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The Expansion of NOCs: What Strengthening State-Owned Enterprises Means for Global Energy

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WHAT STRENGTHENING STATE-OWNED ENTERPRISES MEANS FOR GLOBAL ENERGY

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ABSTRACT

THE EXPANSION OF NOCS: WHAT STRENGTHENING STATE-OWNED ENTERPRISES MEANS FOR GLOBAL ENERGY

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The rise of National Oil Companies (NOCs) in the 20th century has been well documented. However, little work has been done with respect to how these entities have evolved in the 21st century. This study aims to measure the changing strength of contemporary NOCs by comparing them to their privatized counterparts. Using this comparative analysis, the study will explain the changing global energy landscape and the potential internecine effects on the international system.

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TABLE OF CONTENTS

Page

Chapter Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION

In June 2017, President Donald Trump delivered remarks at the Department of Energy declaring "We're here today to usher in a new American energy policy."[1] The President explained that he is not only focusing on energy independence but expanded to include what he calls "energy dominance." Both statements highlight a critical misperception about American energy policy – that if the US can become energy self-sufficient or even a significant net exporter, then it doesn't need to worry about world events that impact global energy markets.[2] Yet reality sketches a different portrait, that prices in global markets are decided by the totality of supply, regardless of any particular nation's energy trading balance. Similarly, less prominent public officials such as senators, house representatives, and governors maintain the promise of energy independence and the public continue to rally behind the policy prescription. In fact, a 2014 survey conducted by the *Center for American Progress* found that 65 percent of Americans say the federal government is doing "too little" when it comes to promoting independence from foreign oil.[3]

Likewise, when asked about the global causes of fuel price increases consumers demonstrate a skewed perception. According to the *NACS Fuels Resource Center*, every polled age-group, excluding 50 and older, place greater blame on oil companies seeking profit windfalls than they do pricing manipulation by the organization of petroleum exporting countries (OPEC)

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[1] The White House, "President Trump Vows to Usher in Golden Era of American Energy Dominance," Energy & Environment, June 30, 2017.
[2] Alan J. Krupnick, "A Look at President Trump's Energy Speech," Resources for the Future, June 30, 2017.
[3] Hart Research Associates, "Public Opinion on US Energy and Environmental Policy," Center for American Progress, December 5-9, 2014.

or nations like Saudi Arabia or Russia.[4] Even less blame is directed at global conflict like that in the Middle East or at market speculation by oil traders.[5] By contrast, experts and scholars have recognized both the pivotal role National Oil Companies (NOCs), such as Saudi Aramco, play in determining the global price for oil as well as the recent collapse in prices in 2014 as "intelligently calculated to serve long-term economic interests."[6]

These examples illustrate one of the striking features of the global energy industry – that it has long been plagued by misperceptions on issues ranging from production and pricing to geopolitics and security.[7] This occurs on multiple levels of society from its political leadership to the individual consumers. Consequently, there is little understanding when it comes to the rise of NOCs and the overall significance of these events. However, this is not to suggest that the emergence of NOCs has gone completely unnoticed. As previously acknowledged, scholars have indeed explored the rise of NOCs and the associated implications concerning issues ranging from geopolitics and security to the impact they have on their parent states such as rentier dynamics, corruption, and non-democratization.

On the other hand, scholars rarely ask how the relative strength of NOCs has shifted when compared to that of the privatized International Oil Companies (IOCs), who reigned supreme over the global energy industry a mere half century ago. This dissertation primarily explores the extent to which NOCs have strengthened relative to IOCs, the reasons for their expansion, and how this defines governance in the global energy industry. Secondarily, it then utilizes this analysis to make broader inferences about the structure of the global political

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[4] NACS, "What Consumers Say About Fueling," NACS Fuels Resource Center, March 1, 2017.
[5] Ibid.
[6] Chas W. Freeman, Jr., "Saudi Arabia and the Oil Price Collapse," Middle East Policy Council, Remarks to a Panel at the Center for the National Interest, Washington, DC, January 2015.
[7] Steve A. Yetiv, *Myths of the Oil Boom: American National Security in a Global Energy Market* (Oxford University Press, 2015).

economy and the relationship between global security and global energy. In other words, it seeks to understand the extent to which globalization has penetrated and transformed the global oil industry and more generally, the subsequent implications as they pertain to the debate over the centrality of the State in the 21st century political economy.

Why the Oil & Gas Industry?

The world's economy is massive, containing a vast array of industries and services, and they all have their peculiarities. In the time since the end of World War II economic activity skyrocketed under the hegemonic leadership of the US. Shortly thereafter, the collapse of the Soviet Union, and by extension the competing autarkic modes of economic development, trade liberalization and market deregulation further expanded across the globe. These events combined together with technological revolutions ushered in modern day globalization as we know it, helping to nurture a sprawling global network of economic activity. Why then should one focus one a single industry? What makes oil & gas more important than other goods such as coffee, wood, or rubber? And why derive greater inferences about the structure of the global political economy and the effects globalization from that single particular industry?

First, oil is fundamentally connected to most economic interactions that occur in the modern world.[8] Global oil trade accounts for a major part of overall global economic consumption. In 2012, it accounted for 62 percent of it, up from 57 percent a decade earlier.[9] It dominates the transportation sector, including shipping, trucking, and flight-based transport, by a substantial margin. The movement of goods and the massive outgrowth of global trade in the

[8] Brian C. Black, "Oil for Living: Petroleum and American Conspicuous Consumption," *Journal of American History* 99 (June 2012): 40–50.
[9] See BP, "Oil," Energy Economics, Statistical Review of World Energy, accessed October 5, 2021.

modern era is owed chiefly to oil. Electric vehicles have some potential to allow for a greater mix of energy feed-ins, but they continue to struggle to penetrate markets and the technology is less capable for larger transport needs such as in the aviation or shipping industries. For now, transportation is likely to remain petroleum dominated. Beyond transportation, oil plays a role in a multitude of unsuspected industries. Petrochemicals, which are refined from oil, are utilized in the manufacturing of nearly all chemical products today. These range from plastics, fertilizers, paints, medicines, to a whole host of other consumer products such as cosmetics. Unbeknownst to most, oil is connected to everyday life in the most fundamental ways and will remain so for the foreseeable future.

Second, oil can't be substituted for economically. In economics, most goods tend to have a substitute so that when there are disruptions in supply and/or prices spike, consumers can simply switch to another good that meets the same need. For example, most people enjoy adding milk or creamer to their coffee. One product can easily be substituted for the other, so if there is a shortage or the price rises for one, people can simply use the other instead. However, this is not the case with oil. When supply shocks and price spikes occur, consumers can't simply replace gasoline with another product in their tank. One cannot pump coal into their gasoline engines or anything else for that matter. Because of this inability to substitute, prices can spiral out of control relatively quickly and cause a great deal of economic damage not to mention bring everyday life to a grinding halt in a short period of time.

Third, the oil industry is one that is extremely capital intensive. These kinds of industries require high amounts of upfront investment as well as the maintenance of costly and expansive fixed assets. This is especially so the more unconventional the project, which is why the Saudis can extract a barrel of oil for around USD $7 when compared to the US, Canada, or Venezuela,

who are all northwards of USD $20 per barrel.[10] The capital intensive nature of the oil industry makes it more vulnerable to economic recessions because it must continue to maintain fixed assets, whereas labor intensive industries can simply lay off workers to reduce overhead. As a result, sudden drops in prices or unexpected contractions in demand can cause problems for the oil behemoths in a major way. For example, after the Asian Financial Crisis in 1997 and the subsequent drop in demand from the affected nations, the number of major IOCs significantly declined due to mergers and acquisitions. Another good example is that of Venezuela. In September of 2014, the Saudis decided to begin over producing which created a huge supply glut and drop in prices for the following year and a half. The Venezuelan government began suffering massive budget shortfalls and as of early 2019, is on the verge of collapse.

Fourth, oil's vital nature has made it a valuable strategic resource often so sought after that nations are willing to risk all-out war – going for broke, so to speak.[11] This was first observed during WWII when oil started getting used on a massive scale in both the civilian and military ecosystems. It had already become so vital by the early 20th century that both the German and Japanese war efforts largely depended on securing access to oil.[12] Securing the economic benefits of oil have continued to draw the attention of powerful states, even into the twilight of the 20th century and the beginning of the 21st century. Iraq invaded Kuwait largely based on grievances having to do with oil and with the strategic aim of obtaining its oil wealth to

[10] Rystad Energy, "U Cube," Oil & Gas, Upstream, accessed October 5, 2021.
[11] Charles L. Glaser, "How Oil Influences U.S. National Security," *International Security* 38, no. 2 (Fall 2013): 112-146; and Jeff D. Colgan, *Petro-Aggression: When Oil Causes War* (New York: Cambridge University Press, 2013).
[12] Robert Goralski and Russell W. Freeburg, *Oil & War: How the Deadly Struggle for Fuel in WWII Meant Victory or Defeat* (Morrow, 1987); and Dietrich Eichholtz, *War for Oil: The Nazi Quest for an Oil Empire* (University of Nebraska Press, 2012).

pay for the previous war with Iran.[13] Similarly, oil is playing a role in the current tensions between the US and Venezuela as the prospects of privatization of their oil sector has certainly boosted US interests in seeing Maduro ousted.[14] Since oil began proliferating throughout military and civilian systems and as dependence has grown, it has been the focus of national and corporate strategic interests alike and will continue to do so, at least for some time to come.

While there is a great deal of covariance among these reasons that oil is so vital, as long as it remains a central commodity to the global economy, especially with regards to the transportation sector, it will remain critical for all of these reasons. Ultimately this results in oil having a peculiar allure that other resources and industries do not. It is no stretch to suggest that those who hold notable power in the oil & gas industry have the ability to express an immense amount of influence on the global stage. This is especially so concerning states that are highly dependent on oil imports. Nonetheless, everyone hurts when supplies dry up and prices spike, producers and consumers alike. Furthermore, there have been several studies confirming the correlation between oil price spikes and economic recessions.[15] For these reasons, studying the structure of the oil industry can give us insights into more general trends on the global level as well as providing for a more nuanced understanding of globalization and the centrality of the state.

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[13] Abbas Alnasrawi, *The Economy of Iraq: Oil, Wars, Destruction of Development and Prospects, 1950-2010* (ABC-CLIO, 1994).
[14] W.J. Hennigan, "Inside John Bolton's Month-Long P.R. Campaign Against Venezuela's Government," *Time,* January 30, 2019; Cira Pascual Marquina, "Privatizing Oil in Venezuela? A Conversation with Victor Hugo Majano," VenezuelaAnalysis.com, October 19, 2018.
[15] See Robert U. Ayres, Benjamin Warr, *The Economic Growth Engine: How Energy and Work Drive Material Prosperity* (Edward Elgar Publishing, 2010), 217; and Apostolos Serletis, *Oil Price Uncertainty* (World Scientific, 2012).

Research Design and Definitions

This study employs the method of structured, focused comparison.[16] It is "structured" in that I formulate measures of "strength" for energy firms on the global scale and then use them to guide and standardize data collection. The goal of this structure is to identify accumulations of strength as it applies to these company types and lay the groundwork for a systematic comparison. It is "focused" in that these indicators of strength are not a comprehensive take on energy firms but rather are meant to give a general sense of relative strength when various archetypes are compared to one another. The overarching research question of this dissertation is: given that NOCs have risen to prominence in the last half century, to what extent have they strengthened when compared to their privatized forbearers, and what implications does this carry for the governance in the energy industry and the global economy as a whole? Or in other words, to what extent has the forces of economic globalization penetrated this particularly critical sector of the international economy?

The primary objective is to examine the full extent to which NOCs have risen when compared to IOCs and to subsequently explain this phenomenon. To address this question, I first examine the three major approaches to governance – globalism, neopluralism, and statism – with the intent of providing a theoretical basis from which to examine the energy industry. Utilizing these approaches also provides the foundation for the primary hypothesis relating to the research question: if NOCs have continued to strengthen when compared to IOCs, then statism (rather than neopluralism or globalism) best explains their rise to prominence and continued dominance. After establishing a theoretical basis, I then organize the dependent variable by exploring each of

[16] Alexander L. George and Andrew Bennet, *Case Studies and Theory Development: The Method of Structured Focused Comparison* (Cambridge MA: Harvard University, 2005).

the five indicators separately, incorporating descriptive data. I subsequently utilize the comparative approach by examining how NOCs and IOCs perform when it comes to each measure of strength.

Measuring power or strength in the study of international relations has been a matter of confusion and debate for some time. Kenneth Waltz has noted that power's "proper definition remains a matter of controversy."[17] Similarly, Robert Gilpin describes the conceptual approach to power as "one of the most troublesome in the field of international relations."[18] Generally speaking, power or strength has been defined in two ways. It can be defined as the ability to get another actor to do something they otherwise would not do;[19] this is to say, the ability to achieve one's desired outcomes.[20] This approach subsumes many concepts such as "soft power" which is the power of attraction.[21] The other approach to defining power or strength is to look at relative capabilities. Under this rubric, hegemony is a preponderance of material resources,[22] which is not merely an account of military capabilities as realists would highlight,[23] but also broader economic capabilities as liberals and political economists would stress.[24]

I adopt the second approach in this dissertation, defining strength in terms of relative capabilities. However, examining the capabilities of energy firms is a different matter than that of states. Normally an analysis of the strength of states would incorporate variables such as GDP,

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[17] Kenneth N. Waltz, "Reflections on Theory of International Politics: A Response to My Critics," in Robert O. Keohane (ed.), *Neorealism and Its Critics* (New York: Columbia University Press), 333.
[18] Robert Gilpin, *War and Change in World Politics* (New York: Cambridge University Press), 13.
[19] Robert A. Dahl, "The Concept of Power," *Behavioral Science* 2 (1957): 201-215.
[20] For an example of one such definition, see Joshua S. Goldstein, *International Relations* **(**New York: Pearson-Longman, 2005), 83.
[21] Joseph S Nye, *Soft Power: The Means to Success in World Politics* (New York: PublicAffairs, 2009).
[22] Robert O. Keohane, *After Hegemony* (Princeton: Princeton University Press, 1984), 32–35; Robert Gilpin, *War and Change in World Politics* (Cambridge: Cambridge University Press, 1981), 29.
[23] Christopher Layne, "The Unipolar Illusion Revisited: The Coming End of the United States' Unipolar Moment," *International Security*," 31 (Fall 2006): 11-12.
[24] John A. Agnew, *Hegemony: The New Shape of Global Power* (Philadelphia: Temple University Press, 2005).

GDP per capita, national deficit, defense spending, and the number of alliances to mention a few. But these kinds of measures do not translate for energy firms, though some are certainly richer and more powerful than some states in the world. Comparing oil companies to one another, with the purpose of uncovering their relative strength among one another and with respect to archetype, will require examining different more industry-specific factors. Consequently, I have formulated five indicators of strength to provide a useful portrait of the power and role of national and private energy firms in the global oil industry. These indicators are (1) reserves, (2) production, (3) unconventional capability, (4) spare capacity, and (5) efficiency.

The first two indicators, reserves and production, were chosen because they are the fundamental measures of strength that have been traditionally utilized when analyzing and ranking various energy producing nations and their companies, whether private or national. These two indicators best capture the accumulation of material resources, which holds closely to the adopted definition of strength. A study that seeks to make comparisons between firms, which excludes these factors, would be fundamentally incomplete. The second two indicators, unconventional capability and spare production capacity, are fundamentally related to the first two variables in that they are a further, albeit more nuanced, comparison of oil reserves and production. However, they were separated out as they vary drastically among company archetypes and thus, for the purposes of this study, will provide insightful distinctions between national and private firms. In these domains, I quantify the number of barrels of oil. For reserves, the total number of barrels, and for production, the number of barrels per day.

The final indicator, efficiency, is important because it captures how effective these firms are at translating their material resources into preferred outcomes. It is particularly critical for parsing out the power balance between energy companies as some are able to do more with less

while others seem to not do very much with a great deal more. This indicator is a necessary check on the first two that calculate control over reserves and production. It is also key for teasing out the relationship between the state and the firm, which in the case of NOCs is paramount for examining the differences among these firms. After analyzing the NOC-IOC comparison, utilizing the five indicators, I subsequently move on to the secondary objective: explaining the findings and answering the research questions.

Findings

In comparing NOCs to IOCs, I find that, on the whole, NOCs have strengthened substantially over time and have become the preeminent actors in the global oil industry or, in other words, in controlling and producing global energy and benefiting from such power. There are two key exceptions to unchecked NOC domination: (1) they are generally less efficient than IOCs, except for NOCs that have achieved some level of privatization or benefit from a "hands-off approach" when it comes to their state controllers, and (2) they are far less involved in unconventional oil and gas production, which is an important area of the energy industry. I argue that this finding has three key implications.

First, the rise of NOCs has implications for the study of the state as the core political unit in the global political economy. Powerful oil and gas states have become the key regulatory authorities over the global energy industry and expressed unrivaled strength when it comes to setting price as well as managing supply. This has major implications concerning the theoretical debate on the decline of statism in modern politics. In fact, it suggests that while the forces of economic globalization have done much to spread deregulation and privatization, the state remains the dominant actor when it comes to global oil and gas industry. However, this is not a

zero-sum game as many of the strongest NOCs have either undergone partial privatization or state controllers have allowed for much greater autonomy when compared to the NOCs of the previous century. While the subtle details of this shift will be discussed in further depth later, this reality points to some states possessing the wisdom to take advantage of privatized models of operation while simultaneously maintaining decision-making powers when deemed necessary.

Second, the internationalization of NOCs is an important development. The era of economic globalization has allowed for national firms to try to integrate themselves globally. Besides having become another instance of state-owned firms mimicking the behavior of those that are privatized, it is particularly interesting because international operations have traditionally been atypical of the nationalized model in the energy industry. Most NOCs arose during the era of decolonization, making their establishment intrinsically connected to the idea of retaking control of one's resources from exploitative foreign companies. Thus, the instance of a nationalized firm going abroad to exploit resources is somewhat counterintuitive. However, the autarkic national model of governance lost influence with the collapse of the Soviet Union. This has opened the way for a new form of national governance that seeks to take advantage of economic globalization by internationalizing the operations of state-controlled firms. In the energy industry this has become increasingly the case, which has serious implications for the politization of energy and the structure of the global economy. For example, Chinese NOCs are increasingly competing for already scarce investment opportunities. Traditionally speaking, the American neoliberal model of global oil trade has characterized the structure of the industry.[25] But as resources continue to dwindle, a new Chinese neo-mercantilist model may rise to compete with the prevailing order.

[25] See Andrew T. Price-Smith, *Oil, Illiberalism, and War: An Analysis of Energy and US Foreign Policy* (MIT Press, 2015).

Third, NOCs dominance over the world's oil and gas reserves and production capacity make them critical for investment and expansion of commercial activities and, in turn, for meeting future demand and maintaining price stability. Whether or not all of the NOCs can meet this challenge is less clear given their relative inefficiency compared to IOCs and given rising global energy demand. This is especially the case for the worst performing NOCs, who often have tremendous potential but suffer because of domestic politics like Venezuela's PDVSA. Nevertheless, as NOCs control the lion's share of reserves, they hold a key bargaining position with outside actors who wish to exploit these resources. In this sense, many NOCs, internationalized NOCs, and IOCs stand to gain much by working with each another.[26] More importantly, the efficiency and technical capacity of IOCs can be a boon to NOCs, though much more cooperation will be needed in the future. Indeed, NOCs are not situated well to exploit unconventional oil and gas, while the IOCs can do so with greater effectiveness and efficiency.

Contribution to the Literature

In pursuing my aims, I hope to contribute to the literature in several ways. First, at the broadest level, excellent work has been done on the political economy of states and their constituent NOCs, most especially those of the Middle East.[27] These studies focus attention on subjects such as the relationship between oil wealth and economic development, rentier theory,

[26] Saud M. Al-Fattah, "The Role of National and International Oil Companies in the Petroleum Industry" USAEE Working Paper, January 2013.

[27] Tim Niblock, ed., *Social and Economic Development in the Arab Gulf* (Routledge, 2015); Matthew Gray, "A Theory of "Late Rentierism" in the Arab States of the Gulf," *Center for International and Regional Studies* (2011); Ziad Hafez, "The Culture of Rent, Factionalism, and Corruption: A Political Economy of Rent in the Arab World." *Contemporary Arab Affairs* 2 (2009): 458-480; Michael L. Ross, *The Oil Curse: How Petroleum Wealth Shapes the Development of Nations* (Princeton University Press, 2012); Michael L. Ross, "The Political Economy of the Resource Curse," *World Politics* 51 (2011): 297-322; Bassam Fattouh and Laura El-Katiri, "A Brief Political Economy of Energy Subsidies in the Middle East and North Africa," *Oxford Institute for Energy Studies* (2015).

and the impact of energy subsidies on the domestic economy.[28] But relatively little attention is given to the rise of NOCs within the context of the global political economy characterized by economic globalization and, by extension, the debate over the governance in the global economy. This study seeks to contribute to the political economy literature by drawing on this relationship.

Second, a growing and important literature exists on oil governance and security, but it focuses mainly on issues such as oil and war, oil and terrorism, and oil and non-democratization.[29] I argue that understanding the changing role and strength of NOCs is salient to questions of energy governance. This is chiefly because NOCs help buttress oil-rich states and, more generally, powerful states with these firms at their disposal. This contributes to these state's capabilities on the global stage by allowing them to deploy their firms as foreign policy tools through taking advantage of vulnerability interdependence, controlling production levels in concert with other major producers to manipulate global prices, and granting the ability to challenge the US-led liberal economic order and the petrodollar. Here I hope to add to the literature on swelling illiberalism in the international system by highlighting the rise of NOCs and their role in the broader trends toward wielding energy firms as political weapons, state-dominated capitalism, and instances of neomercantilism.

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[28] Steffen Hertog, "The Oil-Driven Nation-Building of the Gulf States After World War II," In Peterson, J. E., ed., *The Emergence of the Gulf States: Studies in Modern History* (London: Bloomsbury Academic, 2016): 323-352. Hazem Beblawi, "The Rentier State in the Arab World," In Giacomo Luciani, ed., *The Arab State* (London: Routledge, 1990): 85-98. Hussein Mahdavy, "The Patterns and Problems of Economic Development in Rentier States: The Case of Iran." In M. A. Cook, ed., *Studies in Economic History of the Middle East* (Oxford University Press, 1970): 428-467.

[29] Glaser, "How Oil Influences U.S. National Security;" and Colgan, *Petro-Aggression*; Yetiv, *Myths of the Oil* Boom; Anca M. Cotet and Kevin K. Tsui, "Oil and Conflict: What Does the Cross Country Evidence Really Show?" *American Economic Journal* 5 (2013): 49-80; Michael L. Ross, "What Do We Know About Natural Resources and Civil War," *Journal of Peace Research* 41 (May 2004): 337-356; Kevin K. Tsui, "More Oil, Less Democracy: Evidence from Worldwide Crude Oil Discoveries," *The Economic Journal* 121 (2011): 89-115; Michael L. Ross, "Does Oil Hinder Democracy," *World Politics* 53 (2001): 325-361.

Third, insofar as scholars focus on NOCs, they have illuminated issues such as state-NOC interaction and the respective complexity of these relationships,[30] including in specific contexts such as China;[31] NOCs as economic instruments such as for decreasing the effects of rising oil prices on domestic gasoline prices;[32] and the growing international reach of NOCs and the subsequent effects.[33] By comparison, less focus is given to how NOCs have changed over time in terms of their relative strength, albeit with some excellent exceptions.[34] I offer a diachronic application to help fill that void. This approach both uniquely compares the world largest IOCs and NOCs against one another but also specifically highlights the changing nature of NOCs.

Dissertation Roadmap

This study consists of seven chapters including the introduction and conclusion, making nine in total. Following the introduction, I engage in an exploration of the theoretical approach to governance and apply it to the energy industry. The chapter discusses the three prevailing theories to modern governance: the globalist, the neopluralist, and the statist. It then discusses

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[30] Jonas Meckling, Bo Kong, and Tanvi Madan, "Oil and State Capitalism: Government-Firm Coopetition in China and India," *Review of International Political Economy* 22 (October 2015).
[31] Janet Xuanli Liao, "The Chinese Government and the National Oil Companies (NOCs): Who is the Principal?," *Asia Pacific Business Review* (August 2014).
[32] Andrew Cheon, Maureen Lackner, and Johannes Urpelainen, "Instruments of Political Control: National Oil Companies, Oil Prices, and Petroleum Subsidies," *Comparative Political Studies* 48 (August 2014).
[33] Pauline Jones-Luong, "Crude Ambitions: The Internationalization of Emerging National Oil Companies," *Mershon Center for International Security Studies* (October 2013). David G. Victor, David R. Hults, and Mark C. Thurber, *Oil and Governance: State-Owned Enterprises and the World Energy Supply* (Cambridge University Press, 2011). Daniel M. Shapiro and Steven Globerman, "The International Activities and Impacts of State-Owned Enterprises," in Karl P. Sauvant, et. al., eds., *Sovereign Investment: Concerns and Policy Reactions* (Oxford University Press, 2012).
[34] Valérie Marcel and John V. Mitchell, *Oil Titans: National Oil Companies in the Middle East* (Royal Institute of International Affairs, 2006). Donald L. Losman, "The Rentier State and National Oil Companies: An Economic and Political Perspective," *The Middle East Journal* 64 (Summer, 2010): 427-445. Silvana Tordo, *National Oil Companies and Value Creation* (World Bank Publications, 2011).

the structure of global energy and which approach best explains the industry as it currently exists. This is important for understanding the rise of NOCs as well as answering questions having to do with the centrality of the state in modern politics and the fate of neoliberalism moving forward.

The third chapter provides a quick history of the oil industry. It begins with the discovery of oil in the late 19th century and its rise to prominence as the primary energy input in the early 20th century. Special attention is given to the original structure of global energy and the domination of the industry by the Seven Sisters, and later the Supermajors, what this study refers to as IOCs. This will help to underscore how much the structure of global energy has transformed over the 20th century. The chapter discusses the rise of NOCs and OPEC in the mid to late part of the century, which sees the proliferation of nationalized firms across the world, with a few important exceptions like in Mexico or the Soviet Union. Finally, the chapter discusses the 1997 Asian Financial Crisis, which had massive ramifications for the IOCs of the world. This was a transformative event that reduced the Seven Sisters to what would become known the Supermajors. This history is important for both providing a narrative backdrop and for arranging the beginning point of the study, which seeks to measure and analyze the strength of energy firms from the beginning of the 21st century to present day.

The fourth chapter will be dedicated towards the five indicators of strength, which form the basis for my NOC-IOC comparison. The indicators are reserves, production, unconventional capability, spare capacity, and efficiency. These variables are based on descriptive data and utilize original figures with the purpose of representing the various forms of expressed strength nested within the global oil and gas industry. Each indicator will systematically establish the essence of the measure of strength as well as provide diachronic data points in order to sketch

shifts in the power balance between firms more accurately. This quantitative assessment will provide for a data-driven appraisal of strength, utilizing the definition of power in terms of relative material resources.

The fifth chapter deals with the explanation of the continued expansion of NOCs in the 21st century. Fundamentally, this will be a qualitative analysis derived from the empirical findings of the indicators of strength. The first explanation is the resurgence of the State, which ties forces of resource nationalism and the reassertion of state authority over the energy industry as an essential driver of NOC proliferation. The second, internationalization, focuses on how NOCs have increasingly taken advantage of economic globalization to expand their operations abroad. This occurs in the areas of upstream and downstream production, joint development projects, mergers and acquisitions of foreign firms, and overseas research and development centers. The third explanation is government policies, which deals with how States have adjusted their approach to governance over time. Specifically, the proliferation to the "hands-off" approach and the partial privatization approach to NOCs, which has significantly increased their competitiveness globally. Finally, the fourth explanation, strategic value, highlights the political and economic power States accumulate from their NOCs. This manifests itself in the form of bargaining power between producers and consumers, control over pricing and supply mechanisms in global markets for oil and regional markets for gas, and the strategic flows of energy that affect levels of vulnerability in terms of interdependence.

The final three chapters delve into separate case studies. These focus on the NOCs of the important nations of Saudi Arabia, Russia, and China. Saudi Arabia's Saudi Aramco has long been one of the most prominent NOCs in the world and is in the midst of major transformations that will certainly lengthen and magnify its centrality to global energy in the future. Its traditional

dominance is being buttressed by the expansion of OPEC, growing levels of efficiency due to government policies, expansion into unconventional technologies, and partial privatization. Russia's NOCs, Rosneft, Gazprom, and Lukoil, while traditionally dominating in the areas of reserves and production as far back as the Soviet Union, have made some significant strides in the modern era worthy of note. While the Putin era saw a renationalization of these companies, the process followed the partial privatization model which has seen varying levels of success. Similarly, they have internationalized and engaged in more unconventional methods than ever before. Lastly, China's NOCs, Sinopec, CNOOC, and CNPC, have burst onto the scene in the last twenty years going from completely inconsequential players on the global stage to becoming some of the worlds most prominent firms. This is primarily the consequence of a combination of factors – A flurry of international mergers and acquisitions and the expansion of international operations on a scale only matched by IOCs (1), varying levels of state interference among the different companies that has seen Sinopec become one of the world's most efficient companies (2), and the strategic deployment of these companies as a means of both reducing China's vulnerability in terms of interdependence and accumulating the capability to undermine the US-led economic order.

CHAPTER II

GOVERNANCE AND THE ENERGY INDUSTRY

The various transformations that the energy industry underwent in the 20th century has not only altered the structure of the markets, the firms that dominate, and the institutions that comprise the industry, but invariably energy governance changes as a consequence. In other words, energy governance is a macrocosm of these smaller more distinct features of the industry. When they experience transformation, energy governance keeps in step, reflecting the new structure of the industry. Major historical events such as the rise of NOCs, international energy institutions, and globalization-driven externalities in the Southeast Asian financial sector all contributed to a fundamental restructure of the energy industry. This history will be dealt with in depth in the following chapter. For the moment, the focus will center on energy governance itself, which has transformed as a consequence of the changing global economic order as well as the rise of new prominent actors in the industry. These serve as top-down and bottom-up forces that feed into what energy governance looks like in the contemporary period.

In addition to acting as top-down force that plays a part in shaping energy governance, the prevailing economic models that are vying for supremacy within the context of the global economic order also provide a frame with which this study can characterize energy governance. The economic models or modes of governance that will be explored below are the globalist, neopluralist, and statist. In terms of shaping energy governance, if the majority of the most prominent producer and consumer states subscribe to one particular model, then their mode of governing energy will follow suit. When it comes to providing a frame to analyze the structure of energy governance, if both top-down and bottom-up forces are majority aligned with one

particular model, then the claim that energy governance is characterized as global, neoplural, or state-driven in nature is reliable. Concerning the bottom-up forces that influence energy governance, the emergence of new actors in the industry, namely the rise of NOCs, is part of the fundamental analysis of this study and will be examined more closely in chapters three, four, and five. This chapter will operate on the basis of the emergence of NOCs in the mid to late 20th century for the purpose of theoretical exploration.

