 primary groups. They are commonly referred to as the liberals, technocrats, and *siloviki*. There are also several influential figures within the government who are not fully allied with any one of these factions, such as Mikhail Fradkov (Prime Minister) and Sergei Sobyenin (Head of Presidential Administration).⁵ The liberals, the weakest of the three, are former businesspeople and economists led by German Gref (Economic Development and Trade Minister) and Aleksei Kudrin (Finance Minister) defined by their shared approach to economic policy, which is relatively market friendly (Bremmer and Charap, 2006: 85).

The technocrats, led by First Deputy Prime Minister and Gazprom chairman Dmitry Medvedev and Gazprom president Aleksei Miller, ironically, are defined by their control over Gazprom, the state controlled gas monopoly, which gives them significant influence on all policy matters (Bremmer and Charap, 2006: 85).

Though its commercial appearance may deceive, tight state control has always been an integral part of Gazprom's history. Gazprom traces its origins to 1965, when the Soviet Union established a gas ministry as a way to aggressively develop its national gas industry (Victor and Sayfer, 2012: 655). Today's political questions related to the proper balance between the management of the company and the executive branch of the government were irrelevant back then, because Gazprom was a government body (Victor, 2008: 46). It was only in 1989, a couple years before the collapse of the Soviet Union, that the government transformed Gazprom into a company. Gazprom was partially privatized through a widely criticized sale of state assets in 1993

⁵The positions in parentheses indicate high office held by the individuals during the 2000s.

(Victor and Sayfer, 2012: 655).

In 2003, Gazprom came under even closer state command. Only when it became confident that Gazprom had been brought firmly within its fold did the Kremlin, while retaining a controlling share, sell larger stakes to private investors and select Western companies (Victor and Sayfer, 2012: 655). Although Gazprom holds regular board and stockholder meetings, the real decisions are made within an informal circle around the Russian president and communicated through the chairman of the board of directors (Victor, 2008: 41). Shareholders have tolerated the situation mainly because they see Gazprom's political connections as crucial to its viability as an enterprise (Victor and Sayfer, 2012: 656).

The *siloviki*, the most powerful of the three groups, is often stereotyped as current and former intelligence officers from Putin's hometown of St. Petersburg who wield considerable power within the Kremlin and control key sectors of the Russian economy. Its leaders, Igor Sechin (Deputy Head of Presidential Administration), Viktor Ivanov (Adviser to the President), and Nikolai Patrushev (Director of the Federal Security Service) fit this profile (Bremmer and Charap, 2006: 85). As deputy chief of staff, Sechin is the head of the Kremlin chancellery and controls the president's schedule and incoming paper flow. He also determines who may have access to him. Viktor Ivanov, although formally just an adviser, is responsible for personnel appointments, both in the government and in state-owned companies (Bremmer and Charap, 2006: 87).

Bremmer is careful to note, however, that their associates, particularly in the lower tier of the bureaucracy, state-owned enterprises, and private companies, do not fit this profile (Bremmer and Charap, 2006: 85). Sergei Bogdanchikov, the influential president of Rosneft, is a notable example

(Zabanova, 2007: 28). Discarding the emphasis on shared background, then, the faction is better defined as an informal network of government officials and businessmen led by the core group of Sechin, Ivanov, and Patrushev, who share similar political views, pursue a common policy agenda, and seek joint control over economic assets (Bremmer and Charap, 2006: 86). They share similar views, such as preference for state intervention in the economy, economic nationalism, resource nationalism, and Russia's return to global supremacy (Zabanova, 2007: 28).

The *siloviki* control the Federal Energy Agency, a substructure of the Ministry of Industry and Energy, which has significant regulatory power in the energy sector. The *siloviki* have also infiltrated other groups, industries, and agencies.⁶ Even Gazprom, which is controlled by the technocrats and is generally believed to be hostile to the *siloviki*, has vice presidents with links to Sechin, Ivanov, and Patrushev (Zabanova, 2007: 28). The liberals have likewise seen their ministries infiltrated by *siloviki*. The Agency for State Reserves in Gref's Economic Development and Trade Ministry and the Service for Financial Monitoring in Kudrin's Finance Ministry, both of which are subministerial agencies operating with a high degree of autonomy, are influenced by the *siloviki* (Bremmer and Charap, 2006: 88).

The *siloviki* had a role in the Yukos affair, after which some of its junior members reached top leadership positions. One example is Vladimir Ustinov (Justice Minister), who was the prosecutor general at the time who pursued Khodorkovsky's case (Bremmer and Charap, 2006: 87). The *siloviki* have also been credited with the widely discussed draft law on strategic sectors in the economy, ratified by the Russian government in January 2007, which aims to exclude foreign

⁶The *siloviki* control more than 10 government agencies and have partial control over several more. Besides the force structures—law enforcement, the intelligence services, and the armed forces—group members head such critical institutions as the Customs Service and have considerable influence within the Federal Property Fund and the Financial Monitoring Service (Bremmer and Charap, 2006: 87).

investors from holding controlling stakes in “strategic” Russian companies, especially in the energy sector. The draft law contains a provision concerning a mechanism of issuing permissions to foreign investors, and the committee charged with this responsibility is expected to consist of the sector insiders and the Federal Security Service (Zabanova, 2007: 28).

It is not an accident that the *siloviki* came to thrive in the 2000s, when political and economic power became much more concentrated in the Kremlin. In fact, the political agenda that unites the *siloviki* has been the perpetuation of that trend, the continued consolidation of political and economic power within a highly centralized state, buttressed by large, well-financed security and defense structures (Bremmer and Charap, 2006: 89). Nor is it an accident that the rise of Rosneft tracks closely the growing influence of the *siloviki*. Like the *siloviki*, Rosneft was shrouded in obscurity and played a minor role in Russian political economy until the 2000s.

After losing many valuable assets over the 1990s, Rosneft accounted for less than 5% of the country’s crude output and hydrocarbon reserves, and it would remain a second-tier company until its acquisition of Yuganskneftegas in 2004 (Poussenkova, 2007: 11). It was only after Rosneft acquired Yuganskneftegas and successfully held the biggest IPO in Russia (the fifth biggest in the world in 2006) that a company previously known only to experts in Russia’s oil sector became a household name in energy (Poussenkova, 2007: 1).

Today, with Igor Sechin, Deputy Head of the Presidential Administration, as its Board of Directors Chairman, Rosneft possesses uncommon administrative clout and plays an important role in Russia’s domestic and foreign policy. In fact, the Russian leadership, which strives to position the country as an energy superpower and the guarantor of global energy security, actively

promotes and supports Rosneft in its expansion since it wants to have its own oil supermajor (Poussenkova, 2007: 2). Thus, it is easy to overlook the fact that Rosneft's pride of place in Russia, unlike that of Gazprom the gas monopoly, was never a guarantee.

The status of the company channels broader political and macroeconomic trends and the evolving role of the state in the economy. Rosneft's ordeal in the 1990's is particularly telling in this regard. In the heyday of oligarchs, Rosneft and the Ministry of Fuel and Energy were victims of privatization processes underway in the Russian energy sector. The Ministry had been consistently losing its competencies, while Rosneft was a tempting target for domestic financial-industrial groups that had developed a taste for acquiring attractive oil assets (Poussenkova, 22). The fate of the state company, as well as its most attractive assets, thus depended on the relative clout of competing oligarchic groups (Poussenkova, 2007: 15).

The aforementioned shares-for-loans auctions gave birth to SIDANCO, comprised of four oil producing enterprises privatized from Rosneft. Initially promised a fifth, namely the jewel in Rosneft's crown Purneftegas, SIDANCO came in hot pursuit (Poussenkova, 2007: 15). The competition played out at the highest level of government, pitting Vladimir Potanin (Vice Premier) against Vladimir Chernomyrdin (Prime Minister). While Potanin championed SIDANCO, Chernomyrdin actively defended the interests of Rosneft because his team, which included bosses of Gazprom, LUKOIL, and Rosneft, were reluctant to let SIDANCO grow stronger (Poussenkova, 2007: 15). The contest ended with a *fait accompli*. When Evgeniy Primakov, a champion of the strong state and the national oil company, became Prime Minister, he helped return Purneftegas's controlling interest to Rosneft by a court decision in November 1998, using the resources of the

General Prosecutor Office (Poussenkova, 2007: 21).

The most important milestone for Rosneft, however, was 2000, when Vladimir Putin came to power. On the heels of the elections, there were two influential factions in Russia, the “family” associated with former president Yeltsin and the “*piterskiye*” from St. Petersburg. Bogdanchikov, president of Rosneft since 1998, could not join the first group since he replaced Yury Besspalov, the “family” man. The rapprochement between the head of Rosneft and the “*piterskiye*” allowed Rosneft to rise through the ranks of the Putin establishment despite its modest place in the domestic oil industry (Poussenkova, 2007: 23). With its foot in the Kremlin door, Rosneft found a powerful patron in Igor Sechin, who became Rosneft’s Board of Directors Chairman in 2004. Thus, Rosneft was extremely well positioned to benefit from the rise of *siloviki*. Backed by Sechin, Bogdanchikov could exact revenge for Rosneft’s past ordeals (Poussenkova, 2007: 24).

With great power comes great responsibility—to do the state’s bidding. While the new image of Rosneft as a future global supermajor probably does not permit it to admit that it undertakes additional activities on behalf of the state, and Rosneft prefers to trumpet its commercial and business successes, it is no secret that Rosneft enjoys special privileges and performs government duties (Poussenkova, 2007: 39). As Rosneft headquarters were located on the Sofiiskaya Embankment facing the Kremlin, employees of the companies began to joke that all strategic decisions are made “right across the river” (Poussenkova, 2007: 60).

The fall of 2004 is particularly illustrative of the fact that Rosneft stands and falls with political initiative from the Kremlin. In September, Putin approved a government proposal to fully incorporate Rosneft in Gazprom in exchange for 10.74% of Gazprom shares held by its subsidiaries.

This swap would have permitted the state to increase its stake in the gas monopoly from 38.4% to the controlling interest, and after that to liberalize the market of Gazprom's remaining shares (Poussenkova, 60). Then in November 2004, Deutsche Bank, Gazprom's advisor, advised the company to purchase Yukos assets, Yuganskneftegas (Yugansk), Surgutneftegas and Sibneft, and this idea was wholeheartedly approved by Gazprom's management and Bogdanchikov, who was expected to head the new oil division within the gas giant (Poussenkova, 2007: 61).

In an unprecedented move, Yukos management team under Steven Theede took the fight to the Houston court, seeking protection under chapter 11 of the U.S. law on bankruptcy. The court granted the request to temporarily forbid the auction for Yugansk, and warned Gazprom and six foreign banks that were to provide foreign credit for the acquisition not to participate in the December 19 auction. The banks obeyed and Gazprom found itself faced with the prospect of economic sanctions and strained relations with business partners (Poussenkova, 2007: 61).

The Kremlin would never be caught "dancing to the tune of foreigners," however. In a throw-back to the shares-for-loans auctions of the 90s, a 77% stake in Yugansk, representing 100% of its voting shares, was sold for \$9.35 billion to the shell company Baikail on December 19, allegedly to cover the company's tax debts. Three days after the auction, Rosneft bought Baikail for 10,000 rubles, the "price of a mid-class refrigerator." After acquiring Yugansk, the biggest oil producing subsidiary of Yukos, Rosneft was transformed overnight from a modest player with 21 million tons of oil production into a 75 million tons per year giant. It increased its hydrocarbon reserves to 2.05 billion tons of proven oil reserves and 691 billion cubic meters of proven gas reserves (Poussenkova, 2007: 63). The planned merger between Gazprom and Rosneft became much

more complicated after Rosneft acquired Yugansk. In the spring of 2005, Gazprom concluded that the risks associated with Rosneft were too high to proceed (Poussenkova, 2007: 67).

As the foregoing discussion illustrates, Putin has been consistently pursuing the policy of augmenting the role of the state in the economy, and the energy sector in particular. The President seems to have desired a powerful state oil company that could be used to counterbalance the influence of private corporations and oligarchs. The name of the company seems to have mattered less. Rosneft's quick turnaround under Bogdanchikov's leadership may be a testament to his managerial talents, but being the right man in the right place at the right time certainly did not hurt his chances (Poussenkova, 2007: 23).

5.4 Brazil

Conventional Wisdom

I next turn to Brazil, an oil producer with many veto players to check against rent-seeking. The neorealist hypothesis is likely to have been more relevant before the temporal scope of my analysis, when Brazil was a heavy importer of oil concerned about developing its burgeoning oil and gas industry. Its relevance should have decreased as Brazil's productive capacity at home became more and more self-evident. Indeed, the future is bright for oil and natural gas in Brazil.

The days of Brazil's dependence on oil imports is long gone. The country now ranks 16th in the world in terms of proven oil reserves with 15.31 billion barrels. In terms of crude oil production, Brazil ranks 14th in the world with 2.0 million barrels per day. The country is the 10th in the world in terms of refining capacity with 1.9 million barrels per day. Proven natural gas reserves places Brazil 33rd in the world with 16.22 trillion cubic feet. In gas production, the

country ranks 33rd in the world with 752 billion cubic feet.⁷ These figures have been increasing at a rapid pace over the past years, thanks to continued commercial discoveries.

From the mid-1990s, the government has seen competition as the best strategy for encouraging investments in the country's resources (de Oliveira, 517). Thus, Brazil implemented regulatory changes in a piecemeal fashion, allowing the NOC Petrobras ample time to adapt while continuing to capitalize on its inherent domestic advantage. In 2002, deregulation of oil and derivative prices further liberalized the market. By 2006, thanks in part to hydroelectric power and the increased use of ethanol, Brazil became oil self-sufficient (Fishman, 2010: 7).

As for the liberal hypothesis, Brazil also has the institutional capacity to make focused energy policy. The ground rules for the energy sector are upheld by a constitution and multiple cross-checking institutions (Kingstone, 2004: 26). While the political system concentrates a great deal of power and discretion in the executive, occasionally criticized as "hyper-presidency," it also creates multiple "veto gates," points at which policy can be blocked by the system's many veto players (Kingstone, 2004: 2). To be sure, different actors' inclusion in the policy-making process has varied between the political regimes, but during the democratic regimes in the 1990's and 2000's, the involvement of all relevant actors in state policy-making has been relatively high (Gonzales Rodriguez, 2013: 54).

Brazil of the twenty-first century is a promising producer with above average governance. Not only has Brazil uncovered a sizable resource endowment to focus its business at home, but it also has the governance infrastructure to prevent rampant rent-seeking that may drive ill advised

⁷The latest statistics are obtained from the Energy Information Administration available at <http://www.eia.gov/countries/country-data.cfm?fips=BR#ng> (Accessed March 26, 2015).

energy policy. While Petrobras may harbor international ambitions, even the paradigms suggest that investments abroad are likely to proceed based on commercial considerations rather than “energy security” or parochial interests of rent-seeking elites. Given Brazil’s centralized energy sector, the prediction of the competing principals model overlaps with the liberal hypothesis, though there is an added emphasis on the presence of a capable energy ministry backed by robust cross-checking institutions.

Historical Overview of Energy Sector

In 1938, President Getulio Vargas created the National Petroleum Council (CNP) to increase state control over the budding oil industry under the slogan, “the petroleum is ours” (Fishman, 2010: 3). CNP was directly linked to the Presidency of Brazil with the goal to establish long term guidelines for the development of the Brazilian oil industry, such as pricing policies, priorities for investments and geological studies, and supply and distribution policies (Guilhoto, Ichihara, and Postali, 2007: 2).

In 1953, President Vargas signed into law Petrobras, an NOC overseen by the CNP, and granted it a legal monopoly in hydrocarbon exploration and production. In addition, the law allowed Petrobras to control a large share of refining and corollary industries (Fishman, 2010: 3). The government conferred a substantial set of incentives—regulatory, financial, taxation—to the newborn company to accomplish its central objective of supplying domestic oil consumption with minimal pressure of oil imports on the trade balance (de Oliveira, 2012: 549). The firm received a fixed price for output and faced limited market pressure. In time, Petrobras became a “sprawling conglomerate” under these advantages, though admittedly overstaffed and inefficient

compared to its peers in the private sector (Fishman, 2010: 3).

At first, Petrobras did not deliver on the government's aim to develop the domestic upstream hydrocarbon industry. Instead, it focused on the least risky activities most aligned with the government's goals and devoted its first decades to downstream activities (de Oliveira, 2012: 549). By 1961, national refining capacity exceeded consumption for the first time, but production still lagged and the nation remained a net importer of oil. In 1964, under the new military regime, Petrobras contracted foreign firms to assist in and expand offshore exploration to boost production (Fishman, 2010: 5). The government allowed Petrobras to offer high-risk offshore oil blocks to the foreigners and keep the lower-risk offshore blocks for its own exploration. Petrobras could control which acreage was available to the foreign firms and the terms under which the most important fields would be developed. The contracts foreign firms signed required them to develop any found resources and hand them over to Petrobras for exploitation and production (de Oliveira, 2012: 549).