A set of hypotheses will guide the inquiry moving forward: if NOCs have indeed risen to prominence, then energy governance will reflect more statist modes of governance (1); if energy institutions are the primary actors, then energy governance will look more like the neopluralist model (2); and if markets and nonstate actors are diffusing energy governance, then the system would be primarily characterized by globalism (3). While these hypotheses possess some overlap with one another in terms of what they are seeking to explain, they diverge on the significance of modern developments. For example, all three acknowledge the existence of energy institutions but argue that they exist because of different reasons and serve separate purposes. Are they mechanisms for state power? Do they represent nonstate modes of governance subsuming state power? Or are they necessary nonstate entities that allow states to cooperate and adapt to a globalizing world? Thus, this study will parse seek to substantiate the hypothesis that holds the greatest explanatory power by first reviewing the literature on the theoretical approaches to governance in the modern global economy and then following with an examination of energy governance in particular.

Among scholars there exists a range in views concerning the global economy in the modern era of globalization and what it means for the future of governance and state power. This chapter will highlight the three primary theoretical approaches: Globalism, Neopluralism, and

Statism. However, there is actually some areas of agreement among these scholars. Their ideas coincide most around the transformative power of economic globalization in the modern era. Proponents of each theory would agree that economic globalization has indeed made some modes of governance more disparate, and also that supranational entities have risen in importance as a result. On the other hand, there is more discontinuity when it comes to their views on governance and state power, or more precisely, its capacity to express regulatory authority.[35] Specifically, the deviations among the theoretical approaches comes down to separate interpretations of the state: its loss of the monopoly over modes of governance, the nature of states' interplay with international institutions, whether or not the state is at the mercy of these processes, and the future of the state as the primary actor on the global stage.

The next three sections will highlight the perspectives of the theoretical approaches to governance and the state. They will also highlight the structure of the industry including the markets and associated mechanisms, energy institutions and their functionality, and the primary actors. This examination will provide the theoretical basis for the following analysis of energy governance and the hypotheses laid out earlier. Lastly, I will enumerate my contribution to the literature on energy governance. Specifically, how an in-depth study on the rise of NOCs and the relative power balance between IOCs and NOCs enhances the study of energy governance.

Globalism

Globalization scholars that are proponents of the globalist approach to governance question the primacy of the state in modern politics.[36] They argue that states have not just lost

[35] For a comprehensive look at the transformations of the modern state see Stephan Leibfried, et al., eds., *The Oxford Handbook of Transformations of the State* (OUP Oxford, 2015).
[36] See James Rosenau, *Turbulence in World Politics: A Theory of Change and Continuity* (Princeton University Press, 2018); Jan Art Schulte, *Legitimacy in Global Governance: Sources, Processes, and*

their monopoly over modes of governance, but that they are becoming more inconsequential than ever. Some scholars argue rather extremely that the nation-state has become archaic. For example, Kenichi Ohmae has posited that nonstate actors such as multi-national corporations are replacing the nation-state as the dominant economic actors in the international system.[37] On the other hand, other globalists suggest more modestly that the waning of state power has led to a rise in non-state actors' capability to enforce regulatory authority that the state must now contend with, when it can. For instance, Jan Art Scholte still sees the state as a prominent actor that remains indispensable at certain sites of regulation, albeit no longer all of them.[38] Similarly, Susan Strange argues that the state is not disappearing, but rather that it is no longer the main source of authority over societies and economies and faces challenges from rival sources of power.[39]

Globalists see economic globalization as a force that is exacerbating the inability of states to maintain dominant control over governance, which has given rise to multiple or many modes of governance. James Rosenau has called it the multi-centric world, or governance with intricate overlapping dynamics among multiple levels of regulatory authority.[40] Scholte calls it the polycentric world, which he defines as "governance that is multi-scalar and diffuse; regulation that occurs at, and through interconnections among, municipal, provincial, national, macro-

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Consequences (Oxford University Press, 2018); Susan Strange, *States and Markets* (Bloomsbury Publishing, 2015); Wendy Brown, *Walled States, Waning Sovereignty* (MIT Press, 2017); Kenichi Ohmae, *The Next Global Stage: Challenges and Opportunities in Our Borderless World* (Wharton School Publications, 2005); and Yale H. Ferguson and Richard W. Mansbach, *Remapping Global Politics: History's Revenge and Future Shock* (Cambridge University Press, 2004).

[37] Kenichi Ohmae, *The Borderless World: Power and Strategy in the Global Marketplace* (Profile Books, 2002).

[38] Jan Art Scholte, *Globalization: A Critical Introduction* (Macmillan International Higher Education, 2005), 186.

[39] Susan Strange, *The Retreat of the State: The Diffusion of Power in the World Economy* (Cambridge University Press, 1996), Ch. 1.

[40] James N. Rosenau, *Distant Proximities: Dynamics Beyond Globalization* (Princeton University Press, 2003), 396-397.

regional, and global sites."[41] Concerning the increasingly diffuse nature of governance, the growing supranational sites of regulation are intrinsically opposed to state-centric governance, pitting national sovereignty and international cooperation against one another,42 which is an important point of distinction for the globalism camp. Therefore, globalization is not only an uncontainable force that states are failing to reckon with, but a phenomenon that is necessarily generating tension between state and non-state actors seeking to express regulatory authority at various levels of the global economy. To put it simply, the regulatory monopoly traditionally enjoyed by the state has diminished, despite its efforts otherwise.

The rise of supranational governance and of the importance of non-state actors is not simply a consequence of economic globalization and the rise of transnational challenges, but also a solution to enhance longer-run strategic solutions to modern global challenges.[43] This is best represented in the accent of supranational organizations that seek to regulate issue-areas such as climate change, financial flows, the Internet, migration, and arms proliferation. These challenges are "transnational" in that they require cooperation among many state actors within the international system and cannot be solved by traditional means, or by unilateral action. This is especially the case in the area of economics best represented in the financial contagion that took place during the 1997 Asian Financial Crisis or the 2008 Global Recession. During the 2011 Arab Spring, the spread of revolution was most certainly amplified by globalization both in terms of economic causes and by media and the internet.[44] Some globalists have pointed out that

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[41] Scholte, *Globalization,* 185-186.
[42] Michael Ross Fowler and Julie Marie Bunck, *Law, Power, and the Sovereign State: The Evolution and Application of the Concept of Sovereignty* (Penn State Press, 2010), 154-161.
[43] Thomas G. Weiss, *Global Governance: Why? What? Whither?* (John Wiley & Sons, 2016).
[44] On global economic causes of the Arab Spring see Troy Sternberg, "Chinese Drought, Bread, and the Arab Spring," *Applied Geography* 34 (May 2012): 519-523; on the effects of internet and media on the Arab Spring see Nahed Eltantawy and Julie B. Wiest, "The Arab Spring| Social Media in the Egyptian Revolution: Reconsidering Resource Mobilization Theory," *International Journal of Communication* 5

the lines between the private and public sectors have never been as blurred as they are now, sometimes even beyond distinction.[45] Yet these transnational issues have, for the most part, tended to figure only peripherally in national elections.[46] These challenges have left some states paralyzed while others have proven better able to cope. Nevertheless, individual states are finding it increasingly difficult to maintain control where they once did without much difficulty. This observation provides the basis for the argument that there exists a fundamental friction between the polycentric and state-centric nodes of governance.

Global governance, thus, has become a necessary end and not merely just a means to provide nation-states with an additional tool for adapting to 21st century challenges. Alexander Wendt, the purveyor of the constructivist approach to international relations, makes this argument more transparently than perhaps any other scholar that falls into the globalist camp. Wendt argues that a world state is ultimately inevitable because globalization has made the nation-state incapable of solving two emerging challenges: technological advancement that is exacerbating the Hobbesian state of nature and the Hegelian struggle for recognition among nation-states in a global system.[47] The idea here is that technological advancement is enhancing vulnerabilities in the most powerful actors making even the weakest actors in the system potential threats, capable of dealing a previously unimaginable level of damage. Additionally, all of the actors on the global stage are not recognized equally in the same way that great powers are, which is due to unequal distributions of resources and capabilities. This makes all

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(2011): 1207-1224; and Habibul Haque Khondker, "Role of the New Media in the Arab Spring," *Globalizations* 8 (November 2011): 675-679.

[45] Michael Strauss, *Hostile Business and the Sovereign State: Privatized Governance, State Security and International Law* (Routledge, 2019).

[46] Jan Art Scholte, "Reinventing Global Democracy," *European Journal of International Relations* 20 (March 2014): 7.

[47] Alexander Wendt, "Why a World State is Inevitable," *European Journal of International Relations* (December, 2003).

international systems innately unstable regardless of the configuration. These two forces, not to mention the proliferating transnational challenges, will compel the creation of a world state that can achieve what the nation-state cannot.

Neopluralism

Neopluralism has long occupied space regarding governance.[48] Concerning modern global politics, Phillip Cerny pioneered a distinct version of neopluralism in his book *Rethinking World Politics* which sets out to build the theoretical approach he calls transnational neopluralism.[49] The theory strives to elaborate on an alternative vision for the future, lying somewhere between globalism and statism. A practical third way between the discredited ideals of state socialism and laissez-faire capitalism, as described by Paul Hirst.[50] Similar to the globalist perspective, the neopluralist approach agrees that the processes of economic globalization have given rise to polycentric or multicentric modes of governance and that states have found it more difficult to monopolize governance as a result. However, state-centric and polycentric modes of governance are not necessarily in opposition to one another. Rather, they coexist and form instruments through which they can cooperate, international institutions or organizations being one example. As Cerny points out, "those actors who will be most effective

[48] Neopluralism is a social science model that examines the structure of power and policy making in some domain of public policy, originating from Robert Dahl's pluralism model in *Who Governs?* (1961). For a review of neopluralism see Andrew S. McFarland, "Neopluralism," *Annual Review of Political Science* 10 (2007): 45-66.
[49] Philip Cerney, *Rethinking World Politics: A Theory of Transnational Neopluralism* (Oxford University Press, 2010).
[50] Paul Hirst, *From Statism to Pluralism: Democracy, Civil Society, and Global Politics* (Routledge, 2012).

at influencing and shaping politics and policy outcomes are those who possess the most transnationally interconnected resources, power, and influence in a globalizing world."[51]

The transformations that Cerny refers to as "structuration" have also contributed to advancing an ideological shift in international relations favoring neoliberalism, specifically the idea of complex interdependence popularized by Keohane and Nye.[52] They utilized the imagery of a web when describing complex interdependence to underscore the various interweaved nature of transnational connections between states at every level, while noting the relative decrease in importance of unilateral action, military force, and power balancing. Thus, while the monopoly of power that states have traditionally enjoyed has declined relatively, they have hardly become inconsequential.

Consistent with the neopluralist approach, Nye advances the indispensability of transnational power when it comes to solving problems that are supraterritorial in nature, such as global migration flows or transnational terrorism.[53] Although globalization scholars might refer to suprastate actors, including both regional and global modes of governance, as nonstate entities who "operate with some autonomy from the state,"[54] neopluralists would argue that these international institutions and organizations are the means by which both state and nonstate actors shape politics. This is a departure from both the globalist and statist interpretations concerning the relationship between national sovereignty and supranational governance. While the two other approaches view this relationship as zero-sum, the neopluralist approach claims that institutional mechanisms can overcome this contention.[55] In other words, suprastate modes of governance are

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[51] Cerney, *Rethinking World Politics*, 106.
[52] Robert O. Keohane and Joseph S. Nye, *Power and Interdependence* (Longman, 2012), 269-272.
[53] Joseph Nye, *The Future of Power* (Public Affairs, 2011), 118-122.
[54] Scholte, *Globalization*, 186.
[55] Michael Zurn, "Democratic Governance Beyond the Nation-State: The EU and Other International Institutions," *European Journal of International Relations* 6 (June, 2000): 183-221.

not opposed to statist modes of governance but rather they coexist and interact with one another as an adaptation to the forces of globalization.

Concerning the dynamics between state and nonstate actors at various levels of governance, Nye has pointed out that transnational actors and private systems "do not frontally challenge the governments of sovereign states; they simply add a layer of relations that sovereign states do not fully control."[56] Furthermore, states remain indispensable primarily because suprastate modes of governance were created, are funded, and are predominantly influenced by state actors, something the statists would agree with. Hirst, Thompson, and Bromley argue that globalization has yet to lead to a complete domination of distinct national economies by international capital and that government and societal actors are not subject to the vagaries of global processes and the ever-expanding power of multinational corporations.[57] Moreover, the claim that sovereignty is being overwhelmed by the processes of globalization relies on a "territorialized" view of state authority, which has not necessarily been the case historically.[58] This is recognized by neopluralist scholars as well as traditional pluralists, who make the argument that the existence of multiple layers or modes of governance not controlled outright by the state is nothing particularly novel. They often point to the structure of Medieval Europe and its overlapping structures of authority between kingdoms and the Papacy as well as within kingdoms among the rulers and the aristocracy.

Rather than being subsumed by globalization, states are being transformed. According to Cerny, supranational organizations such as international institutions are "at the heart of the

[56] Nye, *Future of Power*, 119.
[57] Paul Hirst, Grahame Thompson, and Simon Bromley, *Globalization in Question* (John Wiley & Sons, 2015), 7-10.
[58] John Adnew, *Globalization and Sovereignty* (Rowman & Littlefield, 2017).

transformation of the state itself into a competition state."[59] This claim coincides with the observations of Richard Rosecrance, who pointed out that state power is becoming less correlated with territorial expanse and more with economic comparative advantage.[60] The concept of state transformation, especially with regards to power and regulatory authority, is at the heart of the neopluralist claim that states are coexisting with nonstate actors and it is the interactions between state actors and suprastate modes of governance that is driving their metamorphosis. Rather than relying on traditional systems of power such as global military preponderance and financial statecraft, global economic convergence is driving states to compete for control over transnational and regional markets as well as global resources.[61] As it turns out, the best way to engage in this global economic competition is by embedding oneself in various regional and transnational institutions.

Statism

The statist approach is very much aligned with neorealist or structural realist thinking in international relations. This is especially so when it comes to explaining the behavior of states, their fundamental concerns, and their standpoint concerning increasingly disparate governance. This is not merely to conclude that states are still the dominant actors despite globalization and the growing importance of nonstate actors, which a statist would ultimately argue, but more fundamentally that states are predominantly concerned with their security[62] and that this informs

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[59] Cerny, *Rethinking World Politics*, 97.
[60] Richard Rosecrance, *Rise of the Trading State: Commerce and Conquest in the Modern World* (Basic Books, 1987); and Richard Rosecrance, *Rise of the Virtual State: Wealth and Power in the Coming Century* (Basic Books, 1999).
[61] Daniel Woodley, *Globalization and Capitalist Geopolitics: Sovereignty and State Power in a Multipolar World* (Routledge, 2017).
[62] On the State's preoccupation with security see Kenneth N. Waltz, *Theory of International Politics* (Waveland Press, 1979), 107.

their behavior concerning governance. Therefore, security concerns become an important theoretical underpinning that informs the statist approach to explaining the nexus of state regulatory authority and the emergence of more disparate governance.

Statists are far more like neopluralists than globalists when it comes to interpreting the relationship between statist and suprastate modes of governance. Like the neopluralist camp, statists do not view nonstate actors and international institutions as challengers to state sovereignty. Their rise is a natural phenomenon that is the product of shrinking time and space, a process of globalization. This simply gives rise to an increasing level of interactions among states sufficient to engender an international society – When a group of states that hold similar interests and values form common institutions that uphold sets of formal and informal norms and rules.[63] However, statists are distinct from neopluralists in maintaining that states have preserved their power structures and will eventually use their regulatory mechanisms to assert authority wherever and whenever they deem it possible, attractive, or necessary. In other words, states and nonstate actors are not separate autonomous entities that compete or cooperate at sites of regulatory authority, rather nonstate actors are subject to states and their national interests and more specifically to the most powerful constituent states. This is primarily because they provide the lion's share of funding and also because suprastate governance is made relevant and fundamentally legitimized by the participation of powerful states in the first place.

States choose to assert their authority if possible and when necessary but also will refrain from doing so, based on their interests. As Stephen Krasner puts it, "states voluntarily extend and retract authority over specific aspects of sovereignty in ways that enhance stability."[64] He points

[63] Hedley Bull, *The Anarchical Society: A Study of Order in World Politics* (Macmillan International Higher Education, 2012).
[64] Stephen Kranser, "Sovereignty," *Foreign Policy* (Jan-Feb 2001):24-25.

out that in the 1648 Treaty of Westphalia states relinquished their authority over religion because continuing to regulate it had become volatile beyond what was tolerable and it was contributing too much to overall instability.[65] Similarly, the statist approach views the rise of suprastate modes of governance and the relinquishing of authority by states to nonstate actors in some areas of governance as analogous to its retraction of power over religion three and a half centuries earlier. Statists would also point out that following the Thirty Years War despite a retraction of state authority over religion, these states would begin rapidly centralizing power at the expense of the nobility producing the era of absolute monarchy. Alexander Cooley and Hendrik Spruyt posit that a state will generally engage in the surrender of regulatory authority in modern politics when it suits them using their concept of "contracting states," arguing that states will engage in incomplete contracts or arrangements that are intentionally ambiguous and subject to future negotiation.[66] This allows them to take advantage of various international arrangements while preserving the capability opt out or renegotiate if circumstances change. Additionally, statists contend that various modes of suprastate governance such as international institutions are actually mechanisms through which the most powerful states can influence regional and global politics.[67] Moreover, these powerful states have established, legalized, continue to fund, and ultimately legitimize international institutions without which they would cease to exist.[68]

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[65] Ibid.
[66] Alexander Cooley and Hendrik Spruyt, *Contracting States: Sovereign Transfers in International Relations* (Princeton University Press, 2009).
[67] On the realist critique of international institutions see John Mearsheimer, "The False Promise of International Institutions," *International Security* 19 (Winter 1994-1995): 5-49; and Joseph M. Grieco, "Anarchy and the Limits of Cooperation: A Realist Critique of the Newest Liberal Institutionalism," *International Organization* 42 (Summer 1988): 485-507.
[68] Stephen D. Krasner, "The Persistence of State Sovereignty," in Orfeo Fioretos, ed., *International Politics and Institutions in Time* (Oxford University Press, 2018), 40-54.

Concerning the position that economic globalization has diffused power such that states no longer enjoy the regulatory monopoly they once did in the past, the statist approach rejects this on a fundamental basis. For one, this is an overblown claim that simply lacks empirical support.[69] To be precise, statists are not disagreeing with globalists and neopluralists on the basis of the claim that regulatory authority has become more diffuse in modern times when compared to the early 20th century, but rather that this claim lacks historic perspective and as such is a moot point. The statist approach claims that states never monopolized governance to begin with, which is why Krasner uses the example of religion at the Treaty of Westphalia. Additionally, informal systems have always existed as states have traditionally had trouble regulating both the flow of ideas and of capital. For instance, the 1997 Asian financial crisis or the 2008 global recession were far less problematic than the Great Depression was. These examples point to a strengthening of the states' ability to cope, which run counter to the arguments of the other perspectives, which claim states have relatively weakened and are becoming outdated or that they find it necessary to synergize with suprastate modes of governance in order to cope. As Krasner puts it, the most important impact of globalization "will be to alter the scope of state authority rather than to generate some fundamentally new way of organizing political life."[70]

When it comes to the various aspects of society that the state no longer maintains regulatory authority over, statists argue that this phenomenon ebbs and flows throughout history. In modern times states have relinquished control in areas such as international financial flows, religion, and individual identity, but they have earned net benefits as a result. Greater international flows of finance have led to larger volumes of trade, foreign direct investment, and

[69] Lui Hebron and John F. Stack Jr., *Globalization: Debunking the Myths* (Rowman & Litllefield, 2016), 105.
[70] Krasner, "Sovereignty," 20.

liquid capital mobility among OECD countries while simultaneously avoiding capital flight and higher interest rates.[71] Moreover, when observing overall government taxation and expenditures as a percent of national income, activity has increased since the 1950s among the most economically developed states.[72] Despite individual identity becoming less monopolized by the state, it remains the only viable institution that can enforce laws and protect the rights of citizens in a reliable way.[73] Thus, the citizenry will look to and affiliate with the institution of the state when it comes to their rights and freedoms, rather than a nonstate actor or a suprastate organization. There is also the resurgence of nationalism across the west to contend with, which culminated in the 2016 election of Donald Trump, Brexit, and the rise in populist right wing politics more generally across Europe. Regarding crises of authority and control, the strength and development of individual states, especially amongst the strongest, play the greatest role when it comes to mitigating crises. On the other hand, the greatest crises of authority and control have surfaced among states who are isolated, undeveloped, and relatively less economically integrated in the global economy. Thus, it is not strong states that have weakened as a consequence of globalization but rather already weak states, not having the institutional capacity to cope, that have further deteriorated.

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[71] See Geoffrey Garret and Deborah Mitchell, "Globalization, Government Spending and Taxation in the OECD," *European Journal of Political Research* (October 2003); and Geoffrey Garrett, "Global Markets and National Politics: Collision Course or Virtuous Circle*?," International Organization* 52 (1998): 787-824.

[72] Krasner, "Sovereignty," 24-25.

[73] Jeremy A. Rabkin, *Law without Nations?: Why Constitutional Government Requires Sovereign States* (Princeton University Press, 2009).

Energy Governance

The global energy industry before the 1970s was fully operated and maintained by the western IOCs. The power to regulate at essential sites, like access to reserves, levels of production, and the posting of prices, rested solely in the hands of these private multinational firms. They were also, for the most part, allowed to act with relatively little governmental oversight. This was truer of US companies than it was for their western European counterparts but as a whole these companies enjoyed levels of freedom that accompanied the free market, trade liberalization model of governance. In contrast, the modern energy industry has seen a proliferation of nonwestern state-controlled firms that have risen to prominence. In some ways this relative decline in power mirrors the narrative in economic development of the "rise of the rest,"[74] but with an important distinction. The rise of the rest in the energy industry looks similar in terms of the nonwestern nature of the power shift but different when it comes to the structure of governance.

According to the globalist approach, the rise of the rest occurred in congruence with and to some extent because of economic globalization and the growing diffuse nature of governance. Yet, governance in the energy industry favored the globalist interpretation during the pre-1970s arrangement rather than afterward. These privatized multi-national corporations had a stranglehold on resources across the world in various nations and monopolistic power over supply and pricing mechanisms. This makes the structure of energy governance unique for a couple reasons. For one, its more globalist structure coincided not with the wave of globalization that hit following the collapse of the Soviet Union in the 1990s, which sparked the growing modern literature on globalism, but rather preceded it. One might even refer to it as a legacy of

[74] Fareed Zakaria, *The Post-American World* (W.W. Norton & Company, 2008).

the first wave of globalization, occurring at the turn of century preceding the first world war, although the primary resource input was still coal at the time. Secondly, the evolution of energy governance over time has shown some signs of bucking the trend as time has gone on. Global markets would grow freer following WWII as a result of Bretton Woods and the founding of the neoliberal economic order and would experience their greatest expansion after the collapse of the Soviet Union. Conversely, the energy industry would see the rise of state control through NOCs in the areas of reserves and production as time has progressed through the last century.

As a response to the rise of NOCs, the reassertion of state authority in local areas of production, and the increasing politization of oil, western nations freed oil prices from being set by companies.[75] This is perhaps the most predominant globalist feature of the modern energy industry. Specifically, the structure of the international markets themselves and their pricing mechanisms. Without a doubt, the energy markets have become more de-territorialized in nature than ever before and are fundamentally driven by forces of supply and demand, and to some extent trader speculation.[76] However, this more globalist feature of the energy industry is mitigated by two major institutions as well as the Kingdom of Saudi Arabia. Despite discontinuity and cheating, OPEC nations tend to cooperate well enough to regulate supply, which has a strong impact on price.[77] This is especially the case concerning the Saudis as their spare production capacity gives them a unique role of swing producer, enabling them to temporarily override market forces when deemed strategically necessary.[78] On the consumer side

[75] Llewelyn Hughes, *Globalizing Oil* (Cambridge University Press, 2014).
[76] For more on how oil prices are factored globally see Paul Davidson, "Crude Oil Prices: 'Market Fundamentals' or Speculation?" *Challenge* 51 (2008): 110-118.
[77] Robert K. Kaufmann, et al., "Does OPEC Matter? An Econometric Analysis of Oil Prices," *The Energy Journal* 25 (2004): 67-90.
[78] Saudi Arabia's role as swing producer has been well documented, as early as the as the 1973 oil crisis and as recent as the 2014-2016 oil glut. For more see Ian Skeet, *OPEC: Twenty-Five Years of Prices and Politics* (CUP Archive, 1991); F. Gregory Gause III, "Saudi Arabia over a Barrell," *Foreign Affairs* 79

of the equation, the International Energy Agency was initially designed as a mechanism through which countries could coordinate collective responses to major supply disruptions and price spikes.[79] The organization employs mechanisms such as strategic petroleum reserves both among states and within the institution and coordinated joint-releases of oil stocks – strategies that help keep price volatility under control.

The initial development of energy institutions occurred in congruence with the rise of NOCs with the founding of OPEC in 1960, whose purpose was to raise oil rents for producers. Later institutions would include the International Energy Agency (IEA) in 1973, responsible for encouraging policies among consumer that increase energy security; the Energy Charter Treaty (ECT) in 1994, governing Eurasian gas in the former Soviet Republics in central Asia; the International Energy Forum (IEF) in 2001, promoting producer-consumer dialogue; the Gas Exporting Countries Forum (GECF) in 2001, raising gas rents for producers; the International Partnership for Energy Efficiency Cooperation (IPEEC) in 2009, advancing energy efficiency policies and technologies; and International Renewable Energy Agency (IRENA) in 2009, promoting the adoption and sustainable use of renewable energy.

The neopluralist and the statist approaches would agree that the rise of both NOCs and specific international institutions for energy governance is no coincidence. To be certain, it was the founding of OPEC that allowed producer nations to cooperate and coordinate with one another such that they were able to, over time, wrestle away control of the energy firms operating within their national boundaries. Colgan, Keohane, and Graaf point out that institutional change in the global energy regime have historically occurred at the cross-section of dissatisfaction and

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(May-June, 2000): 80-94; and Fattouh, Bassam and Anupama Sen, "Saudi Arabia Oil Policy: More than Meets the Eye?" *Oxford Institute for Energy Studies* (2015).

[79] IEA, "From Oil Security to Steering the World Toward Secure and Sustainable Energy Transitions," History, accessed May 17, 2019.

shocks and that the nature of the change depends on interest homogeneity among major actors.[80] Regarding the founding of two most important institutions concerning energy governance: OPEC and the IEA, this principle of punctuated equilibrium certainly rings true. The founding of both were precipitated by high levels of dissatisfaction and shocks not to mention the nature of the institutions are fundamentally characterized by the national interests of the major states comprising them. In the case of OPEC, the dissatisfaction of producer nations following the price cuts by the western controlled energy firms, the economic shock of sudden reduced revenues, and the goal of the organization centering around raising rents for producers. In the case of the IEA, Arab OPEC producers embargoed the west for its support of Israel, the economic shock which is ironically referred to as the "1973 oil shock," produced extreme dissatisfaction among western nations and led them to create an institution promoting energy security for consumer nations.

In critique of the globalist assertions, energy scholars have pointed out that "despite all the buzz about energy sector deregulation, liberalization, and privatization, the role of the government in shaping the energy sector remains crucial."[81] Others have recognized that the current framework for energy governance is often chaotic, incoherent, and fragmented.[82] While international institutions seeking to govern energy have proven themselves pivotal at times, mostly in the case of OPEC and the rise of NOCs, they are mostly nonbinding and voluntary in nature as well as tending to focus on information and transparency for societal actors.[83] Even

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[80] Jeff D. Colgan, Robert O. Keohane, and Thijs Van de Graaf, "Punctuated Equilibrium in the Energy Regime Complex," *The Review of International Organizations* 7 (June 2012): 117-143.
[81] Thijs Van de Graaf and Fariborz Zelli, "Actors, Institutions, and Frames in Global Energy Politics," in Thijs Van de Graaf, et al., eds., *The Palgrave Handbook of the International Political Economy of Energy* (Springer, 2016), 55.
[82] Aleh Cherp, Jessica Jewel, and Andreas Goldthau, "Governing Global Energy: Systems, Transition, Complexity," *Global Policy* 2 (January 2011): 76.
[83] Graaf and Zelli, "Actors, Institutions and Frames in Global Energy Politics," 61-62.

OPEC itself, while giving lesser countries the ability to gain control over industries that were previously controlled by nonstate actors, is plagued by inefficiency and discontinuity because of the national politics of its member states.[84]

The overall ineffective and incomplete nature of the global energy regime has led to a consensus among scholars that energy governance requires further development in order to meet the challenges of the 21st century.[85] Global energy governance is difficult to achieve primarily because actors' national interests rarely coincide enough to allow for a cooperative breakthrough. Mike Bradshaw correctly points out the diverging interests among the three major economic groupings of countries in the global economy: among the developed nations there is tension between the decarbonization imperative and the affordability dimension; emerging economies are primarily concerned with securing sufficient energy to power sustained development rather than worrying about emissions; and the developing world simply needs reliable access to energy regardless of how clean the source may be.[86] To be sure, the rise of NOCs has only further exacerbated these dynamics by increasing the politicization of the oil industry and further interweaving national politics and energy policy.[87] There is also regional political dynamics to

[84] Mohammed E. Ahrari, *OPEC: The Failing Giant* (University Press of Kentucky, 2015).
[85] See Slawomir Raszewski, *The International Political Economy of Oil and Gas* (Springer, 2017); Dries Lesage and Thijs Van de Graaf, *Global Energy Governance in a Multipolar World* (Routledge, 2016); Rafael Leal-Arcas, Andrew Filis, and Ehab S. Abu Gosh, *International Energy Governance: Selected Legal Issues* (Edward Elgar Publishing, 2014); Thijs Van de Graaf, *The Politics and Institutions of Global Energy Governance* (2013); and Ann Florini and Benjamin K. Sovacool, "Bridging the Gaps in Global Energy Governance," *Global Governance* 17 (January-March 2011): 57-74.
[86] Mike Bradshaw, *Global Energy Dilemmas* (Polity, 2013).
[87] For a comprehensive look at NOCs and global energy see David G. Victor, David R. Hults, and Mark C. Thurber, *Oil and Governance: State-Owned Enterprises and the World Energy Supply* (Cambridge University Press, 2011).

consider, which vary greatly around the world and tend to interfere with global energy governance.[88]

On the other hand, some energy scholars have pointed out that the global energy regime has been shifting in focus in more recent years. Andreas Goldthau argues that there has been a more general effort to establish energy governance instead of simply looking to ensure energy security.[89] This position holds that energy security tends to heighten the impact of national politics because of the various needs of different countries based on their economic status. Thus, statism in the energy industry can be transcended by focusing on energy governance more generally, despite the centrality of NOCs.[90] Of course this claim has yet to be realized, but perhaps time will tell. The push towards global energy governance and away from energy security is a relatively new one.