It took two global oil crises to steer Petrobras towards proactive upstream development. The 1973 and 1979 crises wrought havoc on Brazil, a net oil importer (Fishman, 2010: 5) (de Oliveira, 2012: 549). In that decade, Petrobras established an international subsidiary, Braspetro, to explore in the Middle East, North Africa, and Colombia, though these ventures failed to produce profitable results and Braspetro folded (de Oliveira, 2012: 526). Petrobras reoriented its investment strategy toward the upstream. By 1979, more than half of all investments were for exploration and production compared to only about one-quarter in the early 1970s (de Oliveira, 2012: 529). Taking advantage of its monopoly over domestic oil resources and the favorable topography of

the Brazilian continental shelf, which gently slopes to deeper water, Petrobras began the gradual development of the technology and practices needed to exploit the Campos Basin (de Oliveira, 2012: 529). Petrobras' decision to invest heavily in research and development (R&D) would later pay off, as production rose dramatically in the 1980s (Fishman, 2010: 5).

The special privileges afforded Petrobras by the government seemed indispensable to its success. The company was consistently profitable and compared favorably against its state-owned peers, both Brazilian and foreign.⁸ To be sure, it came at a cost, as public enterprises accounted for two thirds of the nation's external debt by the mid-1980s. The bloated public sector crowded out private investment and contributed to fiscal instability (Fishman, 2010: 3). Nonetheless, in 1988, the federal Constitution consolidated the state's monopoly over oil and gas exploration and production, as well as refinery, import, export, and transportation activities, and brought Petrobras firmly within its fold (Sennes and Narciso, N.d.: 26) (Arriagada and Cote, 2011: 30).

That is why the institutional changes to the industry in the mid-90s seem so revolutionary in retrospect (Guilhoto, Ichihara, and Postali, 2007: 6). In 1995, a constitutional amendment authorized the federal government "to outsource oil and gas activities under state monopoly to private or government-owned companies" (Arriagada and Cote, 2011: 30) (Sennes and Narciso, N.d.: 26). More than 40 years of nationalized monopoly came to an end with the passage of the historic Petroleum Law in 1997. The law demonopolized hydrocarbon exploration and production, allowed private purchase of minority participation in Petrobras, allowed private companies to participate in exploration and production through concessions, and created both the National

⁸This bar is not terribly high, given that Brazilian public firms showed on average one half the rate of return of private firms in the mid-1970s.

Agency of Petroleum and Natural Gas (ANP) to administer the industry and the National Council for Energy Policy (CNPE) to supervise policy and implementation (Fishman, 2010: 7).

Interestingly, the changes to the sector had a positive impact on Petrobras. Suddenly forced to adapt to greater competition, Petrobras cut its workforce by slightly less than a third and doubled its production in the 1990s. Under Henri Philippe Reichstul's leadership, it admitted to billions in previously undisclosed liabilities and cleaned up its books. Since that time, Petrobras has excelled by continuing to develop advanced technologies and initiating many new international contracts and partnerships (Fishman, 2010: 7). Petrobras has emerged as "the undisputed world leader in deep and ultra-deep offshore" exploration and production (Fishman, 2010: 5).

The remaining challenge for Brazil is to design an adequate model for the natural gas sector. In Brazil, gas exploration is associated with oil, and Petrobras has always treated the former as a complementary product of its main activity. The 1997 Petroleum Law has not changed the situation, and Petrobras continues as a monopoly in gas exploration and transportation, while distribution is in the hands of regional monopolies (Goldstein and Linhares Pires, N.d.: 25).

Organizational Overview of Energy Sector

In 1997, Petrobras' legal monopoly on all aspects of Brazil's oil and gas sector came to an end. The Petroleum Law maintained state ownership of all hydrocarbon resources, but the execution of this monopoly was transferred to a new agency, the National Agency of Petroleum and Natural Gas (ANP), responsible for all aspects of oil and gas regulation, including the auctioning of exploration and development licenses to domestic and foreign companies. Energy policy would be formulated by the Ministry of Mines and Energy (MME) in consultation with an advisory

body, the National Council for Energy Policy (CNPE). After an initial allocation of exploratory and development properties, Petrobras was allowed to bid, as any private company, on all new exploration concessions offered by the ANP in an open auction (Hester and Prates, 2006: 67).

ANP is in charge of regulation, contracting, and supervision of economic activities in the petroleum industry and administrates the rights related to exploration and production activities, including contracting with private or state-owned companies. ANP awards concession contracts for the exploration, development, and production of oil and gas, issues authorizations related to these activities, and supervises the performance of the concessions (Zacour et al., 2012: 130). ANP also approves the import, export, and transportation of gas, oil, and its derivatives, and plays a regulatory, oversight and dispute settlement role in substantive cases (Arriagada and Cote, 2011: 30). The ANP is not responsible for the regulation of prices and tariffs, however, which remains under the control of the Ministry of Finance (Goldstein and Linhares Pires, N.d.: 24).

Carving out a territory for itself presented a challenge for ANP at first, especially vis-à-vis the other entities that make up the triangle, MME and Petrobras. ANP started out as a powerful agency extending its reach even to energy policy formulation. A few years later, the tables turned. The MME reclaimed its role and influenced the government to preempt the ANP, leaving the agency to operate with a minimum budget and personnel (Hester and Prates, 2006: 68). The ANP also had trouble establishing its credibility as the “referee” in the market for oil and gas given the degree of market power exercised by Petrobras in upstream and downstream segments. Despite these growing pains, ANP has so far successfully accomplished its mission of implementing the competitive model in the oil and gas industry (Goldstein and Linhares Pires, N.d.: 24-25).

The Petroleum Law also created the National Council for Energy Policy (CNPE) in 1997. While CNPE was not actually installed until October 2000, its intended function and organization underscore the central role of the Ministry of Mines and Energy (MME) in energy policy (Bajay, 2004: 5). CNPE was created and designed to advise the MME (Gonzales Rodriguez, 2013: 54). It consists of ten members, seven ministers of state bureaus (Mines and Energy, Planning, Economy, Environment, Industry and Trade, Civil House, and Science and Technology), one representative of the state governments, one representative of the universities, and one citizen expert on energy policy issues. The President appoints the latter two. CNPE is headed by the Minister of Mines and Energy, who forwards proposals of energy policy resolutions to the President. Once approved, the proposals have the power of a presidential decree (Bajay, 2004: 5). The idea is to maintain national interests within the different energy sectors. Expert advice from relevant stakeholders is often sought to develop informed and implementable policies in the petroleum sector (Gonzales Rodriguez, 2013: 54).

Before the enactment of the Petroleum Law, Petrobras was the only entity authorized to carry out exploitation and production of oil, as an agent of the Federal Union, which held the monopoly of these activities. After its enactment, but before the first ANP bidding round for the award of concession contracts, it was established that Petrobras would retain its rights over each of the fields that were in production on the date of the Petroleum Law's enactment (Article 32) and the blocks where Petrobras had commercial discoveries or promoted investments in exploration. However, in the exploratory areas, Petrobras had three years to continue its activities and, if successful, proceed with production activities (Article 33) (Zacour et al., 2012: 130).

In 1998, ANP and Petrobras signed concession contracts for blocks that met the conditions set out in Articles 32 and 33, which became known as “Round Zero Concession Contracts.” The first Round was held in 1999, and Petrobras has participated in all subsequent rounds in free competition with other players in the oil industry. Nowadays, Petrobras holds multiple concession contracts, either solely or in association with other oil companies under consortium arrangements (Zacour et al., 2012: 130).

Focused Energy Policy

The Petroleum Law is very clear and detailed in dividing responsibilities among MME, ANP and Petrobras. Such clear demarcation of responsibilities, well respected by the parties involved, produces focused energy policy (Gonzales Rodriguez, 2013: 53). The government’s main objectives have always been national control of its oil reserves and self-sufficiency in oil supply (Gonzales Rodriguez, 2013: 59). Though these objectives were not initially pursued by its commercially oriented agent Petrobras, Brazil stands out as a successful case of NOC governance. The government was particularly prescient in accepting some degree of autonomy for Petrobras as necessary to achieve its long term objectives, and knowing when to give and take away its privileges.

From its birth in 1953, Petrobras enjoyed a monopoly over the energy sector and carried out both commercial and regulatory functions. While these privileges led to inefficiency and conflicts of interest, the government deemed them necessary to grow the NOC’s human and institutional capital. To thwart the possibility of Petrobras’ becoming a “state within the state,” the government later removed its monopoly and created ANP as a regulatory agent in 1997 (Gonzales Rodriguez, 2013: 56). Since the government’s objectives, such as achieving self-sufficiency in

oil through increased domestic production, were at least not initially aligned with commercial incentives of private actors, MME was flexible enough to grant Petrobras significant privileges and autonomy in undertaking the risks necessary to develop the sector, particularly in deep-water offshore (Gonzales Rodriguez, 2013: 57).

While Petrobras' line of action, decision-making process, and strategies have reasonable autonomy from the government and ANP, it could still be considered an arm of the Brazilian federal government, or even the country's executive (Sennes and Narciso, N.d.: 26). In many cases, the relationship is symbiotic and of mutual support, though there is clearly room for divergence (Sennes and Narciso, N.d.: 30). The communication among MME, ANP and Petrobras is frequent and open. The Petroleum law clearly outlines the national objectives, and the three main actors share these objectives and work in dialogue to fulfill them. In conflicts of interest between MME and Petrobras, MME has made decisions based on the national objectives, and Petrobras has been loyal in implementing decisions (Gonzales Rodriguez, 2013: 60).

Petrobras has ambitious plans for the future—investing hundreds of billions of dollars to expand its oil production to 6.4 million barrels per day, with 0.4 million from overseas, by 2020 with roughly half to be sold in the international oil market (de Oliveira, 2012: 518).⁹ Such aggressive expansion would land the company among the world's top five integrated energy companies by 2020 (Sennes and Narciso, N.d.: 28). Part of this expansion involves going abroad. Petrobras' 2008-12 investment plans included investments of \$112 billion—around \$22.5 billion per

⁹Petrobras cut its production goal for 2020 to 5.7 million barrels per day in a business plan published June 14, 2012. Nonetheless, Petrobras is spending \$236.5 billion through 2016, with a majority on exploration and production at offshore fields. See "Petrobras Looks Past Lula for Next Big Find: Corporate Brazil" *Bloomberg Business*, June 26, 2012, Available at <http://www.bloomberg.com/news/articles/2012-06-26/petrobras-looks-past-lula-for-next-big-find-corporate-brazil> (Accessed March 27, 2015).

year—out of which 13% would be invested abroad (Sennes and Narciso, N.d.: 28). Petrobras has been investing in countries where the skills it developed at home confer a competitive advantage, especially in deep water operations and the downstream (de Oliveira, 2012: 540).

Petrobras, active in 26 countries, is principally focused on exploration and production and the improvement of its performance in gas and energy in general, as well as the refining stages and trade (Sennes and Narciso, N.d.: 28). In 2002, Braspetro, the formerly independent overseas operator, was merged into the general structure of the company to develop Petrobras' operations overseas (de Oliveira, 2012: 540). From 2003, Petrobras decided to step up its internationalization. By 2008, around 8.5% of Petrobras' proven reserves were located abroad, especially in Argentina, Nigeria, Peru, and Venezuela. It held a similar standard production capacity internationally, although its principal bases were in Latin America, most notably in Argentina. The company's liquid receipts abroad in 2006 were worth \$6.5 billion (Sennes and Narciso, N.d.: 28).

Taking stock of the energy sector from the government's perspective—particularly the government's take from oil exploration and development—de Oliveira (2012: 543) concludes that the results have been impressive. In the mid-2000s, the country became self-sufficient in oil and eliminated net expenditures associated with oil imports. The original mission that inspired creation of the NOC has been achieved, not simply by nationalizing production, but through NOC-led oil development and a healthy dose of competition.

Government and NOCs Mutually Benefit

The success of the Brazilian model of sectoral governance cannot be attributed to sheer luck. The government methodically designed its sectoral institutions to minimize moral hazards associated

with Petrobras' informational advantage, while being careful to grant the company sufficient autonomy and special privileges to be a profitable, self-sustaining entity. To survey Brazil's work of institutional engineering, I return to the example of the Petroleum Law and conclude with a few preliminary remarks on the latest stress-test for Brazil's sectoral governance, the round of regulatory changes following the discovery of the pre-salt in 2007.

The Petroleum Law, to recapitulate, created the ANP in 1997 to manage the auctioning of blocks for exploration, contract the licensing of exploration with winning bidders, and regulate both the upstream and the downstream activities across the oil sector. Following industry practice, companies were required to report any discoveries along with development plans to the ANP. Any company engaged in the extraction and development of the country's hydrocarbon resources then had to pay compensation, such as signature bonuses, royalties, special participation fees, and fees for the retention of an area, for subsequent production activities. These arrangements were meant to expose Petrobras to competition, increase fiscal transparency, and attract international oil companies to Brazil's hydrocarbons market (de Oliveira, 2012: 536,547).

The reforms not only took away Petrobras' monopoly over the hydrocarbon sector, but also built greater autonomy into the company's decision-making structure, allowing its shares to be sold to private investors and floated on the New York Stock Exchange. To pacify nationalists, the government maintained a majority of the company's voting shares as well as authority to nominate seven of nine board members. Independent shareholders and the stock listing forced much greater transparency and made it legitimate for the company to pursue profit along with other goals, such as social and environmental responsibility (de Oliveira, 2012: 536).

The reforms were also an exercise in apportioning risks and benefits between the government and the oil companies. Since estimating risks and benefits is difficult prior to exploration, the regulations allowed taxes on oil companies to vary with risks and expected benefits as their operations progressed. The government used competition over the size of the signature bonus as a preliminary estimate of the risks and benefits associated with each oil block. The ANP also charged special participation fees on top of royalties on the basis of information about the actual oil production and costs linked to each field once production started. And it set a fee for area retention to prevent oil companies from sitting on potential oil reserves for future exploration instead of beginning production promptly (de Oliveira, 2012: 537).

Petrobras accepted these new policies because they removed government control over the pricing of oil products and the company was likely retain a de facto monopoly in the domestic market for the foreseeable future. Indeed, the government allowed Petrobras to safeguard its existing assets from privatization, only demanding back the exploration blocks not yet under production and those unlikely to yield discoveries in the near future. In a period of oil prices increase, the new regulatory regime also meant more autonomy for the NOC to invest its revenues in new production (de Oliveira, 2012: 537).

From the government's perspective, the new regulatory regime guaranteed its control of the exploration and production efforts of the oil companies, while also increasing the flow of oil benefits to the Treasury (de Oliveira, 2012: 538). In 2000, besides sales taxes, Petrobras paid \$1.75 billion in royalties, land rental fees, and signature bonuses. By law, most of these are earmarked for infrastructure development projects of the main beneficiaries, state and municipal govern-

ments where oil and gas fields are located, and contributions to the budgets of the Ministry of Science and Technology, the Ministry of the Navy, the ANP, and the MME (Lewis, 2004: 23).

Moreover, the new regime reduced somewhat the asymmetry of information that existed between Petrobras and the government. Over time, the government regulators became skilled at using information from bids, such as from the signature bonus, to glean information about the country's oil basins (de Oliveira, 2012: 538). The principal seemed satisfied with the performance of its agent, as the new government which took power in 2003 made relatively few changes to the country's single most important economic sector (de Oliveira, 2012: 547).

In 2007, Petrobras identified a very large oil reservoir in the pre-salt geological layer of the Campos Basin and informed the government that its data indicated that several other giant oil reservoirs were likely to be found in a vast offshore area that stretches from the north of Santa Catarina state to the south of Bahia state (de Oliveira, 2012: 544). The pre-salt oil reserves were estimated to contain 50 billion barrels, and the Lula administration immediately went to work creating new institutions to bring the oil under more direct state control. The government passed four laws in 2010 that effectively limit foreign participation and guarantee Petrobras a majority hand in production (Arriagada and Cote, 2011: 31).

To increase oil revenues that accrue to the state, the first law replaced the concession regime with production sharing agreements to be entered into with the MME in production areas declared "strategic" by the Brazilian government, including the pre-salt (de Oliveira, 2012: 547) (Arriagada and Cote, 2011: 31). The new system would apply to 78 percent of the 149,000 km^2 pre-salt area not already under concession and existing concession contracts would be honored

(Fishman, 2010: 15). To handle the oil resources in these areas, the government created a new, fully state-owned company under the MME, Pre-Sal Petroleo S.A. (Petrossal), which would be neither an oil operator nor an oil investor. Petrossal would have the chief role in the development and marketing of the oil resources from these areas, reducing the role of Petrobras in the upstream (de Oliveira, 2012: 547). The second authorized the government to cede Petrobras exploration and production rights to the equivalent of 5 billion barrels in the pre-salt in exchange for a company share package whose value is set by law (Arriagada and Cote, 2011: 31).

The third made Petrobras the sole operator of pre-salt projects and gave it a 30% minimum stake in each (Arriagada and Cote, 2011: 31). Although Petrobras would be the sole operator, it would have to create a management committee for each licensed block. The president of each committee, appointed by Petrossal, would have the power to veto committee decisions. Moreover, at least 50 percent of the committee members would be appointed by Petrossal. The role of private companies in these areas would be limited to participation in consortia with Petrobras for bidding at auctions (de Oliveira, 2012: 547) (Arriagada and Cote, 2011: 31).¹⁰ Finally, the fourth law created a social fund that will invest the pre-salt profits in education, anti-poverty initiatives, environment, science, and technology (de Oliveira, 2012: 517) (Arriagada and Cote, 2011: 31).