Contribution to the Literature

While the structure of the global energy industry has features represented by all three approaches, there is some divergence in explanatory power. Globalism tends to hold the least of the three, as it really only helps to understand the overall structure of trade and pricing mechanisms of the global markets. International markets have become increasingly deterritorialized and prices have been characterized by instances of volatility rather than stability. However, the rise of NOCs and various energy institutions presents a frontal challenge to

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[88] For analysis of how regional politics can disrupt consensus around energy governance see David Ramin Jalilvand and Kirsten Westphal, *The Political and Economic Challenges of Energy in the Middle East and North Africa* (Routledge, 2017).
[89] See Andreas Goldthau, *The Handbook of Global Energy Policy* (John Wiley & Sons, 2016); and Andreas Goldthau and Jan Martin Witte, *Global Energy Governance: The New Rules of the Game* (Brookings Institution Publishing, 2010).
[90] Caroline Kuzemko, et al., *Dynamics of Energy Governance in Europe and Russia* (2012), 266.

globalism in the energy sector. State actors through NOCs and through international institutions have been able to dampen, and in some cases blunt, the forces of globalization, mostly regarding market dominance by nonstate actors and price volatility.

Much of the debate among energy scholars has revolved around the assertions of neopluralist and statist perspectives. Most neopluralists recognize the centrality of nation-states in the energy industry via NOCs but argue that the energy institutions that provide for cooperation among states have been and continue to be indispensable. These scholars, while admitting to the impotent status quo of energy governance, claim that it is beginning to eclipse the traditional focus on energy security alone. This renewed international emphasis on energy governance is ultimately being driven by climate change imperatives. They also point out that national interests tend to converge and allow for energy governance breakthroughs in times of crisis, which climate change could prove the spark for.

On the other hand, statists point out the politization of oil via national politics and regional politics diminishes the capability of energy institutions to foster cooperation. Particularly because of the fundamental relationship between energy and development. Thus, most of the world, including the emerging and developing economies, are unable to cooperate with climate change imperatives without tremendous sacrifice. Additionally, energy institutions have operated more as tools for powerful energy producer/consumer states than they are bodies that foster cooperation among them. Statists also argue that most energy institutions are frail, being mostly voluntary and nonbinding in nature, as well as fraught with discontinuity among member states. They also point out that NOCs have, in many instances, become tools to buttress national foreign policy interests, especially when it comes to Saudi, Chinese, and Russian NOCs.

To be sure, cases can be made for each of the theoretical approaches, some more effectively than others. This study aims to uniquely add to the literature on energy governance in a few major ways. First, energy scholars tend to acknowledge the rise of NOCs and their centrality in global energy, to varying degrees. This is especially so since the proliferation of unconventional energy technologies in America, the partial privatization of some NOCs around the world, and the rise of Chinese NOCs. However, few have explored NOC and IOC strength over time with a focus on the momentous developments of the 21st century. This study will offer a diachronic assessment of energy companies, which will parse out the various elements of their strengths and weaknesses in global energy. Much has taken place since NOCs initial rise in the 1970s. This comparison to IOCs will allow for a deeper, more up to date, understanding of the NOC-IOC dominance nexus. The debate on the structure of energy governance depends largely on the true extent of NOCs rise to prominence, making this study salient.

Second, this analysis will position the structure of energy governance within the larger context of the structure of governance in the global political economy. As American global economic dominance wanes, the neoliberal order fostered by the Washington consensus is also weakening. Consequently, the rise of China and resurgence of Russia, fosters a more state-led model for economic development, and are beginning to challenge the neoliberal order. This has led to a further blurring between the private and public sectors and has impacted the global political economy in a couple ways. On one hand, the rise of state capitalism has contributed to a further strengthening of NOCs in the 21st century as well as the partial privatization of some NOCs. On the other, increasing state power in the energy industry has instigated a greater strategic competition over resources and markets which has prompted the utilization of some NOCs as foreign policy tools as well as internationalization among some NOCs. Placing the rise

of NOCs, the relative power balance between IOCs and NOCs, and the structure of energy governance within this larger context will offer a more circumspect explanation.

Third, this study will employ multiple case studies of the most powerful NOCs and their constituent nation-states to fully explore the extent to which NOCs have 'risen.' Among NOCs there is quite a bit of variance when it comes to the NOC-state interaction. Some states tend towards rent-seeking and utilize the firm as an arm of the government, while others allow for the company to operate with various levels of autonomy. This relationship will have a strong effect on the NOC, contributing to its organizational efficiency and investment capacity. Offering an in-depth look at the strongest NOCs and how their states utilize them will better illuminate the nature of energy governance in a few ways. For one, the politicization of energy and state's use of NOCs as political arm of the government is particularly important. Using energy firms as a lever to pressure other nations would suggest a serious challenge to the assertion of globalists and support the claims of neopluralists and statists. On the other hand, if the most important NOCs operate with high levels of autonomy and function, for the most part, like IOCs, then the assertion that the rise of NOCs challenges the prevailing economic order and the claims of globalists are less potent.

Additionally, studying the behavior of NOCs within the context of the international institutions they belong to will further illuminate the relationship with its state. This will unveil whether or not states are existing alongside these energy institutions or using them as mechanisms to magnify their strategic interests. This would primarily be done through examining NOCs within the context of OPEC, the single-most important institution involving NOCs, which has seen its fair share of highs and lows concerning cooperation among members. That being said, IOCs within the context of the IEA should also be examined since energy

governance encompasses more than just the powerful NOCs. Although this will not be included in the sections dealing with the case studies, it will be applied later on when explaining the rise of NOCs and arriving at the implications for energy governance. Examining the relationship between NOCs and states as well as energy companies in the context of institutions will further parse out the structure of energy governance by pitting the core claims of neopluralists and statists against one another, utilizing practical examples.

Conclusion

The ebb and flow of state authority has always been a complicated matter, made even more so by modern economic globalization. This phenomenon has been best represented in the three leading theoretical approaches that seek to explain the current trends and future structure of governance in the modern global political economy. However, when it comes to energy industry, the trends do not appear to be the same. While the rest of the global economy has become increasingly dominated by multinational corporations, the energy industry has been flooded with national firms that now compete with private firms. Similarly, an analysis of energy governance reveals that it is less characterized by globalism when compared to other important sectors of the global economy. Markets have indeed become more deterritorialized than in previous decades and prices are generally determined by global supply and demand, but these elements have not gone unchallenged. While oil is predominantly globalized, gas is much more regional as it is mostly traded via pipeline rather than by tankers over maritime routes. Additionally, states have developed national policies and international institutions in order to express some level of control of supply and price, both on the producer (OPEC) and consumer (IEA) side of the equation.

Conversely, neopluralism and statism offer greater explanatory value for the rising number and strength of NOCs in the energy industry. Both would point toward the establishment of international institutions for producers and consumers to allow states to better express regulatory authority over a more global and complex market. However, the neoplural approach relies on the claim that these institutions are mechanisms for cooperation between countries and energy firms to better cope with globalization. Meanwhile, the statist approach relies on the claim that these institutions are merely mechanisms for magnifying state power and pursuing national interests. The IEA fits more comfortably with the neoplural interpretation as it is highly cooperative and primarily functions to help import dependent western countries cope with supply shocks and price spikes. On the other hand, OPEC is better explained by statism as cooperation among member countries is often fraught with rivalries and national interests drives much of the members' behavior. Statism alone best explains the initial rise of NOCs in number and strength in the post-1970s era. Fundamentally, many states both stood to gain from and saw the opportunity to reassert authority over a particular area of governance and therefore did so.

Exploring the full extent of the rise of NOCs in the 21st century, the balance of power between IOCs and NOCs, and the features of the relationship between the most powerful NOCs and their states, will ultimately be the deciding factor as to whether neopluralism or statism best explain the energy industry. If states are cooperating alongside these national firms as a means of coping with modern economic globalization, then political interference will not significantly stifle commercial activities. However, if countries are seeking to utilize these companies as arms of the state, then political and strategic interests will tend towards interfering with economic interests. Chapter 4 will develop indicators of strength for energy companies and chapters 6, 7,

and 8 will examine three important case studies of NOCs, which will provide greater revelation as to whether the industry is becoming more neoplural or state-centric.

CHAPTER III

THE HISTORY OF THE OIL INDUSTRY

This analysis of the global energy industry will ultimately focus on the major developments that have taken place in the 21st century, the shifts in the balance of power between IOCs and NOCs, and what this means for the global economic system and the many nations that are central players. However, to fully appreciate the changes of the last two decades it is necessary to survey the previous century. This period saw the birth of the industry's prominence when oil began to displace coal as the primary energy source of industrialized nations during the interwar period of the 1920s and 1930s, the rise of the western IOCs that would dominate global energy for half a century, and the creation of NOCs during the era of decolonization. These events are the basis by which the developments of the 21st century will be judged.

When compared to the history of nations, empires, cultures and the like, one hundred years of hydrocarbons seems relatively miniscule. Yet, in this last century the oil industry has transformed the world in ways unimagined at its inception and has done so with more haste than arguably any other resource in human history. The following synopsis of the history of oil will focus on the three most salient points in time that have shaped the industry with respect to the actors that comprise it. More specifically, the private and national oil firms, and the major events that have contributed to their rise and transformation over time.

The Era of Big Oil

The modern discovery of oil took place relatively recently by historical standards, dating back to 1859, but its unveiling would fundamentally transform the world as a result. Following oil exploration in Baku, the first permanent oil well was drilled in Titusville, Pennsylvania. Just a few years later Nikolaus Otto invented the first gasoline engine, marking the rise of the automobile as the fundamental means of transportation and thus revolutionizing social life, business, as well as warfare around the globe.[91] At the time it was difficult to grasp, but oil would ultimately change the course of history by becoming the world's most critical commodity,[92] and by becoming a core strategic resource. It would implicate global security and economics to an extent that no resource had ever done before. For its part the US would ride this tidal wave to economic prominence by becoming the world's largest cumulative oil producer of the 20th century.[93]

In the beginning, the large oil producing companies were private firms and their founders were among the business barons of the "Gilded Age" in American history. John D. Rockefeller's Standard Oil Company was among the largest private oil firms in the country and by extension the globe. Before it was broken up it controlled as much as 85 percent of oil refining and 90 percent of total sales in the US and even after its dissolution in 1911 the firm remained among America's top corporate powers.[94] Meanwhile in Europe, two major oil companies arose to

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[91] Vaclav Smil, *Energy at the Crossroads: Global Perspectives and Uncertainties* (Cambridge: MIT Press, 2003), 59.
[92] Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, And Power* (New York: Simon and Schuster, 1991), 28.
[93] EIA, "International Energy Statistics," Energy Information Administration, accessed February 16, 2019.
[94] Ida M. Tarbell, *The History of the Standard Oil Company: The Briefer Version* (Courier Corporation, March 2012), 8.

become the first truly "international" oil companies. These were British Petroleum (BP) and Dutch Royal Shell.

In 1901, William Knox D'Arcy, a wealthy British investor in Australian Mount Morgan mining, struck an oil concession with the Persian Shah Mozaffar Al-Din allowing him exclusive rights to prospect for oil for 60 years. After burning through much of his fortune, he was forced to sell a sizable portion of his rights to the Burmah Oil Company based in Glasgow. In 1908, after finally striking oil, the Anglo-Persian Oil Company (APOC) was created with shares open to the public. Six years later before the breakout of the first World War, the British government purchased 51% of the company in order to secure oil for its royal navy, which was rapidly shifting away from coal as the primary energy input. By 1954 APOC became British Petroleum and is known today as BP.[95]

The Royal Dutch Shell group arose in 1907 out of the union of two European firms – The Royal Dutch Petroleum Company of the Netherlands and the Shell Transport and Trading Company of the UK – and was largely an effort to compete with the rising US oil titan Standard Oil.[96] For nearly a century it operated as a dual-listed company, eventually reaching a full merger in 2005. The Royal Dutch Petroleum Company began in the Dutch East Indies, first drilling an oil well in North Sumatra in 1890.[97] Soon thereafter it had fully integrated both upstream and downstream operations and was looking for a means to become the preeminent supplier of European oil, but this would require a truly global capability. At the same time, the Rothschild family invested heavily into Russian oil and commissioned the first oil tankers from Marcus

[95] This paragraph is based on J.H. Bamberg, *The History of the British Petroleum Company* (Cambridge University Press, July 30, 2009).
[96] Fred Aftalion and Otto Teodor Benfey, *A History of the International Chemical Industry: From the "early Days" to 2000* (Chemical Heritage Press, 2001), 142.
[97] Scott Merrillees, *Jakarta: Portraits of a Capital 1950-1980* (Jakarta: Equinox Publ., 2015), 60.

Samuel, a British trader, who subsequently founded Shell Transport and Trading in 1897. A decade later both companies saw the vast opportunities that working together offered and the Royal Dutch Shell Group was formed.[98]

In the US, shortly preceding the breakup of Standard Oil, a massive oil discovery in Texas began a US oil boom in earnest. In January of 1901 a well at Spindletop struck oil, the gusher lasting for around nine days and with oil escaping at a rate estimated at 100,000 barrels per day (bdp).[99] Before this discovery oil had predominantly been used for lighting and as a lubricant, but this discovery made mass oil production and consumption economically feasible for the first time and would transform the US forever.[100] This event would see two more major US oil companies founded in Beaumont, Texas: Gulf Oil and Texaco. A group of investors starting an oil refinery in nearby Port Arthur that same year would later form Gulf Oil Corporation in 1907 via a merger with a number of oil companies, principally the J.M. Guffey Petroleum and Gulf Refining Companies of Texas.[101] Texaco was founded as the Texas Fuel Company in 1902 and became the first US oil company to sell its fuel nationwide under a single brand name.[102]

These seven oil companies came to be known as the "Seven Sisters" and would virtually control global oil for the next half century.[103] These International Oil Companies or IOCs as they would later come to be known as were Standard Oil of California, Standard Oil of New Jersey

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[98] Joost Jonker and Jan Luiten van Zanden, *A History of Royal Dutch Shell Vol. 1: From Challenger to Joint Industry Leader 1890-1939* (Oxford University Press, 2007).
[99] Robert Wooster and Christine Moor Sanders, "Spindletop Oilfield," Handbook of Texas Online, accessed March 12, 2019.
[100] Yergin, *The Prize*, 69-71.
[101] Craig Thompson, *Since Spindletop: A Human Story of Gulf's First Half Century* (Literary Licensing LLC, 2012).
[102] Marquis James, *The Texaco Story: The First Fifty Years, 1902-1952* (Literary Licensing LLC, 2012).
[103] Anthony Sampson, *The Seven Sisters: The Great Oil Companies and the World They Made* (Hodder and Stoughton, 1980).

(Esso), Standard Oil Company of New York (Socony and now ExxonMobil), Texaco (now Chevron), Gulf Oil, the Anglo-Persian Oil Company (now BP), and Royal Dutch Shell. For its part, the Italian NOC Eni tried to join the cartel but was rejected by what the head of the company, Enrico Mattei, dubbed the Seven Sisters. British writer Anthony Sampson would popularize the term not long after by writing his book about the Anglo-American dominance of the global petroleum industry.[104]

These massive firms founded and developed by the oil barons of the Gilded Age would bring about what energy analyst Daniel Yergin coined as the era of "Hydrocarbon Man" – a time when global economic activity was hyper boosted by and growing ever more dependent upon the benefits of the oil era, ranging from fuels for various combustion engines to plastics and petrochemicals.[105] The Middle East was introduced to the oil era as early as 1907, when the first regional discovery was made in Iran by APOC. Subsequent discoveries around the Persian Gulf was led by members of the Seven Sisters, usually forming Middle East subsidiary companies and entering into concessions with the regional governments. Most notably, shortly before the outbreak of World War II, Saudi Arabia and the Standard Oil Company of California struck a sixty-year contract. This deal, the subsequent discoveries and expansion of production, would ultimately build the foundation of one of the largest, most profitable and influential oil firms on the planet: Saudi Aramco. As it was formerly known, the Arabian-American Oil Company first discovered oil in commercial quantities roughly around 1938.[106] As time went on however, the Saudis gradually wrestled control away from the Americans,[107] which would solidify their center

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[104] Ibid.
[105] Yergin, *The Prize*, Ch. 27.
[106] Josh Pollack, "Saudi Arabia and the United States, 1931-2002," *MERIA* 6 (September 2002): 78-9.
[107] On the oil and security nexus see Parker T. Hart, *Saudi Arabia and the United States: Birth of a Security Relationship* (Bloomington: Indiana University Press, 1998), and Anthony Cave Brown, *Oil, God, and Gold: The Story of Aramco and the Saudi Kings* (New York: Houghton Mifflin Co., 1999). On

stage role in the future of global oil as well as coloring the backdrop for crucial upcoming developments.

Now if we fast forward to the contemporary outlook, the landscape of Big Oil looks drastically different. No longer would the global oil industry be dominated by the Seven Sisters or the IOCs, rather NOCs have become the central figures. While they remain wealthy and important, their former power has been clipped, and their weakening is largely the result of the rise of these national firms. For the most part these events go relatively unnoticed across the broader public discourse as I have already mentioned, which is reflected in the public polling, and highlights a major misconception in the US – that corporate greed emanating from the all-powerful western oil companies are to blame for our energy woes. Nevertheless, the rise of NOCs would prove to be a meteoric turning point. One that would alter the structure of the global energy system so much that 50 years into the age of hydrocarbons it would be unrecognizable compared to when it began.

The Rise of the Organization of Petroleum Exporting Countries

With the rise of OPEC Big Oil, currently under the control of the group of IOCs known as the Seven Sisters, was about to take a big hit. These events would ultimately fuel a transition of power from the IOCs over to a new group of oil companies. Formerly their foreign subsidiaries, NOCs arose out of the umbrella of IOC dominance. Countries whose resources were being exploited would slowly renegotiate their stakes in these companies by banding together through OPEC, eventually fully nationalizing the firms operating within their

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Saudi Aramco see Irvine H. Anderson, *Aramco, the United States, and Saudi Arabia* (New Jersey: Princeton University Press, 1981).

boundaries. In effect this would facilitate a transfer of power, seeing the rise of national firms to dominate the oil industry and leaving their private counterparts in a precarious position.

Among the first major nationalizations was Mexico in 1938, preceding the major Middle Eastern producers by about two decades.[108] On one hand, this was the first nationalization of many that would hint towards major structural changes to occur, fundamentally changing the global oil industry forever. On the other, Mexico would neither become a member of OPEC nor would it achieve notable status on the global stage as a critical producer, albeit the US would and continues to import a fair amount of oil from Mexico. Nevertheless, this event remains a marker that would point towards underlying pressures in the oil industry which would begin to manifest throughout producer nations and would underpin the rise of OPEC and the nationalizations that would follow.

The Seven Sisters that controlled global oil had negotiated roughly fifty-fifty splits with most producer nations throughout Latin America and the Middle East. This arrangement had worked without major problems for the majority of the twentieth century. However, Big Oil intrinsically had interests that superseded those of the producer nations such as the economic interests of their home countries. This would increasingly become a point of contention with the producer nations and would reach a breaking point in the 1960s. During this period a global surplus led Aramco, among other subsidiaries of Big Oil, to cut the price they paid producer nations for their oil becoming the launchpad for the rise of OPEC.[109] In Baghdad for a span of four days in September 1960, representatives from the countries of Saudi Arabia, Venezuela,

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[108] Jonathan C. Brown, "The Structure of the Foreign Owned Petroleum Industry in Mexico, 1880-1938," in Jonathan C. Brown and Alan Knight, eds., *The Mexican Petroleum Industry in the Twentieth Century* (University of Texas Press, 2010), 26.
[109] Heather Lehr Wagner, *The Organization of the Petroleum Exporting Countries* (Infobase Publishing, 2009), 12.

Iran, Iraq, and Kuwait met to discuss the current status of their concessions with the western oil firms and how they were going to move forward. By the end of their meeting, OPEC had been formed with the chief goal of defending oil prices and eliminating price volatility with regard to the interests of producer nations and securing a steady stream of income.[110] Additionally, they set out to renegotiate the fifty-fifty splits with the oil companies, taking the majority stake and eventually reaching full nationalization.

OPEC quickly grew its membership over the next decade. Qatar would join in 1961 as well as Indonesia and Libya the following year. The larger the group became and the greater the cumulative production capacity, the more attractive joining was to other producer nations. Especially in light of general trends towards decolonization and the perceptions fostered in producer nations by the historical legacy of economic mercantilism and imperial domination. Not long after the early birds joined OPEC, a new wave of states would follow suit over the next several years. Abu Dhabi (now the United Arab Emirates) in 1967 and Algeria in 1969. Nigeria, Ecuador, and Gabon all joined in the early 1970s bringing the size of the cartel to thirteen.

While OPEC membership grew steadily during the 1960s its power as a unified cartel did not. Instead of acting in a unified manner with central goals such as setting a global price and allocating production quotas, the individual members set about devising their own expedients by which they could further wrestle away the revenues from oil companies operating within their national boundaries.[111] These conflicts between oil companies and producer nations would see a lack of expansion in production in most OPEC states over the decade and contribute to their weakness in terms of market share.[112] Additionally, a number of factors contributed to

[110] Ibid, 14.
[111] James M. Griffin and Henry B. Steele, *Energy Economics and Policy* (Elsevier, 2013), 111.
[112] Ian Seymour, *OPEC: Instrument of Change* (Spinger, 1980), 197-200.

discontinuity of the cartel: there was still a significant portion of production capacity that existed outside of OPEC control, petroleum infrastructure networks were becoming more efficient and cheaper to build, as well as rising political and economic competition among members from the Persian Gulf. However, by the end of the 1960s the situation had changed substantially seeing a notable tightening of the global market. This would set the table for the earthshattering events of the 1970s which would bolster the strength of OPEC, its member countries, and the structure of the global oil industry forever.

The tight oil market that followed the first decade of OPEC activity was a consequence of two converging factors. First, the excess global production capacity had shrunk considerably as a result of noncommunist oil consumption doubling over the previous decade.[113] There was considerable post-war economic recovery in western Europe in addition to a booming US economy. These events led to a significant rise in income levels and an outgrowth in oil consumption. Second, oil production in the US and Canada hit its peak around 1970,[114] notwithstanding the unconventional oil boom that would take root in 2005. This peak in production meant less flexibility on the part of the west to shift its consumption away from the Persian Gulf should there be any breakdowns in negotiations. Furthermore, around this time the US would eliminate import quotas which could be used as leverage by nations such as Saudi Arabia.[115] These factors would make possible the oil embargos against the US and the Netherlands as well as constrictions against other western nations.

The 1973 oil embargo rose out of political grievances connected to the Israeli occupation of Arab territories in the Sinai, the West Bank, and the Golan Heights taken in 1967 during the

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[113] Griffin and Steele, *Energy Economics and Policy*, 112.
[114] US EIA, "Petroleum and Other Liquids," International Energy Agency, accessed March 13, 2019.
[115] Warren R. Copeland, *Issues of Justice: Social Sources and Religious meanings* (Mercer University Press, 2008), 270.

Six Day War. The steadfast support of Israel with money and arms by the US made it a target of Arab OPEC nations who were beginning to see oil as a viable political weapon.[116] Especially because the US at this point relied on oil for about half of its energy needs.[117] When conflict between Egypt, Syria, and Israel ratcheted up on October eighth, a mere two days later the OPEC conference in Vienna concluded with the Gulf members establishing their aims to renegotiate the terms of the previous agreement on price and supply. These events combined together to produce a 30 percent rise in the price of crude oil on the global markets and a twofold increase in the profit margins of oil companies.[118] What followed was the most substantial peaceful transfer of wealth to ever occur in history. Moreover, this event marked a critical turning point when it comes to setting prices and controlling supplies. NOCs through coordination via OPEC seized power and the IOCs never again had a say in the matter.

While OPEC nations and their NOCs where able to make some major gains, they also jolted the consumers of the world into action. The response by the West to the oil shock in 1973 was to seek to protect itself from the possibility of oil being used as a weapon against them again in the future. Greater cooperation among energy consuming nations was already gaining steam in the West due to the economic effects stemming from prior events such as the initial founding of OPEC, the Suez crisis in 1956, and the Six Day War in 1967.[119] In 1974, the American initiative for improved international cooperation among energy consumers would bear tangible fruits marking the formation of the International Energy Administration (IEA). Its policy mandates

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[116] Francisco Parra, *Oil Politics: A Modern History of Petroleum* (I.B. Taurus, 2004), 175.
[117] Meg Jacobs, *Panic at the Pump: The Energy Crisis and the Transformation of American Politics in the 1970s* (Macmillan, 2016), 4.
[118] Ibid, 178.
[119] Marloes Beers, "The OECD Oil Committee and the International Search for Reinforced Energy-Consumer Cooperation, 1972-73," in Elisabetta Bini and Giuliano Garavini, *Oil Shock: The 1973 Crisis and its Economic Legacy* (I.B. Taurus, 2016), Ch. 6.

would revolve around energy security and cooperation on issues such as "security of supply, long-term policy, information transparency, energy and the environment, research and development and international energy relations."[120] While the IEA has proven useful for OECD countries in a myriad of ways over time, perhaps one of the most enduring countermeasures is the Strategic Petroleum Reserves (SPRs) which are still used to this day. To be sure, OPEC was able to make some serious gains for NOCs, particularly in the realm of price and supply, but this ultimately came at a cost as consumer nations would find ways to balance their growing power.

OPEC has been referred to as one of the most powerful and infamous cartels to emerge in modern politics and economics, but this should be viewed as an overstatement. For one, there is a constant political tension between members. Take the Iran-Iraq war in the 1980s or the geopolitical rivalry between Saudi Arabia and Iran for example. Secondly, most members generally tend to fall into the dove or hawk camp when it comes to setting prices, making cooperation over price and supply quotas tedious work. Moreover, quota compliance among members has proved difficult in the long run as the temptation to cheat runs high, most especially when there is a budgetary strain.[121] Lastly, the members don't always share the same geopolitical concerns, which can undermine collective action. Take the case of the 1973 Arab embargo for example. The non-Arab members of OPEC diverted oil to the embargoed consumer nations, undermining the potential effectiveness of the strategy.[122] Ultimately, it did not achieve its political aims of curbing support for Israel, partly because of this discontinuity.

To be sure, the rise of OPEC was a net positive for NOCs and their parent countries. While OPEC didn't create an all-powerful mechanism by which its members could unilaterally

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[120] IEA, "From Oil Security to Steering."
[121] Fadhil J. Chalabi, *Oil Policies, Oil Myths: Observations of an OPEC Insider* (I.B. Taurus, 2010), Ch. 13.
[122] Morris Albert Adleman, *Genie Out of the Bottle: World Oil Since 1970* (MIT Press, 1995), 112.

control global oil, it did produce two major outcomes. First, it provided the foundation by which producer states would eventually fully nationalize the oil companies operating within their national boundaries. This would bring the vast majority of supplies and production as well as the associated revenues into their hands. Second, after the events in 1973 the power to set the global price for oil through direct control of supply was permanently transferred over to NOCs. This meant that oil production and global energy security was no longer a market affair but rather a political one, colored by the national policies of producer countries. It also meant an about face when it comes to the balance of power between private and national firms. Where once the internationals occupied the preeminent position in global oil, from this point on it would be the nationals.

The 1997 Asian Financial Crisis

The discovery of oil and the founding of the original IOCs, the Seven Sisters, was significant. Even more so was the rise of OPEC and the creation of the NOCs, which fundamentally reversed the balance of power in the oil industry from consumer to producer. Yet we still do not have the complete picture. The current group of IOCs, known as the supermajors, differs from the original group of seven. This was the result of a major global economic incident, the Asian Financial Crisis in 1997 which was responsible for instigating that most recent restructuring to take place in the oil industry.

In the second half of the 20th century, the economic growth of Southeast Asian nations made up a lion's share of the global economic growth.[123] The Asian economic miracle was first driven by the Cold War, seeing nations such as South Korea, Japan, Taiwan, and Singapore

[123] Young Kim, *The Southeast Asian Economic Miracle* (Routledge, 2018).

aligning with the US-led neoliberal order, and later by the rise of China and its embrace of capitalism.[124] Alongside the string of economic booms that took place across the region came a new insatiable demand for oil. In fact, many of the decisions to increase production quotas by OPEC in the 1980s and 1990s were made with this in mind. But this habit would come back to haunt the OPEC producers in November 1997.

The Asian Financial Crisis began in July with the collapse of the Thai Baht, eventually spreading to other Asian currency and banking institutions by year end. Despite the surmounting Asian financial contagion, the OPEC members convened in Jakarta less concerned with the growing problems in the Asian markets than with the demand spike that preceded it.[125] They concluded their meeting with the OPEC ministers approving a ten percent production hike, translating to 2.5 mb/d.[126] This mistake saw a precipitous drop in oil prices well below the $18 dollar per barrel mark, the accepted norm at the time among oil companies and countries alike.[127] The shocking collapse of oil prices sparked fitting headlines such as "Oil Shocked" and later after the resulting glut, "Drowning in Oil" by the economist.[128]

Much can be said of OPECs lamentable decision to ignore the brewing storm in Asia and to move forward with quota increases. For example, the fall in prices to around $10 dollars per barrel caused OPEC producers to lose billions in potential revenue.[129] Yet it was the IOCs that would suffer to a greater extent. Initially IOCs tried to stem the hemorrhaging by slashing jobs

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[124] Richard Stubbs, *Rethinking Asia's Economic Miracle: The Political Economy of War, Prosperity and Crisis* (Macmillan International Higher Education, 2017).
[125] Robert McNally, *Crude Volatility: The History and the Future of Boom-Bust Oil Prices* (Columbia University Press, 2017), 162.
[126] Ibid.
[127] Robert Mabro, "The Oil Price Crisis of 1998," Oxford Institute of Energy Studies, 1998, 1-3.
[128] "Oil Shocked," *The Economist*, March 26, 1998; and "Drowning in Oil," *The Economist*, March 4, 1999.
[129] Blake C. Clayton, *Market Madness: A Century of Oil Panics, Crises, and Crashes* (Oxford University Press, 2015), Ch. 5.

and expenditures on exploration, production, and R&D. This resulted in a reduction of the number of active US oil rigs from 392 in 1997 to just 111 a mere year and a half later.[130] The ripple effects of this incident would become so significant that they would cause a restructuring of the major players in Big Oil unseen since the breakup of Standard Oil a century earlier.

With oil prices nearly cut in half, the previous strategies of oil companies fell short. Even the industry's most powerful firms found their resolve tested unlike ever before. One after another, executives of IOCs all adopted a similar strategy, seeking to buttress efficiency and contain overhead while simultaneously leveraging technical capability and human capital. As a result, a tidal wave of mergers and acquisitions would hit the IOCs reducing the original group of seven majors down to five as well as seeing a number of smaller prominent companies not listed among the major seven being swallowed up further swelling the size of the leftover five. These events would produce what energy analysts refer to as the creation of the "Super Major" energy companies.[131]

At home in the US, history was made in two major ways. First, one of the biggest mergers ever would transpire between Exxon and Mobil. Second, one of the largest foreign takeovers of a US company would take place via BP's acquisition of Amoco.[132] The momentous merger that took place between Exxon and Mobil in 1999 formed the preeminent IOC in the US, ExxonMobil. At the time of the merger, this created the world's largest oil company, increasing Exxon's market share by a whopping 23 percent, and the third largest company in the US in terms of market capitalization behind General Electric and Microsoft.[133] In 2001, Chevron would

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[130] Ibid.
[131] Jeremy Rifkin, *The Hydrogen Economy: The Creation of the Worldwide Energy Web and the Redistribution of Power on Earth* (Penguin, 2003), Ch. 3.
[132] Clayton, *Market Madness*, Ch. 5.
[133] B. Rajesh Kumar, *Mega Mergers and Acquisitions: Case Studies from Key Industries* (Springer, 2012), Ch. 6.

purchase Texaco for around $39 billion, amassing a market value estimated at $90 billion.[134] Later that same year Conoco and Philips agreed to a $15.2 billion merger, creating the third largest American oil company behind ExxonMobil and ChevronTexaco (now just Chevron).[135]

In Europe, like in the US, a number of significant mergers and acquisitions would occur that would vastly expand the size and scope of its traditional IOCs. Most notably, BP would acquire a set of smaller firms including Amoco in 1998, which was important for reasons already mentioned above, but also because of the sheer size of the merger. At the time, Amoco operated in around 30 countries and owned an estimated $32 billion in gross assets, including five oil refineries that processed one million barrels of crude a day.[136] Over the next two years BP would also acquire Atlantic Richfield Co. (Arco), Burmah Castrol, and Veba Oil. In 2004 Royal Dutch Oil and Shell would finally merge into a single entity after nearly a century of operating as two separate firms. The company's stated purpose of the merger was "to achieve governance, management, and fiscal efficiencies for the Shell Group,"[137] likely driven by the crisis although there was much speculation about the impeding scandal concerning the downgrading of their oil reserves data.[138]

While the effects on the larger IOCs once a part of the Seven Sisters consortium of the most powerful oil companies was transformative, numerous lesser-known IOCs were also hit hard. IOCs such as Mitsubishi Oil, Nippon Oil Co., YPF, Getty, Enterprise Oil, Amerada Hess, Enel SpA, Endesa, and many others did not escape the refining fires of the crisis. Perhaps one of

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[134] Ibid.
[135] Albert Legault, *Oil, Gas and Other Energies: A Primer* (Editions Technips: December 30, 2007), 233-235.
[136] Kumar, *Mega Mergers and Acquisitions*, Ch. 6.
[137] Royal Dutch Petroleum Co., "Disclosure Document Relating to Merger of Royal Dutch Petroleum Company with Shell Petroleum N.V.," (disclosure document released to shareholders of Royal Dutch Petroleum Co. in compliance with US securities laws, November 14, 2005), 10.
[138] Mark Tran, "Shell Fined Over Reserves Scandal," *The Guardian,* July 29, 2004.

the more significant mergers to hit the group of smaller IOCs centered around the French oil company Total. In 1999, Total acquired the Belgian company Petrofina for $12 billion and then subsequently the French firm Elf for $54.2 billion, catapulting these less notable IOCs to a position of competitiveness with the likes of ExxonMobil, BP, and Royal Dutch Shell Group.[139]

The overall effects of the Asian Financial Crisis yielded about $200 billion in mergers and acquisitions worldwide and sparked what energy Analyst Jeremy Rifkin would refer to as the "transformation of Big Oil into Colossal Oil."[140] This new group of IOCs, the Supermajors, would become the primary competitors of the NOCs that arose three decades earlier. While many consider these companies relatively periphery actors when compared to the overwhelming strength of the NOCs, in terms of reserves and production, the gains IOCs made during this period in terms of market capitalization, operational efficiency, and technical capabilities would breathe new life into these firms. Particularly, this would provide the basis for the unconventional energy revolution that would shortly follow these events, and without a doubt would not have been possible absent these gains.

Conclusion

The era of Big Oil was the foundation for the transformation of the West, allowing for booming growth in economic output and the hyperlinking of regional economies around the world through international trade. The outgrowth of interconnectedness from the local level all the way up to the global that would define modern economic development and globalization would not have been possible without the necessary hydrocarbons propelling automotive

[139] Kumar, *Mega Mergers and Acquisitions*, Ch. 6.
[140] Rifkin, *The Hydrogen Economy*, Ch. 3.

transportation, air travel, and shipping. Yet, the second half of the twentieth century did not mirror the first, at least in terms of the prevailing actors in the industry.

The decline of Big Oil came on the heels of the rise of NOCs, primarily through the founding of OPEC and the renegotiations of oil company ownership that occurred as a result. Ten years after the organization's founding the ability to set prices and control production was permanently wrestled away from the IOCs that once dominated the industry. This has led to several consequences that are salient to this study. First, States reasserted themselves over an industry where market forces had previously dominated and they did so with little resistance from the West. This was primarily the result of OPEC and the ability to manipulate prices, though they struggle to act collectively at times. Second, the oil industry has become more politicized. This hurts overall oil security but more importantly makes IOCs and their livelihoods more subject to the power of NOCs. When OPEC makes a decision that could cause extreme oil price volatility, IOCs must adapt or perish.

Perhaps no other example best points towards the vulnerability of IOCs to oil prices than the 1997 Asian Financial Crisis. Faced with little choice, Big Oil underwent a metamorphosis on a magnitude that had yet to be seen historically, especially outside the US. Through a number of mergers and acquisitions Big Oil had grown even bigger and IOCs became more resilient. The accumulation of capital, maximization of efficiency, and a greater focus on technical capacity would not only prove necessary for IOCs in weathering the stresses of the oil glut that followed the events of 1997, but they would become the essential pillars of their future competitiveness. These transformations would prove especially fruitful in 2006 when the US oil boom would take off in earnest, powered by the unconventional capability of IOCs. Nevertheless, these events

shaped the current landscape of global oil and provide us with a launchpad by which we can thoroughly examine the comparison between NOCs and IOCs.

CHAPTER IV

MEASURING THE STRENGTH OF ENERGY COMPANIES

The events of the 20th century had massive consequences for the structure of the global energy industry and the world economy. Similarly, the first two decades of the 21st century would be just as transformational. These more recent developments will be captured below but not in the way that was done previously, as a historical survey. Rather as this study seeks to measure the strength of energy companies and compare NOCs with IOCs, the more recent shifts in power will be embedded in this fundamental analysis. To gauge the strength of energy companies this study establishes five dimensions of power for both NOCs and IOCs: control over world reserves (1), levels of global production (2), unconventional capability (3), spare capacity (4), and operational efficiency (5). Each variable speaks to a different dimension of power wielded by these companies that can allow for differentiation between all of the most prominent individual firms as well as distinguishing between groups such as NOCs and IOCs.

Controlling World Reserves

The first indicator of the strength of NOCs deals with the distribution of control over world reserves. This is one of the fundamental and most important measures of strength for energy companies for a couple reasons. First, the proximity to your reserves counts for a lot. Having the ability to operate within your own national boundaries means reduced costs associated with operations and with transportation. This allows companies to scale their operations to a greater extent, which is essential in capital intensive industries like energy. Increasing vertical and horizontal integration is more necessary for competitiveness and

companies that operate in various disparate locations suffer a competitive disadvantage. Having to transport your resources over vast distances will also increase costs considerably. This has led many IOCs to become more specialized in either upstream or downstream production because they can't centralize their operations in the way that a company like Saudi Aramco has.

Second, there is far less risk involved operating at home. This is mostly because foreign territory can present long term uncertainty as a result of unpredictable politics. Being that the energy industry is not only capital intensive but also requires long-term commitments, volatile politics and general insecurity presents a challenge difficult to overcome for firms looking to operate abroad. This can range from a foreign government suddenly turning hostile towards a firm's operations all the way to various political factions or nonstate actors engaging in acts of sabotage. In a more general sense, operating abroad often requires difficult negotiations with these states that can involve profit sharing on the low end to unscrupulous rent seeking on the high end. These tendencies are a vestige of the era of decolonization inclining former colonial territories to view foreign companies as exploitative and are consequently less favorable at the negotiation table.

Third, since there are vast inequalities in the energy industry emanating from the distribution of reserves as well as the wide variation in technical capability among energy firms, there is a strong impetus for engaging in partnerships. Having sizable reserves, especially when they are recoverable by using foreign technology, is important for attracting investment from partners abroad. Thus, companies operating at home are in stronger positions to appeal to potential partners as well as increasing opportunities to learn from international companies in a technical capacity. Essentially, the more reserves that an energy company has control over, the better positioned it is to be a major player in the industry.

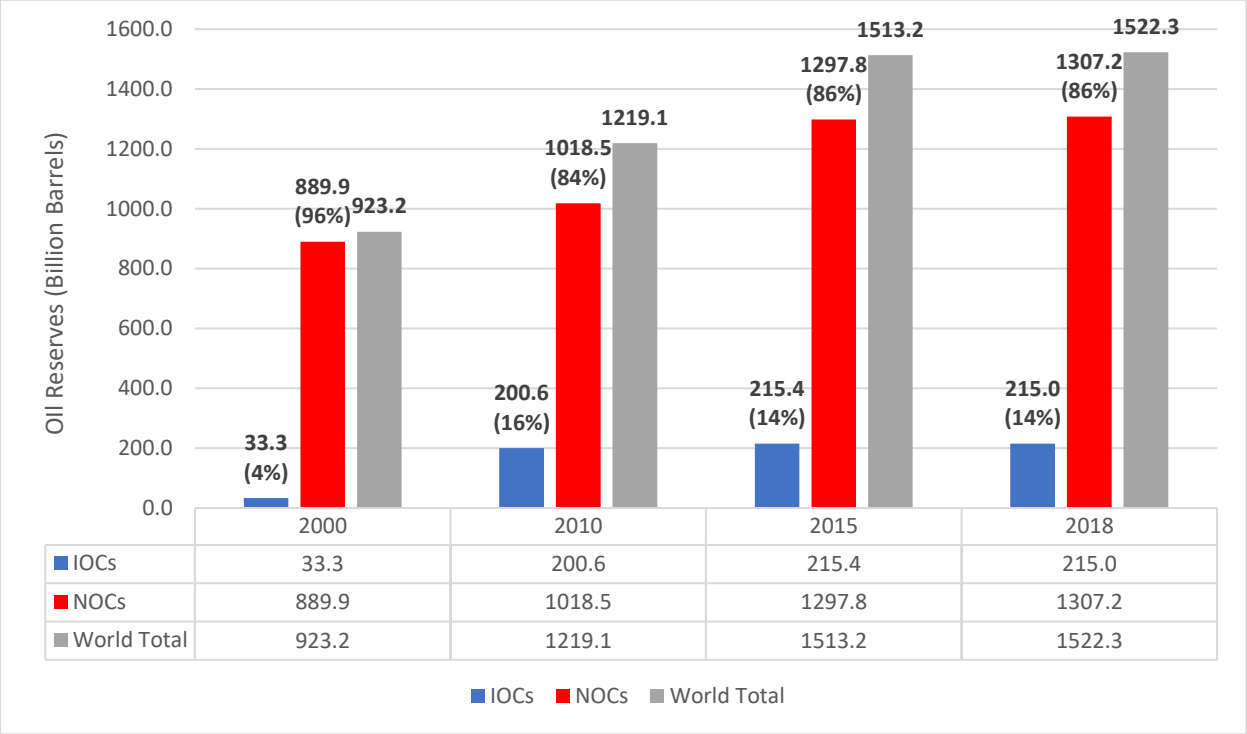
NOCs rose as a result of and continue to be bolstered by the nationalization of energy assets, which is a smaller component of a larger phenomenon: resource nationalism. This will be discussed in length in a later chapter as one of the explanations of preponderant NOC strength. Consequently, NOCs expanded most rapidly during the period of decolonization in the 1950s, 1960s, and 1970s as the previous chapter on the history of the oil industry has already underscored. However, more recent nationalizations in the 1990s and 2000s indicate that the trend of resource nationalism continues to influence the policies of countries that have significant reserves. The specific examples will also be covered in detail later. For now, suffice it to say that NOCs have continued to expand their influence over the world's oil reserves beyond the era of decolonization and the initial expansion of NOCs associated with the rise of OPEC. This trend has been ongoing in the energy industry even up to contemporary times as recent as the rise of Chinese NOCs, which has taken place in the last ten years or so.

The cascade of nationalizations that took place in the previous century produced the monumental disparity in control over the world's hydrocarbon reserves that we observe now in modern times (See Figure 1). Before the 1973 oil crisis, the Seven Sisters operated and controlled around 85% of global oil reserves. The early nationalizations resulted in Western IOCs being placed in a relative marginal position, controlling less than 10% of oil and gas reserves for decades.[141] By contrast, NOCs have since maintained a near monopoly on hydrocarbon reserves. At the turn of the century their strength was at its zenith as NOCs controlled a staggering 96% of global oil reserves.[142] Since then IOCs have gained back some

[141] Amy M. Jaffe and Ronald Soligo, "The International Oil Companies," The James A. Baker III Institute for Public Policy, Rice University, November 2007, 3.
[142] These figures are approximate but reliable estimations. A number of smaller companies were excluded from the dataset, most of which being NOCs and would only further illustrate the disparity. Data was compiled from the US EIA, "International Energy Statistics," Independent Statistics & Analysis, April 2019; and BP, "Statistical Review of World Energy 2021," Energy Economics, June 2021.

ground as a result of unconventional oil discoveries and the development of new technologies to exploit these resources. The fruits of the unexpected increase in North American reserves saw IOCs increasing their share as high as 16% by 2010 but has since leveled off to around 14% and remained stagnant.

Figure 1. Control Over Oil Reserves by NOCs & IOCs



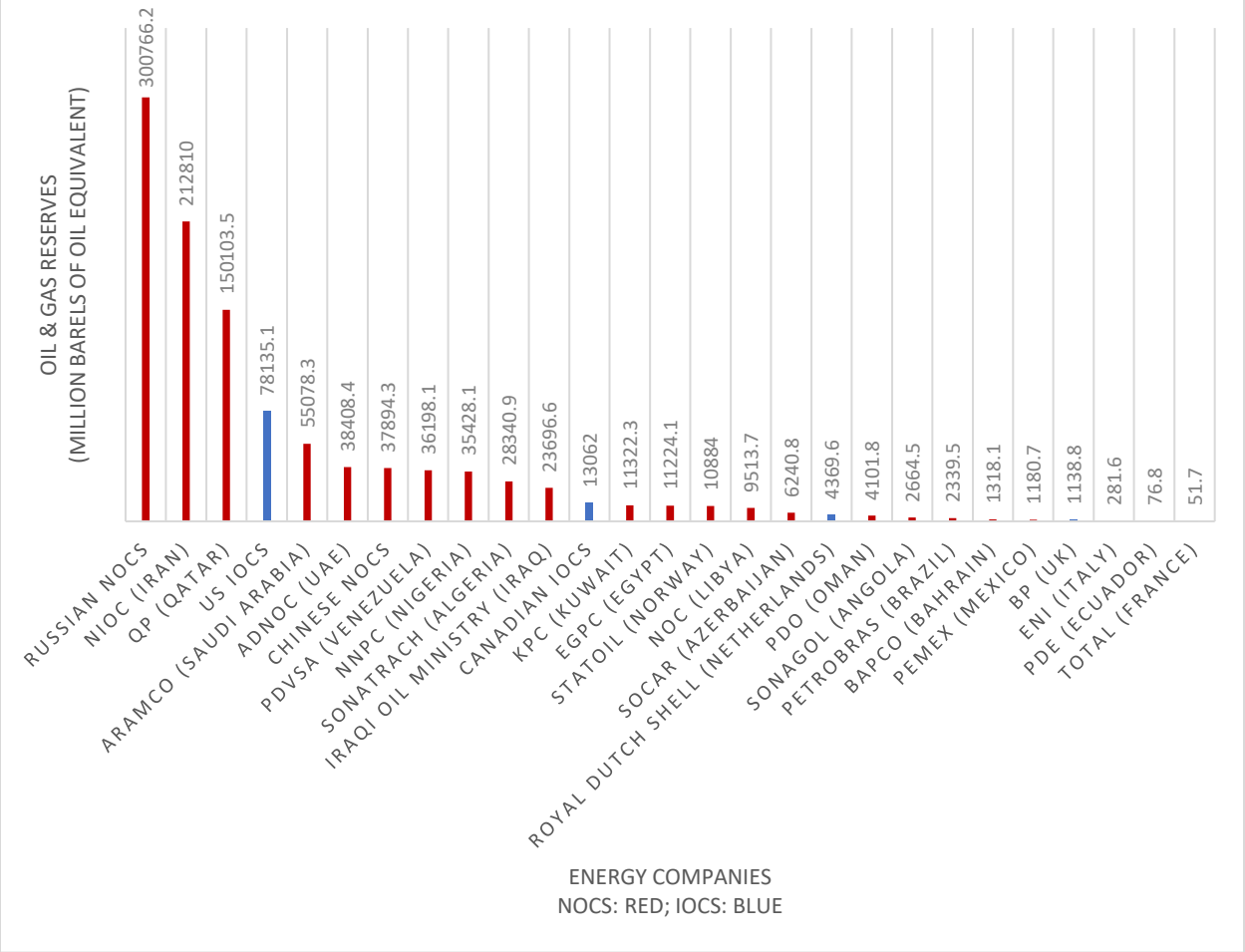
Source: Data obtained from EIA, "International Energy Statistics," Independent Statistics & Analysis, accessed April 2020; and BP, "Statistical Review of World Energy 2021," Energy Economics, June 2021.

When accounting for both oil and natural gas and incorporating the top 30 companies globally, the data continues to reflect the observed disparity (see figure 2). States that have multiple oil companies have been compiled together into a single national measure. When it comes to the sheer size of reserves, the NOCs of Russia, Iran, and Saudi Arabia stand atop the world and by a notable quantity at that. The compilation of US IOCs still possesses only about

half as much as Saudi Aramco and about a fourth as much as Russian NOCs. If broken up into the standalone individual companies, their relevance would become even more negligible. For example, ExxonMobil and Chevron, the two largest US IOCs, control around 20 billion and 11.1 billion barrels of oil respectively.[143] This would move both companies much further down the list, occupying space somewhere between Kuwait and Egypt in significance. The same could be said of Canadian IOCs, which would independently exist alongside companies like BP, Eni, and Total.

[143] "ExxonMobil Announces 2016 Reserves," ExxonMobil, February 22, 2017; and Ernest Scheyder, "UPDATE 1-Chevron's 2014 Oil, Gas Reserves Slip After Chad Asset Sale," *Reuters,* February 20, 2015.

Figure 2. Control Over Oil and Gas Reserves by Largest NOCs and IOCs



Source: Data obtained EIA, "International Energy Statistics;" BP, "Statistical Review of World Energy 2021."[144]

The total energy reserves controlled by a company is the most fundamental indicator of strength. The firms with the largest reserves will be strategically placed as absolute necessities for the supply of energy that will power the global economy. As it turns out NOCs dominate this dimension of strength with near monopolistic power. Even the unexpected and impressive boom in North America has done little to reduce the stranglehold NOCs have on the pool of global

[144] Data covers NOCs' and IOCs' control over gas and oil reserves for years 2018/2019; Data for Russia, the US, China, and Canada is combined data for the top 3 oil companies respectively.

reserves. Additionally, it is well recognized that massive investment to develop these reserves will be necessary to meet the forecasted rise in global demand. According to BP's 2019 Energy Outlook, global demand for liquid fuels is expected to grow by about 10 mb/d, plateauing around 108 Mb/d in the 2030s.[145]

While the unexpected availability North American oil will initially play a strong role in meeting demand growth, these reserves are expected to reach their ceiling relatively quickly. Ultimately, NOCs still control the lion's share of global energy reserves and the majority of future increases in global energy supply will mostly be met by OPEC countries,[146] making them the most "critical in determining the path of the energy market."[147] This will allow NOCs and their national controllers unassailable strength in two major ways. For one, they will become the centers of global investment for supply growth. Even IOCs themselves will be forced to partner with NOCs as their supplies dwindle. There is also the dimension of asymmetrical interdependence to consider. Because developed economies are highly dependent on energy consumption and are difficult to decarbonize, NOCs will benefit greatly both politically and economically as a result. Even in their most environmentally optimistic projections, the "sustainable development scenario," the IEA forecasts that oil and gas will continue to be the primary sources of global energy consumption to 2040 and beyond.[148]

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[145] BP, "Energy Outlook 2019," Energy Economics, January 2019, 81.
[146] Kjell Aleklett, "An Analysis of World Energy Outlook 2012 as Preparation for an Interview with Science," Association for the Study of Peak Oil & Gas, November 29, 2012.
[147] Mark Finley, "The Oil Market to 2030-Implications for Investment and Policy," *Economics of Energy & Environmental Policy* 1, No. 1, 2012, p. 42.
[148] IEA, "World Energy Outlook 2018," Analysis, Flagship Report, November 14, 2018, 5-6.

The Level of Global Production

While examining the distribution of control over world reserves is important, the second indicator of NOC strength, production, is equally important. Reserves and production are related to one another, for obvious reasons, but they also differ in a couple important ways. First, while controlling a large reserve oil can allow for a greater level of production, this relationship is not necessarily causal. For those companies whose reserves are located at home, there are a number of factors that can disrupt the reserves-to-production relationship. There is a myriad of political, social, and economic phenomena that function as intervening variables such as instability, recession, regulation, and environmental concerns to name a few. Additionally, the technology to discover reserves tends to outrun the ability to technically and economically recover them. This is especially the case for NOCs, who lag behind the IOCs in R&D investment more often than not. However, IOCs are not necessarily better positioned as their reserves are, in many cases, positioned offshore or in foreign countries. This can present difficulties for investment and expansion of production capacity for the same reasons as discussed above regarding reserves. Moreover, even though they often possess more advanced technologies and are more effective at converting reserves to production, there are considerably higher costs associated with these kinds of operations.

Second, controlling the majority of reserves yields oil companies potential longer-run influence, while levels of production yield some influence over short-run energy dynamics such as month-to-month supply. Countries that possess considerable reserves have more staying power as they are central for meeting future demand. However, transforming reserves into future production is contingent on a number of factors that are very difficult to predict such as investment, future market supply and the growth of demand, the presence of conflict,

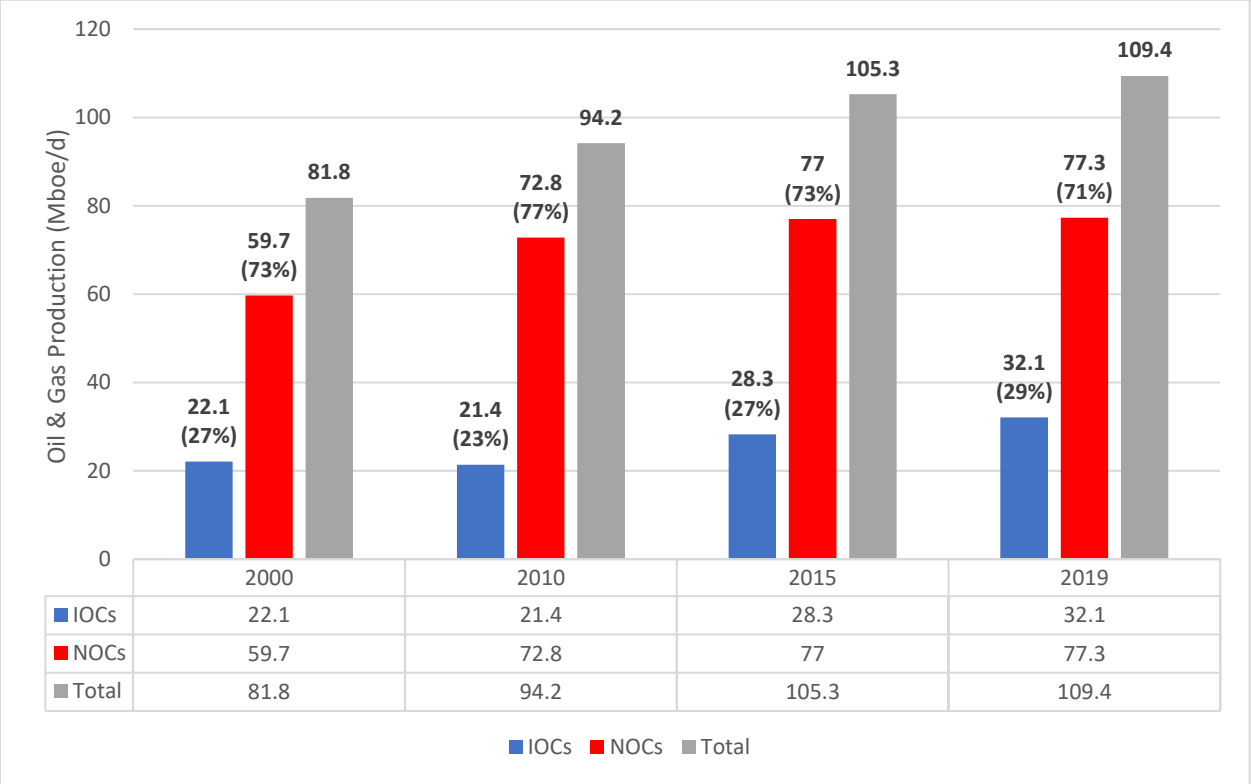
international or otherwise, unexpected technological breakthroughs like the American energy boom, and in the case of NOCs, the government's domestic budgetary decision-making. On the other hand, high levels of production confer more strength in the present. Companies with high levels of production will be more profitable and as a result better positioned and more adaptable when there are sudden supply shocks, price spikes, or economic recessions. Additionally, the power to use energy companies as foreign policy tools has been well documented by both the Saudis and other OPEC producers as well as Russian NOCs more recently. Since energy is so critical for the modern economy, consumers are far more vulnerable to producers than the other way around. Therefore, high levels of production confer some serious short-run power. This is more so the case for NOCs since IOCs are essentially economic actors and not involved in the state apparatus in the same way NOCs are.

Since the 1960s NOCs have produced the majority of the world's oil and gas production. While they have traditionally dominated the global energy market since this point in time, especially regarding control over reserves, their position has not been as strong as it is when it comes to production. This trend has not changed very much in the 21st century, which has fluctuated between around 71% and 73% of global production (see figure 3). Between 2000 and 2010, NOCs almost exclusively made up the increase in global production. The following five years saw a dramatic increase in production for IOCs by about 7 mboe/d, as the American energy boom was well underway. This has slowed since 2015 and is expected to peak at some point in the next five years. During this period NOCs production has remained relatively flat, which is mostly the result of the increased levels from IOCs. While there are reports of some NOCs investing to increase their production capacity,[149] they have kept their current production levels

[149] Nidhi Verma and Promit Mukherjee, "OPEC Urges Producers to Ramp Up Investment Amid Shrinking Spare Oil Capacity," *Reuters*, October 16, 2018.

steady for the most part. This is because of the unexpected rise in American production, which forced OPEC producers to lower their production in order to defend global price. Of course, this excludes the oil glut that took place between 2015 and 2017, a borderline unilateral Saudi policy, that will be examined in more detail later.

Figure 3. Levels of Oil & Gas Production by NOCs & IOCs



Source: Data obtained from EIA, "International Energy Statistics;" and BP, "Statistical Review of World Energy 2021."

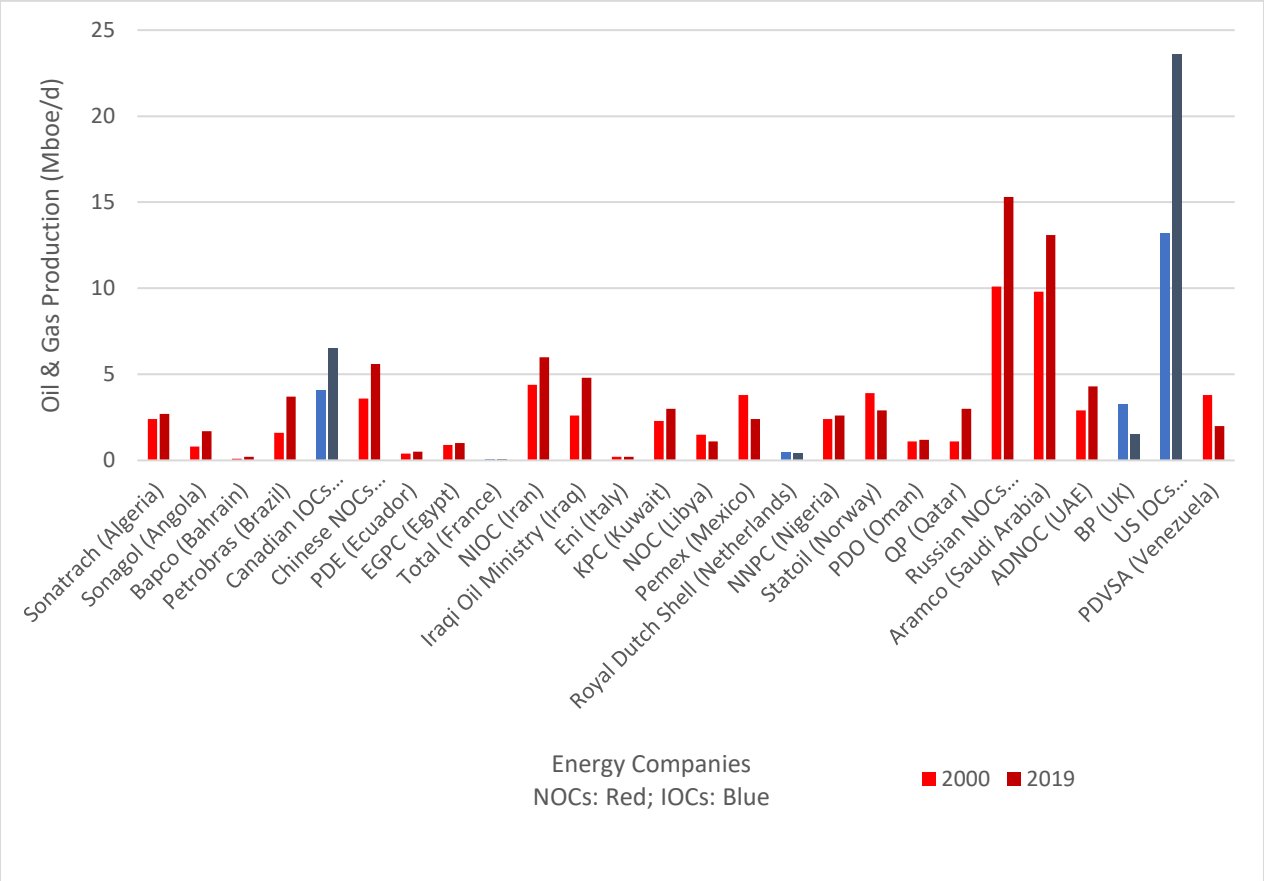
Figure 4 further breaks down levels of oil and gas production by the largest companies in the same time frame. Similar to the figure dealing with reserves the companies of the US, Canada, Russia, and China were compiled into a single unit of measurement. On the NOC side of the equation, the most notable gains were made by Russian and Chinese NOCs, Saudi Aramco, Brazil's Petrobras, and the Iraqi Oil Ministry. Iran's production, in light of the

tightening of US sanctions and the revocation of oil waivers,[150] will likely plummet for the foreseeable future. This will soon cancel out the impressive gains made by Iran's company, NIOC, since the nuclear agreement with the Obama administration in January of 2016. Additionally, despite holding the world's largest oil reserves, Venezuela's production has fallen significantly in the last twenty years, mostly as a result of poor economic policy and extreme political instability. This highlights the difficulties associated with converting reserves to production and the various intervening variables that can disrupt development.