In many respects, Petrossal would perform a role quite similar to that originally envisioned for Petrobras in the 1950s—to oversee and tightly control these resources. This new mechanism would be needed, according to the government’s logic, because the existing mechanisms for con-

¹⁰Private companies bid by estimating “cost oil” and “profit oil” and pledging a percentage of the latter to the government, in addition to regular taxation and potential signature bonuses. Petrobras would then have to match this bid, relative to its share of the contract, which is automatically set at 30 percent. Petrossal has the right to veto any drilling contract and can award a contract directly to Petrobras without auction if it be deemed “in the public interest.” Petrobras has the right to bid competitively for more than its minimum 30 percent (Fishman, 2010: 15).

trolling the oil sector, particularly the ANP, would not be able to focus adequately on the special tasks that arise in these strategic oil areas, especially concerning the industrial backward linkages of the oil business (de Oliveira, 2012: 548). The creation of Petrossal is also an attempt to subordinate Petrobras to the government's policies while making Petrobras responsible for taking on the large financial and operational risks associated with these new fields (de Oliveira, 2012: 551).

This is an unusual institutional and regulatory arrangement for an NOC to operate in its domestic market and is a radical break from the one in which Petrobras has been operating since its inception in 1954 (de Oliveira, 2012: 551). These changes would remove from Petrobras one of its most valued privileges—the evaluation and management of risks in Brazil's oil sector—and require the company to find new ways to maintain an edge (de Oliveira, 2012: 552).

5.5 Norway

Conventional Wisdom

Our last destination is Norway, which, similar to Brazil, is an oil producer with many veto players to check against rent-seeking. Both neorealist and liberal hypotheses suggest restraints on NOC investments abroad, though commercially driven investments may be possible. Norway is considered a traditional producer and famously known for its Norwegian model, perhaps the most successful example of resource governance in the world. For this remarkable achievement, the Norwegian government could draw from a tradition of reliance on nature. Each of its previous spurts of economic growth was based on an abundant natural resource, such as timber, fish, hydroelectric power, and now oil and gas (Moses, 2010: 127).

Norwegian energy governance is based on the idea of combining effective and professional

management of resources with democratic control by steeping political decisions in institutional frameworks that encourage participants to think beyond their own parochial interests. The result is a management regime that prioritizes the national over the particular, and the long-term horizon over the short-term (Moses, 2010: 127). Thus, Norway, like Brazil, seems to fit the profile of a well-governed producer. Not only does Norway have an established energy industry at home, but it also has governance infrastructure with a proven record. However, there are also indications that Norway may need to change its strategy, though the reason cannot be readily reduced to “energy security” or parochial interests of rent-seeking elites.

An NOC’s ability to grow and create wealth is substantially constrained as the national hydrocarbon sector matures. The dilemma is intensified by the fact that the NOC will generally be large relative to the indigenous hydrocarbon sector. This seems to be the case for Norway’s Statoil (Gordon and Stenvoll, 2007: 5). Unlike Brazil, production growth no longer comes from exploration success, measured in terms of multiple world class discoveries and the development of these major discoveries (Gordon and Stenvoll, 2007: 8).

As additions have fallen, success has become more linked to commercial development of discovered reserves not yet in production (often by utilizing spare capacity on existing infrastructure), exploration for satellite fields around existing infrastructure, and advanced technology to increase recovery rates and sustain production volumes from existing producing fields (Gordon and Stenvoll, 2007: 8). Last but not least, Statoil will need to leverage these home-grown engineering advantages to expand its international production (Thurber and Istad, 2012: 599).

Historical Overview of Energy Sector

In October 1962, Philips Petroleum sent a letter to Norwegian authorities requesting the permission to explore for petroleum in the North Sea on the Norwegian continental shelf (NCS), offering to pay \$160,000 per month for the license. The offer was seen as an attempt to gain an exclusive right to explore (Cullen, 2014: 4). Caught off guard, Norway immediately assembled a core group of civil servants to work on petroleum and began the acquisition of seismic data (Thurber and Istad, 2012: 605) (Cullen, 2014: 4).

The petition was declined in May 1963, and the government proclaimed sovereignty over the Norwegian continental shelf. New legislation stated that the state was the owner of resources on the continental shelf and only it could issue licenses for exploration and subsequent production. In March 1965, Norway worked out negotiated agreements with neighboring countries, particularly Denmark and the UK, on the median line principle and the limits of each country's continental shelf in the North Sea. The first licensing round for exploration on the Norwegian shelf was announced in April 1965, and 22 licenses were awarded (Cullen, 2014: 4). The Ministry of Industry, which was in charge of hydrocarbon policy, continued to accumulate expertise through learning-by-doing over subsequent licensing rounds (Thurber and Istad, 2012: 605).

The first exploration well was drilled in 1966. After 200 unsuccessful exploration wells in the North Sea, the 1969 discovery of oil by Philips Petroleum in the Norwegian sector at Ekofisk proved the existence of large oil deposits on the NCS (Cullen, 2014: 4). The knowledge and capabilities accumulated in the years preceding the Ekofisk discovery allowed the Ministry of Industry to steer the debate over how Norway should manage its newfound oil (Thurber and

Istad, 2012: 605). Production from Ekofisk began on June 15, 1971 (Cullen, 2014: 4).

In 1972, the Storting (Parliament) expressed its vision for the hydrocarbon sector in the “Ten Oil Commandments,” the thrust of which was that oil and gas should “benefit the whole nation” (Austvik, 2012: 322). In keeping with this vision, an unanimous Parliament decision established the wholly owned NOC, Den Norske Stats Oljeselskap AS (Statoil), as an instrument of resource management on September 18 (Jadhav, 2014: 19). Before doing so, however, the government also increased its stake in Norwegian industrial conglomerate and petroleum operator Norsk Hydro to 51 percent and directed the remaining private Norwegian petroleum interests to merge, creating a third Norwegian player in oil and gas, Saga Petroleum (Thurber and Istad, 2012: 607).

In that same year, the government established the Norwegian Petroleum Directorate (NPD) in Stavanger to offer independent technical and regulatory expertise to the Ministry of Industry (Thurber and Istad, 2012: 607). The triangle thus established among the Ministry of Industry (policy), NPD (regulation), and Statoil (commercial interests) came to be known as the Norwegian model (Gordon and Stenvoll, 2007: 22).

As the number of commercial discoveries increased during the 1970s, so did the government’s involvement in the sector (Cullen, 2014: 4). The big three, Statoil, Norsk Hydro, and Saga Petroleum, also assumed roles of growing importance in the sector. From 1972 on, Statoil was given a 50 percent ownership share of all new fields (Holden, 2013: 871). Statoil learned to use the privileges granted by the government to fuel its own corporate growth.

The first CEO, experienced Labour politician Arve Johnsen, allowed Statoil to aggressively flex its political muscles to gain special advantages in licensing and access to acreage. Politicians at

the time, especially but not exclusively in the Labour Party, justified these privileges as necessary support for the fledgling Norwegian enterprise in oil (Thurber and Istad, 2012: 602). As net unspent profits had to be transferred to the Norwegian treasury, Statoil learned to be proactive in seeking out investments as to prevent capital from leaving the company (Gordon and Stenvoll, 2007: 25). In fact, an entrepreneurial culture emerged, as the first ten years of tremendous success encouraged the company to take on additional risks and projects (Gordon and Stenvoll, 2007: 26).

Not everyone welcomed these developments. The creation of Statoil, at the cost of Norsk Hydro, was for many conservatives seen as a big mistake as it increased the economic power of the state at the private sector's expense. Although the success of Statoil could not be denied, it quickly became apparent that the conservative and later center-right coalition wanted a change of power relations to reverse the policies of the Labour party during its post war dominance (Gordon and Stenvoll, 2007: 27).

Voices calling for further restraints on Statoil also included private oil companies, arguing that Statoil's special preferences and effective veto power on field development due to its minimum 50 percent share in all the license groups were making the Norwegian operating environment unattractive. Officials within the Ministry itself were also reaching the conclusion that the government's formal separation of political and commercial roles needed to be strengthened in practice (Thurber and Istad, 2012: 620).

With the change to a Conservative government in 1981, the heated debate over the subject started to move towards real action. Labour, seeing the political tide turn against them, came to the table to seek a compromise solution. The result of the negotiations, implemented in January

1985, was that Statoil's balance sheet was split in two, with more than half of Statoil's interests in oil and gas fields, pipelines, and other facilities transferred to the newly created State's Direct Financial Interest (SDFI) in petroleum. These reforms came to be known as Statoil's "wing clipping." All revenues from SDFI shares would now be channeled directly to the state, dampening Statoil's cash flow (Thurber and Istad, 2012: 620).

The creation of SDFI also meant that Statoil as a company no longer had the right to 50% of any field developed. Although the company maintained its role as manager and marketer of the state's resources, it could no longer book these as company owned reserves (Gordon and Stenvoll, 27). Statoil's influence in government was exposed to further public scrutiny in connection with the severe cost overruns in its Mongstad refinery project. This scandal contributed to the resignation of Johnsen and his replacement in 1988 with the less political Harald Norvik (Thurber and Istad, 2012: 609).

As domestic resources began to mature, Statoil's leadership, starting with Harald Norvik in 1988, and continuing through the tenures of Olav Fjell and Helge Lund, saw the need to forge ahead with an independent corporate identity and a governance structure that would allow the company to compete effectively abroad. While the government had revoked many of Statoil's privileges at home during the late 80s, it became, over time, increasingly willing to grant Statoil unprecedented formal corporate autonomy, most notably by allowing it to expand internationally in the 1990s and partially privatize in 2001 (Thurber and Istad, 2012: 602,618).

History seemed to repeat itself as the 90s drew to a close, as another leader of Statoil found himself embroiled in a scandal. Much like the Mongstad refinery expansion ten years earlier, the

cost overruns at Aasgaard brought to light a lack of budgetary controls and project mismanagement. While Mongstad at the time of construction set a domestic record in missing its budgetary targets, Aasgard was \$2.6 billion above the original budgets at the time of completion. The state, with dual direct ownership, was particularly hard hit. In April of 1999, the board of Statoil was removed by the Minister of Petroleum. Mr. Norvik offered his resignation thereafter (Gordon and Stenvoll, 2007: 32).

Late in the summer of 1999, Statoil presented its formal proposal for reorganizing its ownership. It involved transferring ownership from SDFI to Statoil and partial privatization of the company. While the reintegration of the state's reserves would have been a return to the past, Statoil saw privatization as a way to maintain competitiveness (Gordon and Stenvoll, 2007: 33). Statoil's ability to rapidly mobilize investment for international projects could be compromised by the six months to a year it might take to obtain parliamentary approval to access international capital markets. Mergers and acquisitions using equity were impossible as long as the state insisted on 100 percent ownership. Privatization also offered Statoil the possibility of reduced demands from the Parliament for high dividend rates to boost revenue (Thurber and Istad, 2012: 623).

After Mongstad and Aasgard, there was renewed interest from the government also to change the incentive structure of the company to ensure that the management would focus on improving the return to capital. Thus, Statoil was to be partially privatized and given 15% of SDFIs mostly in natural gas. Norsk Hydro and other Norwegian companies would be entitled to buy an additional 6.5% of SDFI. The remaining SDFI was to be transformed into Petoro, a 100% state owned company responsible for maximizing the values of the state's oil and gas assets. Further-

more, Statoil was to lose ownership in the pipeline infrastructure, which was passed to a newly created company, Gassco, to level the playing field for all participants (Gordon and Stenvoll, 2007: 34) (Thurber and Istad, 2012: 623, 624).

The political compromise was made in April 2001 and on June 18, Statoil was listed in Oslo and New York. Olav Fjell became the new CEO and correctly noted, “The listing is a milestone for the group. We are now entering a new era.” No longer could Statoil be thought of as the government’s tool in domestic oil policy. Important changes also took place for the wider petroleum and domestic policy-makers who no longer had exclusive control for the first time. As Norway entered into the European Economic Area (EEA) agreement with the European Union, the state no longer required operators to use Norwegian firms (Gordon and Stenvoll, 2007: 34).

Organizational Overview of Energy Sector

Norway’s approach from the outset has focused on maintaining control over the oil sector, as opposed to simply maximizing revenue (Thurber and Istad, 2012: 600). An active and dominant role for the state was envisaged when the “Ten Oil Commandments” were proclaimed in the Parliament in 1971. The Norwegian State, unique among OECD countries, is unto this day a dominant player in the petroleum sector as resource owner, legislator, licensor, regulator, commercial operator, and tax collector (Cullen, 2014: 13). The idea is that the state, through the Ministry of Petroleum and Energy (MPE), approves all steps at all levels in the sector to promote both competition and cooperation as to maximize the value of each license (Austvik, 2012: 322).

The Parliament provides the guiding principles for petroleum activities in Norway by debating and approving legislation and by parliamentary deliberation on major issues, such as the

opening of potential new production areas and major development projects. Executive actions of the Government are supervised by the Parliament. Government policies are implemented by way of several Ministries, Directorates and supervisory authorities (Cullen, 2014: 9). The management of the petroleum sector, the petroleum resources of the Norwegian continental shelf (NCS), came under the purview of the Ministry of Industry (Gonzales Rodriguez, 2013: 37).

The Ministry of Petroleum and Energy (MPE) was established in 1978, taking over management responsibilities for the petroleum sector and the NCS from the Ministry of Industry (Gonzales Rodriguez, 2013: 36, 38). The MPE together with the country's political leadership set the goals of the sector (Gonzales Rodriguez, 2013: 41). It also ensures that petroleum activities occur in accord with the guidelines set by the Parliament and the Government. The MPE has ownership responsibilities for two fully state-owned companies, Petoro AS and Gassco AS, and for the 67 percent state-owned Statoil AS (Cullen, 2014: 10) (Jadhav, 2014: 29) (IEA, 2011).

With the creation of the MPE, the relations and communication among the major actors in the sector became more formalized, as Statoil also developed a clearer corporate identity (Gonzales Rodriguez, 2013: 50). The decision-making in the Norwegian petroleum sector has been done in close dialogue among the MPE, NPD and Statoil since. Before new policy decisions are made, economic studies of policy impact on society and wealth are conducted on behalf of the MPE. The administrative leadership of the MPE has been strong and consistent with few changes between shifting governments. This leadership makes policy decisions in close cooperation or negotiation with Statoil and other operating companies (Gonzales Rodriguez, 2013: 42). According to the Secretary General in the MPE, former Statoil employee Elisabeth Berge, the ministry

represents knowledge and continuity in the petroleum sector (Gonzales Rodriguez, 2013: 50).

The Norwegian Petroleum Directorate (NPD) manages petroleum resources and advises the MPE. It exercises administrative authority in exploration and production of petroleum deposits on the Norwegian Continental Shelf. (Cullen, 2014: 10) (IEA, 2011). The NPD was established as a regulatory and technical advisory organization reporting to the Ministry of Industry (and later Ministry of Petroleum and Energy), whose autonomy would in theory be assured by a separate board of directors (Thurber and Istad, 2012: 613). In the tripartite framework, the NPD would offer independent technical advice on petroleum to the Ministry to facilitate control of Statoil and all of the other players on the NCS. The existence of the NPD would also allow the Ministry to focus on policy, relieving it of the all-encompassing portfolio of oil-related activities from the early years (Thurber and Istad, 2012: 614).

The NPD, which started with few resources and limited knowledge, had to fight to find its role in the sector. Neither Statoil nor the Ministry itself were initially all that receptive to its efforts. In addition to cajoling the private companies and a grudging Statoil to share data and expertise, the NPD increased its knowledge and capability through its own fledgling technical efforts, such as seismic surveying. A key step to building capability was the ability of NPD leadership to obtain from the Ministry a separate and more generous salary structure for the NPD, as shoring up technical expertise often involved directly competing against the private industry for top talent (Thurber and Istad, 2012: 619).

Focused Energy Policy

Analysts agree that the “Ten Oil Commandments” of 1971 have more or less been faithfully kept for more than forty years since they were first introduced (Gonzales Rodriguez, 2013: 49) (Cullen, 2014: 6). Divergence is arguably greatest with the sixth commandment. While some oil is refined in Norway and some gas processed onshore, much of the oil and 99 percent of the gas is exported (Cullen, 2014: 6). The Norwegian model of separating policy (MPE) from regulation (NPD) and commercial production (Statoil) has allowed the government to oversee profitable production of oil and gas and utilize the petroleum resources to improve national welfare (Cullen, 2014: 7, 22) (Thurber and Istad, 2012: 599). To be sure, Norway had the advantage of building its oil sector on the foundation of a mature, open democracy as well as bureaucratic institutions with experience regulating other natural resource industries, such as hydropower, fishing, and mining. Thus far, the institutions governing the petroleum sector have collectively proven robust enough to handle the strains of petroleum development (Thurber and Istad, 2012: 600).