On the IOC side of the equation, while the production of IOCs has drastically increased on the whole, the gains are quite lopsided. According to the data, the US and Canadian IOCs are solely responsible for the observed rise in production made by private firms in the 21st century. Meanwhile, the other major IOCs – BP, Dutch Royal Shell, and Total – have actually fallen during the same period. This underscores the significance of the American energy boom as it has not only made up for falling IOC production elsewhere, but also propelled the titanic increase of 10 mboe/d in the last two decades.

[150] Michael O'Kane, "US Revokes Iran Oil Waivers," *European Sanctions*, May 7, 2019.

Figure 4. Largest Oil & Gas Companies by Production



Source: Data obtained from EIA, "International Energy Statistics;" and BP, "Statistical Review of World Energy 2021."

In terms of production, NOCs are slightly less preponderant when compared to reserves. Nevertheless, they are in a commanding position, controlling over 70% of global production. Admittedly, this represents a relative decline when compared to the to the last three decades of the 20th century, which saw NOCs' production making up around 80%-85% of the global share. However, the reduction in percentage of global production is partly voluntary and was also somewhat necessary. As North American production has increased, NOCs were faced with the dilemma of either continuing with their current production numbers and seeing global prices fall or reducing their production levels so that prices remained higher. Additionally, NOCs are responsible for providing rents to their home governments because of their status as national

entities not to mention they are often the primary source of income for their countries. As a consequence, NOCs usually tend to be more hawkish when it comes the price of oil.

While NOCs opted to reduce their production levels and at the present time make up a smaller relative share of global production when compared to the last few decades, on the whole they remain in a very strong position. This is primarily because their high levels of production and politicization of their business model allow them to increase and decrease production based on political and economic strategy. On the other hand, IOCs always produce as much energy as possible and allow market forces to curtail or buttress their activities. Of course, the privatized model tends to offer more net benefits, which we will explore in a later indicator of strength. However, the national model does have its benefits at times. Here we can observe that when it comes to controlling the global supply and by extension the price of energy, a difficult task in the era of globalized markets, NOCs allow countries to coordinate and manipulate the market in accordance with their perceived strategic goals.

This ability also allows NOCs to play for time. According to future projections expanding global demand will slowly soak up the increased production from North America. Therefore, NOCs will still be the primary energy suppliers for the global economy in the long run. They will be capable of slowly increasing their production levels whenever necessary to maintain a favorable price. In fact, energy forecasts are predicting that despite North American production meeting global demand over the next decade, OPEC production will almost exclusively become the source of incremental supply growth during the 2030s.[151]

[151] BP, "Energy Outlook 2019," Oil, 81.

Unconventional Capability

Since the rise of unconventional sources of energy and the ability of companies to utilize cutting edge techniques to exploit them in the last decade, the ability of firms to engage in these activities has become an important indicator of strength. Unconventional energy refers to hydrocarbons that are far more difficult to extract when compared to conventional energy resources. In a historical sense, hydrocarbons that were "conventionally" exploited by energy firms were the largest deposits of oil and gas discovered and the easiest to commercialize. Generally speaking, this is because infant industries often have the least technical know-how at this point during their life cycle. However, as time goes on and activity is expanded over time, companies often improve the efficiency with which they operate as well as develop new techniques, which often open up new possibilities for the industry as a whole. When it comes to energy, history has proven many times that unexpected technological breakthroughs have played a major role in pushing back peak energy and overwriting current projections for the future state of the markets.[152] Nevertheless, our conception of conventional versus unconventional is defined by this dynamic, that is, the more difficult and expensive a particular resource deposit is to develop, the more it is considered "outside the norm" or "unconventional."

Unconventional energy production has been around since the early days of the hydrocarbon revolution. For example, in WWII Germany the synthetic oil industry, based on a number of chemical processes, allowed the nation to refine high octane fuel for its armor and aircraft from the nation's vast coal resources.[153] This was fundamentally driven by the scarcity of

[152] Steve Yetiv and Lowell Field, "Why Energy Forecasting Goes Wildly Wrong," *Journal of Energy Security*, October 23, 2013.
[153] R. Holroyd, "Report on Investigations by Fuels and Lubricants Teams at the I. G. Farbenindustrie, A. G., Works, Ludwigshafen and Oppau," US Bureau of Mines, Washington, DC, 1946.

conventional hydrocarbon reserves in Germany, which is necessary for creating an environment conducive for commercializing unconventional technologies. This goes hand-in-hand with the earlier principle of how we categorize conventionality. Which is to say, commercial opportunity drives our categorical conceptions, and furthermore, incentivizes the development of technologies that can unlock resources that were previously considered outside a reasonable investment of time, capital, and effort. Moreover, it is scarcity that fundamentally drives the extent to which these economic incentives are magnified.

In the US, which has become the premier global unconventional energy superpower, commercial incentives would not begin to appear like they did in Germany until the second half of the 20th century. This is primarily because the US had been one of the world's leading conventional producers since oil was discovered in Pennsylvania in the late 19th century. However, as the conventional reserves of the US began to reach peak production and the national consumption continued to skyrocket, the economic incentives for unconventional energy would start to present themselves. The Department of Energy would begin investment and research in 1976 and through the next few decades that would lay the foundation for the American energy boom that took off after the turn of the century.[154]

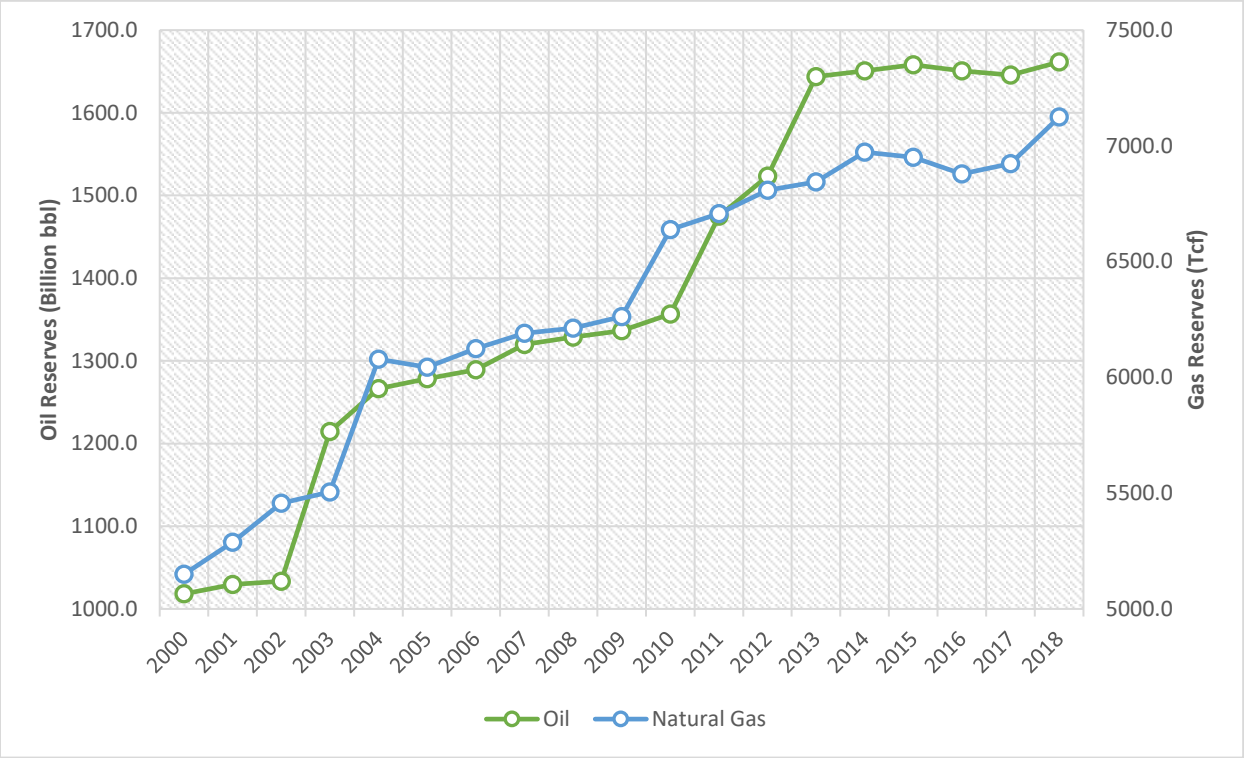
While unconventional capability is related to reserves and production for obvious reasons, it is also different because it speaks towards a pivotal point of distinction between energy companies: technical efficiency. This term refers to a company's ability to economically deploy advanced techniques or methods in the recovery of resources. In terms of liquid hydrocarbons or petroleum, unconventional energy refers to extra- or ultra-heavy oil, tar sands, shale oil, gas-to-liquids (GTL), and coal-to-liquid (CTL) technologies. In terms of natural gas, it

[154] US Department of Energy, "Shale Research & Development," Department of Energy, accessed June 20, 2019.

refers to tight, shale, and offshore gas as well as coalbed methane. The rise of unconventional energy has the potential to rearrange the global energy landscape, and already has to some extent, making this new dimension of strength significant. In fact, the North American energy boom is the prime example of the power of unconventional energy. On the other hand, the boom has been thus far contained to the US and Canada. Unless unconventional capability spreads to other vital regions, its revolutionary potential will remain limited. As of right now North American IOCs have been the only handful of companies with the ability to make notable inroads into this new dimension of energy.

Despite being thus far limited, the global potential of unconventional energy is staggering. On the supply side, global energy reserves have grown significantly in the last twenty years (see figure 5). So far, the 21st century has seen two massive spikes in oil supply: around 150 billion barrels from 2002-2004 and about 300 billion barrels from 2010-2013. In total, world oil supply has grown by 643 billion barrels since 2000, representing a 39% growth. For perspective, in 2019 Saudi Arabia's oil reserves were 266 billion barrels, less than half of what has been added as a result of the rise unconventional energy. Natural Gas reserves have grown more steadily and modestly over time when compared to oil. Between 2003 and 2004 natural gas saw its most drastic increase, jumping by over 500 Tcf. Since the turn of the century global gas supplies have risen by 28% or by about 2000 Tcf.

Figure 5. World Oil & Gas Supply Since the Unconventional Energy Boom

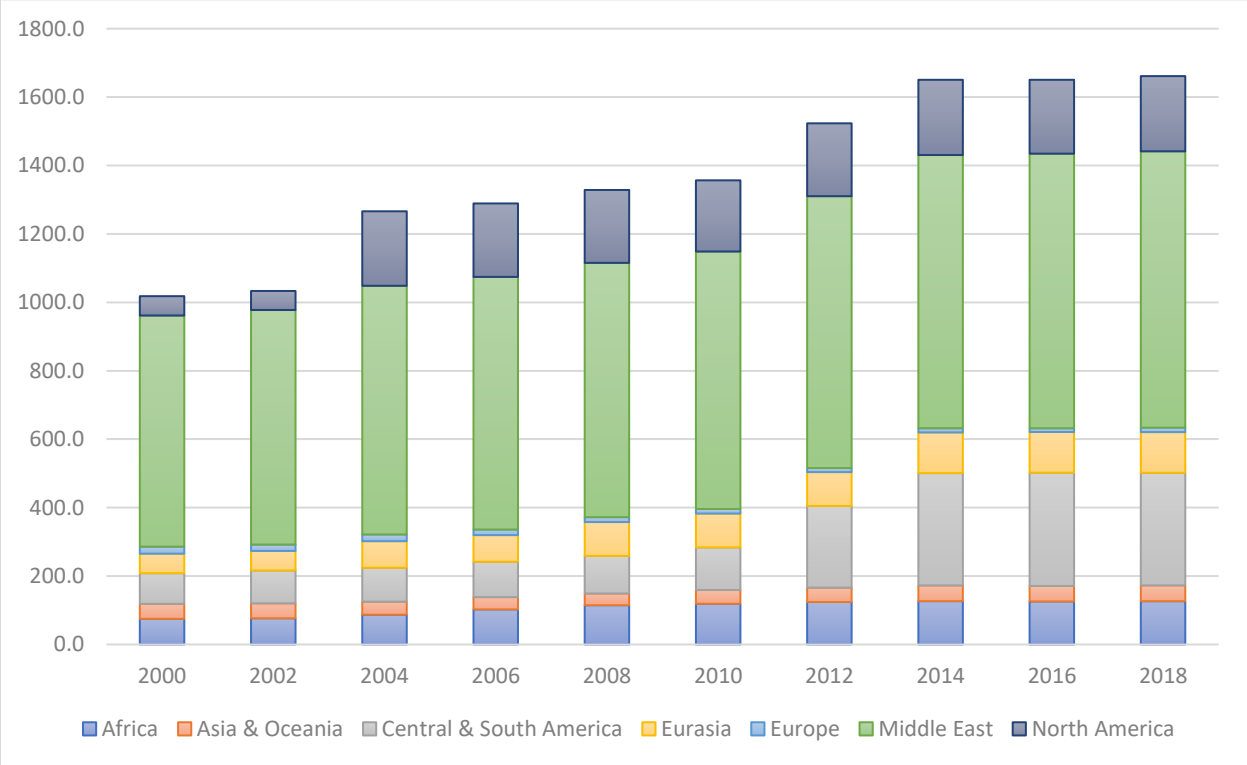


Source: Data obtained from EIA, "International Energy Statistics;" and BP, "Statistical Review of World Energy 2021."

Figure 6 details the rise in oil reserves by region, which indicates the areas of the world that are benefiting more so from unconventional energy. The more notable shifts have taken place in the western hemisphere, predominantly in North America and Latin America. Since 2000, these two regions' reserves have increased by 163.2 billion barres (74%) and 239.6 billion barrels (73%) respectively. While Latin America has benefitted more so in terms of quantity, these gains have gone relatively unexploited because of the primary beneficiary of these new reserves – Venezuela. In the last twenty years Venezuela's oil reserves have risen from 72.6 billion barrels to 302.8 billion barrels. Its additional reserves total a staggering 230.2 billion barrels, making up 96% of the entire regional increase and representing a 76% increase of its own previously impressive supply. For perspective, this has jettisoned Venezuela over even

Saudi Arabia (266.3 billion barrels) as the nation with the greatest supply of oil. Unfortunately, because of poor policy decision-making during the Chavez era and the mounting political and economic ruin under Maduro, Venezuela has not taken advantage of the golden opportunity it has been offered. In fact, during the same time frame the states oil production has fallen by nearly 2 mb/d, the equivalent of the total annual production of countries like Mexico or Nigeria.

Figure 6. Regional Growth of Oil Reserves from Unconventional Additions



Source: Data obtained from EIA, "International Energy Statistics."

While unconventional oil has powerful untapped potential for Latin America, the revolution is in full swing to their north. Thus, the unconventional revolution has been dubbed the "North American energy boom."[155] In terms of reserves, Canada has been the main

[155] Russel Gold, *The Boom: How Fracking Ignited the American Energy Revolution and Changed the World* (Simon and Schuster, 2014).

benefactor, increasing from 4.9 billion barrels in 2000 to 167.4 billion barrels in 2019. This has mostly come from the vast tar sands that were not previously recoverable. Canada has jumped to a commanding position on the list of nations with the largest oil reserves, passing Iran (151 billion barrels) and Iraq (143 billion barrels) and only trailing Venezuela and Saudi Arabia. However, it differs from Venezuela when it comes to production as Canada has been far more successful at exploiting its newfound source of wealth. Since its major unconventional discoveries oil production has risen by about 2.5 mb/d, which nearly matches the entire annual production of Kuwait, a traditionally important OPEC producer.

The US has benefitted in terms of reserves, seeing an Increase in supply by nearly 19 billion barrels, but it is production that has made the more outstanding gains. American oil production rose from 5 mb/d in 2008 to well over 7.44 mb/d in 2013,[156] and then surpassed the 10 mb/d mark in 2017.[157] Production has so far topped out at over 10.96 mb/d for 2018 amounting to a colossal growth of around 6 mb/d in total production since the beginning of the boom,[158] putting the US in contention for the position of world's top oil producer alongside Saudi Arabia and Russia. In its central scenario, the EIA projects the boom will continue to set annual historical records through 2027, nearly reaching as high as 15 mb/d, and remaining above the 14 mb/d mark through 2040.[159] For perspective, the increase in American oil production per

[156] US EIA, "Petroleum & Other Liquids Database: Crude Oil Projections," Independent Statistics & Analysis, March 14, 2014.
[157] See figure 3: US Crude Oil Domestic Production in US EIA, "This Week in Petroleum," Independent Statistics & Analysis, July 10, 2019.
[158] See IEA, "International Energy Statistics;" and BP, "Statistical Review of World Energy 2021."
[159] Lower 48 onshore tight oil development continues to be the main source of growth in total US crude oil production. See figure 1 in US Crude Oil Production, US EIA, "Annual Energy Outlook 2019: with Projections to 2050," Outlooks, January 15, 2019, 15-16. Meanwhile, the British Petroleum outlook predicts that US tight oil increases by almost 6 Mb/d in the next 10 years, peaking at close to 10.5 mb/d in the late 2020s, before falling back to around 8.5 mb/d by 2040. BP, "Energy Outlook: Oil," Energy Economics, Energy Outlook, Fuels accessed July 12, 2019.

day far exceeds the amount of oil that Iran exported daily prior to US-led sanctions that were imposed on Iran in response to its nuclear pursuits. That's a truly massive rise in oil production in a world that consumes around 95-100 mb/d.

When it comes to gas, relatively smaller quantities of total reserves have been added when compared to oil, yet the potential economic boon to energy companies and potential political influence gained by producer nations are just as potent and perhaps even more so for a few reasons. First, gas is not traded internationally to the same extent as oil. Because gas is primarily moved through pipelines rather than marine tankers, the markets are less globalized and more regional. Therefore, consumers are more dependent on regional trade partners for those specific resources produced by a particular company. In short, there is less likelihood of an energy company's product being substituted for or replaced by a different source from other producers in the market. Of course, with the international trade of Liquified Natural Gas (LNG) on the rise this could change over time. The US and others are already showing signs of increasing investment in LNG terminals to support additional exports.[160] But for now, gas markets remain more localized than globalized and this supports an asymmetrical interdependence that favours the producer.

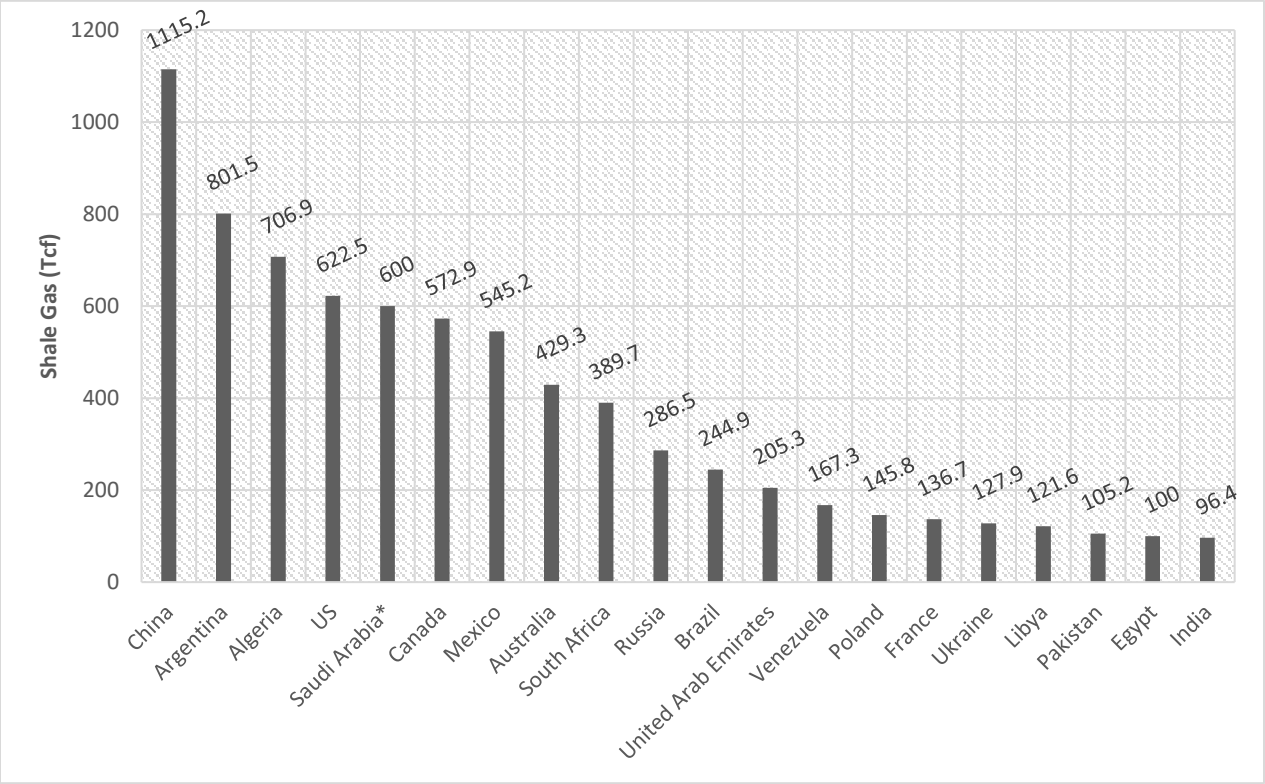
Second, Gas has been more advantageously dispersed among nations that do not have much conventional alternatives to speak of. When it comes to oil, there are still very large conventional deposits that are inexpensive to extract putting depressive pressure on economic incentives to pursue unconventional oil. However, this is not the case with gas as unconventional deposits have so far proven to be abundant in nations that have little to no conventional sources to serve as distractions. Consequently, nations with unconventional gas will be more likely to

[160] Brian Hicks, LNG Investing in the Next 10 Years," Energy & Capital, June 8, 2015.

take advantage of their resources. Third, there is also the environmental dimension to consider. Gas can be more revolutionary because it burns cleaner than any other fossil fuel. This makes it capable of addressing the consumption of the OECD nations, the emerging world's needs to propel continued economic development, and the developed world's environmental imperatives.

Most conventional gas is categorized as either "associated," existing alongside oil deposits, or "non-associated" as a standalone deposit. In the 20th century most of the world's gas reserves resided in Eurasia and the Middle East, predominantly in Russia and the Persian Gulf States, as associated natural gas. The unconventional energy revolution has produced new natural gas superpowers, flipping this previous arrangement on its head. China, Algeria, and Argentina all individually possess more shale gas than the United States or Canada, which is significant (see figure 7). Moreover, China's supplies are colossal (over 1000 Tcf)—nearly double the size of the US reserves. Mexico has comparable reserves to both the United States and Canada, all coming in between 530 Tcf and 630 Tcf. Australia and South Africa also have significant quantities, with 429.3 Tcf and 389.7 Tcf respectively. Adding to the quantity of the old guard, Russia and the UAE have both discovered between 200 Tcf and 300 Tcf. Additionally, if Saudi Arabia's projections are confirmed this would add a whopping 600 Tcf, which is nearly the same amount as the US.

Figure 7. Top 20 Largest Shale Gas Reserves by Country



Source: Data obtained from EIA, "World Shale Resource Assessments," last modified September 24, 2015.[161]

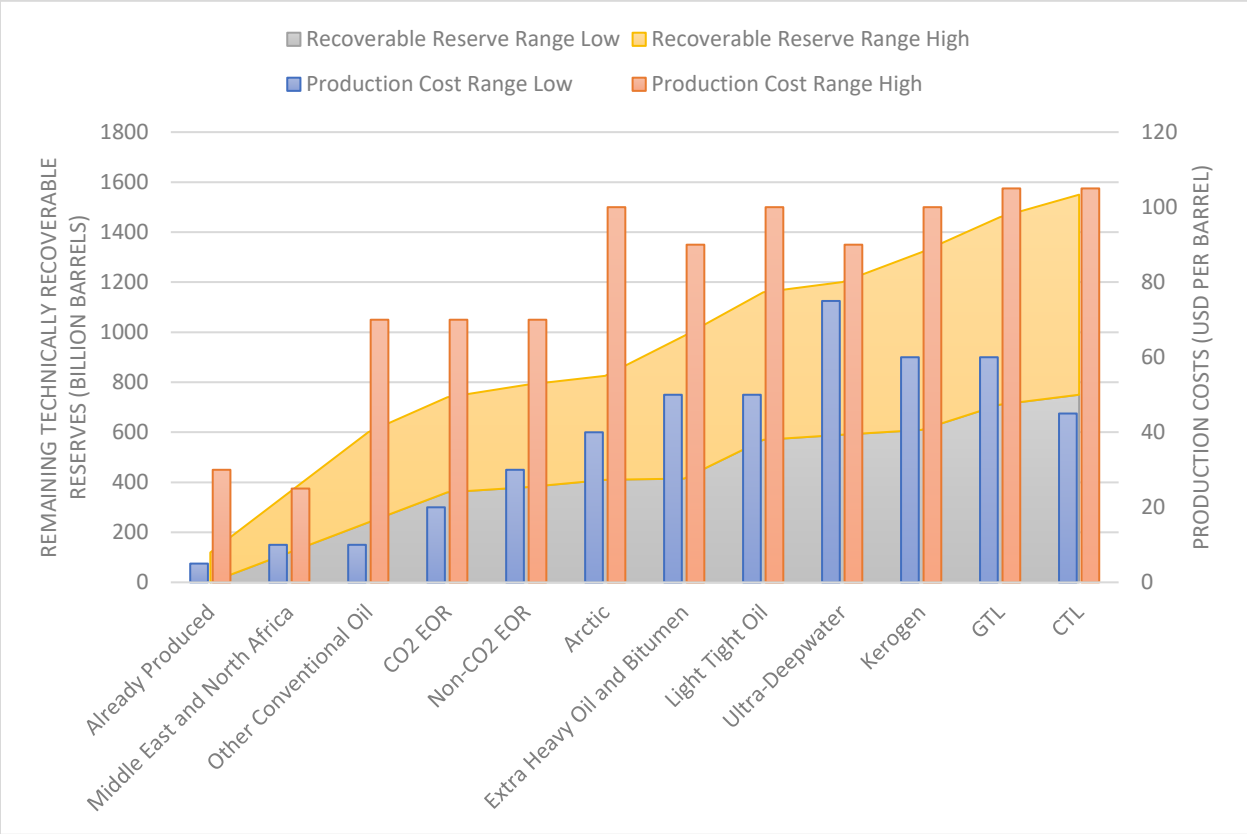
Despite the major discoveries outside of the US and Canada, little production outside of North America has been added thus far. Generally speaking, NOCs have tended to perform very well in terms of proven reserves but less so when it comes to converting reserves to production since their rise in the mid-20th century. Their technical efficiency has tended to lag behind the IOCs, whether speaking of conventional or unconventional energy. For the most part, publicly owned industries have always been less efficient than their private counterparts, primarily because of rentier dynamics. Combine this tendency together with the higher costs associated

[161] Assessment contains data for only 44 countries as exploration is thus far highly limited. Saudi Arabia's reserves are an estimation released by the oil minister and seismic surveys have not been made public.

with unconventional energy production and it becomes easier to see why the boom has remained a north American phenomenon.

Unconventional techniques are difficult and costly across the board when compared to conventional methods, however the economic disparity is more substantial when it comes to oil specifically. This is because most conventional gas came in the form of associated deposits. Conversely, there are large reserves of conventional oil that stand alone and provide for a stark comparison to unconventional production methods (see figure 8). Most of the world's conventional oil that has already been exploited or that remains to be developed in the Middle East and North Africa ranges between $5 USD and $25 USD per barrel in production cost. This usually refers to oil that is mostly "light" and "sweet" as opposed to "heavy" or "sour." Other conventional production, ranging between $5 USD and $65 USD per barrel, represents heavier or more sour varieties of oil. Enhanced oil recovery (EOR) methods, both CO2 and non-CO2, can be as expensive as some conventional oil on the high end but is generally more expensive on lower end by about $5-$10 USD per barrel.

Figure 8. Recoverable Reserves and Production Costs by Extraction Method and Oil Type



Source: IEA, "Resources to Reserves 2013: Oil, Gas and Coal Technologies for the Energy Markets of the Future," OECD/IEA, 2013.

Arctic oil can be as expensive as any of the most expensive methods, which has limited its growth over the years, but some sources have been exploited on par with conventional oil and tends to be about as competitive as unconventional oil. This has allowed arctic oil to remain somewhat relevant during times of low prices and economically worthwhile when prices float upwards. Extra- or ultra-heavy oil and bitumen as well as light-tight oil are at the heart of what is referred to as the "unconventional energy revolution" or the "American energy boom" by analysts. These techniques, ranging from as little as $45 USD to between $85 USD and $100 USD per barrel, make up the majority of unconventional gains to date. This is largely due to new

discoveries of "tight oil" and shale gas in the US[162] as well as the extra- or ultra-heavy supplies of Venezuela.

Tight oil refers to oil found within reservoirs with very low permeability, including but not limited to shale. Permeability is the ability of fluids, such as oil and gas, to move through a rock formation.[163] Hydraulic fracturing shoots pressurized, chemically tipped liquids into compact, underground rock formations to discover oil. Horizontal drilling provides access to this energy from the side, where more reservoir rock is exposed, providing much better results with far fewer drilling wells and attempts. The technical expertise required to economically engage in unconventional energy exploitation, specifically utilizing hydraulic fracturing and horizontal drilling, is underscored by figure 8. Therefore, energy companies with greater technical efficiency can deploy these methods at lower cost, granting them better unconventional capacity. This explains why North America has been the primary beneficiary of unconventional energy as US and Canadian IOCs have proven the most capable at developing their technical efficiency.