When starting out in 1971, Norway lacked the technical capacity to develop its petroleum sector, so it adopted a pragmatic approach, heavily relying on international private firms for exploration and production in joint ventures with the Norwegian firms Statoil, Norsk Hydro, and Saga. To Norway’s credit, the state has been able to adapt its policies and modes of participation in the sector to the changing circumstances, pursuing its principal goals of controlled development and utilization of the resource, growth in technical competence, and capture of economic rent for the benefit of Norway (Cullen, 2014: 23). Today, the government derives revenues from the petroleum industry from three major sources—taxes and fees paid by oil companies producing

in Norway, the government's share in the net cash flow from Norwegian production through its SDFI holdings, and dividends from Statoil (Gordon and Stenvoll, 2007: 14).

Norway's tight control of the energy sector was achieved without taking away Statoil's autonomy in the commercial sphere. Statoil has enjoyed considerable freedom to make decisions and prioritizes long-term goals without political interventions. To be sure, Norwegian politicians and civil society organizations often have strong opinions on Statoil's activities. Indeed, its national symbolic significance as "Norwegian property" means that they can score political points by criticizing Statoil for being out of line on issues such as tar-sand developments in Canada and investments in countries with dictatorial regimes (Thurber and Istad, 2012: 603) (Gonzales Rodriguez, 2013: 43). Given that the MPE rarely chooses to directly intervene in Statoil's strategy, however, the cheap talk is unlikely to affect Statoil's operational performance (Thurber and Istad, 2012: 603) (Gonzales Rodriguez, 2013: 42).

Statoil stands out among NOCs as a majority of its board of directors are external members relatively independent from the government (Gonzales Rodriguez, 2013: 43). Compared to many NOCs, the noncommercial functions of Statoil have been relatively limited. One implication of this difference is that Statoil's operations have been less likely to serve conflicting goals. Also, over time there has been a progressive decline in the importance of the less commercial functions, such as social welfare or regulation and management (Gordon and Stenvoll, 2007: 19).

Whereas Statoil's strategy under Johnsen had relied on domestic lobbying for advantage, the company's strategy starting with Norvik and continuing thereafter aimed increasingly at developing a more arm's-length relationship with the Norwegian state (Thurber and Istad, 2012: 621).

The management did not have the same privileged role Johnsen did, nor did it want to replicate the political baggage with which Statoil was perceived in the 1980s (Gordon and Stenvoll, 2007: 31). Norvik sought internationalization of upstream operations as one key strategy for creating more breathing room between Statoil and the Norwegian state (Thurber and Istad, 2012: 621). Since Statoil had “lost” many of its reserves through the restructuring of the SDFI in 1985, internationalization would also help secure alternative sources of hydrocarbons at a time when the Norwegian petroleum sector was maturing (Gordon and Stenvoll, 2007: 29).

In this regard, there were three main options for Statoil—independently identify and develop positions abroad based on Statoil’s geological knowledge, buy international assets from other players while also developing independent projects, or seek an experienced international partner who could share knowledge and investment risk and generally accelerate Statoil’s international efforts. After discussions with the Board, Norvik found the third route to be the fastest and lowest-risk path to international operations (Thurber and Istad, 2012: 621).

The Statoil-BP Alliance, which went from 1990 to 1999, was unambiguously successful in allowing Statoil to rapidly expand onto the world stage. Together with BP, Statoil went into upstream exploration and production projects in Kazakhstan, Azerbaijan, Vietnam, China, Angola, and Nigeria, although Statoil was the operator only of the Nigerian venture. Statoil later sold its assets in Kazakhstan and Vietnam, but its operations in Angola and Azerbaijan remain a mainstay for Statoil abroad, and the company’s presence in Nigeria is gradually expanding (Thurber and Istad, 2012: 622). Production from assets acquired or discovered during this alliance are a major part of the Statoil’s current international output. International efforts outside the BP alliance

have included a costly mix of acquisitions and grass roots efforts in Ireland, United States, Iran, and Venezuela (Gordon and Stenvoll, 2007: 30). Leveraging home-grown engineering advantage, Statoil has also expanded its production to include countries such as Algeria, Canada, Libya, and Russia (Austvik, 2012: 325) (Thurber and Istad, 2012: 599).

Government and NOCs Mutually Benefit

Statoil's expansion abroad cannot be understood as a unilateral initiative from an agent seeking greater autonomy from its principal. Both the incentives of the government and the NOC, as well as their interactions, shape and are shaped by the domestic resource base (Gordon and Stenvoll, 2007: 4). In Norway's case, when the government first began to develop its domestic petroleum sector, it chose to enlist the help of private oil companies and foster competition even among the Norwegian big three, Statoil, Norsk Hydro, and Saga, because it deemed the infusion of technical expertise and competition to be a necessary component of efficient and timely development of the NCS. This judgment proved to be, on balance, correct.

As Norway's domestic resource base matured, however, the critical issues confronting the government and the NOC have changed (Gordon and Stenvoll, 2007: 4). This is most clearly illustrated in the newfound willingness of the government to throw its weight behind the merger of Norsk Hydro's upstream operations with Statoil's. The same way a reassessment of its corporate strategy had led Norvik's Statoil to internationalize, the government, in light of its changing interests, concluded that competition among largely state-owned companies, which had served Norway so well in developing its domestic industry, may not be as ideal as they expand their operations abroad. The merger would allow for, both in terms of scale and the prospective range

of international operations, a stronger national champion to compete against the majors, such as Shell, BP, Total, Chevron, ExxonMobil, and ConocoPhillips (Gordon and Stenvoll, 2007: 35).

The successful merger also revealed the extent to which personal and political connections within Norway's tight-knit governing circles can remain a significant factor in oil-related decision making. After reaching an agreement on the merger among themselves, Statoil CEO Helge Lund and Norsk Hydro CEO Eivind Reiten directly cleared the deal with Prime Minister Jens Stoltenberg and a very small group of civil servants, namely the Ministry of Petroleum and Energy and Ministry of Industry and Trade. Stoltenberg then promptly announced the merger in public and gave it his unconditional endorsement (Thurber and Istad, 2012: 627).

The unusual alignment of government and Statoil interests, attributable to shared concerns about the maturing petroleum sector, brought about a swift change to the energy sector. Neither the civil servants charged with regulating oil and gas nor the Norwegian Competition Authority were seriously consulted. Government authorities went through the prescribed formal review process after Stoltenberg's announcement, but the deal was a foregone conclusion. By only consulting ministry officials in their ownership capacity and preempting the input of regulators, the process certainly did not fulfill the ideal of separation of regulatory and commercial functions embodied by the formal governance structures in the sector (Thurber and Istad, 2012: 627). However, the merger exhibited exactly the kind of capacity for decisive action one would expect to see in a centralized energy sector.

Chapter 6

Origins of Energy Sectors

The empirical analysis, both quantitative and qualitative, raises the question of endogeneity. Perhaps countries have centralized (decentralized) energy sectors for reasons that also bear upon governance of NOCs. In Chapter 2, for instance, one of the assumptions underpinning my theoretical analysis was that the organization of the energy sector (the number of governing entities), which affects the government's ability to monitor the NOC's behavior, is exogenously determined and unchanging over the course of their principal agent interactions. In short, the government cannot change the organization of its energy sector at will to enhance its bargaining position vis-à-vis the NOC. To what extent does this assumption hold in practice?

To investigate, I push the causal chain back further, qualitatively investigating the historical sources of variation among energy sectors. Through this line of inquiry, I seek to explore the more immediate claim of endogeneity, as well as begin the conversation on the durability of different organizational forms of the energy sector. More fundamentally, this chapter seeks to explore the nature of relations between governments and their institutions in the energy sector.

The analysis by no means claims to be comprehensive, as I only examine the more limited sample of the countries covered by the case studies in Chapter 5. China and India represent decentralized energy sectors, while Russia, Brazil, and Norway represent centralized energy sectors. I return to episodes of reforms and institutional rearrangements these countries underwent that came to define the organization of their energy sectors for my previous analysis.

The defining moments I identified were usually characterized by the introduction of new actors in the energy sector or major changes to the institutions of sectoral governance—broadly construed as rules, principles, and norms around which the expectations of actors converge. While

the original aim was to capture actual movements toward or away from centralization of the energy sector, such temporal variation was absent for some countries. Nonetheless, these episodes of institutional change, regardless of whether they follow the exact typology of centralization or decentralization, have important insights to offer on the nature of relations between governments and their instruments of choice for energy sector governance.

The Chinese and Indian cases are useful for understanding the processes leading to decentralization of energy sectors. China's dismantlement of the Ministry of Energy in 1993 and India's decision to divide up its central Energy Ministry in 1992 can reveal what political economic goals governments sought to achieve through decentralization. Russian, Brazil and Norway, on the other hand, reveal some of the resilient properties of centralized energy sectors. Russia's ministerial reforms of the early 2000s not only consolidated the Kremlin's authority, but also saw the transfer of authority from the Ministry of Industry and Energy to the powerful Federal Energy Agency. Brazil's introduction of the Petroleum Law in 1997, which gave birth to ANP and CNPE, were also preceded by a decision to end Petrobras' petroleum monopoly, a landmark decision by all accounts. The Norwegian model was born in 1972 through a series of reforms that led to the establishment of NPD and Statoil. While the three countries share the similarity of having centralized energy sectors, the historical and political circumstances that shaped them differ in interesting ways.

In China, I find that the decentralization of the energy sector in 1993 occurred in the context of wider economic liberalization. Despite the growing importance of energy in light of China's economic growth, the decision to dismantle the energy ministry did not originate within the

energy sector. Rather, it was a top down decision by reform oriented leaders who wanted to simplify sectoral governance structures, not just in energy but across the board. Thus, instead of an energy ministry to coordinate a national strategy, the government would rely on general purpose institutions such as the State Planning Commission and the State Economic and Trade Commission. The impact of these changes are felt today, as China's energy sector remains decentralized.

The Indian decision to dismantle its energy ministry in 1992 also came during the administration of one of the most reform minded Prime Ministers, Narasimha Rao. Part of his wide-ranging reforms involved, among others, demanding greater autonomy and accountability for public sector enterprises, and selling shares of public sector enterprises to financial institutions and private individuals. However, these economic reforms, while unprecedented, did not proceed without political motives, and the decision to dismantle the Energy Ministry seems to have been one such example. The breakup of the ministry into separate ministries of coal, renewables and power opened up positions of high office for political allies of the Congress Party. This practice of reshuffling cabinets to reward coalition members continues today.

The Russian reforms of the 2000s stand out among the five examined in this chapter because centralized governance of the energy sector in that country did not rely on a government ministry. Rather, the establishment of the Federal Energy Agency under the powerful influence of *siloviki* effectively turned the Ministry of Industry and Energy into “‘Queen of England’ only without the money” (Victor and Sayfer, 2012: 664). This can be understood in the context of the institutional vacuum left by the collapse of the Soviet Union. Given the lack of institutional capacity, Vladimir Putin's attempt to reverse the trend set by his predecessor, Yeltsin, who allowed

business tycoons called “oligarchs” greater say in the affairs of state, would proceed through the consolidation of informal networks of power. To take back the control of the energy sector and Russia’s national champions, Putin placed his trusted associates in positions of influence, regardless of whether they be in an energy ministry or a federal agency.

Brazil’s introduction of the Petroleum Law in 1997, particularly the decision to end Petrobras’ hydrocarbon monopoly, was a clear break from its history. While the combination of setting up independent regulatory agencies and privatizing the major state-owned enterprise had become a trend in the 90s in sectors such as electricity and telecommunications, petroleum was understandably off limits. Petrobras had become a symbol of national sovereignty when President Vargas, who had signed the NOC into law in 1953, left behind a suicide note blaming his liberal opponents. Thus, setting in motion a Constitutional amendment to end Petrobras’ monopoly would have been no small feat, even for the reform minded President Cardoso. This is precisely what Cardoso achieved, and a series of important events, such as the petroleum workers’ decision to go on a widely criticized strike, helps us understand how it happened.

Last but not least, in Norway, an examination of the Ten Oil Commandments proclaimed in 1972 helps illustrate how Norway’s commitment to cross-checking institutions combined powerfully with resource nationalism to become a foundation for its resource management model. This example brings the entire project full circle, as we are left with the conclusion that institutional design can powerfully shape interactions among actors within the energy sector. The Norwegian case seems to suggest that the tripartite framework—the separation of policy, regulatory, and commercial functions through arms-length relations among three different government

institutions—far from being a magic formula, is but an extension of Norway’s national commitment to highly capable, yet cross-checking institutions.

None of the five countries examined deliberately sought to cede control of their energy sectors, though they understood the importance of attracting foreign investments. They profoundly differed, however, in their methods of pursuing greater control. While China and India sacrificed an overarching energy ministry to assert control through general purpose institutions governing multiple strategic sectors, Norway and Brazil reserved an important role for their energy ministry, entrusting it with holistic implementation of energy policy. Russia, on the other hand, minimized the role of institutions, choosing instead to govern through informal networks of power, such as the *siloviki*.

China: Dismantlement of Energy Ministry in 1993

I now travel back to 1993, when the Ministry of Energy was abolished in China, to examine the broader context for this institutional change. In the Chinese case, the decentralization of the energy sector was a byproduct of broader marcoeconomic reforms. Indeed, the period under examination saw substantial changes not only within China’s energy sector, but also across much of its government institutions, state industries, and economy. Ministries were abolished, new state companies were created, existing companies were re-structured, and government policies underwent continual adjustments (Meidan, Andrews-Speed, and Xin, 2009: 600).

The stakes for economic reforms, particularly in the energy sector, were fairly high. Between 1992 and 1996, the annual growth of GDP was between 10% and 14%, according to official statistics. Energy demand picked up at the same time, with annual rises averaging about 6%. Although

the rate of increase of demand for energy was about half that of GDP, it was still significantly higher than the rate of growth of primary energy production in China, which had an average of about 4% per year. The year 1993 saw the change of China's status from being a net oil exporter to being a net oil importer. The government recognized the vital importance of securing energy that underpins its economic growth (Meidan, Andrews-Speed, and Xin, 2009: 602).

The energy sector reforms, however, were driven by the top leadership and guided by national economic policy rather than priorities within the sector itself (Meidan, Andrews-Speed, and Xin, 2009: 600). The recognition of the need to re-invigorate the national economy after the slowdown of the late-1980s was marked by Deng Xiaoping's Southern Tour in 1992 and his political triumph over the conservatives. This led the leadership to introduce a package of "radical" reforms to develop a "socialist market economy." In addition to being perceived as valuable in themselves, these reforms were part of China's preparation for admission into the WTO. The government sought a "progressive move" towards the introduction of market forces away from centralized planning (Meidan, Andrews-Speed, and Xin, 2009: 601).

On a sectoral level, the dismantlement of the Energy Ministry seems more of an acquiescence to the status quo than a serious reassessment of economic governance. Even before 1993, China had had much difficulty finding an appropriate mechanism for governing its energy industry. The Ministry of Fuel Industries was abolished in 1955, when separate ministries for coal, electricity and oil were established. In 1970, a new Ministry of Fuel and Chemical Industries combined the functions of those three ministries, but it had to be dissolved after five years. In 1988, a Ministry of Energy was launched to oversee coal, oil, nuclear and hydroelectric development (Meidan,

Andrews-Speed, and Xin, 2009: 595). However, the central government could not effectively control energy production and consumption because the Ministry lacked institutional capacity (Zhao, 8). Its effectiveness was constrained by the continuing authority of the State Planning Commission (SPC), the Ministries for Electrical Power and for Coal, and the NOCs (Meidan, Andrews-Speed, and Xin, 2009: 606).

As a result of the 1993 reforms, the structure of government for the energy sector, as well as for many other industrial sectors, was simplified (Andrews-Speed, Dow, and Gao, 2000: 12). The aforementioned SPC, reporting directly to the State Council, stood at the top of the hierarchy and was effectively responsible for energy policy (Andrews-Speed, Dow, and Gao, 2000: 12) (Ma, Oxley, and Gibson, 2009: 1785) (Meidan, Andrews-Speed, and Xin, 2009: 606). A number of ministries were abolished, among them the Energy Ministry. The State Economic and Trade Commission (SETC) was re-established to oversee the overall economy (Meidan, Andrews-Speed, and Xin, 2009: 601). The SETC and the State Science and Technology Commission (SSTC), while nominally equal to the SPC in standing, played relatively minor and subordinate roles in the energy sector (Andrews-Speed, Dow, and Gao, 2000: 12) (Ma, Oxley, and Gibson, 2009: 1785).

Each of the main energy industries was dominated by either a state enterprise or a ministry. The China National Petroleum Corporation (CNPC) dominated petroleum exploration and production, while the China Petroleum and Chemical Corporation (Sinopec) controlled oil refining and distribution. The Ministry of Electric Power (MEP) and Ministry of Coal Industries (MCI) were in charge of the power and coal sectors, respectively. These large institutions dominated their respective industries because of their sheer size and their dual role as government organ and

commercial enterprise. They were also involved in policy formulation, regulation and enterprise management, though certain regulatory tasks such as investment approval and pricing were retained by the SPC (Andrews-Speed, Dow, and Gao, 2000: 12) (Ma, Oxley, and Gibson, 2009: 1785) (Meidan, Andrews-Speed, and Xin, 2009: 606).

Then, in 1998, reforms resulted in major changes to the government structure in the energy sector. First, there was a nominal separation of management and government functions. Enterprise management was removed from the government and assigned to the energy companies themselves (Andrews-Speed, Dow, and Gao, 2000: 12).¹ Petroleum sector governance was removed from the energy companies and assigned to State Administration of Petroleum Corporation (SAPC), a newly created agency within the SETC (Ma, Oxley, and Gibson, 2009: 1786). A new ministry was created—the Ministry of Land and Resources (MLR)—to administer land use (Andrews-Speed, Dow, and Gao, 2000: 12).² The Ministries of Power and of Coal were abolished, and the revamped SETC was given responsibility for the operational oversight of the energy industries and for formulating and implementing reforms in these industries' management. The SPC retained authority for planning, investment approval, and pricing (Meidan, Andrews-Speed, and Xin, 2009: 604).

Thus, in the Ministry of Energy's absence, the SETC and SDPC, both general purpose gov-

¹Though the Corporation Law and the "Modern Enterprise System" of governance were introduced in mid-90s, it was in 1998 that more radical measures were taken to commercialize state-owned enterprises. Many were privatized over the next decade, though pillar industries, such as energy, remained under tight state control and ownership. But even these pillar industries were restructured and forced to take a more commercial approach. Despite these reforms, the newly created energy companies retained significant ties to the administration through their former ministerial functions and became the key source of information (Meidan, Andrews-Speed, and Xin, 2009: 602).

²To be sure, there was also evidence of continuity. The previous Chief Executive of Sinopec was appointed Chairman of the SETC. The previous Chief Executive of CNPC was appointed Minister of Land and Resources (Andrews-Speed, Dow, and Gao, 2000: 12).

erning entities charged with broader responsibilities for the economy, had assumed coordination and regulatory functions in the energy sector (Meidan, Andrews-Speed, and Xin, 2009: 601). The SETC, as a coordination agency, would manage short-term production planning and supervise the production of energy in different subsectors, while the SPC would be responsible for long-term planning and macroeconomic policy and project selection (Zhao, 2001: 8). In practice, the final allocation of tasks among the SDPC, the SETC and the MLNR would be the result of negotiation and compromise rather than a comprehensive vision for sectoral governance (Andrews-Speed, Dow, and Gao, 2000: 12).

In the energy sector, leadership structures have been notoriously weak and between 1993 and 2003, policy initiatives were fragmented and dispersed between a number of ministries and bureaucratic entities (Meidan, Andrews-Speed, and Xin, 2009: 595). The consensus-building nature of decision making meant that stakeholders could delay or amend policy initiatives according to their interests at the drafting stage. They could also intervene at the implementation stage, stalling or promoting projects according to their interests (Meidan, Andrews-Speed, and Xin, 2009: 597). It was only in March 2003, with the creation of the Energy Bureau under the NDRC (descendant of SPC), that China's top leaders attempted to centralize control over the sector and create an institutional framework that will enable formulating and implementing a more overarching energy policy (Meidan, Andrews-Speed, and Xin, 2009: 595).

However, these efforts are likely to prove more difficult than in the past. Stakeholders and interest groups have become increasingly diversified. The industrial actors, state-owned enterprises, as well as private domestic and international actors, are now all part of the system. While

the influence and impact of foreign actors on the decision makers is not comparable to that of the SOEs, they all, to a varying extent, feed into the policy implementation process. The Chinese SOEs are also more closely implicated in the agenda setting process that precedes actual policy-making (Meidan, Andrews-Speed, and Xin, 2009: 597). The establishment of an energy ministry would have to take into account the interests of various powerful institutions, companies, and private actors, and overcome considerable bureaucratic conflict—as was demonstrated by the failure to reach an agreement in this area at the 17th National Congress of the Communist Party in October 2007 (Dansie, Lanteigne, and Overland, 2010: 478).

India: Dismantlement of Energy Ministry after 1992

India's last Ministry of Energy was responsible for all energy related issues except nuclear, which fell under the purview of the Prime Minister, and petroleum, which had been hived off as a separate ministry after the discovery of the super-giant oil field Mumbai High. In 1992, this Ministry was split into three—Coal, Power, and Renewables (Mehta, N.d.: 15).

The effort to process-trace this decentralization episode faces a major obstacle. The breakup of the Energy Ministry in 1992 has received little attention in the academic and grey literature. For instance, one often cited and arguably incorrect account is that “India created a central energy ministry in 1992 and then divided it into the ministries of coal, petroleum, and natural gas; nonconventional energy sources; and power” (Friedman and Schaffer, 2009: 3). The Energy Ministry, in fact, existed before the year 1992 and was dismantled in 1992. The fact that there are conflicting accounts regarding the timing of India's Energy Ministry's demise is telling. This event has hardly occupied the attention of energy policy analysts.

Nonetheless, I seek to provide historical context for the dismantlement of the Energy Ministry in 1997 for comparative analysis. Similar to China, ministerial reforms accompanied broader liberalization efforts. In mid-1991, the Indian government was undergoing wide-ranging liberalization and globalization reforms. The reform effort was aimed at addressing a severe balance of payments crisis, attributable to the Persian Gulf crisis in 1990, which increased the price of oil imports and reduced remittances (Dutt, 1997: 69). This was politics in hard times. The precarious state of domestic politics undermined international lender confidence, India's credit rating was downgraded, and non-resident Indian capital took flight. India's foreign exchange reserve position became precarious, and only an IMF loan stood between the country and default. This crisis spurred action, as the new, minority Congress government led by Narasimha Rao initiated stabilization and structural adjustment programs (Dutt, 1997: 69).

To be sure, strides in liberalization were not unprecedented. The Janata party government, which removed Indira Gandhi from power in 1977, had dabbled with reforms. When Mrs. Gandhi's Congress party returned to power in 1980, her policies moved away from earlier socialist rhetoric in favor of liberalization. Her son Rajiv Gandhi, who took over after a convincing victory in the December 1984 elections, pushed liberalization even farther, employing a judicious combination of deregulation, import liberalization and easier access to foreign technology. However, from 1987 on, the loss of several state assembly elections followed by the loss of national elections largely blunted the momentum (Dutt, 1997: 69).

It was in 1991, however, that the Congress government of Narasimha Rao embarked on a liberalization program of unprecedented scale. Starting with the New Industrial Policy Statement

of 1991, a series of measures began to take apart the heavy hand of government in the economy. The reforms reduced the number of industries reserved for the public sector, demanded greater autonomy and accountability for public sector enterprises, and sold shares of public sector enterprises to financial institutions and private individuals. The industrial licensing system had been substantially dismantled with the abolition of licensing requirements in all but 18 specified industries. The government removed most quantitative restrictions on imports, relaxed exchange controls on foreign trade, and made significant reductions in the tariffs on equipment and industrial imports. The exchange rate was devalued by 20 percent in 1991 and made more flexible; the Rupee was gradually made fully convertible on current account transactions (Dutt, 1997: 70).

There were important limitations to what these wide-ranging reforms could achieve. The public sector remained at large, and the outright transfer of control over public-sector enterprises remained rare. India's industrial sector remained tightly controlled, bureaucratic bottlenecks continued, and price and distribution controls remained. Several capital goods, intermediate goods, and all consumer goods required import licenses, and import taxes remained among the highest in the world. Foreign exchange remained tightly controlled, despite its convertibility in the current account (Dutt, 1997: 71). The reforms also slowed down once the foreign exchange reserves improved and the immediate cause of the crisis was resolved (Dutt, 1997: 79).

Thus, it is tempting to view the breakup of the Energy Ministry in the context of wider liberalization efforts intended to streamline an Indian public sector faced with an economic crisis. It is hard to deny that the early 90s represented a window of opportunity for such reforms, particularly in an industrial sector as important as energy. Be that as it may, the key point is that the

breakup of the Energy Ministry does not seem to have been driven by priorities within the energy sector. As Vikram Singh Mehta, the Executive Chairman of Brookings India, writes, “The official reason was organizational clarity, focus and accountability but the underlying driver was it allowed the Congress party to accommodate the demands of its coalition partners for Cabinet positions of economic significance” (Mehta, N.d.: 15).

The idea that the breakup of the Energy Ministry into three different ministries was intended to open up more Cabinet positions of significance for political allies of the Congress Party is certainly not a far-fetched one, especially when we consider the politics of ministry appointments in India, both past and present. Going back even farther in time to examine the decisions of Rao’s predecessor, Rajiv Gandhi, sheds light on the openly political, and often arbitrary, nature of ministerial appointments (Gupta, 1988: 230). The author of such a study wryly notes: “Prime Minister Rajiv Gandhi probably deserves an entry in the Guinness Book of Records for ministerial reshuffles—17 times in three years, including seven major shake-ups” (Gupta, 1988: 230).

Even in this earlier period of 1984-1987, the Energy Ministry was abolished in the first council of ministers only to be revived under a full cabinet minister later (Gupta, 1988: 231). His criterion for ministerial appointment was openly political. Under Rajiv Gandhi, loyalty to Indira Gandhi, which had been the previous litmus test for ministerial or party berths, was simply replaced by political clout (Gupta, 1988: 233). The analyst is moved to remark: “Never have central ministers been so uncertain of their portfolios as in the last three years, never have ministers or departments been under so rapidly shifting leaderships ... It does the prime minister no good if ministers are seen by civil servants as men of straw who can be moved from one seat to another as if they are

equally bad or good for all portfolios under the prime minister's command" (Gupta, 1988: 233).

As an energy analyst writes in *Foreign Policy*, ministerial appointments remain higher on politics than merit today. While Prime Minister Narendra Modi has kept his predilection for a small cabinet from his days as the chief minister of the western state of Gujarat (his state government had 16 ministers), it was widely thought that Modi's election to prime minister through the formation of a coalition government would force his hand and require him to dispense cabinet posts to various allies. However, with Modi's Bharatiya Janata Party (BJP) winning a clear majority in the parliament, the onerous task of streamlining the cabinet became easier (Misra, 2014).

It is interesting that the energy sector has been put on the watch list for one of the largest efficiency improvements in minister portfolios between previous Indian governments and the present one. The comparison usually begins in 1992, when the Ministry of Power, Coal, and Non-Conventional Energy Sources became three separate ministries with separate cabinet minister positions. It is argued that in the years since the split, the policy objectives of these three separate ministries (power, coal, and renewable energy) have often been at odds with one another, and have added more bureaucratic hurdles to an already convoluted energy sector (Misra, 2014).

Now in discussion is the integration of all power and coal policies under one ministry in order to streamline the implementation of very ambitious energy goals that the Modi government has outlined as part of its general economic growth plans. Modi has also made sure that he has direct control of the energy ministries by appointing ministers of state to the energy ministries as opposed to cabinet ministers, which gives him the ability to intervene directly in the workings of these ministries (Misra, 2014).

Russia: Ministerial Reforms of the Early 2000s

For Russia, I examine the reforms of the early 2000s that shifted responsibilities away from the Ministry of Fuel and Energy (renamed Ministry of Industry and Energy) and consolidated the President's influence over all federal ministries. It was then that the Ministry of Industry and Energy became responsible for issuing resolutions and orders that designed policy, while ceding supervisory and control functions to the Federal Energy Agency (FEA). Ministerial bureaucrats would determine the "interests of the state," while the FEA would implement. Direct management of NOCs passed completely to the FEA (Victor and Sayfer, 2012: 664).

The Russian reforms stand out among the five because of the unique role Russia reserved for its Ministry of Industry and Energy. While China and India chose to do away with their energy ministries altogether, Norway and Brazil further cemented their power and function in their respective energy sectors. Norway and Brazil also intended for their newly created regulatory agencies to advise and facilitate, rather than directly challenge, the energy ministries. In this sense, the Russian decision in the early 2000s to create a federal agency that effectively turned the Ministry of Industry and Energy into "Queen of England' only without the money" is one worth explaining (Victor and Sayfer, 2012: 664).

In one sense, the dilemma facing Putin was not entirely different from the one confronted by his Norwegian or Brazilian counterparts. While Putin clearly wished to extend state control of the oil and gas sector, he also understood the need for foreign investment to help realize its vast potential (Adachi, 2009: 1402). Norway and Brazil achieved both objectives through arms-lengths relations and division of labor among three differentiated entities in the energy sector—a pow-

erful energy ministry (policy), an independent agency (regulation), and an autonomous NOC (commercial enterprise). While Russia potentially had all three elements by way of Ministry of Industry and Energy, Federal Energy Agency, and Rosneft, the Russian version of this tripartite arrangement yielded a different dynamic.

Consistent with the central hypothesis of this project, I submit that the difference is rooted in the absence of checks and balances in Russia. While all three countries have centralized energy sectors, Russia lacks the foundation of cross-checking institutions to uphold and enforce meaningful division of labor among the energy ministry, regulatory agency, and the commercial enterprise. While these entities surely do have differentiated functions, the central locus of their decision-making is to be found elsewhere. From this perspective, it is not at all surprising that Rosneft and Federal Energy Agency are more powerful than the Ministry of Industry and Energy, since they are more directly linked to the *siloviki*—the single most powerful faction in Russia.

The weakness of institutions is frequently mentioned in the existing literature on Russian political economy. As Tompson writes, the Russian economy leaves the Kremlin with few alternatives to direct assertion of state control because an unusually large share of industrial production is generated by capital intensive sectors characterized by a high degree of asset specificity and significant economies of scale. Such sectors tend to be subject to very high barriers to entry and exit, and are generally dominated by a small number of large companies, presenting two political problems, which can be particularly acute in situations of state weakness. First, someone must own these companies. Second, regardless of who owns them, such companies will lobby to reshape state policy in their own image: Their size makes them politically powerful and their asset

specificity makes them relatively inflexible (Tompson, 2007: 5).

Faced with such companies, weak states often find state ownership appealing, as they feel threatened by the power of private owners, whether foreign or domestic. Keenly aware of their institutional limitations, state leaders may fear exploitation by private owners or even “state capture.” Conflicts among domestic private owners could prove difficult to contain, as exemplified by the “kompromat wars.” Foreign domination of leading sectors may be seen as politically unacceptable to sovereignty-conscious elites, especially in energy. Thus, state ownership remains the only feasible solution (Tompson, 2007: 5). This suboptimal solution, once adopted, becomes entrenched through vested interests, blocking future institutional improvements. The same institutional weaknesses that generate incentives to rely on direct control also stymie future improvements to sector governance (Tompson, 2007: 6).

To put this institutional weakness in historical context, it was the collapse of the Soviet Union in December 1991 that left a huge void of political and economic power. Key institutional structures, such as the Communist Party and the central planning system, were dismantled, and the new government entities that emerged to replace them, such as the presidential administration, the State Committee for the Administration of State Property, and regional governors were hard-pressed to expand their effective zone of control. In the chaos of this transition, power had shifted from formal political institutions to informal networks of influence among individuals who had political connections or economic resources at their disposal (Rutland, 2009: 3).

While market forces penetrated large sections of economic activity, the Russian economy was only partially marketized by the liberalization reforms (Rutland, 2009: 3). Yeltsin’s political

economy was built around horizontal bargaining among a plurality of actors, particularly the oligarchs, many of whom had made their fortunes in the energy sector (Rutland, 2009: 10). When Putin came to power, however, he replaced Yeltsin's system with a centralized, authoritarian hierarchy (Rutland, 2009: 8). On July 28, 2000, Putin met with 21 leading businessmen in the Kremlin, mostly from energy companies. In contrast to previous meetings between Yeltsin and business leaders, this time it seemed to be the president laying down terms to the oligarchs, rather than the other way around (Rutland, 2009: 11).

Armed with a more supportive legislature after his reelection in 2004, Putin continued these reforms. Private oil interests would still be represented among the elite, but on Putin's terms. In the first weeks, Putin reduced the number of deputy Prime Ministers from six to one and ministerial posts from 23 to 15. The Ministry of Industry and Energy would combine the functions of an energy ministry, atomic energy ministry, and Russia's space agency. As part of this reorganization, he also injected "new blood" from the oil industry into key posts in both the government and presidential administration. Former deputy Prime Minister Viktor Khristenko was appointed to lead the Ministry of Industry and Energy. Former governor of Perm Region Yuri Trutnev was appointed the Minister of Natural Resources. Former vice-president of Rosneft Sergey Oganessyan was appointed the head of the Federal Energy Agency (Olcott, 2004: 24).

As discussed in the previous chapter, Putin's concentration of power in the Kremlin also had the effect of creating rifts within the executive, mainly among factions such as the *siloviki* and the technocrats. Nonetheless, from a statist perspective, the once bankrupt Russian state now had both the cash and the coercive capacity to acquire what it wants. Private owners were unpopular

and widely regarded by the public as illegitimate, which made them particularly vulnerable to official pressure. Moreover, the authorities in Russia, anxious to pursue ambitious development goals very rapidly, steered clear of the uncertainties of indirect methods of economic governance and market-based solutions. Direct intervention, the driving force behind the ministerial reforms of the early 2000s, offered Russia a degree of apparent control and certainty (Tompson, 2007: 4).