Figure 8 reveals another important dynamic of unconventional energy that deserves mention – the relationship between price and supply (recoverable reserves). As stated earlier, commercial incentives play a defining role in our categorical understanding of resources and society's interest level in pursuing more expensive alternatives. This relationship between price and recoverable reserves is a demonstration of this principle at work. When the price of a barrel of oil increases, the total amount recoverable reserves expand. It is no coincidence that the rise of

[162] Tight oil does not account for all of America's oil production growth; it is estimated by the EIA to account for 81 percent of expected future production. If we add Canadian oil production, the impact would be greater, albeit not by a great deal because tight oil production in the United States represents 91 percent of all North American tight oil production, with the remaining 9 percent coming from Canada. See US EIA, "Tight Oil-Driven Production Growth Reduces Need for U.S. Oil Imports," Today in Energy, April 7, 2014.

[163] US EIA, "Tight Oil Production Pushes U.S. Crude Supply to over 10 Percent of World Total," Today in Energy, March 26, 2014.

unconventional energy in the US coincided with a decade of unusually high oil prices, setting an all-time historical high in 2008 of $163.80 USD per barrel.[164] In a sense, the sustained high oil prices became the fertilizer that fed the growth of unconventional energy in the US, who had a host of alternative sources of exploitable energy now open to them. This reveals the role that price plays when calculating the significance of unconventional capability as well as its potential for becoming a greater, global phenomenon.

While the price of energy is important for unlocking additional reserves and sparking a potential foray into unconventional operations, a company's technical efficiency is the defining dimension. Look no further than the expansion of unconventional production in the US and Canada but not in other well-endowed nations as an example. This is because increased operational experience, improved business strategies, and the development of more advanced techniques allows firms to lower their own individual production costs and sustain operations under greater external pressure. This is particularly important when, for instance, price is not presently conducive towards commercial activity. For all the talk about the significance of price, it has proven to fluctuate wildly at times which makes expensive operations like unconventional production a risky investment. In fact, there was much speculation that the 2014-2017 Saudi oil glut was targeted towards US unconventional producers in part.[165] The logic here being that if oil flooded the market and pushed prices low enough, then the US unconventional production would collapse. However, US companies were able to respond to the pressure by increasing their

[164] According to the West Texas Intermediate crude oil index, prices remained between $80 USD and $120 USD per barrel for the majority of the decade.
[165] Steve Austin, "Shale Producers Won OPEC's Oil Price War," Oil-Price.net, June 7, 2017.

technical efficiency to such an extent that in some cases production costs were cut by fifty percent, remarkably falling under $30 USD per barrel in some instances.[166]

While unconventional energy presents energy companies with a lot of potential opportunity, there is also another drawback that must be accounted for aside from the higher costs: the relative longevity of the wells. As was pointed out earlier, conventional deposits are usually more economically viable because they contained the easiest oil to refine and, more importantly, because they were the largest singular deposits of reserves that could be exploited over the long-haul. The latter distinction is especially important when comparing conventional and unconventional production. The IEA has found that production from unconventional wells falls to twenty percent of peak production after about three years, whereas the same level of decline takes around eleven years for conventional wells.[167] These diminishing returns on investment place a premium on the technical efficiency of companies, especially when accounting for the potential volatility of prices.

When it comes to unconventional capability, IOCs are in the strongest position for a couple of reasons. First, the traditional conventional reserves were mostly nationalized in the 1960s and 1970s during the rise of NOCs and OPEC, which explains why they tend to dominate when it comes to reserves and production. Having relatively little access to cheap alternatives, IOCs have focused their efforts on unconventional development. Second, IOCs sport a more efficient business model as privatized companies. They are free of government rents and the

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[166] The numbers for a few major producers have reportedly fallen under $30 USD per barrel but this is rarely the case for most shale oil companies. Costs are generally significantly higher the majority of smaller companies. See Arthur Berman, "Why Break-Even Costs are Plunging Across the Oil Industry," *Oilprice,* April 10, 2017; and Robert Rapier, "The Break-Even Cost for Shale Oil," *Forbes,* February 29, 2016.

[167] IEA, "World Energy Outlook 2013," Analysis, Flagship Report, 467.

interference of political considerations when it comes to business decision making. Thus, they can harness their profits towards innovation and increasing the efficiency of their operations.

Unconventional capabilities will prove a source of strength for IOCs going forward mostly because of global energy demand. According to projections, global economic development and energy consumption are showing little signs of slowing. This will only continue to put upward pressure on energy prices. Over the next decade in particular, as liquid fuel consumption will increase by 10 mb/d over the next decade, US tight oil production is expected to play the major role.[168] Global demand growth for natural gas will also play a major role in buttressing the unconventional dimension of energy. By 2030, industrial consumption of energy is expected to push natural gas upward, displacing coal as the second most consumed source of energy behind oil.[169] The IEA projects that LNG trade will double in response, most directed towards China as it is leading the world in consumption growth.[170] The upward pressure on prices and the projected centrality of North American tight oil and shale gas points towards the rising role unconventional capability will play as a dimension of strength for IOCs.

While unconventional energy will certainly continue to be a source of strength for IOCs, it comes with a few caveats. The aforementioned shorter life span of the unconventional wells, which is important, can generally be mitigated for. More notably, the short-lived nature of unconventional energy extends beyond the ground-level analysis and takes on a more systemic form; that is, the current regional limitation of the boom to North America. While the position IOCs have certainly been bolstered for the time being, US and Canadian reserves can only last for so long. In fact, data is suggesting that the current status quo will be mostly a temporary

[168] BP, "Energy Outlook 2019 Edition," News & Insights, Reports, January 2019.
[169] IEA, "World Energy Outlook 2018," 4-5.
[170] Ibid.

boost as unconventional production is expected to reach its peak between 2020-2025 and seriously taper off by 2040.[171] Unless the IOCs can spread the scope of unconventional energy to other important regions like South America, Southeast Asia, and Europe, the predictions pointing towards OPEC's return to unchallenged dominance by 2030 will likely hold true.

On the other hand, if IOCs are able export the boom globally, the potential is massive. As these firms are the leading innovators of unconventional technologies, they therefore stand to greatly benefit via partnerships with NOCs. However, this task presents a number of challenges not to be taken lightly. In Europe, prospects are dim as many EU countries have banned fracking because of environmental imperatives.[172] Southeast Asia also presents concerns because of geopolitical tensions. Since most of the discovered unconventional reserves are located in China, it will be difficult to forge partnerships with Chinese NOCs amid the current political and economic environment. South America, while being the best option, is also problematic. Venezuela now has the largest supply of oil in the world but is in shambles politically and economically not to mention the recent souring of relations with the US. Argentina presents the most hopeful opportunity as it is making headway towards emulating the American boom but its largest company YPF is a NOC that lacks the technical efficiency to do so effectively. In 2017, two major deals were completed with ExxonMobil and Royal Dutch Shell, which were major steps forward.[173] This example aside, the prospects of exporting the unconventional boom globally remain an uphill battle. If left to fizzle out, unconventional capability will suffer as a dimension of strength in the longer run. Conversely, it has shown tremendous potential in the

[171] On that boom, see Steve A. Yetiv, Myths of the Oil Boom: American National Security in a Global Energy Market (New York: Oxford University Press, 2015).
[172] Kelly Gilblom and Tara Patel, "Fracking in Europe," *Bloomberg,* November 22, 2016.
[173] Matthew Smith, "Argentina is on the Cusp of a Shale Boom," *OilPrice,* February 15, 2018.

short term and, if exported globally, could seriously restructure the balance of power in the energy industry.

Spare Capacity

Though very much related to overall production levels, it is important to understand how spare capacity is distinct from production and how it lends itself to a different dimension of strength. Spare capacity is the amount of production capacity that is currently offline but can be utilized relatively quickly and whenever necessary. Essentially, it is the difference between the company's total production capacity and current production. It is important to distinguish between overall production levels and spare capacity because it enables an energy company to become what is known as a "swing producer," possessing the ability to reflexively increase and decrease production levels. Depending on the levels of spare capacity, an energy company can manipulate the global supply and the price of energy in accordance with its strategic interests. This is a phenomenon that occurs particularly in the oil market and almost exclusively among NOCs, usually member countries of OPEC.

After the rise of OPEC, western nations and the IOCs moved to globalize the oil markets as there was little trust in these new NOCs and their controlling governments regarding the power to set the price of oil. Consequently, OPEC countries sought to manage the global supply by coordinating with one another through setting production quotas, which would afford the organization the price controls that it desired.[174] OPEC currently accounts for around 40% of the world's crude oil production and about 60% of the oil traded globally.[175] Because of their pooled

[174] OPEC, "OPEC Statute," Secretariat, accessed August 1, 2021.
[175] US EIA, "What Drives Crude Oil Prices?: An Analysis of 7 Factors that Influence Oil Markets, with Chart Data Updated Monthly and Quarterly," Energy & Financial Markets, accessed July 19, 2019.

market share and their policy of increasing and decreasing oil production among its members, OPEC can significantly influence the international price of oil. Thus, when production quotas are reduced among the member countries, a portion of each of their production capacity remains idle.

This idle production capacity is what is referred to as spare capacity and is considered a source of strength primarily because of the control over price it affords. It is no secret that developed economies are highly dependent on energy imports. Additionally, there is a strong negative correlation between energy prices and economic growth. Cheap energy spurs growth while expensive energy has been linked to recession.[176] Alongside the influence over consumer nations, there is also geopolitical power where other producer nations are concerned. This arises from one nation's ability to make up for another's production elsewhere. For example, Saudi Arabia announced that it, along with other OPEC producers, would increase production to cover for any global supply losses stemming from the re-installment of sanctions on Iran during the Trump administration.[177] Considering the longstanding tensions between Saudi Arabia and Iran, this has proved a useful tool for helping to isolate their regional adversary.

The ability to maintain a considerable spare capacity can certainly prove a serious source of strength for energy producing countries or groups of countries. On the other hand, it is one of the most difficult dimensions of strength to sustain for two main reasons: opportunity costs and ever-expanding global consumption. Energy infrastructure are generally long-term investments as well as extremely capital intensive. It is difficult to muster the will to allocate immense

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[176] Michael Levi, "Does Expensive Oil Inevitably Cause Recession," Council on Foreign Relations, October 6, 2018.
[177] IEA, "Oil Market Report: Supply Cushion Insures Against Losses," International Energy Agency, March 15, 2019; and Grant Smith, "Saudi's Take Iran's Oil Market Share, Keeping OPEC Supply Steady," *Bloomberg*, June 3, 2019.

investments if merely to expand offline capacity that exists as a tool for political and economic influence. Additionally, construction of the necessary infrastructure can take years, which pushes the payoff even further into the obscure future. There are opportunity costs associated with the initial investment, as it forgoes spending in other important areas, as well as those relating to production and the potential economic returns. It is very difficult to sit by and allow newly constructed production capacity to sit idle. Generally speaking, when capital inputs are high for a particular investment, the need to receive a return on that investment looms large. This tends to preclude IOCs from engaging in this behavior and makes it highly strenuous for NOCs, especially when the government's revenues are dependent on those rents or if it is suffering from budget shortfalls. The economic costs are steep but so is the political upside.

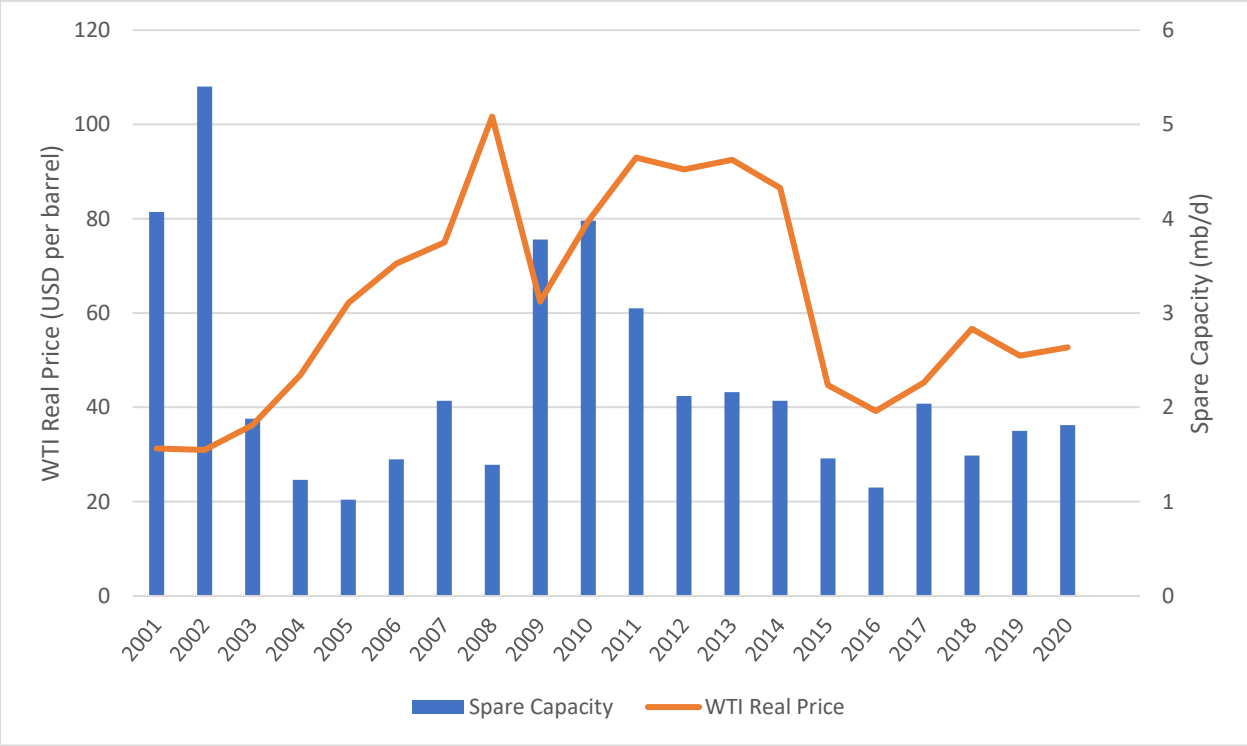
In addition to opportunity costs, the ability to control oil price requires a considerable cushion of spare capacity, making the strength afforded by spare capacity a constantly moving target. As global demand increases over time, more production capacity is required in order to maintain prices. Between 1980 and 2016, global oil consumption increased from 63.1 mb/d to 97.1 mb/d and projections suggest demand could reach 110 mb/d by 2040.[178] This constant pressure forces companies to constantly invest towards expanding overall production capacity or see their spare capacity dwindle. Of course, the picture is not completely negative. Other variables such as economic recessions can intervene in their favor. Whenever economic growth slows or retracts, the consumption of energy follows suit. Events such as the 1997 Asian Financial Crisis, the 2008 Global Recession, and the Coronavirus Pandemic economic lockdowns massively reduced the global consumption of oil and temporarily relieved the pressure on companies to quickly expand capacity.

[178] For data on global consumption see EIA, "International Energy Statistics;" for future projections see figure on BP, "Energy Outlook 2019," 85.

Figure 9 demonstrates how falling OPEC spare capacity in the last two decades resulted in a tightening of the oil markets and the slow erosion of OPEC's control over price. Generally speaking, when OPEC has had more spare capacity prices have tended to be lower. This is because higher prices reflect more global consumption and a dwindling supply. Between 2000 and 2002 spare capacity was higher and prices were lower than at any other point during the last two decades. This was an outcome of the 1997 Asian Financial Crisis. Similarly, after the global recession in 2008 and the subsequent reduction in global consumption, prices fell sharply and spare capacity spiked. Despite this general trend, both price and spare capacity dramatically decreased between 2014 and 2017. This is a prime example of the ability to utilize spare capacity to either economic or political ends. During this period, Saudi Arabia rapidly increased its production (resulting in the observed decrease in spare capacity) as a strategy to punish its strategic adversaries—Iran for its regional instigation, Russia for actions in Syria, and the US for threatening its market share via the unconventional boom.[179]

[179] See Fahad Nazer, "The Story Behind Saudi Arabia's Oil Games," *CNN Business*, December 31, 2014; and Issac Arnsdorf, "Saudi Arabia's Risky Oil-Price Play," *Bloomberg Business*, October 23, 2014.

Figure 9. OPEC Spare Capacity and the Price of Oil



Source: Data obtained from EIA, "What Drives Crude Oil Prices?," Energy Information Administration, accessed July 25, 2019.

While spare capacity rose sharply in the wake of the global recession in 2008, which was expected, one distinct trend has arisen in the last two decades: the gradual decline of OPEC spare capacity. This is primarily because of negative geopolitical developments among OPEC member states. The collapse of Venezuelan production, the Iraq war, and economic sanctions on Iran have taken large portions of production off the table. Thus, other OPEC members have been forced to bring more of their spare capacity online in order to make up for these losses. To some extent, the rising production in North America and Canada in the wake of the unconventional boom alleviated some of this pressure, but on the whole it has not been substantial enough to make up for the massive levels of production that would come from the massively endowed nations of Venezuela, Iraq, and Iran. Alongside the troubled members, many other OPEC nations

have neglected the necessary investments that would expand production capacity and allow for additional spare capacity. As a consequence, one of the primary sources of power that NOCs have been able to wield since the 1970s has slowly diminished.

The relative rebalancing of market share in favor of IOCs has led to a number of consequences, chief of which is the rise of what has been called the "Vienna Group" or "OPEC+." By December 2016, OPEC released its "Declaration of Cooperation," announcing that non-OPEC producers including notable countries such as Russia, Kazakhstan, and Mexico would be aligning themselves with OPEC producers.[180] The historic meeting between OPEC and non-OPEC NOCs reached an agreement on production cuts with the express goal of regaining power over the global oil market and price management.[181] OPEC's market share had declined to about 41.5% in 2016 and was being forecasted to drop even further into the 2020s, with some projections holding it would fall as low as 36%.[182] However, with the incorporation of such notable NOCs into the fold, OPEC+ would control an unprecedented market share of around 55%, a level of market power that has led some to declare the foundation of a new supercartel.[183]

With cooperation along the lines of production cuts in OPEC+, primarily between Russia and Saudi Arabia, spare capacity has begun rising again, reaching about 3.8 mb/d.[184] This is equivalent to the levels not seen since after the 2008 global recession and before 2001, when OEPC spare capacity was at its highest over the last twenty years. Figure 10 illustrates the spare

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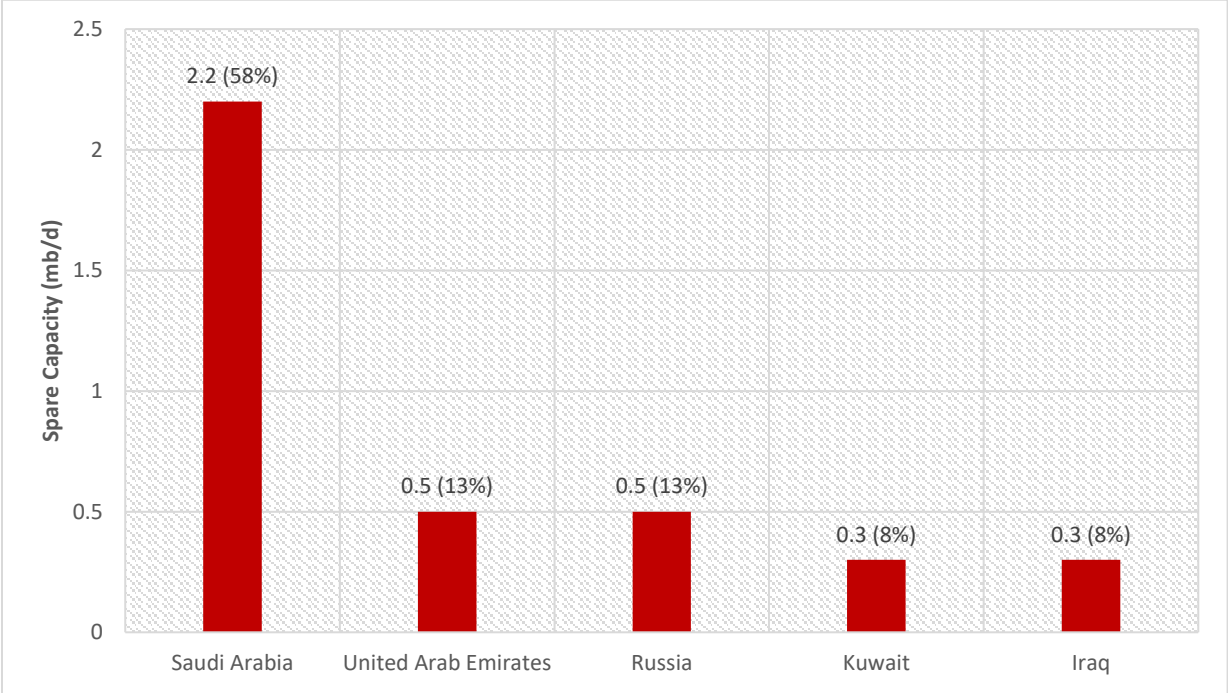
[180] OPEC, "OPEC Makes History in Vienna," OPEC Bulletin Commentary, November-December 2016.
[181] See Nicholas Trikett, "Russia-Saudi Arabia Oil Cooperation: The Rise of OPEC+?," Foreign Policy Research Institute, November 2018; Camila Domonoske, "OPEC Formally Embraces Russia, Other Non-Members in Expanded 'OPEC+'," *NPR*, July 2, 2019.
[182] BP, "Statistical Review of World Energy 2021," 87.
[183] Ariel Cohen, "OPEC is Dead, Long Live OPEC+," *Forbes*, June 29, 2018.
[184] For the spare capacity of Saudi Arabia, The UAE, Kuwait, and Iraq see IEA, "IEA Statement on Global Oil Markets," IEA News, April 23, 2019; for Russia's spare capacity see OGJ Editors, "ESAI: Russian Crude Ready to Expand with Spare Capacity Above 500,000 b/d," *Oil & Gas Journal*, July 11, 2018.

capacity of the top 5 oil producers among OPEC+ member countries. Saudi Arabia, as it traditionally has, dominates this dimension of the energy market as it has roughly 2.2 mb/d of idle production or 56% of the cartels' spare capacity. Both Russia and the UAE as well as Kuwait and Iraq have around 0.5 mb/d and 0.3 mb/d respectively.

Figure 10. OPEC+ Spare Capacity



Source: Data obtained from IEA, "IEA Statement on Global Oil Markets," IEA News, April 23, 2019.

The potential control over world energy markets OPEC+ will command is certainly staggering, well exceeding the past heights of OPEC's strength. With market share ballooning to over half of global production while simultaneously maintaining levels of spare capacity that match the highest recorded levels in the last twenty years, OPEC+ will have unprecedented levels of power over the global markets. To put this in perspective, Saudi Arabia was able to sink the price of oil from a high of $106.20 USD per barrel in June 2014 to a low of $27.45 in

February 2016 by simply producing 726 kb/d more in the same period.[185] OPEC+ will have more than five times that amount of spare production capacity at its disposal. Needless to say, this signals a very strong shift back in favor of NOCs when it comes to spare capacity despite the continued strength of North American production.

However, there is reason to be sober when projecting the overall influence OPEC+ will be able to generate. For the same reason the original OPEC struggled, this new international organization will likely suffer from cooperative issues, specifically the incentive to cheat.[186] The incorporation of Russia, a nation with belligerent tendencies and a long history of using energy as a foreign policy tool,[187] has many experts suspicious about the long-term viability of cooperation. One energy analyst at the Center for Strategic and International Studies has already pointed out that Russia has displayed highly opportunistic behavior, doing the bare minimum to satisfy the Saudis while exploiting high prices and geopolitical events at every turn.[188] Despite the potential conflicts of interorganizational national interests, it is difficult to see the group Completely dissolving due to cooperation issues. The fact remains that the potential strength of OPEC+ is substantial and while the addition of Russia may increase the likelihood of occasional organizational conflicts, the members are unlikely to cast aside the potential influence they can wield through cooperation.

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[185] For the price of oil see "WTI Crude Oil Prices - 10 Year Daily Chart," *Macrotrends,* accessed July 24, 2019; and for Saudi production levels see EIA, "International Energy Statistics."
[186] For more on cheating among OPEC member countries see Sel Dibooglua and Salim N. AlGudhea, "All Time Cheaters Versus Cheaters in Distress: An Examination of Cheating and Oil Prices in OPEC," *Economic Systems* 31 (September 2007): 292-310; Douglas B. Reynolds, "Modeling OPEC Behavior: Theories of Risk Aversion for Oil Producer Decisions," *Energy Policy* 27 (December 1999): 901-912; and James M. Griffin and Weiwen Xiong, "The Incentive to Cheat: An Empirical Analysis of OPEC," *The Journal of Law and Economics* 40 (October 1997): 289-316.
[187] For a comprehensive look at Russia's use of energy diplomacy see Anita Orban, *Power, Energy, and the New Russian Imperialism* (Praeger Security International, 2008).
[188] Andrew J. Stanley, "Russia: The OPEC+ Opportunist," *Center for Strategic and International Studies,* June 6, 2019.

More importantly, the formation of OPEC+ represents a massive shift back in favor of NOCs. IOCs have been the originators and the primary beneficiaries of the North American energy boom. This was beginning to threaten the market share of the original OPEC countries. We have seen the Saudis pour oil onto the market, which was partly aimed at drowning the boom. When that strategy failed, they simply looked to bring more NOCs into the fold. The addition of Russia is especially significant because of their production levels and their contentious politics. Russia has traditionally been one of the "big three" oil producers, alongside the US and Saudi Arabia. Therefore, an alignment between two of the three is notable. There are also the numerous examples of energy coercion that suggest Russia will be keen to utilize the power of OPEC+ in a hawkish manner. In the past, Saudi-led OPEC has been overwhelmingly dovish as a consequence of their alliance with the US. This could very well change under the leadership of a Saudi-Russo partnership. Needless to say, with the addition of Russia and others, NOCs now wield more power in the area of spare capacity than ever before.

Operational Efficiency

Wielding strength in terms of reserves and production, conventional or otherwise, provides for a core analysis of an energy companies' comparative position to their privatized or nationalized counterparts. However, all companies are not necessarily created equal, even among similar archetypes. There is much that separates these firms from one another when it comes to performance and, ultimately, outcomes. This is because various elements such as corporate structure, operational (vertical or horizontal) integration, and government intervention (taxation/rents or regulations) all influence how efficiently an individual company can function.

To be precise, this is different from what this study has referred to as technical efficiency in the earlier section on unconventional capability. Of course, the two are somewhat related as they both are dealing with issues of efficiency as well as performance and outcomes. However, the two deserve distinction in that technical efficiency deals specifically with a company's ability to innovate and its overall technical expertise. Companies that have high levels of technical efficiency tend to be highly oriented towards R&D and are usually on the cutting edge in the industry. Moreover, they are generally known for deploying the most sophisticated machinery and engaging in the most effective technical methods.

On the other hand, operational efficiency is more about the fundamental integrity of the company. In other words, it underscores the firm's ability to engage in the basic economic operations associated with its particular industry without being hamstrung by intervening factors like the ones listed above. In the energy industry, this is an important indicator of strength because of the capital intensity of the front-end investments that are necessary for commercial activity. Therefore, high levels of profitability are paramount for success, requiring that these companies structure themselves as efficiently as possible in order to get ahead. Operational efficiency is particularly significant because it underscores how well they will be able to exploit their reserves, the long-term viability of their current operations, and their ability to expand over time.

NOCs have historically been much less efficient than IOCs. In fact, many studies over the years have reached this conclusion.[189] However, despite the conclusions that NOCs are

[189] Stacy Eller, Peter Hartley, and Kenneth B. Medlock, "Empirical Evidence on the Operational Efficiency of National Oil Companies," *Empirical Economics* 40 (May 2011): 623-643; Nadejda M. Victor, "On Measuring the Performance of National Oil Companies (NOCs)," Working Paper no. 64, Program on Energy and Sustainable Development, Stanford University, 2007; Christian Wolf, "Does Ownership Matter? The Performance and Efficiency of State Oil vs. Private Oil (1987-2006)," *Energy Policy* 37 (July 2009): 2642-2652; Christian Wolf and Michael G. Pollitt, "Privatizing National Oil

generally less efficient than their private counterparts, there is a great deal of variation among them. Additionally, NOCs' efficiency as a group has risen in recent decades, requiring a closer look at the literature. As it turns out, many of the studies examining NOC efficiency have noted that while factors such as corporate structure and managerial skills certainly influence the level of efficiency, "it is ultimately the government that affects the performance and strategy of NOCs."[190] The more a company must account for high rents or regulatory interference, the less likely it will be efficient.[191]

Therefore, the wide variation in efficiency among NOCs goes hand in hand with the controlling state's goals and policies, which also vary from country to country. There exists a profound difference in the performance and strategies of Saudi Aramco when compared to that of Mexican PEMEX, for example. There are a few NOCs, save a few examples such as Saudi Aramco or Norway's Equinor (previously Statoil), that are considered to be efficient enterprises comparable to IOCs.[192] Changes in efficiency among NOCs are also reflected in the evolving policies of their governments over time. Take for example Venezuela's PDVSA and Russia's NOCs (Gazprom, Rosneft, Lukoil). In the case of PDVSA, government nationalization in 1976 as well as mismanagement and high rents under Chavez has run the company into the ground essentially collapsing under low oil prices in the wake of the global recession in 2008 and the oil glut in 2014-2016.[193] On the other hand, Russia's NOCs were burdened with various noncommercial activities and performed with far less efficiency throughout the 1990s after their

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Companies: Assessing the Impact on Firm Performance," EPRG Working Paper 0805, Electricity Policy Research Group, University of Cambridge, 2009; William L. Megginson, *The Financial Economics of Privatization* (New York: Oxford University Press, 2005).

[190] Victor et al., *Oil and Governance.* p. 887.

[191] Eller et al., "Empirical Evidence on the Operational Efficiency of National Oil Companies."

[192] Victor et al., *Oil and Governance*, p. 32.