Brazil: Introduction of the Petroleum Law in 1997

In 1997, the Petroleum Law ended Petrobras' 40 year legal monopoly on all aspects of Brazil's oil and gas sector. The Law retained state ownership of all hydrocarbon resources, but the execution of this monopoly was transferred from Petrobras to a regulatory agency, the National Agency of Petroleum and Natural Gas (ANP) (Fishman, 2010: 7) (Hester and Prates, 2006: 67). This move was intended to mitigate the conflict of interest inherent in the government's dual role as businessperson and regulator (Radon and Thaler, 2005: 18). The ANP would be responsible for all aspects of oil and gas regulation, including the auctioning of exploration and development licenses to domestic and foreign companies, while remaining independent of Petrobras and the Ministry of Mines and Energy (Radon and Thaler, 2005: 18) (Hester and Prates, 2006: 67).

Brazil's petroleum sector reforms took shape through a legislative process, formalized bargaining among political actors within robust institutions (Radon and Thaler, 2005: 18). Though the legislation that eventually emerged had a specific purpose—opening up the market to attract the investments necessary to boost production, there were also specific limitations imposed as the result of bargaining and accommodation of interests. Unlike other regulatory reforms to the national infrastructure that characterized the mid-90s, such as the creation of ANEEL (Brazilian

Electricity Regulatory Agency) and ANATEL (Brazilian Telecommunications Agency) in electricity and communications sectors, respectively, the Petroleum Law that birthed ANP in 1997 was not accompanied by the privatization of the state-owned enterprise (Moura, 2014: 9).

When the bill was submitted to Congress in July 1996, the most discussed topic was the impossibility of privatizing Petrobras given the link between oil and national sovereignty. In August 1997, the bill creating ANP was sanctioned, barring any possibility of transferring Petrobras to the private sector. Thus, Petrobras remained under government ownership, though the market was opened to competitors through a highly controlled regime. Unlike in electricity and communication sectors, no international consultancy had participated in the planning of the reforms, and the ANP was fully developed by the Ministry of Mines and Energy (Moura, 2014: 9).

The founding of Petrobras in 1953 can help shed light on the central role the NOC occupies in the Brazilian national consciousness. When oil sector governance was first debated following his election, President Getúlio Vargas favored a compromise between state ownership and private investment, such as state ownership of the fields with concession contracts to private firms for exploration and the rights to any oil found. Economic liberals, however, demanded full liberalization, arguing that Brazil did not have the domestic investor base or the capacity to develop its oil sector without foreign capital. Nationalists warned that liberalization would simply hand the sector to the very foreign interests that were so hostile to Brazilian development. The center failed to hold, and Vargas sided with the nationalists, creating Petrobras with monopoly control of the hydrocarbon sector (Kingstone, 2004: 23).

The matter was not quite settled. The liberal forces intensified their criticisms of national-

ists, labeling them communists, and sought alliances within the non-nationalist military. After inflammatory press attacks led by Carlos Lacerda, the military pushed for Vargas' resignation in 1954. Instead, the embattled president committed suicide. His suicide note, blaming the foreign interests and their domestic allies who opposed the creation of Petrobras, ended by saying he had fought for the greater good of Brazil and "offered his life in the holocaust" (Kingstone, 2004: 23).

The backlash that followed sealed the fate of liberal, free market model for Brazil's economic development, and the turbulent history of Petrobras' birth was forever etched into the national consciousness (Kingstone, 2004: 23). Petrobras' impressive performance since 1954 only added to its reputation as a national champion. By 1980, Petrobras had spawned more than 30 different companies in a variety of related sectors, with almost 50,000 employees, and the largest profit margins by far of any state-owned enterprise (Kingstone, 2004: 24).

In this light, the petroleum sector reforms of the 90s under President Cardoso are somewhat surprising. The Constitutional Amendment of November 1995 ended Petrobras' constitutionally protected monopoly on all aspects of oil production in Brazil. The amendment permitted private corporations to provide services through concessions and called for legislation to establish a new set of ground rules for the sector (Kingstone, 2004: 24). The ensuing "Petroleum Law" of June 1997 established that any firm, regardless of origin of capital, could operate in exploration, production, transport, refining and import or export of petroleum. The Law also set a timetable for complete liberalization of prices and imports of petroleum (Kingstone, 2004: 25).

As Kingstone (2004: 26) describes it, changing the constitutional protection of Petrobras' monopoly was a lengthy process with multiple veto gates:

To amend the constitution, the government must present the amendment in the lower house, where a special committee forms to review the bill. The chamber leadership (Mesa da Camara) appoints the committee chair and the “reporter” (the member responsible for ushering the bill through committee and reporting it to the full chamber—and a powerful position in Brazil’s committee structure). The membership is selected by party leaders and allocated in proportion to the parties’ representation in the chamber. Once the bill is passed in committee, it needs to be voted on twice in the lower house and twice in the Senate before being sent to the president to be signed into law. In both houses, the amendment requires a 3/5 vote—not a simple majority. The amendment can be defeated or amended any time in this process and can be derailed by individuals in leadership positions—whether in the chamber leadership, or within the special committee.

Nonetheless, public opinion and party positions did not rule out privatization. Brazil remained dependent on foreign imports and vulnerable to variations in crude oil price, and while Petrobras had been increasing its production capacity steadily, its investment capacity proved insufficient to change the situation. There were also successful examples of privatized firms, such as Usiminas and Embraer. By a small margin, a majority of Brazilians supported privatization. In the congress, three of the main parties in President Cardoso’s coalition supported either a full or partial breakup of Petrobras’ monopoly (Kingstone, 2004: 27).

Opposition came from the Workers’ Party, the largest labor central, and the petroleum workers, united by ideology and the fear of potential lay-offs. The congressional leadership, regardless of formal party positions, resisted the privatization of Petrobras and threatened to block constitutional reform. Left wing elements from the unions, opposition parties, and even the President’s own coalition and party also joined the fray. Petrobras’ internal management opposed privatization, and they could call on a large number of congressional allies and business lobbies from related industries, such as petrochemicals (Kingstone, 2004: 27). Nationalists in the military also opposed privatization since oil is a strategic sector (Kingstone, 2004: 28).

To protest against privatization, petroleum workers went on strike in May 1995 for 31 days, even after the labor court ruled against them. The strike shut down production, quickly leading to shortages of gas for cooking. As poor people began to suffer, the organized workers were seen as privileged elites protecting their status at the poor's expense. The strike was a disaster as public opinion turned sharply against the unions. Cardoso called upon the military to shut down the strike and return Petrobras to production. He capitalized on this victory to turn the tide against his opponents in congress, publicly criticizing leftists and nationalists. In the remainder of the year, the President successfully reformed the constitution, eliminating all constitutional limits to private sector and foreign capital participation in the Brazilian economy (Kingstone, 2004: 28).

To be sure, the reform effort did not proceed unopposed. To pass the Petrobras reform, Cardoso was forced to promise that he would not privatize the NOC. During congressional debates on reform of the sector, congressional allies indicated that they would support liberalization, but not privatization, and sought to include the prohibition against privatization in the constitutional amendment. Cardoso instead promised to include language guaranteeing state ownership of Petrobras in an ordinary law, which has the less stringent requirement of simple majorities for amendment. The congress passed the amendment ending Petrobras' monopoly without the protection of Petrobras' state-owned status by sizable margins (Kingstone, 2004: 28).

With the amendment passed, the executive branch gained substantial authority over reforms. Technical experts for the legislature are few in number, and members rarely make use of them as they defer to the more technically informed executive to present legislation. Thus, once the larger issues are worked out in congress, few legislators take particular interest in the details of

the policy. Since cabinet posts are often decided as part of a governing compact, reforms—both in energy and other sectors—have come to depend on which party and party members control the relevant ministries (Kingstone, 2004: 29).

Norway: The Founding of the Norwegian Model in 1972

The most noteworthy feature of the political context that gave birth to the Norwegian Model is a deep national commitment to state control of the petroleum sector achieved through well functioning, cross-checking institutions (Gonzales Rodriguez, 2013: 49). While private oil companies were early participants in Norway’s oil development, particularly in the Norwegian continental shelf (NCS), the government had always maintained the goal of developing a competitive domestic oil industry based on its own active participation in petroleum exploitation. The government acted on this vision with the declaration of the “Ten Oil Commandments” and the establishment of Statoil as a fully integrated oil company in 1972 (Hunter, 2014: 55).

The “Ten Oil Commandments,” represented “a mixture of economic and non-economic goals,” such as national control, Norwegian content, environmental concern, and self-sufficiency (Gonzales Rodriguez, 2013: 49). Though balancing these often conflicting objectives required finesse, Norway had the institutions to see it through. The principal means through which Norway was able to exert control over domestic petroleum activities was a skillful bureaucracy operating within a mature and open political system. Civil servants accumulated petroleum expertise through independent efforts, enabling them to productively steer the political discourse on petroleum management as oil discoveries were made (Thurber and Istad, 2012: 601) (Moses, 2010: 127) (Hunter, 2014: 55).

The “Ten Oil Commandments” were drafted in 1971 and first proclaimed in the Royal Decree of 8 December 1972. The goals and strategies outlined therein would guide national involvement in the development of petroleum for decades to come. Even today, these principles are imbued within the Norwegian legislative framework and legally enforceable. In particular, Section 1.2 of the Petroleum Activities Act (1996) states: “Resource management of petroleum resources shall be carried out in a long-term perspective for the benefit of Norwegian society as a whole. In this regard the resource management shall provide revenues to the country and shall contribute to ensuring welfare, employment and an improved environment as well as to the strengthening of Norwegian Trade and Industrial development” (Hunter, 2014: 50).

The original commandments are as follows. First, national supervision and control must be ensured for all operations on the NCS. Second, petroleum discoveries must be exploited in a way which makes Norway as independent as possible of others for its supplies of crude oil. Third, new industry will be developed on the basis of petroleum. Fourth, the development of an oil industry must take necessary account of existing industrial activities and the protection of nature and the environment. Fifth, flaring of exploitable gas on the NCS must not be accepted except during brief periods of testing. Sixth, petroleum from the NCS must as a general rule be landed in Norway, except in those cases where socio-political considerations dictate a different solution. Seventh, the state must become involved at all appropriate levels and contribute to a coordination of Norwegian interests in Norway’s petroleum industry as well as the creation of an integrated oil community which sets its sights both nationally and internationally. Eighth, a state oil company will be established which can look after the government’s commercial interests

and pursue appropriate collaboration with domestic and foreign oil interests. Ninth, a pattern of activities must be selected north of the 62nd parallel which reflects the special socio-political conditions prevailing in that part of the country. Tenth, large Norwegian petroleum discoveries could present new tasks for Norway's foreign policy (Holden, 2013: 876) (Moses, 2010: 128).

The choice of venue for the declaration of these principles, the Parliament, also speaks to the Norwegian combination of effective resource management and institutional checks. The Norwegian premise is that political decisions should be steeped in institutional frameworks that encourage participants to think beyond their own parochial interests, prioritizing the national over the particular and the long-term over the short-term (Moses, 2010: 127). In 1973, the Ministry of Finance reiterated the need to maintain robust institutional oversight of national resources, its report stating that "democratically elected institutions must have full control of all important aspects of petroleum policy, such as exploitation, rate of extraction, safety measures and localization" (Moses, 2010: 129).

Thus, as the oil industry was just beginning to see the potential lying beneath the Norwegian Continental Shelf, the state was already positioning itself to manage this resource in a way that could maximize the nation's economic gain from the resource, contribute to Norway's social and economic development, develop and maintain strong environmental and safety standards, and develop the resource in a slow, careful, and deliberate manner. These became the core political objectives of the new management regime that developed in the mid-1970s (Moses, 2010: 129).

While the political objectives were relatively clear and easy to articulate, it was not at all evident how they might be achieved in practice. In 1970, a government committee was established

to draft the organization of the nation's future petroleum administration. This committee concluded that the state had responsibility for three core functions, commercial, regulatory, and centralized political functions (Moses, 2010: 129).

The "Norwegian model" of separating commercial, regulatory, and policy-making functions, realized through the establishment of Statoil and the Norwegian Petroleum Directorate (NPD) to aid the Ministry of Industry, worked in large part because the country's bureaucracy could draw on enough talent and experience to develop into a legitimate counterweight to the nascent NOC. Robust political competition between socialist and conservative political parties also helped contribute to a system of oil administration that fostered competition and was flexible enough to evolve new checks and balances as needed (Thurber and Istad, 2012: 601) (Moses, 2010: 127).

Chapter 7

Conclusion

This dissertation project has examined the global expansion of national oil companies through the lens of mechanisms of energy sector governance. The key finding that emerges from this cross-national study is that institutional features of countries—particularly the combination of checks on policy-making and the organization of the energy sector—can help predict whether the government or the national oil company is in the driver’s seat of the global expansion.

Given that upstream investments in oil and gas assets abroad represent the most expensive and risky form of global expansion, countries with institutional features that favor the NOC over the government should be more likely to engage in them. Based on this intuition, my statistical analysis examined whether institutional checks on policy-making and the organization of the energy sector can together explain the the varying frequency of overseas investments among NOCs.

Specifically, I argue that the willingness of governments to restrain NOC investments depends on the presence of veto players, whereas their ability to do so depends on the organization of the energy sector. When the energy sector is governed by multiple entities with overlapping jurisdictions, NOCs can exploit coordination problems among them to escape scrutiny for their investments. This weakness is particularly acute in countries without an overarching energy ministry, where energy policy is implemented by informal bargaining among a multiplicity of ministries and agencies. The core intuition is that decentralization, a potential virtue in policy-making, can be a critical weakness in overseeing policy implementation.

Leveraging GlobalData’s database of energy M&As and joint ventures, my statistical analysis was able to discern—among the sample of countries with national oil companies—correlates of frequent upstream investments in oil and gas assets abroad. To test my argument, I interacted the

number of veto players with an original dummy indicator for the presence of a centralized energy sector. I tested the interactive hypothesis alongside neorealist and liberal alternatives, such as oil import dependence, external risks, political competition, and checks on policy-making.

While I found little to no support for the alternative hypotheses, I found suggestive evidence that countries missing one of the two components—either the veto players to safeguard policy decisions or a centralized energy ministry to coordinate policy implementation—are more likely to engage in these investments than countries that possess both. While these results do not conclusively rule out neorealism or liberalism, they do warrant a shift in emphasis in current debates towards problems of governance in the energy sector.

Informed by these statistical results, I examined the cases of China, India, Russia, Brazil, and Norway for qualitative evidence consistent with the theorized mechanisms of sectoral governance—NOCs are more powerful in countries with decentralized energy sectors, such as China and India, while governments are more powerful in countries with centralized energy sectors, such as Russia, Brazil, and Norway. What distinguishes Norway and Brazil from Russia, however, is the presence of institutional checks on policy, a foundation for effective sectoral governance.

NOCs in China and India pursued global expansion based on their own commercial interests rather than concerns for energy security. Chinese NOCs found themselves outbidding each other overseas. India's ONGC made numerous high-risk investments on the government's account, while paying only lip service to energy security. The reality is that there is no institutional mechanism in place for either of these countries to properly coordinate and implement an energy security strategy involving overseas investments of NOCs. The NOCs set the agenda, often pro-

viding self-serving information to government entities to secure their approval.

NOCs from Brazil and Norway were also driven primarily by commercial interests. However, effective sectoral governance embedded in cross-checking institutions allowed their governments to profit from the commercial success of their NOCs. Not only did Brazil eventually achieve oil self-sufficiency, but it was also able to unilaterally change the resource governance regime once the pre-salt was discovered in 2007. Norway made sophisticated use of competition among Statoil, Norsk Hydro, and Saga Petroleum to develop its domestic petroleum sector. As the industry matured, Norway oversaw the merger between upstream operations of Statoil and those of Norsk Hydro to compete globally.

The Russian case, on the other hand, demonstrated what happens when the strong arm of the state in the energy sector meets lack of institutional safeguards on policy-making. While the NOCs became faithful instruments of the state, energy policy itself was driven by the interests of powerful factions within the Kremlin, such as the *siloviki* and the technocrats. As a result, tensions between these groups would manifest themselves not only in Russian domestic and foreign energy policy, but also in NOC behavior, such as outbidding and rivalry between the *siloviki*-owned Rosneft and the technocrat-run Gazprom.

Before concluding the analysis, I revisited each of these countries to examine moments in their history that defined their model of energy governance. To be sure, these defining moments did not always involve a shift from centralization to decentralization or vice versa, since countries such as Norway and Brazil have always been centralized. Nonetheless, examining these defining moments helped reduce concerns of endogeneity and revealed relevant details about each country

that were not included in the case studies.

For instance, China and India reveal similarities in their decisions to dismantle their energy ministry, decisions that were based on wider liberalization reforms underway during the 90s rather than priorities within the energy sector. Brazil and Norway, on the other hand, share the tripartite framework of a strong, centralized energy ministry flanked by a commercially oriented NOC and a technically competent regulatory agency. The integrity and autonomy of each are assured by further embedding these institutions in a web of cross-checking institutions. An examination of Russia's ministerial reforms of the early 2000s, on the other hand, demonstrates how a centralized energy authority, without the accompanying checks and balances, can become co-opted by one of the most powerful factions operating within the Kremlin.

Overall, the statistical findings in conjunction with the case studies suggest that the combination of institutional checks on policy-making and the organization of the energy sector can tell us a lot about the interactions between governments and their NOCs in general, and NOC overseas expansion in particular. While countries with decentralized energy sectors, such as China and India, generally cannot prevent NOCs from dominating their energy sectors and setting their own agendas for expansion abroad, countries with centralized energy sectors, such as Norway, Brazil, and Russia, can cut them down to size when necessary. Among the latter three, those with robust cross-checking institutions are better able to ensure the profitability of their NOCs and the advancement of state interests.

Implications for scholarship are myriad. First, this project is among the first to systematically engage a topical issue—NOC internationalization—in the previously neglected area of energy.

The ongoing global scramble for resources, as CNOOC's bid for Unocal demonstrates, has been a cause for concern among policy-makers, and its foreign policy implications are currently the subject of a heated debate among scholars (Leung, 2011; Jiang and Sinton, 2011; Gholz and Press, 2010; Leverett, 2009; Victor, 2007*a*; Friedberg, 2006; Klare and Volman, 2006; Downs, 2004). While these debates have focused mostly on the role of geopolitics or rent-seeking, my statistical findings suggest that problems of governance in the energy sector deserve more attention. For instance, more research is needed on the topic of how principal agent dynamics change with institutional configurations of the principal.

Second, my findings suggest that NOCs have become relevant actors in international politics and that the tools we have to explain interactions among states are inadequate to explain their behavior. Modifications to our existing frameworks are necessary. The success of Petrobras in helping Brazil achieve oil sufficiency in the 2000s, for instance, may mimic the neorealist model. The competition between Rosneft and Gazprom, on the other hand, tells us that the liberal emphasis on rent-seeking is well placed. However, the framework I have considered, which emphasizes institutional checks on policy-making, the organization of the energy sector, and the ways in which they shape interactions between governments and NOCs, can explain all of them.

Third, my findings suggest that examining structural variation among energy sectors is a novel practice and holds much promise for advancing the debate on political control of the economy. While the purpose of this project has been to explain international energy policy, an in depth investigation of how energy sectors have evolved has yielded interesting implications for students of political economy. For instance, anecdotal evidence from Chapter 5 suggests that countries with

robust veto institutions and centralized energy sectors may be more successful in their efforts to privatize their national oil companies. This question may be of particular interest to political economists (Szakonyi and Urpelainen, N.d.; Warshaw, 2012; Dinc and Gupta, 2011; Bremmer, 2010; Chong, Guillen, and Riano, 2010; World Bank, 1995; Dewatripont and Roland, 1992).

Policy implications are as follows. First, my findings suggest that problems in government NOC relations—whether it be the NOC lobbying the government or the government abusing the NOC—are rooted in institutions, such as checks on policy-making and the organization of the energy sector, and require institutional solutions. In China, Xi Jinping has launched a series of investigations as part of a nation-wide corruption probe, and in his cross-hairs are executives and patrons of CNPC and Petrochina.¹ The professed goal of ending corruption is certainly a laudable one. However, given China’s institutional features, my research suggests that these probes, while providing positive press for the current regime and putting discredited rivals behind bars, will not fundamentally change the advantageous position of NOCs.

In contrast, scores of prominent politicians in Brazil, mostly from the ruling party, are currently under supreme court and parliamentary investigations in connection with a multi-billion-dollar kickback scheme at Petrobras.² While these accusations certainly represent a black eye for the national champion Petrobras and its government patrons, the fact that the investigations are proceeding despite the political inconvenience (an understatement) they represent for the incumbent administration speaks to the importance of Brazil’s institutions.³ Though Petrobras and

¹“PetroChina vice-chairman detained in anti-corruption probe,” *Financial Times*, March 16, 2015, Available at <http://on.ft.com/1DupICx> (Accessed March 25, 2015).

²“2-Top Brazilian politicians investigated in Petrobras scandal,” *Reuters*, March 6, 2015, Available at <http://reut.rs/1MdawZW> (Accessed March 25, 2015).

³“The Guardian view on the Petrobras scandal: a big test for Brazil,” *Guardian*, March 17, 2015, Available at <http://gu.com/p/46yp8/stw> (Accessed March 25, 2015).

politicians in power may go astray, there are resilient institutions in place to hold them accountable and straighten their paths.

Second, my findings suggest that setting up regulatory agencies may not be sufficient to improve NOC governance in the absence of a centralized energy ministry and a robust web of cross-checking institutions in which to embed sectoral governance. In Russia, the federal agency established to oversee the energy sector, the Federal Energy Agency, simply became an arm of the domestic faction *siloviki*. China and India, after dismantling their ministry of energy, were both proactive in setting up one agency after another to coordinate energy policy, to no avail. Unless potential overlap of authority with other institutions in the energy sector is addressed, establishing a regulatory agency only compounds the problems of coordination and implementation.

Third, my research suggests that support for NOC investments abroad has organizational roots. Thus, global expansion of NOCs, popularized in the media by China's Going Out strategy, is likely to persist for the foreseeable future. Chapter 6 demonstrated that organizational changes to the energy sector often entrench vested interests who actively lobby to prevent further changes to the sector. For instance, China and India's decisions to rid themselves of their energy ministry were based on considerations beyond the the energy sector. Yet, once the decisions were made, they further entrenched powerful interests within the energy sectors that thrive in the absence of a centralized energy ministry. Thus, policy-makers seeking to improve NOC governance would do well to identify vested interests that benefit from decentralized energy sectors before seeking to effect major changes to the energy sector.

My dissertation project has generated a wealth of questions for future research. First, based

on the international oil and gas investments data, it may be fruitful to investigate the extent to which NOCs tailor the form of their investments to the geological and political risks of target countries. Under what conditions do NOCs engage in direct purchases of assets as opposed to joint ventures? Second, based on the coding of 78 energy sectors, future research could explore the implications of centralization for domestic energy policy. To what extent does the organization of the energy sector help predict variables such as a country's prospects for energy sector privatization? The preliminary evidence presented in Chapter 5 seems to suggest that countries with centralized energy sectors will have an easier time with privatization. Third, while there is robust quantitative evidence that NOCs are generally less efficient than private oil companies (POCs), one could compare the international operations of NOCs and POCs in a given target country through careful process-tracing. NOC-POC pairings could speak to the debate on the disciplining effects of globalization, whereas NOC-NOC pairings could uncover whether the organization of the energy sector at home affects relative NOC performance abroad.

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Supplementary Appendix

Data Description

- Table A1 presents the list of regulatory agencies and their relevant industries.
- Table A2 displays the summary statistics.
- Table A3 displays the correlation matrix.

Robustness Tests

- Table A4 presents the results based on zero-inflated negative binomial models.
- Table A5 presents the results with various lag structures.
- Table A6 presents the results with interactions between other variables and centralization.
- Table A7 presents the results with various time trends.
- Table A8 presents the results with various Herfindahl-Hirschman Indices.
- Table A9 presents the results with regional exclusions.
- Table A10 presents the results with polity score instead of veto players.
- Table A11 presents the results with the Freedom House transparency control.
- Table A12 presents the results with the World Bank's weighted mean applied tariff control.
- Table A13 presents the results with ICRG's updated Political Risk instead of External Risk.
- Table A14 presents the results with the United Arab Emirates coded as centralized.

Table A1: Universe of regulatory agencies

Country	Regulatory Agency	Industry
Algeria	ALNAFT	Oil and gas
Austria	OIAG	Oil and gas
Bahrain	NOGA	Oil and gas
Bangladesh	BERC	Oil and gas
Bolivia	NHA	Oil and gas
Brazil	ANP	Oil and gas
Brunei Darussalam	Petroleum Unit	Oil and gas
Chile	CNE	Oil and gas
China	NEA	Oil and gas
Colombia	ANH	Oil and gas
Croatia	HERA	Oil and gas
Denmark	DEA	Gas
Ecuador	ARCH	Oil and gas
France	ERC	Gas
Gabon	DGH	Oil and gas
Ghana	NPA	Oil
Greece	RAE	Oil and gas
Hungary	HEO	Gas
India	DGH	Oil and gas
Indonesia	BP Migas	Oil and gas
Italy	UNMIG	Oil and gas
Jordan	NRA	Oil and gas
Kenya	ERC	Oil
Malaysia	EC	Gas
Mexico	NHC	Oil and gas
Mozambique	INP	Oil and gas
Nigeria	DPR	Oil and gas
Norway	NPD	Oil and gas
Pakistan	OGRA	Oil and gas
Philippines	DOE	Oil and gas
Poland	ERO	Gas
Romania	NAMR	Oil and gas
Slovak Republic	URSO	Gas
South Africa	PASA	Oil and gas
Sudan	SPC-OEPA	Oil
Tanzania	EWURA	Oil and gas
Thailand	NEPC	Oil and gas
Turkey	EMRA	Oil and gas
Turkmenistan	SAMUHR	Oil and gas
Uganda	PAU	Oil and gas
Ukraine	NERC	Oil and gas
Uruguay	URSEA	Oil and gas
Uzbekistan	SC	Oil and gas
Venezuela, RB	ENAGAS	Gas

Table A2: Summary statistics

	mean	sd	min	max
Investments	1.11	2.77	0.00	22.00
Oil imports (t-2)	0.47	0.96	0.00	5.73
External risk (t-4)	10.20	1.14	5.17	12.00
Polity competition (t-2)	6.55	3.22	1.00	10.00
Checks (t-2)	2.94	1.89	1.00	17.00
Centralization (t-2)	0.71	0.45	0.00	1.00
Checks * Centralization (t-2)	1.98	1.71	0.00	7.00
Oil reserves (t-2)	12.69	39.55	0.00	266.81
GDP pc (log) (t-2)	8.33	1.41	5.46	11.12
Population (log) (t-2)	16.89	1.62	13.05	21.01
Africa	0.22	0.41	0.00	1.00
Americas	0.18	0.39	0.00	1.00
Asia	0.36	0.48	0.00	1.00
Herfindahl-Hirschman Index (t-2)	0.31	0.22	0.06	0.99
Trend	4.93	3.11	0.00	10.00

Table A3: Correlation matrix

	Invest	Oil imp	Ext risk	Pol comp	Checks	Cent	Interact	Oil res	GDP pc (l)	Pop (l)	Afr	Amer	Asia	HHI	Trend
Investments	1.00														
Oil imports (t-2)	0.64	1.00													
External risk (t-4)	-0.06	-0.05	1.00												
Polity competition (t-2)	0.04	0.17	0.30	1.00											
Checks (t-2)	0.20	0.20	0.09	0.56	1.00										
Centralization (t-2)	-0.16	-0.18	-0.02	0.00	-0.13	1.00									
Interaction	-0.05	-0.07	0.06	0.36	0.32	0.74	1.00								
Oil reserves (t-2)	0.01	-0.08	-0.07	-0.35	-0.19	-0.21	-0.17	1.00							
GDP pc (log) (t-2)	0.13	0.21	0.17	0.18	0.03	0.01	0.11	0.21	1.00						
Population (log) (t-2)	0.42	0.49	-0.21	0.10	0.29	-0.17	0.01	0.00	-0.42	1.00					
Africa	-0.20	-0.20	0.04	-0.14	-0.16	0.16	0.01	-0.13	-0.49	0.06	1.00				
Americas	-0.12	-0.15	0.05	0.22	0.11	0.05	0.23	-0.07	0.02	-0.15	-0.25	1.00			
Asia	0.18	0.26	-0.22	-0.43	-0.22	-0.11	-0.32	0.26	0.00	0.15	-0.39	-0.35	1.00		
HHI (t-2)	-0.21	-0.25	0.00	-0.08	-0.09	0.04	-0.09	-0.13	-0.16	-0.27	-0.08	0.05	-0.05	1.00	
Trend	0.22	0.04	-0.11	0.03	-0.01	0.01	-0.02	0.00	0.04	0.04	0.03	-0.05	0.00	-0.12	1.00

Table A4: Empirical analysis of investments with zero inflation 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.327*** (0.089)	-0.391*** (0.103)	-0.438*** (0.107)	-0.344*** (0.099)
External risk (t-4)	-0.041 (0.074)	-0.053 (0.075)	-0.080 (0.087)	-0.029 (0.069)
Polity competition (t-2)	-0.174*** (0.034)	-0.150*** (0.035)	-0.167*** (0.037)	-0.135*** (0.033)
Checks (t-2)	0.136*** (0.035)	0.111*** (0.033)	0.112*** (0.033)	0.095*** (0.031)
Centralization (t-2)	0.568* (0.307)	0.752** (0.316)	0.548 (0.342)	0.740** (0.309)
Interaction	-0.138 (0.085)	-0.144* (0.086)	-0.083 (0.093)	-0.131 (0.085)
Oil reserves (t-2)	-0.007** (0.003)	-0.008*** (0.003)	-0.011*** (0.003)	-0.008*** (0.003)
GDP pc (log) (t-2)	1.219*** (0.130)	1.177*** (0.145)	1.244*** (0.161)	1.074*** (0.142)
Population (log) (t-2)	1.093*** (0.113)	1.112*** (0.120)	1.186*** (0.132)	1.063*** (0.115)
Africa		-1.010*** (0.350)	-1.214*** (0.405)	-1.056*** (0.345)
Americas		-0.627** (0.273)	-0.713** (0.289)	-0.670*** (0.260)
Asia		0.187 (0.240)	0.217 (0.250)	0.183 (0.233)
HHI (t-2)			0.006 (0.476)	
Trend				0.145*** (0.023)
Inflate				
Oil imports (t-2)	-0.900** (0.402)	-0.684** (0.342)	-0.769* (0.440)	-0.774** (0.355)
External risk (t-4)	-0.123 (0.160)	-0.212 (0.175)	-0.217 (0.240)	-0.301 (0.194)
Polity competition (t-2)	-0.088 (0.079)	-0.055 (0.082)	-0.077 (0.105)	-0.022 (0.097)
Checks (t-2)	0.057 (0.122)	0.010 (0.121)	0.044 (0.136)	-0.064 (0.199)
Observations	716	716	638	716
Vuong test	1.552	1.513	1.454	1.607
Pr > z	0.060	0.065	0.073	0.054

Standard errors in parentheses

Zero inflated negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Robustness analysis of investments with random effects and varying lags

	(1)	(2)	(3)	(4)	(5)
	L0	L1	L2	L3	L4
Oil imports (t-n)	-0.082 (0.179)	-0.204 (0.149)	-0.147 (0.101)	-0.251*** (0.097)	-0.206* (0.105)
External risk (t-(n+2))	-0.127* (0.074)	-0.121* (0.067)	-0.054 (0.062)	-0.131** (0.059)	-0.023 (0.061)
Polity competition (t-n)	-0.087 (0.066)	-0.102* (0.058)	-0.087 (0.058)	-0.039 (0.056)	0.027 (0.055)
Checks (t-n)	0.111** (0.043)	0.104*** (0.035)	0.041 (0.029)	0.048* (0.028)	-0.038 (0.031)
Centralization (t-n)	1.604*** (0.581)	0.935** (0.469)	1.091** (0.463)	1.259*** (0.439)	1.525*** (0.452)
Interaction	-0.472*** (0.130)	-0.279** (0.114)	-0.262** (0.107)	-0.319*** (0.102)	-0.399*** (0.101)
Oil reserves (t-n)	-0.009* (0.005)	-0.009** (0.004)	-0.010** (0.005)	-0.010** (0.005)	-0.008* (0.005)
GDP pc (log) (t-n)	1.659*** (0.329)	1.443*** (0.209)	1.460*** (0.215)	1.438*** (0.198)	1.405*** (0.202)
Population (log) (t-n)	1.145*** (0.204)	1.083*** (0.149)	1.169*** (0.163)	1.124*** (0.145)	1.130*** (0.152)
Africa	-0.124 (0.673)	-0.302 (0.564)	-0.318 (0.573)	-0.331 (0.561)	-0.612 (0.582)
Americas	-0.198 (0.549)	-0.291 (0.479)	-0.268 (0.511)	-0.336 (0.492)	-0.249 (0.497)
Asia	-0.012 (0.599)	0.171 (0.466)	0.440 (0.482)	0.624 (0.468)	0.672 (0.477)
Observations	716	716	716	763	780

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects and regional dummies.

Model (1) estimated with no lags (2000 - 2011).

Model (2) estimated with most R.H.S. variables lagged by a year (2001 - 2012).

Model (3) estimated with most R.H.S. variables lagged by two years (2002 - 2013).

Model (4) estimated with most R.H.S. variables lagged by three years (2002 - 2013).