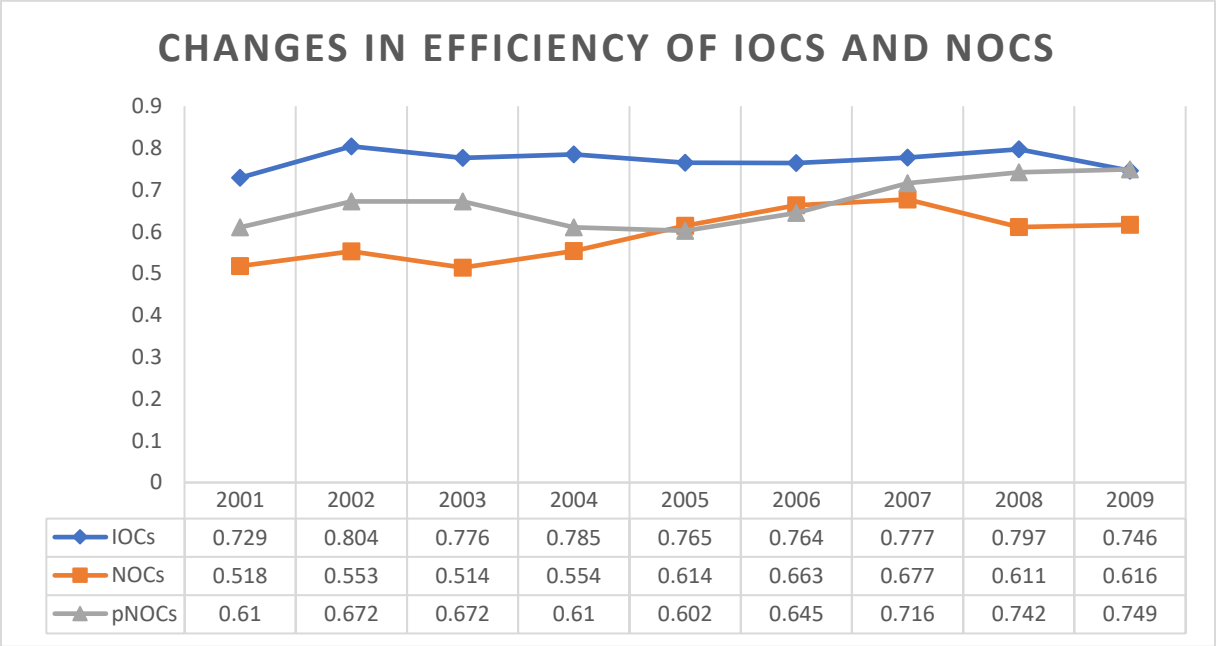
[193] Keith Johnson, "How Venezuela Struck it Poor: The Tragic — and Totally Avoidable — Self-Destruction of one of the World's Richest Oil Economies," *Foreign Policy* (July 16, 2019).

re-nationalization. However, Gazprom and Rosneft have increased their efficiency in recent years as a result of changing Russian policies.[194]

While many NOCs have had considerable difficulties expanding production while having to balance between commercial and non-commercial responsibilities, others have been more effective. Perhaps one of the biggest developments in the world of NOC efficiency is the rise of what are called *pNOCs* or partially privatized NOCs. These are national companies that allow for investors to purchase shares in the company, though the controlling country is careful to maintain the majority stake. This is an interesting strategy among countries with nationalized energy companies because through increased capitalization they can both buttress their overall commercial capabilities while maintaining control over operations and decision-making at the same time. As a result, pNOCs have given rise to a new class of national companies, some of which are comparable to the most efficient companies in the industry. [195] One study, examining the changes in operational efficiency of IOCs and NOCs between 2001 and 2009, finds that NOCs have generally increased their efficiency over the decade. Experiencing some marginal ups and downs, IOCs have remained roughly unchanged in efficiency. Most notably, the dramatic increase in the efficiency among pNOCs has put them on par with IOCs.

[194] Mike Olsen, "The Future of National Oil Companies in Russia and How They May Improve Their Global Competitiveness," *Houston Journal of International Law* 35 (Summer, 2013): 617-652.
[195] Peter R. Hartley and Kenneth B. Medlock III, "Changes in Operational Efficiency of National Oil Companies," *The Energy Journal* 34 (2013), 55.

Figure 11. Changes in Efficiency by Company Type, 2001-2009



	2001	2002	2003	2004	2005	2006	2007	2008	2009
IOCs	0.729	0.804	0.776	0.785	0.765	0.764	0.777	0.797	0.746
NOCs	0.518	0.553	0.514	0.554	0.614	0.663	0.677	0.611	0.616
pNOCs	0.61	0.672	0.672	0.61	0.602	0.645	0.716	0.742	0.749

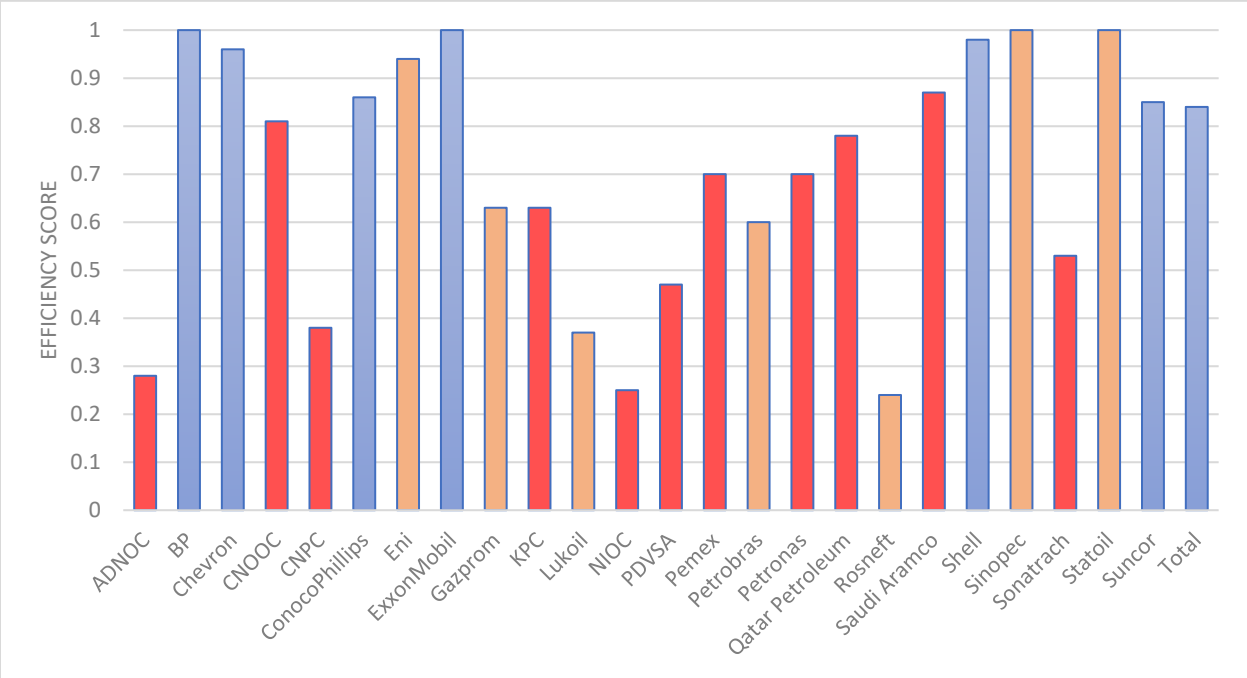
Source: Peter R. Hartley and Kenneth B. Medlock III, "Changes in the Operational Efficiency of National Oil Companies," *The Energy Journal* 34 (2013), 39.

Privatized NOCs such as Sinopec, PTT, and Equinor produced the same efficiency score as the most efficient IOCs (BP and ExxonMobil).[196] Moreover, as figure 11 illustrates, when comparing the entire group of IOCs to that of pNOCs over the decade, both groups had roughly similar efficiency scores by 2009. Furthermore, this represents an upward trend for the trajectory of all NOCs' efficiency that began in 2005. However, pNOCs have shown themselves far more resilient in the face of plummeting oil prices and global recession, which began in 2008. In this period, the efficiency of NOCs leveled off to their previous 2005 levels; meanwhile their privatized counterparts continued their upward trend, closing the gap in efficiency between IOCs and themselves by 2009. More importantly, pNOCs were able to increase their efficiency between 2007-2009, a period in which even the IOCs lost efficiency.

[196] Ibid.

While partial privatization has had a net positive effect on NOC efficiency, its positive effect still varies by case. Figure 12 underscores the wide range of efficiency between and among IOCs, NOCs, and pNOCs. For instance, China's Sinopec has benefited from partial privatization to a far greater extent and much faster than has Russia's Lukoil or Rosneft, which reflects the greater autonomy enjoyed by Chinese NOCs. This means that the extent to which partial privatization will improve NOC efficiency still depends on the NOC relationship with the government. That is, political considerations can still stifle commercial activities even if a NOC is partially private.

Figure 12. Structural Efficiency of the Largest 25 Oil & Gas Companies



Source: Hartley and Medlock III, "Changes in the Operational Efficiency," 51.[197]

When it comes to operational efficiency, IOCs still maintain their position of relative strength, albeit less so than in the past. Private companies are simply lighter and more flexible, less encumbered by the non-commercial burdens that come along with public ownership. To be sure, NOCs are no longer the inefficient enterprises that energy scholarship had become accustomed to in the late 20th century. While mostly dependent on the wisdom of the controlling government, some NOCs like Saudi Aramco and Chinese NOCs have made considerable progress and compete on the same level as the most efficient IOCs. On the other hand, some NOCs have made marginal improvements or none at all. Even worse, there are NOCs such as Venezuela's PDVSA that have completely collapsed as a result of crippling government interference.

[197] Figure based on the Data Envelopment Efficiency Score model; Red - National oil companies (NOCs), Blue – International oil companies (IOCs).

Perhaps the most impactful evolution of NOCs when it comes to operational efficiency is the rise of pNOCs. On the whole, the dramatic increase in performance of pNOCs has played the most significant role in raising the profile of NOCs around the world and indicates the increased blurring between public and private enterprises. However, the most important element influencing the operational efficiency of a company remains the level of government intervention, regardless of whether a NOC is fully owned and operated by the state or it is partial privatized. This is made apparent in the top performance of Saudi Aramco, which is still fully nationalized. Additionally, partial privatization has produced more marginal benefits for Russian NOCs, further highlighting the dampening effects state policies can have. As a result, it remains difficult to conclude decisively that the rise of pNOCs will seriously redistribute the balance of power in terms of structural efficiency.

To be sure, both NOCs and pNOCs have made considerable strides in the previous decade, especially when compared to their first thirty years. If anything, this reflects the growing wisdom of national bodies in their policies towards the companies under their control. More governments are restraining themselves, moving more towards hands-off policies, and allowing their companies to flourish. Ultimately, this has somewhat eroded the undisputed IOC dominance in this dimension of strength.

Conclusion

According to the indicators of strength that this study has utilized in its analysis of NOCs and IOCs, the national firms have been more effective at increasing their power over time in the energy industry. However, their dominance is not monopolistic nor their control unassailable. A more nuanced view is required in order to yield an appropriate analysis and is necessary for a

suitable explanation of NOCs' expanding influence in global energy. The indicators have revealed that NOCs dominate in the areas of reserves, production, and spare capacity, as well as having made impressive strides when it comes to operational efficiency. IOCs, on the other hand, have found new life in unconventional energy as they completely control this area of the industry. This has allowed for some gains in the areas of reserves and production, though the strength of NOCs remains overwhelming. Additionally, IOCs have experienced an erosion of relative strength in the area of operational efficiency, which was one of their traditional areas of dominance.

As long as economic growth and development are powered by hydrocarbons, NOCs' and their controlling states will be the most essential actors in the area of global energy. While environmental imperatives have gained steam in western countries, there remains no suitable substitute for hydrocarbons outside of nuclear energy. Thus, projections still weigh heavily in favor of the continued use of hydrocarbons up to and beyond 2040. As a result, the NOCs that control the overwhelming majority of the world's oil and gas reserves will be the most critical energy suppliers and the lifeblood for sustained global economic growth for the foreseeable future.

Despite a dip in their global share of production over the last decade, NOCs still control the overwhelming portion of supply. To be sure, North American production has surprised the world, but this unexpected and rapid growth has only modestly shifted the share of supply. Moreover, projections for unconventional production suggest a two-decade shelf life set to expire by the 2030s. Burgeoning production levels has led to more downward pressure in the last decade when compared to the previous. While NOCs' production will take over once North American production tapers off, this has had mixed effects on NOCs in the present. Countries

like Brazil and Iraq have proven resilient and have even grown their operations under the more demanding circumstances. Powerful producers like Saudi Arabia have attempted to fight back and use their spare production capacity to place added pressure on the IOCs. Others, like Venezuela have completely collapsed in the face of lower prices.

In the area of unconventional energy, IOCs have carved out a niche for themselves. Reserves once considered not economically recoverable have, through innovation and a conducive price environment, been opened up to the companies with the capability to exploit them. This has massively rebalanced the energy endowments of many countries, albeit not necessarily in favor of IOCs. However, unconventional energy has overwhelmingly benefitted IOCs with respect to production. Moreover, IOCs have an opportunity to export their capabilities globally through partnerships. NOCs do not have the technical capabilities to take advantage of unconventional reserves and therefore IOCs have gained a new path they can pursue in the future. Admittedly, these new opportunities face many political challenges and much work is still required if serious progress towards a global unconventional boom is realized. At the same time, the IOCs have undoubtedly secured a source of strength in the industry going forward.

Spare capacity had always been an exclusively held NOC strength, but a dwindling one in the face of increasing global demand and shrinking market share. When many members of the original OPEC agreed to defend their existing share and overproduce, they achieved mixed results. Consequently, more NOCs were recruited into the fold and a new supercartel commonly known as OPEC+ came into being. Nearly all the prominent NOCs have now aligned in policy to recapture this dimension of power. This has resulted is an unprecedented position for NOCs in the area of spare capacity.

Operational efficiency has traditionally been a strength of IOCs, but NOCs have made tremendous progress in this area. At the same time, it is important to recognize that overall gains have been unevenly distributed and are mostly the result of hands-off government policies. Increased activities such as mergers and acquisitions as well as partial privatizations have also played a significant role. However, when companies are overburdened by non-commercial policies, they struggle to compete. Ultimately, the wisdom of the controlling government will be the deciding factor. To be sure, the ability for some nationalized entities to perform on the same level as their privatized competition underscores the shifting balance of power in the industry.

CHAPTER V

EXPLAINING THE RISE OF NOCS

The initial rise of NOCs and OPEC in the 20th century was best explained by a host of political and economic factors such as the statist reassertion of power over respective national energy sectors. This coincided with the post WWII US-led neoliberal economic order eclipsing the previous century's European mercantilist system as well as the western response to the rise of NOCs that globalizes the international energy markets and pricing mechanisms. Additionally, western countries formed the IEA as a response to the 1973 oil shock, a neoplural solution to international energy crises. While these factors led to the most dramatic shift in dominance over the global oil and gas industry's history, they do not specifically explain why NOCs have remained powerful or why some have significantly risen in prominence despite the magnifying forces of economic globalization in the 21st century. In the previous chapter, the indicators of strength revealed a number of fundamental truths concerning NOCs over the last two decades, their resilience in some cases, and their continued expansion in others. However, they do not tell the entire story. The rise of NOCs in the 21st century requires fresh explanations, especially since there have been profound geopolitical and global economic changes since the collapse of the Soviet Union.

First, the spread of democracy and free markets via US-led global institutions as well as the forces of economic globalization have not been as successful at expanding privatization and deregulation as much as one might assume.[198] The resurgence of Russia in the post-Soviet era,

[198] For analysis of the relationship between democracy and economic openness see Helen V. Milner and Bumba Mukherjee, "Democratization and Economic Globalization," *Annual Review of Political Science* 12 (June 2009): 163-181; for a geographical centered focus on the spread of these forces see Henry Wai-

the failure of the Arab Spring uprisings,[199] the continued illiberalism of the undeveloped and developing world,[200] and the rise of China eclipsing the mature Asian Tiger economies, have all contributed to a blunting of neoliberalism and economic globalization. Furthermore, they have contributed to a resurgence of statism in the global economy. While state capitalism is a larger phenomenon dealing with increasing state authority in the free market spanning a multitude of industries outside of energy, it is greatly reflected in the expansion of nationalizations that have taken place since the turn of the century. As a result, the recent wave of nationalizations, re-nationalizations, and rise of new powerful NOCs have been aided by renewed resource nationalism, which is a distinct phenomenon stemming from the resurgence of state power in the global economy.

Second, the era of globalization has reduced barriers for wealthy and powerful corporations to go multinational.[201] As a result, many globalists concluded that the international system was benefiting and increasingly becoming populated by a strengthening class of MNCs at the expense of state power and regulatory authority.[202] However, the expanding power of MNCs

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Chung Yeung, "The Limits to Globalization Theory: A Geographic Perspective on Global Economic Change," *Economic Geography* 78 (July 2002): 285-305.

[199] See Adil Malik and Bassem Awadallah, "The Economics of the Arab Spring," *World Development* 45 May 2013): 296-313; and Michael Sakbani, "The Revolutions of the Arab Spring: Are Democracy, Development, and Modernity at the Gates?," *Contemporary Arab Affairs* 4 (April 2011): 127-147.

[200] Jan Engberg and Svante Ersson, "Illiberal democracy in the Third World," Democracy in the Third World: What should be done?, ECPR Joint sessions of workshops, Mannheim, Germany, 26-31 March 1999; and Fareed Zakaria, "The Rise of Illiberal Democracy," *Foreign Affairs* 76 (Nov/Dec 1997): 22-43.

[201] Many studies have explored how globalization have further expanded the reach of MNC. See especially Sali Li and Stephen Tallman, "MNC Strategies, Exogenous Shocks, and Performance Outcomes," *Strategic Management Journal* 32 (October 2011): 1119-1127; Ricardo G. Flores & Ruth V. Aguilera, "Globalization and Location Choice: An Analysis of US Multinational Firms in 1980 and 2000," *Journal of International Business Studies* 38 (December 2007): 1187-1210; Johny K. Johansson and George S. Yip, "Exploiting Globalization Potential: U.S. and Japanese Strategies," *Strategic Management Journal* 15 (October 1994): 579-601; and Alexandra J. Campbell and Alain Verbeke, "The Globalization of Service Multinationals," *Longe Range Planning* 27 (April 1994): 95-102.

[202] See Kenichi Ohmae, *The End of the Nation State: The Rise of Regional Economies* (Simon and Schuster, 1995); and Susan Strange, *The Retreat of the State: The Diffusion of Power in the World Economy* (Cambridge University Press, 1996).

globally has also included those that are controlled and operated by national governments. Consequently, nationalized corporations including NOCs have increasingly extended themselves beyond their country's borders, blurring the distinction between energy companies that are national and international. The internationalization of NOCs is a new development in the global energy industry and takes shape in three primary ways: foreign direct investment, M&A activity, and collaborative R&D. These activities have given rise to increased global competition as well as cooperation among national and international energy companies, both of which have resulted in an overall expansion of NOCs' capabilities.

Third, in the second half of the 20th century a number of global factors served to encourage crippling economic policies by a number of governments. The strength of the Soviet Union and the popularity of socialism and the command style economy, the import-substitution model of industrialization across the developing world, and the era of decolonization all encouraged strong government constraints on commercial activities which tended to stifle the efficiency of nationalized entities. This filtered into the energy industry as much as or perhaps more so than others considering the strategic economic value of energy. For decades NOCs struggled to compete with IOCs because of efficiency problems. Yet, impressive gains have been scored in this important area by NOCs more recently and this is perhaps one of the biggest developments in the energy industry aside from the American unconventional boom. This leap forward is mostly the product of the changing relationship between the state and the NOC and has manifested the increasingly hands-off policies states have adopted towards their energy companies. Consequently, the 21st century has seen a new class of highly efficient NOCs, capable of competing with the world's most efficient IOCs.

Fourth, hydrocarbons and the energy we obtain from them are the undisputed critical resources in our world. The modern industrial economy is fundamentally dependent on energy inputs in order to produce units of GDP. Furthermore, economic development, dominance, and by extension national power are all fundamentally tied to control over or access to these inputs. Thus, power relationships among states and over geopolitics in general are tied to energy resources. As a consequence, these resources hold immense strategic value and are alluring to national governments unlike other industries. This means that countries will likely prefer to express control over their energy industry so that they might benefit from the various areas of state power including regime stability, military capabilities, and foreign policy. Each affords the state additional strength in different ways, but all serve to increase the attractiveness of control over one's energy industry and this bolsters the NOC model around the world.

Resurgence of the State

Since the end of WWII, the establishment of the new world order at Bretton Woods, and the policy formulation known as the Washington consensus, the world slowly began to conform to what has been called the Neoliberal economic order.[203] From its rise out of agrarianism and transformation into an industrial and commercial superpower,[204] the US would rise to guide the west away from the former European-led international order characterized by mercantilism and imperialism and into the neoliberal order. The superpower status of the United States following the conclusion of WWII and the founding of the neoliberal order would also set the stage for the

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[203] Robert O. Keohane and Joseph S. Nye, *Power and Interdependence* (Longman, 2011); and Robert Gilpin, *Global Political Economy: Understanding the International Economic Order* (Princeton University Press, 2001).

[204] For a comprehensive look at the transformation of the US economically and politically from the Civil War into the 20th century, see H. W. Brands, *American Colossus: The Triumph of Capitalism, 1865-1900* (Anchor Books, 2011).

next global international competition with the Soviet Union, involving a struggle for supremacy between very different models for political and economic organization of the international system. Capitalism and socialism spread across the globe geostrategically, pushed by various policies emanating from the two superpowers which are best represented by the Washington Consensus and the Communist International.

In the developing world, this meant that the path to modernity and industrial economic development could best be accomplished by either the state or the market. Consequently, developing states adopted one of two different industrialization policies known as import substitution or export orientation.[205] As the 20th century came to a close a number of revelations became apparent to the world concerning the relative success of these different pathways to modernity. This included the collapse of the Soviet Union, the disastrous results of China's Great Leap Forward, and the general economic outpacing of closed economies that followed import substitution policies in Latin America, India, and Africa by open economies that followed export orientation in East Asia, Southeast Asia, and Western Europe. As a consequence, many in the West were eager to proclaim the triumph of liberal democracy and of global capitalism.[206]

However, this supposed victory and much of the imagined progress associated with it has either been undone, challenged, or was at best surface level. To be clear, the collapse of the Soviet Union was significant and without a doubt it would not be capable of rising again to its former superpower status to challenge the US in the way that it previously did. In this sense,

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[205] Soumyatanu Mukherjee, "Revisiting the Debate over Import-Substituting Versus Export-led Industrialization," *Trade and Development Review* 5 (2012): 64-76.
[206] Francis Fukuyama, "The End of History?," *The National Interest* (Summer 1989): 3-18; Richard Little, "International Relations and the Triumph of Capitalism," Ch. 3, in Ken Booth and Steve Smith, eds., *International Relations Theory Today* (Penn State Press, 1995); and Jonathan R. Macey and Geoffrey P. Miller, "The End of History and the New World Order: The Triumph of Capitalism and the Competition between Liberalism and Democracy," *Cornell International Law Journal* 25 (1992): 277-303.

liberal democracy and global capitalism did triumph. However, much of the liberalization and privatization achieved under Boris Yeltsin in Russia was thoroughly undone when Vladimir Putin came to power and the country has since fallen back into authoritarianism and has renationalized a number of industries.[207] Additionally, much of the spread of democratic institutions outside of the West has resulted in the proliferation of illiberal democracies that at best are just mimicking the institutional process[208] and are riddled with corruption.[209] Scholars have also pointed out the relatively quick relapse into authoritarianism of the Middle East following the Arab Spring[210] as well as the troubling rise of nationalism in Eastern Europe and Southeast Asia.[211]

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[207] Alexander Buzgalin and Andrey Kolganov, "Russia and Ukraine: Oligarchic Capitalism, Conservative Statism and Right Nationalism" *Socialist Register* 52 (2016); Vladimir Gel'man, *Authoritarian Russia: Post-Soviet Regime Changes* (University of Pittsburg Press, 2015); and Thomas Ambrosio, *Authoritarian Backlash: Russian Resistance to Democratization in the Former Soviet Union* (Routledge, 2016).

[208] For a review of illiberal democracy see Fareed Zakaria, *The Future of Freedom: Illiberal Democracy at Home and Abroad Larry Diamond* (W. W. Norton & Company, 2008); Larry Diamond, "Elections Without Democracy: Thinking About Hybrid Regimes," *Journal of Democracy* 13 (2002): 21-35; Andreas Schedler, "Elections Without Democracy: The Menu of Manipulation," *Journal of Democracy* 13 (2002): 36-50; and Steven Levitsky and Lucan A. Way, "Elections Without Democracy: The Rise of Competitive Authoritarianism," *Journal of Democracy* 13 (2002): 51-65; for a regional perspective see Shadi Hamid, *Temptations of Power: Islamists and Illiberal Democracy in a New Middle East* (Oxford University Press, 2014); Daniel Bell, et. al., *Towards Illiberal Democracy in Pacific Asia* (Palgrave Macmillan, 1995); and Peter H. Smith and Melissa R. Zeigler, "Liberal and Illiberal Democracy in Latin America," *Latin American Politics and Society* 50 (Spring 2008): 31-57.

[209] According to the Corruption Perceptions Index every region outside of Europe and North America is characterized by high levels of corruption. See "Corruption Perceptions Index 2018," Transparency International, accessed September 18, 2019.

[210] Jason Brownlee, Tarek Masoud, and Andrew Reynolds, "Tracking the 'Arab Spring': Why the Modest Harvest?" *Journal of Democracy* 24 (2013): 29-44.

[211] Lucan A. Way, "Authoritarian State Building and the Sources of Regime Competitiveness in the Fourth Wave: The Cases of Belarus, Moldova, Russia, and Ukraine," *World Polititcs* 57 (January 2005): 231-261; Renata Uitz, "Can You Tell When an Illiberal Democracy is in the Making? An Appeal to Comparative Constitutional Scholarship from Hungary," *International Journal of Constitutional Law* 13 (January 2015): 279-300; Chua Beng Huat, *Liberalism Disavowed: Communatarianism and State Capitalism in Singapore* (NUS Press, 2017); and Kanishka Jayasuriya, "Authoritarian Staties and the New Right in Asia's Conservative Democracies," *Journal of Contemporary Asia* 48 (January 2018): 584-604.

Most importantly, the rising challenge to western liberal democracy and global capitalism has presented itself in the form China's expanding power and influence.[212] The magnitude of the challenge has yet to reach levels comparable to the Soviet Union during the Cold War and may never, but one glaring similarity is worth noting. China sports a hybrid command-style centrally planned economy that operates with far greater degrees of freedom relative to those of the previous century. This allows for both a retention of state regulatory authority and the enhanced competitiveness of a free market.[213] This is highly attractive for many countries across the world that are either skeptical of western democracy or are in the hands of corrupt politicians and autocrats that wish to hold on to their power while also pursuing modernity. Thus, while the spread of liberal democracy has had a spotted record, the advance of economic liberalization in the era of globalization has been more successful.

The realization of the failures of stringent statist command economics has led to an embrace, to various extents, of economic liberalism and deregulation among many autocratic regimes and illiberal democracies. Simultaneously, these same forces pressing for a rollback favoring state power in some areas have also created new demands and opportunities for state interventionism in others.[214] Thus, the 21st century global political economy has witnessed the rise of a hybrid model that many scholars have come to refer to as "State Capitalism,"[215] which can be generally understood as a market-based economy that operates under an umbrella of state authority and regulatory capacity. This new economic model has been championed

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[212] Azar Gat, "The Return of Authoritarian Great Powers," *Foreign Affairs*, 2007.
[213] Barry Naughton and Kellee S. Tsai, *State Capitalism, Institutional Adaptation, and the Chinese Miracle* (Cambridge University Press, 2015).
[214] Jonah D. Levy, *The State After Statism: New State Activities in the Age of Liberalization* (Harvard University Press, 2006), 28.
[215] Joshua Kurlantzick, *State Capitalism: How the Return of Statism is Transforming the World* (Oxford University Press, 2016).

predominantly by China, but also by countries such as Russia, Brazil, India, Turkey, and South Africa. State capitalism and the actors employing this model increasingly penetrate global markets by interacting with private investors as either majority or minority shareholders in publicly traded corporations or as financial backers of purely private firms.[216] More alarming is the increasing number of authoritarian regimes that have established sovereign wealth funds, rapidly expanding their ability to intervene in the corporate sectors of other countries.[217] In addition to sovereign wealth funds, many of these regimes have also increased their control over the military-industrial and penal complexes, which holds a range of serious implications with respect to ethics and human rights.[218]

Among the many industries in which states have been expanded their strength, the energy industry is a chief example. In the mid to late 20th century this was primarily driven by resource nationalism and was weaved into the greater political transformations of the time, most notably decolonization. Some scholars have argued that the rise of NOCs, OPEC, and the 1973 oil embargo were more fundamentally connected to gaining national control over resources and reforming the neoliberal order established at Bretton Woods, rather than the outcome of the Yom Kippur War.[219] Similarly, the resource nationalism of the 21st century continues to be a blunting force against neoliberalism,[220] though the phenomenon is being driven more by the resurgence of the state and the rise of state capitalism than being embedded within decolonization as was the

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[216] Aldo Musacchio, *Reinventing State Capitalism* (Harvard University Press, 2014).
[217] Richard W. Carney, *Authoritarian Capitalism: Sovereign Wealth Funds and State-Owned Enterprises in East Asia and Beyond* (Cambridge University Press, 2018).
[218] Geoffrey Wood and Mike Wright, "Corporations and New Statism: Trends and Research Priorities" *Academy of Management Perspectives* 29 (May 2015).
[219] Giuliano Garavini, "Completing Decolonization: The 1973 'Oil Shock' and the Struggle for Economic Rights," *The International History Review* 33 (October 2011): 473-487.
[220] Paul A. Haslam and Pablo Heidrich, *The Political Economy of Natural Resources and Development: From Neoliberalism to Resource Nationalism* (Routledge, 2016).

case in the past.[221] Moreover, the new resource nationalism has not limited itself to a specific region or to a smaller subset of resource-rich, formerly colonized territories, but rather has proven to be a global force taking root across Latin America, the former Soviet Union, Africa, Southeast Asia, the Middle East, and even in western democratic countries like Norway or import dependent countries like China.[222]

While there are a number of important continuities between statist policies of the last century and contemporary state capitalism, there are also major differences. Primarily, states look for ways to maintain primacy and regulatory authority while simultaneously allowing for degrees of freedom in the market, whereas in the past the goal was to establish total control over the market. Resource nationalism is not too dissimilar. Overarching narratives like re-establishing national sovereignty over important resources and viewing international companies as exploitative entities persist, but the implementation of national control is not as asymmetrical.[223] As a result, states have pursued renegotiations to obtain majority ownership in various projects or consortiums that develop oil and gas fields, whereas in the past they generally sought complete ownership and control of resource development and intended to expel outside firms over time.[224] Interestingly, the influence of state capitalism on resource nationalism has produced a more measured strategy on the part of states who want to reassert national control over resources via NOCs.

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[221] Sajjad M. Jasimuddin and A. F. M. (Munir) Maniruzzaman, "Resource Nationalism Specter Hovers Over the Oil Industry: The Transnational Corporate Strategy to Tackle Resource Nationalism Risks," *Journal of Applied Business Research* 32 (March/April 2016): 387-400.
[222] George Joffé, et. al., "Expropriation of Oil and Gas Investments: Historical, Legal and Economic Perspectives in a New Age of Resource Nationalism," *The Journal of World Energy Law & Business* 2 (March 2009): Pages 3–23.
[223] Thabit Jacob and Rasmus Hundsbaek Pendersen, "New Resource Naitonalism? Continuity and Change in Tanzania's Extractive Industries," *The Extractive Industries and Society* 5 (April 2018): 287-292.
[224] Vlado Vivoda, "Resource Nationalism, Bargaining, and International Oil Companies: Challenges and Changes in the New Millenium," *New Political Economy* 14 (December 2009): 517-534.