Model (5) estimated with most R.H.S. variables lagged by four years (2002 - 2013).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Robustness analysis of investments with varying interactive terms 2002 - 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Oil imp	Ext risk	Pol comp	Checks	Oil res	GDP pc	Pop	All
Centralization (t-2)	0.829** (0.369)	2.212* (1.260)	1.135 (0.695)	1.091** (0.463)	-0.086 (0.351)	1.907 (2.024)	1.005 (3.499)	-10.597 (9.227)
Oil imports (t-2)	-0.098 (0.097)	-0.118 (0.096)	-0.132 (0.102)	-0.147 (0.101)	-0.127 (0.099)	-0.155 (0.107)	-0.128 (0.098)	0.008 (0.131)
Interaction	-0.858*** (0.188)							-1.043*** (0.258)
External risk (t-4)	-0.064 (0.064)	0.038 (0.091)	-0.064 (0.061)	-0.054 (0.062)	-0.071 (0.061)	-0.078 (0.064)	-0.065 (0.064)	0.007 (0.100)
Interaction		-0.185 (0.118)						-0.125 (0.131)
Polity competition (t-2)	-0.086 (0.059)	-0.108* (0.059)	-0.048 (0.077)	-0.087 (0.058)	-0.125** (0.054)	-0.112* (0.058)	-0.121** (0.058)	-0.087 (0.082)
Interaction			-0.125 (0.091)					0.051 (0.109)
Checks (t-2)	0.019 (0.027)	0.017 (0.030)	0.027 (0.028)	0.041 (0.029)	0.033 (0.029)	0.033 (0.030)	0.029 (0.030)	0.028 (0.030)
Interaction				-0.262** (0.107)				-0.211* (0.118)
Oil reserves (t-2)	-0.012*** (0.005)	-0.009* (0.005)	-0.008* (0.005)	-0.010** (0.005)	-0.016*** (0.005)	-0.010** (0.005)	-0.010** (0.005)	-0.016** (0.006)
Interaction					0.020** (0.008)			0.011 (0.010)
GDP pc (log) (t-2)	1.651*** (0.222)	1.405*** (0.224)	1.448*** (0.219)	1.460*** (0.215)	1.317*** (0.195)	1.548*** (0.289)	1.399*** (0.219)	1.271*** (0.351)
Interaction						-0.185 (0.231)		0.437 (0.407)
Population (log) (t-2)	1.306*** (0.177)	1.147*** (0.176)	1.166*** (0.168)	1.169*** (0.163)	1.062*** (0.150)	1.136*** (0.170)	1.133*** (0.204)	0.939*** (0.292)
Interaction							-0.040 (0.203)	0.523 (0.359)
Africa	0.086 (0.558)	-0.089 (0.580)	-0.111 (0.567)	-0.318 (0.573)	-0.142 (0.540)	-0.078 (0.578)	-0.102 (0.571)	-0.132 (0.548)
Americas	-0.323 (0.513)	-0.379 (0.523)	-0.272 (0.515)	-0.268 (0.511)	-0.404 (0.477)	-0.353 (0.521)	-0.351 (0.510)	-0.485 (0.506)
Asia	0.990** (0.465)	0.627 (0.499)	0.466 (0.486)	0.440 (0.482)	0.482 (0.455)	0.663 (0.509)	0.544 (0.509)	0.989** (0.464)
Observations	716	716	716	716	716	716	716	716

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects and regional dummies.

Model (1) estimated with interaction between centralization and oil imports.

Model (2) estimated with interaction between centralization and external risk.

Model (3) estimated with interaction between centralization and political competition.

Model (4) estimated with interaction between centralization and checks.

Model (5) estimated with interaction between centralization and oil reserves.

Model (6) estimated with interaction between centralization and GDP pc.

Model (7) estimated with interaction between centralization and population.

Model (8) estimated with all interactions.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: Robustness analysis of investments with various time trends 2002 - 2013

	(1) Trend	(2) Regional	(3) Both	(4) HHI
Oil imports (t-2)	-0.295*** (0.099)	-0.371*** (0.116)	-0.314*** (0.110)	-0.474*** (0.118)
External risk (t-4)	0.027 (0.066)	-0.016 (0.065)	0.052 (0.067)	-0.018 (0.070)
Polity competition (t-2)	-0.114** (0.052)	-0.074 (0.051)	-0.095* (0.051)	-0.095* (0.055)
Checks (t-2)	0.025 (0.028)	0.023 (0.027)	0.018 (0.027)	0.025 (0.028)
Centralization (t-2)	0.320 (0.453)	0.645 (0.464)	0.530 (0.448)	0.498 (0.481)
Interaction	-0.108 (0.104)	-0.207* (0.108)	-0.127 (0.102)	-0.174 (0.111)
Oil reserves (t-2)	-0.008* (0.005)	-0.010** (0.004)	-0.008* (0.004)	-0.013*** (0.005)
GDP pc (log) (t-2)	1.260*** (0.173)	1.325*** (0.172)	1.144*** (0.174)	1.482*** (0.190)
Population (log) (t-2)	1.126*** (0.149)	1.148*** (0.145)	1.091*** (0.145)	1.261*** (0.159)
HHI (t-2)				0.205 (0.469)
Trend	0.121*** (0.017)		0.131*** (0.024)	
Trend * Africa		-0.044 (0.058)	-0.164*** (0.061)	-0.103 (0.072)
Trend * Americas		0.070 (0.044)	-0.041 (0.047)	0.078* (0.046)
Trend * Asia		0.131*** (0.024)	0.010 (0.031)	0.156*** (0.026)
Observations	716	716	716	638

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (1) estimated with a standard time trend.

Model (2) estimated with regional time trends.

Model (3) estimated with both standard and regional time trends.

Model (4) estimated with regional time trends and HHI of bilateral oil trade.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Robustness analysis of investments with Herfindahl-Hirschman Index 2002 - 2013

	(1) HHI	(2) Unstable	(3) Stable
Oil imports (t-2)	-0.189* (0.102)	-0.196* (0.101)	-0.164 (0.100)
External risk (t-4)	-0.070 (0.066)	-0.060 (0.064)	-0.045 (0.064)
Polity competition (t-2)	-0.118* (0.063)	-0.134** (0.065)	-0.133** (0.064)
Checks (t-2)	0.042 (0.031)	0.051* (0.029)	0.045 (0.028)
Centralization (t-2)	0.990** (0.488)	1.035** (0.493)	1.063** (0.480)
Interaction	-0.225** (0.111)	-0.218** (0.109)	-0.204* (0.109)
Oil reserves (t-2)	-0.012** (0.005)	-0.013** (0.005)	-0.012** (0.005)
GDP pc (log) (t-2)	1.558*** (0.258)	1.588*** (0.255)	1.465*** (0.256)
Population (log) (t-2)	1.237*** (0.190)	1.232*** (0.192)	1.181*** (0.190)
Africa	-0.786 (0.620)	-0.799 (0.597)	-1.132* (0.616)
Americas	-0.362 (0.541)	-0.285 (0.533)	-0.606 (0.545)
Asia	0.405 (0.504)	0.333 (0.500)	0.179 (0.504)
HHI (t-2)	-0.131 (0.488)		
Weighted HHI (Unstable) (t-2)		-7.055** (3.448)	
Weighted HHI (Stable) (t-2)			-1.409** (0.653)
Observations	638	638	638

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects and regional dummies.

Model (1) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (2) estimated with HHI (politically unstable weighted heavily).

Model (3) estimated with HHI (politically stable weighted heavily).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9: Robustness analysis of investments with regional exclusions 2002 - 2013

	(1) Africas	(2) Americas	(3) Asia	(4) Europe
Oil imports (t-2)	-0.143 (0.104)	-0.198** (0.100)	-1.031*** (0.391)	-0.141 (0.105)
External risk (t-4)	-0.064 (0.064)	-0.014 (0.062)	-0.261*** (0.101)	0.054 (0.073)
Polity competition (t-2)	-0.137** (0.063)	-0.070 (0.068)	0.063 (0.096)	-0.108* (0.065)
Checks (t-2)	0.049 (0.031)	0.026 (0.027)	-0.324 (0.292)	0.026 (0.028)
Centralization (t-2)	0.786 (0.485)	1.575*** (0.538)	-0.046 (1.185)	0.759 (0.610)
Interaction	-0.179 (0.114)	-0.303*** (0.114)	0.051 (0.305)	-0.289* (0.163)
Oil reserves (t-2)	-0.010** (0.005)	-0.010* (0.005)	-0.009 (0.012)	-0.014** (0.005)
GDP pc (log) (t-2)	1.375*** (0.226)	1.774*** (0.284)	1.468*** (0.267)	1.568*** (0.309)
Population (log) (t-2)	1.124*** (0.172)	1.472*** (0.239)	1.161*** (0.235)	1.227*** (0.224)
Africa		-0.057 (0.648)	-0.414 (0.621)	-0.687 (0.494)
Americas	-0.432 (0.495)		-0.588 (0.491)	-0.572 (0.540)
Asia	0.198 (0.487)	0.750 (0.540)		
Observations	540	591	463	554

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (1) estimated excluding countries belonging to Africa.

Model (2) estimated excluding countries belonging to Americas.

Model (3) estimated excluding countries belonging to Asia.

Model (4) estimated excluding countries belonging to Europe.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10: Robustness analysis of investments with polity 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.126 (0.097)	-0.126 (0.099)	-0.172* (0.103)	-0.277*** (0.101)
External risk (t-4)	-0.051 (0.057)	-0.048 (0.058)	-0.068 (0.063)	0.037 (0.062)
Polity competition (t-2)	-0.128 (0.133)	-0.094 (0.139)	-0.378** (0.192)	-0.104 (0.131)
Polity score	0.034 (0.074)	0.023 (0.075)	0.182* (0.102)	0.026 (0.071)
Centralization (t-2)	0.456 (0.386)	0.531 (0.387)	0.834* (0.437)	0.322 (0.368)
Polity score * Centralization	-0.078* (0.043)	-0.061 (0.044)	-0.107** (0.049)	-0.032 (0.041)
Oil reserves (t-2)	-0.006 (0.005)	-0.007 (0.005)	-0.007 (0.005)	-0.007 (0.005)
GDP pc (log) (t-2)	1.514*** (0.207)	1.477*** (0.229)	1.585*** (0.268)	1.124*** (0.191)
Population (log) (t-2)	1.259*** (0.178)	1.209*** (0.180)	1.286*** (0.200)	1.068*** (0.152)
Africa		-0.204 (0.573)	-0.753 (0.614)	-0.857 (0.541)
Americas		-0.135 (0.534)	-0.389 (0.556)	-0.584 (0.501)
Asia		0.439 (0.489)	0.298 (0.501)	0.248 (0.442)
HHI (t-2)			-0.405 (0.465)	
Trend				0.129*** (0.017)
Observations	738	738	660	738

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A11: Robustness analysis of investments with transparency 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.182* (0.099)	-0.180* (0.102)	-0.218** (0.105)	-0.290*** (0.102)
External risk (t-4)	-0.070 (0.063)	-0.067 (0.062)	-0.078 (0.067)	0.034 (0.066)
Polity competition (t-2)	-0.047 (0.063)	-0.021 (0.065)	-0.057 (0.072)	-0.056 (0.065)
Checks (t-2)	0.055* (0.032)	0.049 (0.031)	0.049 (0.033)	0.022 (0.028)
Centralization (t-2)	0.844* (0.456)	1.006** (0.468)	0.934* (0.493)	0.488 (0.456)
Interaction	-0.293*** (0.103)	-0.286*** (0.106)	-0.254** (0.110)	-0.115 (0.104)
Transparency (t-2)	-1.027** (0.480)	-0.989** (0.474)	-0.835* (0.485)	-0.365 (0.458)
Oil reserves (t-2)	-0.012** (0.005)	-0.012** (0.005)	-0.015*** (0.006)	-0.009** (0.005)
GDP pc (log) (t-2)	1.659*** (0.214)	1.620*** (0.231)	1.707*** (0.276)	1.183*** (0.200)
Population (log) (t-2)	1.273*** (0.173)	1.243*** (0.171)	1.302*** (0.196)	1.073*** (0.149)
Africa		-0.388 (0.570)	-0.749 (0.626)	-0.896* (0.543)
Americas		-0.351 (0.514)	-0.392 (0.544)	-0.666 (0.497)
Asia		0.348 (0.491)	0.373 (0.509)	0.233 (0.448)
HHI (t-2)			-0.061 (0.503)	
Trend				0.125*** (0.017)
Observations	716	716	638	716

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A12: Robustness analysis of investments with mercantilist control 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.170 (0.103)	-0.171 (0.107)	-0.222** (0.111)	-0.293*** (0.104)
External risk (t-4)	-0.072 (0.062)	-0.067 (0.062)	-0.081 (0.067)	0.024 (0.067)
Polity competition (t-2)	-0.131** (0.054)	-0.100* (0.059)	-0.132** (0.064)	-0.091 (0.056)
Checks (t-2)	0.058* (0.033)	0.053 (0.033)	0.056 (0.034)	0.027 (0.030)
Centralization (t-2)	0.967** (0.452)	1.096** (0.464)	1.000** (0.489)	0.528 (0.454)
Interaction	-0.276*** (0.104)	-0.269** (0.107)	-0.235** (0.111)	-0.110 (0.105)
Mercantilism (t-2)	-0.026* (0.014)	-0.025 (0.014)	-0.028* (0.014)	-0.010 (0.015)
Oil reserves (t-2)	-0.009* (0.005)	-0.009** (0.005)	-0.012** (0.005)	-0.008* (0.004)
GDP pc (log) (t-2)	1.421*** (0.193)	1.389*** (0.213)	1.488*** (0.247)	1.115*** (0.188)
Population (log) (t-2)	1.203*** (0.161)	1.170*** (0.159)	1.243*** (0.182)	1.056*** (0.145)
Africa		-0.342 (0.566)	-0.776 (0.612)	-0.874 (0.541)
Americas		-0.261 (0.502)	-0.327 (0.530)	-0.631 (0.492)
Asia		0.387 (0.476)	0.365 (0.494)	0.239 (0.442)
HHI (t-2)			-0.075 (0.497)	
Trend				0.124*** (0.018)
Observations	716	716	638	716

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Multiple Imputation of weighted mean applied tariff based on Linear Regression.

Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A13: Robustness analysis of investments with political risk 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.108 (0.093)	-0.113 (0.096)	-0.170 (0.104)	-0.249*** (0.095)
Political Risk (t-2)	0.048*** (0.014)	0.046*** (0.014)	0.052*** (0.016)	0.058*** (0.015)
Polity competition (t-2)	-0.141** (0.058)	-0.110* (0.063)	-0.159** (0.074)	-0.095* (0.056)
Checks (t-2)	0.016 (0.027)	0.015 (0.026)	0.012 (0.027)	0.005 (0.024)
Centralization (t-2)	0.955** (0.473)	1.075** (0.484)	1.050** (0.526)	0.519 (0.455)
Interaction	-0.230** (0.105)	-0.232** (0.108)	-0.198* (0.111)	-0.066 (0.103)
Oil reserves (t-2)	-0.006 (0.005)	-0.007 (0.005)	-0.011* (0.006)	-0.005 (0.005)
GDP pc (log) (t-2)	1.246*** (0.229)	1.240*** (0.247)	1.458*** (0.336)	0.810*** (0.203)
Population (log) (t-2)	1.320*** (0.197)	1.282*** (0.202)	1.488*** (0.285)	1.089*** (0.149)
Africa		-0.222 (0.614)	-0.762 (0.667)	-0.808 (0.554)
Americas		0.130 (0.608)	0.255 (0.731)	-0.268 (0.544)
Asia		0.431 (0.493)	0.491 (0.535)	0.255 (0.442)
HHI (t-2)			0.062 (0.437)	
Trend				0.130*** (0.016)
Observations	708	708	630	708

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A14: Robustness analysis of investments with UAE coded as centralized 2002 - 2013

	(1) Base	(2) Regional	(3) HHI	(4) Trend
Oil imports (t-2)	-0.141 (0.099)	-0.139 (0.102)	-0.182* (0.103)	-0.279*** (0.102)
External risk (t-4)	-0.061 (0.062)	-0.057 (0.062)	-0.073 (0.066)	0.036 (0.066)
Polity competition (t-2)	-0.113** (0.054)	-0.080 (0.059)	-0.109* (0.064)	-0.078 (0.056)
Checks (t-2)	0.046 (0.029)	0.041 (0.028)	0.042 (0.031)	0.019 (0.027)
Centralization (t-2)	1.039** (0.468)	1.171** (0.481)	1.079** (0.510)	0.613 (0.469)
Interaction	-0.277*** (0.104)	-0.269** (0.107)	-0.233** (0.111)	-0.114 (0.104)
Oil reserves (t-2)	-0.010** (0.005)	-0.010** (0.005)	-0.013** (0.005)	-0.009* (0.004)
GDP pc (log) (t-2)	1.472*** (0.191)	1.425*** (0.212)	1.517*** (0.252)	1.115*** (0.186)
Population (log) (t-2)	1.206*** (0.164)	1.167*** (0.161)	1.233*** (0.185)	1.058*** (0.145)
Africa		-0.383 (0.577)	-0.859 (0.623)	-0.926* (0.546)
Americas		-0.311 (0.512)	-0.415 (0.541)	-0.663 (0.496)
Asia		0.381 (0.481)	0.342 (0.500)	0.236 (0.441)
HHI (t-2)			-0.137 (0.487)	
Trend				0.127*** (0.017)
Observations	716	716	638	716

Standard errors in parentheses

Negative binomial model.

All models estimated with random effects.

Model (2) estimated with regional dummies.

Model (3) estimated with Herfindahl-Hirschman Index of bilateral oil trade.

Model (4) estimated with time trend.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$