In Latin America, IOCs such as ExxonMobil, ConocoPhillips, Total SA, Equinor, BP, and Chevron were forced to concede their controlling stakes to the Venezuelan firm PDVSA during the Chavez era.[225] Bolivia and Ecuador also moved toward nationalizing their oil industry in 2006.[226] In the former Soviet Union, similar developments have taken place in Russia and Kazakhstan. Under President Vladimir Putin his goal of renationalization of hydrocarbon resources was finalized when he introduced legislation that made foreign investment in resource rich areas more difficult.[227] As an example, Royal Dutch Shell and TNK-BP were forced to sell a 51 percent stake in the Sakhalin-2 oil field to Russia's Gazprom in 2007.[228] For its part, Kazakhstan suspended the development of the Kashagan oil field in 2006, a project being developed primarily by Italian Eni and French Total SA, and has only recently begun to restart production as of May 2019.[229] As a result, Total SA has announced it will significantly reduce its share of the consortium.[230] Additionally, the Middle East and Africa remain critical for oil and gas development and resource nationalism continues to play a significant role in the political backdrop of the two regions.[231]

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[225] Vlado Vivoda, *The Return of the Obsolescing Bargain and the Decline of Big Oil: A Study of Bargaining in the Contemporary Oil Industry,* Saarbrucken: VDM Verlag, 2008, 97-117.
[226] David R. Mares, "Resource Nationalism and Energy Security in Latin America: Implications for Global Oil Supplies," *The Changing Role of National Oil Companies in International Energy Markets*, Houston: The Baker Institute for Public Policy, January 2010.
[227] Peter Rutland, "The Political Economy of Energy in Russia," in Slowomir Raszewski, ed., *The International Political Economy of Oil and Gas* (Palgrave Macmillan, 2018); and Daniel J McCarthy, Sheila M Puffer, and Alexander I Naumov, "Russia's Retreat to Statization and the Implications for Business," *Journal of World Business* 35 (3rd Quarter 2000): 256-274.
[228] Kuanysh Sarsenbayev, "Kazakhstan Petroleum Industry, 2008-2010: Trends of Resource Nationalism Policy?" *Journal of World Energy Law & Business* 4 (2011): 369-79.
[229] Kuanysh Sarsenbayev, "Kazakhstan Petroleum Industry, 2008-2010: Trends of Resource Nationalism Policy?" *Journal of World Energy Law & Business* 4, no. 4 (2011): 369-79; and Takeo Kumagai, "Kazakhstan's Giant Kashagan Oil Field Restarts Production," *S&P Global* (May 20, 2019).
[230] Tsvetana Paraskova, "Total Looks to Raise $4B By Cutting Stake In Giant Kashagan Oil Field," *Oil Price,* May 24, 2019.
[231] Stefan Andreasson, "Varieties of Resource Naitonalism in Sub-Saharan Africa's Energy and Minerals Markets," *The Extractive Industries and Society* 2 (April 2015): 310-319; and Paul Stevens, "National Oil

On the other side of the equation, IOCs have faced a number of difficulties in accessing desirable oil fields and have been forced to renegotiate their shares in those they already held. Because NOCs and their controlling governments have been increasing their hold over the reservoirs that IOCs want to invest in, they have been forced to prospect in more unconventional plays such as tar sands and shale oil. For example, *Oil Change International* estimates that ConocoPhillips has derived 71 percent of its liquids reserves from Canada's tar sands over the past 10 years.[232] That reliance on tar sands is also evident at ExxonMobil (51 per cent), Shell (34 per cent), Total (26 per cent) and Chevron (7 per cent).[233] On one hand, this has led to the unconventional boom and the recent strengthening of IOCs concerning production and reserves reflected in the data from the previous chapter. On the other hand, all of the projections point out the temporary nature of unconventional plays. Couple this together with the increasingly complex nature of the projects, which require more investment,[234] and IOCs have much to worry about in the coming decades.

The 21st century expansion of NOCs both in terms of number and in importance has coincided with the resurgence of the state in world politics. Globalization, while serving to diffuse state authority in some areas, has opened up opportunities to expand state strength in others. The energy industry is one of these areas of the global economy, where the state has been gaining strength rather than losing it. This is explained in part by the rise of state capitalism and the resurgence of the state in the international political economy. Consequently, resource

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Companies and International Oil Companies: Under the Shadow of Government and the Resource Nationalism Cycle," *The Journal of World Energy Law & Business* 1 (May 2008): 5-30.

[232] Lorne Stockman, "Reserves Replacement Ratio in a Marginal Oil World: Adequate Indicator or Subprime Statistics?" *Oil Change International* (January 2011), 4.

[233] Ibid.

[234] Arora Varun Chandan, "Big Oil Is Spending More, Producing Less," *The Motley Fool,* February 6, 2014; and Gladys Fouche and Balazs Koranyi,"Oil firms seen cutting exploration spending," *Reuters,* February 17, 2014.

nationalism is being expressed in a new way where states are not as hostile towards foreign companies but rather seek more favorable partnerships where they can maintain majority control but also take advantage of highly capable private companies in the global market. With private companies being partially or even completely shut out from most of the desirable sites of production around the world they have turned to unconventional energy. This helps explain why the data reflects a continued dominant control over reserves and production by NOCs and also why IOCs have seen a temporary boost in these areas more recently.

Internationalization

The expansion of NOCs in the 21st century, having taken place during an era of unprecedented economic globalization, have been presented with new opportunities that have contributed to their increasing capabilities and areas of operation. Similar to how states have been enabled by economic globalization so too have NOCs. However, states and their NOCs are not exactly one in the same, though they are intricately related, and these firms can function as arms of the state in some cases. Therefore, it is important to draw distinctions when relevant. Globalization has opened up new opportunities for states and for their NOCs but in different ways. In the previous section I explained how the rise of state capitalism produced knock-on effects for the energy industry, strengthening NOCs as a consequence of the resurgence and transformation of resource nationalism. This section will focus on how economic globalization has directly affected NOCs, while setting the state to the side.

Powered by market liberalization and reduced protectionism around the world, the modern global economy has become increasingly dominated by multi- or international firms. But as we saw in the last section, these forces have been benefitting both autocratic regimes and

illiberal democracies as much as, and perhaps more so, than liberal democracies. Likewise, many nationalized and partially privatized firms have swelled with the rising tides of economic liberalism and have significantly increased their competitiveness to the extent that they now can compete with the traditional western-style privatized firms. In fact, many scholars have argued that the contemporary rise of internationalized NOCs is best contextualized against the backdrop of the intersection between the transformation of global business and emerging economies.[235] The reduced costs associated with operating internationally has afforded NOCs the opportunity to expand beyond their national boundaries.[236] Consequently, a handful of NOCs have increasingly accumulated a global footprint in the 21st century, which can significantly strengthen an NOC when part of a well-conceived strategy. Examples range from fully nationalized firms like Saudi Aramco to partially privatized firms such as Norwegian Equinor. However, it is important to point out that while a number of NOCs are scoring important gains, this is not the case for many others.

The internationalization of NOCs can be defined loosely as the expansion of overseas business operations, investment activity, or R&D. In the broadest sense, this term highlights how some NOCs are beginning to look more like IOCs, despite government oversight. Whereas in

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[235] Andrea Goldstein, *Multinational Companies from Emerging Economies: Composition, Conceptualization and Direction in the Global Economy* (Springer, 2007); Mauro F. Guillén and Esteban García-Canal, "The American Model of the Multinational Firm and the 'New' Multinationals From Emerging Economies," *Academy of Management Perspectives* 23 (May 2009): 23-35; and Mohamed A. Ramady, "From NOCs to Privatized Oil Companies: A Comparative Country Experience," in *Saudi Aramco 2030* (Springer, 2018).

[236] Though the opportunity to internationalize has manifested, not all NOCs have taken advantage. Much depends on the domestic political conditions of the home nation. See Pauline Jones Long and Jazmin Sierra, "The Domestic Political Conditions for International Economic Expansion: Lessons from Latin American National Oil Companies," *Comparative Political Studies* 48 (July 28, 2015): 2010-2043; Andrea Goldstein and César Baena, "Drivers of Internationalization in Emerging Economies: Comparing Petrobras and PDVSA," in Marin Marinov and Svetla Marinova, *Impacts of Emerging Economies and Firms on International Business* (Palgrave Macmillan, 2012); and Andrew Cheon, "On Whose Terms? Understanding the Global Expansion of National Oil Companies," Doctoral Dissertation prepared for Columbia University Political Science, May 12, 2015.

past decades the camps of western IOCs and NOCs embodied separate ends of a spectrum, now many NOCs appear to be scattered across the spectrum with some looking a lot more like IOCs, some less so, and many still like the traditional NOC. In the energy sector, the motivations for international investments mirror that of multinational firms, though they manifest in different ways. These three primary motivations are resource-seeking, market-seeking, and strategic asset-seeking and have been thoroughly studied in the international business literature.[237] Generally speaking, resource-seeking behavior deals with upstream investments such as exploration or extraction, market-seeking behavior concerns downstream investment like gasoline refining or petrochemicals, and strategic asset-seeking refers to industry expansion where firms aim at cross-border M&A activity that allows them to acquire important intellectual know-how and/or technologies that enhances their competitiveness.[238]

In the last two decades, NOCs have been most aggressively pursuing internationalizing strategies in the areas of global upstream investment and cross-border M&A. This has allowed NOCs to significantly increase their influence over various resource-rich regions of the world including Latin America, Africa, and the Middle East as well as helping NOCs to close the gap with IOCs concerning technical expertise and overall global competitiveness. M&A activity has

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[237] Prominent examples of literature in this area include Bruce C. Rudy, Stuart R. Miller, and Dana Wang, "Revisiting FDI Strategies and the Flow of Firm-Specific Advantages: A Focus on State-Owned Enterprises," *Global Strategy Journal* 6 (February 2016): 69-78; Alvaro Cuervo-Cazurra, Rajneesh Narula, and C. Annique Un, "Internationalization Motives: Sell More, Buy Better, Upgrade and Escape," *Multinational Business Review* 23 (April 2015): 23-35; and Pavida Pananond, "Motives for Foreign Direct Investment: A View from Emerging Market Multinationals," *Multinational Business Review* 23 (April 2015): 77-86.

[238] Flavia Carvalho and Andrea Goldstein, "The 'Making of' National Giants: The International Expansion of Oil Companies from Brazil and China," Ch. 7, in Wilfred Dolfsma, Geert Duysters, and Ionara Costa, eds., *Multinationals and Emerging Economies: The Quest for Innovation and Sustainability* (Edward Elgar Publishing, January 1, 2009).

had a profound impact on increasing the international competitiveness of NOCs,[239] because of the impact of technology transfers. Combine this together with historic levels R&D among NOCs that has surpassed that of IOCs for the first time ever according to one study,[240] and it becomes easier to explain how NOCs have closed the efficiency gap vis-à-vis IOCs. In fact, the literature on the internationalization of emerging country NOCs has acknowledged the relationship between the global competitiveness of these firms and technology transfer as well as their expanding capability to invest in recent years.[241]

The expanding reach of NOCs into overseas upstream production has occurred at an equally rapid rate. A great deal of this activity will be gone over in greater detail in the case studies, but for now consider one of the most important targets in recent years for international investment in the energy industry: Iraq. During the era of Saddam Hussein UN sanctions prevented much of any economic interaction with the outside world throughout the 1990s and early 2000s. But with the US invasion of Iraq in 2003, which deposed Hussein's Baathist regime, Iraq was opened back up to the world. The pivotal moment came shortly after the surge in Iraq restored national stability and the bilateral Trade and Investment Framework Agreement between the US and Iraq came into effect in 2013.[242] This agreement would promote strong economic ties and integrate Iraq into the global economy. The country's potential for oil production is

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[239] Gasford Aleksander, "Internationalization of National Oil Companies: Asset Acquisitions and Asset Swaps," Master's Thesis prepared for the International Business Program, St. Petersburg State University, 2016.
[240] Ben Thuriaux-Aleman, Sam Salisbury, Paolo R. Dutto, "R&D Investment Trends and the Rise of NOCs," *Journal of Petroleum Technology* 62 (October 1, 2010).
[241] Pauline Jones-Luong, "Crude Ambitions: The Internationalization of Emerging National Oil Companies," Mershon Center of International Security Studies, Globalization Speaker Series, Ohio State University, October 17, 2013.
[242] Office of the United States Trade Representative, "United States of America and the Republic of Iraq Announce Progress on Entry into Force of Trade and Investment Framework Agreement," Press Release, June 3, 2013.

enormous given its vast, relatively undeveloped reserves. This is the case because the Iran-Iraq war in the 1980s, the Gulf War and subsequent sanctions in the 1990s, and the US invasion in the 2000s had all prevented the nation from developing their oil fields in any significant way until recently. According to current projections from the IEA, Iraq will account for 40% of global oil supply growth over the next two decades, hitting the 8 mb/d mark by 2035, making it the second largest global exporter.[243] These factors have made Iraq the crown jewel for international energy investment over the last decade and this will continue at least until the 2040s.

At first some IOCs did well in Iraq, given America's influential role in the country's politics. Since 2003, the US has invested in Iraqi energy capacity building programs, including spending $4.6 billion on the power section and $2.1 billion on the oil sector.[244] These efforts bore fruit when four export platforms came online south of Basra in 2012, each of which having the capacity to export 900,000 bp/d.[245] After the US withdrawal in 2011, America has continued to cooperate with Iraq on energy issues as part of the Strategic Framework Agreements. A number of IOCs and smaller international oil service companies have benefitted during the initial opening of Iraq. Notably, Royal Dutch Shell and Halliburton joined together to develop one of the world's largest oil fields, the Majnoon field, a contract that has gone to KBR more recently.[246] Others that have operated in Iraq on some level include Baker Hughes, Schlumberger, and Weatherford. In 2010, ExxonMobil along with Royal Dutch Shell signed an agreement with Iraq to redevelop the West Qurna oil field, another massive reserve numbering at

[243] IEA, "World Energy Outlook 2012: Executive Summary," Analysis, Flagship Report, 2012.
[244] US Department of State, "Joint Statement of the U.S.-Iraq Joint Coordinating Committee on Energy," Bureau of Public Affairs, Press Release, April 23, 2012.
[245] US Department of State, "U.S. Foreign Policy Toward Iraq," Testimony, House Foreign Affairs Committee, Subcommittee on the Middle East and North Arica, November 13, 2013.
[246] "KBR Leads in Development of Majnoon Oil Field Project in Iraq," *KBR*, November 1, 2018.

about 8.7 billion barrels.[247] Additionally, ExxonMobil was also awarded six separate production sharing contracts in the Kurdistan region between 2011 and 2013.[248]

In the last decade, most of the energy contracts in Iraq have been awarded to NOCs despite America's penetration. The most notable NOCs have been those from China and Russia, but predominantly China. The IEA has projected that by 2035 Iraq will produce 8 million bpd and that about 80% of Iraq's future oil exports are destined for Southeast Asia, mainly China.[249] Moreover, nearly a third of the future oil production in Iraq is projected to come from fields that either are directly owned or co-led by Chinese companies. To continue to fuel its rapidly expanding economy China has sought to ensure long-term access to Iraqi oil. Since 2009, its economic cooperation with Iraq in the areas of trade and energy have expanded at an unprecedented rate. The UN sanctions from the Saddam era severely crippled Iraq's energy industry, but since 2012 it has been producing oil at the highest rate since Saddam seized power in 1979.[250] Between 2009 and 2014, exports to China more than tripled accounting for more than 9% of total imports and making Iraq China's fourth largest supplier behind Russia (15.8%), Saudi Arabia (12.4%), and Angola (10.4%).[251] China has kept its imports from Iraq steady since 2015, ending a five-year skyrocketing rate of import growth.[252]

To underscore China's success despite the American occupation, CNPC renegotiated the $3 billion oil service contract for the al-Ahdad oil field that was originally signed under

[247] ExxonMobil, "Iraq Operations," Iraq, October 10, 2018.
[248] Agence France-Presse, "Chevron signs Iraq Kurd oil deal," *Al Arabiya,* June 17, 2013.
[249] IEA, "World Energy Outlook 2012."
[250] Nayla Razzouk and Anthony Dipaola, "Iraq Oil Production Beating Iran Ends Saddam Legacy," *Bloomberg,* May 11, 2012.
[251] Daniel Workman, "Top 15 Crude Oil Suppliers to China," *World's Top Exports,* October 6, 2019.
[252] Florence Tan, "China Ends Near Decade of Rising Iraq Crude Oil Orders-Sources," *Reuters,* December 18, 2014.

Saddam.[253] The contract was signed in 2008 despite all negotiations and oil contracts being suspended following the US-led invasion of Iraq in 2003 as well as the US troop surge drawing to a close just a few months prior to the signing. This would make it the first oil contract that Iraq awarded to a foreign company since the overthrow of Saddam Hussein.[254] Chinese overseas activity has been notably robust in the last two decades and will be detailed to a greater extent in chapter 8. Concerning Iraq, Chinese NOCs have been the most active foreign companies since the regime change.

For their part, the Russian NOCs have also been noticeably elevating their interactions in Iraq's energy industry in the post-Saddam era. Similar to China, their activity began shortly after the US troop surge in Iraq came to an end and well before the US withdrawal in 2011. This includes many joint projects between Russia's Rosneft and Crescent Petroleum. In April 2009, Iraq's Prime Minister Nouri al-Maliki visited Russia, the first visit by an Iraqi leader since 1981. Shortly after the negotiations, Gazprom Neft won a monumental contract to develop the 2-billion-barrel Badra oil field and gain a 30% stake in the project, the largest stake of the consortium.[255] This field was discovered in 1979 but had gone unexploited until this contract began in 2010. It is scheduled for a twenty-year period with the possibility of a five-year extension. In 2016, Gazprom completed its tenth production well and third processing line to the central processing facility, raising the potential output capacity to 115 kb/d.[256]

In September 2009, Russian Energy Minister Sergei Shmatko led a Russian delegation to Iraq for the purpose of long-term cooperation in the energy sector. According to Shmatko, the

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[253] Katherine Zoepf, "Iraq Signs $3.5 Billion Deal for China to Develop Oil Field," *The New York Times,* November 11, 2008.
[254] Ibid.
[255] Gazprom Neft, "Gazprom Neft Signs Contract to Develop the Badrah Oil Field in Iraq," News, January 28, 2010.
[256] "10th Production Well Comissioned at Badra Oil Field," *Iraq Business News,* July 26, 2016.

visit "opened a new page in energy cooperation between the two countries,"[257] with the main task being to "create conditions for increased trade and diversifying forms of cooperation."[258] The delegation and Iraq's Prime Minister Maliki agreed to implement a number of joint energy development projects including the major Kirkuk-Biji pipeline and other pipelines as well as Russian companies modernizing existing and building new power plants across the nation. Just as with the Chinese NOCs, investment by Russian NOCs in Iraq will be covered in greater detail later. However, involvement between Russian firms and Iraq's energy industry has only increased since 2009, making it the second most heavily invested behind China.

A handful of other energy firms are also active in Iraq, most of which being NOCs. Aside from ExxonMobil and BP, the other twenty companies currently operating in Iraq are either fully owned and operated by national governments or are partially privatized NOCs.[259] Of course, Iraqi Kurdistan is more slanted in favor of IOCs, where fifteen of the twenty-seven companies in operation are privately held,[260] primarily because of the close alliance between the US and the Kurdish. Nevertheless, most of the contracts for the most significant oil fields in Iraq have gone to NOCs. Moreover, the trend of increasing NOC dominance has continued more recently. In late 2017 and early 2018, Iraq offered contracts on 11 blocks in border regions and offshore oil fields, of which not a single IOC won licensing.[261]

NOCs have benefitted greatly from the decreasing barriers to international economic activity due to the forces of economic globalization. Since the turn of the century, more NOCs

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[257] Gazprom Neft, "Gazprom Neft Wins Tender on Iraqi Badra Oil Field Development," News, December 10, 2009.
[258] Ibid.
[259] "List of International Oil Companies in Iraq," *Iraq-Business News,* accessed October 9, 2019.
[260] "Oil Companies in Kurdistan - Complete List of Top Oil Companies," *Iraq-Business News,* June 25, 2013.
[261] Maher Chmaytelli, "No Oil Majors Win Contracts in Iraqi Oil Licensing Round," *Reuters,* April 26, 2018.

have expanded their activities beyond their national borders than ever before. The internationalization of NOCs has produced a more competitive type of national firm that has come to challenge the traditional oil majors and IOCs more generally in many areas that were once completely dominated by these privately held firms. The most recent example of Iraq is telling. As one of the last countries with vast reserves of undeveloped, cheap oil and gas, sizable investments on the part of IOCs might have been expected, especially since the US and its western allies were the occupying force. In fact, many throughout the world viewed the move as an attempt by the west to secure the oil wealth of Iraq for itself. However, it turns out that for the most part NOCs have benefitted more from the opening of Iraq, rather than the IOCs. Most, notably, Chinese and Russian NOCs have largely outmaneuvered IOCs, which will likely bolster these company's profitability going forward.

The internationalization of NOCs has benefitted far more than just those from China or Russia and their global reach has penetrated numerous countries other than Iraq. While not all NOCs have been able to integrate themselves globally, those that have are benefitting greatly. These new international NOCs have become as competitive as IOCs, which helps to explain why the data on efficiency has reflected a closing gap between the different firm variants as well as why top tier NOCs have become more numerous in the 21st century.

Government Policy

Of the numerous transformations that NOCs have undergone in the last couple of decades perhaps none have been as consequential as their relative increase in freedom from the various noncommercial burdens that they generally shoulder. This has allowed NOCs to become more competitive in general as well as giving rise to a new type of NOC—the partially privatized

NOC. These firms have been able to behave more like private companies because they are less hindered by their governments than in the past. The ability to restrain itself from interventionist policies is somewhat counterintuitive to the nature of governments that operate and control their national industries given nationalization is often a policy prescription of statist ideologies. Thus, a state's aptitude for simultaneously maintaining control over their energy industry while demonstrating self-restrain will play a determining role in the performance of their NOCs. However, the leaders of these countries did not initially display this wisdom.

In the wake of decolonization and driven by early resource nationalism, many new states in Africa, the Middle East, and Latin America saw a quick path to wealth and economic development by taking control of lucrative resources within their national boundaries.[262] However, this led to what has become known as the "rentier state" in the resource curse literature. They are most known for achieving high levels of economic development but are typically dependent on rents from a single sector of their economy.[263] The rentier state also suffers from deficiencies such as non-democratization, lopsided economic development, Dutch disease, bureaucratic overgrowth, kleptocratic governance and nepotism, corruption, and vulnerability to price swings.[264] However, it should be pointed out that studies have acknowledged the resource curse as more of a conditional phenomenon rather than an absolute

[262] Douglas Andrew Yates, *The Rentier State in Africa: Oil Rent Dependency and Neocolonialism in the Republic of Gabon* (Africa World Press, 1996); and Hazem Beblawi, "The Rentier State in the Arab World," *Arab Studies Quarterly* 9 (Fall 1987): 383-398.
[263] Hazem Beblawi and Giacomo Luciani, *The Rentier State* (Routledge, 2015).
[264] Much work has been done examining the effects of the oil curse on states. See especially Michael Ross, *The Oil Curse: How Petroleum Wealth Effects the Development of Nations* (Princeton University Press, 2013); Donald L. Losman, "The Rentier State and National Oil Companies: An Economic and Political Perspective," *Middle East Journal* 64 (Summer 2010): 427-445; Samuel R. Schubert, "Revisiting the Oil Curse," *Development* 49 (September 2006): 64-70; and Alan H. Gelb, *Oil Windfalls: Blessing or Curse?* (World Bank, 1988).

one.[265] This suggests that the relationship is more correlational than causal and that interactions between the state and the NOC are significant.

Contrary to the previous century, many governments who have nationalized energy industries have allowed their firms to operate with less noncommercial burdens. In many cases, states have shown far greater restraint in seeking heavy-handed control of their NOCs. In Latin America, this seems to be a change in policies that reflect learning from the past. More recently, some NOCs in the region have continued to operate under government agendas and with noncommercial priorities such as Venezuela's PDVSA, while others have begun to operate with greater orientation towards private enterprise such as Brazil's Petrobras, Colombia's Ecopetrol, and Argentina's YPF.[266] These recent transitions represent a notable policy shift across a region that was more known in the past for nationalizing industries and implementing protectionist development policies such as import substitution.

In other regions such as the Middle East and Asia, NOCs also seem to be operating with a greater inclination towards commercial concerns. Some scholars have referred to this greater freedom despite government control as "coopetition," meaning the co-existence of cooperation with and competition between increasingly entrepreneurial NOCs and their home governments that can be either supportive or interventionist at times.[267] This takes shapes in different ways based on the unique demands of individual states and regional dynamics. For example, South and

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[265] See David Waldner and Benjamin B. Smith, "Rentier States and State Transformations," in Stephan Leibfried, et. al., eds. *The Oxford Handbook of Transformations of the State* (Oxford University Press, 2015), 715-739; Michael Alexeev and Robert Conrad, "The Elusive Curse of Oil," *The Review of Economics and Statistics* 91 (August 2009): 586-598; and Alan Gelb and Sina Grasmann, "Confronting the Oil Curse," Population and Natural Resources presentation at the AFD-EUDN Conference, 2008, 88.
[266] R. Y. Ramirez Taza, "Energy Security and Latin American NOC," *Energy Sources: Part B: Economics, Planning, and Policy* 9 (October 24, 2013): 342-350.
[267] Jonas Meckling, Bo Kong, and Tanvi Madan, "Oil & State Capitalism: Government-Firm Coopetition in China and India," *Review of International Political Economy* 22 (October, 2015): 1159-1187.

Southeast Asia have large populations, developing economies, and are relatively resource starved. Therefore, governments tend to be more interventionist and push geopolitical goals such as investment in upstream development in high-risk scenarios to gain more access to needed energy imports. However, there is less rentier behavior and state dependence on these revenues because of greater levels of economic development, so firms are able to reinvest windfalls and spur on growth. In the Middle East, where many states are not as populous but are resource rich, countries and their NOCs must manage global prices and supply, rentier behavior is stronger because of lopsided development, and government intervention is more concerned with production levels and how to allocate funds. To be sure, state intervention still occurs for different reasons in various places, but what all of these NOCs and their states have in common is this: a greater freedom on the part of the NOC and far less propensity for the state to intervene than in the past.

The previous chapter discussed how NOCs on the whole have been increasing their efficiency when compared to IOCs, with a smaller set of partially privatized companies (the pNOCs) becoming equally as or nearly as efficient, and how this is an indicator of increasing NOC strength. The increasing competitiveness of both categories of NOCs, as well as the emergence of pNOCs, is fundamentally tied to governments lightening the burdens of noncommercial obligations and the propensity for interventionist policies. The result has been increasing competitiveness among state-owned enterprises such as Saudi Aramco, China's CNPC and CNOOC, Malaysian Petronas, and Qatar Petroleum as well as the emergence of new pNOCs such as China's Sinopec, Russia's Gazprom and Rosneft, Brazil's Petrobras, and Norway's Equinor (Statoil).

In the case of Brazil's Petrobras, this transition from strict government control to greater commercial freedom has yielded striking results. The company was founded in 1953 making it one of the world's first NOCs. Petrobras was given exclusive rights over upstream exploration and production while IOCs were locked out of the nation's energy industry with the exception of downstream development.[268] The foundation of Brazil's NOC, as well as other state-owned enterprises in industries such as iron ore (CVRD) and steel (CSN), were part in parcel of a larger strategy based on import substitution. The company further expanded into downstream in the 1960s to both grow the firm's capabilities and to decrease reliance on foreign IOCs.[269] In the 1990s, alongside the fall of the Soviet Union and the rise in popularity of economic globalization, Brazil initiated an ambitious program of market liberalization and privatization of their state owned enterprises including their energy industry and the NOC Petrobras.[270] The country did away with monopolistic control over its energy industry, issuing a $4.3 billion IPO on the NYSE in August 2000, though it retained a controlling interest in the company.[271]

Since the opening of the industry to foreign competition and the partial privatization of Petrobras, the firm has significantly increased its competitiveness on a global scale through cooperative R&D[272] and by becoming a pioneer in offshore drilling techniques.[273] It also became a leading technological innovator by impressively increasing R&D investment by 23% per year

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[268] Andrea Goldstein, "The Emergence of Multilatinas: The Petrobras Experience," *Universia Business Review* (2010): 98-111.
[269] Thomas J. Trebat, *Brazil's State Owned Enterprises: A Case Study of the State as Entrepreneur* (Cambridge University Press, 1983).
[270] Andrea Goldstein, "Brazilian Privatization in International Perspective: The Rocky Path from State Capitalism to Regulatory Capitalism," *Industrial and Corporate Change* 8 (December 1999): 673-711.
[271] Goldstein, "The emergence of Multilatinas," 101-102.
[272] André Tosi Furtado and Adriana Gomes de Freitas, "The Catch-up Strategy of Petrobrás through Cooperative R&D," *Journal of Technology Transfer* 25 (March 2000): 23-36.
[273] Cássio Garcia Ribeiro and André Tosi Furtado, "Government Procurement Policy in Developing Countries: The Case of Petrobras," *Science, Technology, and Society* 19 (July 2014): 161-197.

between 2003 and 2010.[274] Alongside its global leadership in innovation, Petrobras has grown to become truly global in its reach, operating more than 100 production platforms offshore and 16 refineries and is directly present in 27 countries.[275] Moreover, during the same period Brazil changed its policies concerning the company, oil production began to increase notably. Between 1990 and 2018, production increased by 2 mb/d,[276] making it a significant player on the global market. When it comes to Brazil's Petrobras, much has changed in a short period of time. Struggling to make substantial progress in the first forty years of its life span, so much has been achieved in half the time. Brazil's change in policy towards their energy industry and Petrobras in the 1990s has brought the firm out of obscurity and transformed it into one of the world's top energy companies in the 21st century.

Norway's Equinor is also a strong example of how a nationally owned enterprise has benefitted from governments adopting a less heavy-handed approach to managing their NOCs. Founded in 1972, Statoil was meant to be a strong political instrument of the state as well as a hard line against the IOCs. Quickly it would grow to become Norway's dominant energy company through oil rents on transportation primarily, a model they picked up from Rockefeller's Standard Oil.[277] At its inception, the mantra "national governance and control," the first of the ten points produced by the parliament's industrial committee in 1971, would form the foundation for Norwegian Oil Policy and the fundamental relationship between company and

[274] Thuriaux-Aleman, Salisbury, and Dutto, "R&D Investment Trends and the Rise of NOCs."
[275] Flavia Carvalho and Andrea Goldstein, "The Making of National Giants: The International Expansion of Oil Companies from Brazil and China," in Wilfred Dolfsma, Geert Duysters, and Ionara Costa, *Multinationals and Emerging Economies: The Quest for Innovation and Sustainability* (Edward Elgar Publishing, 2009), 113-115.
[276] EIA, "International Energy Statistics."
[277] Helge Ryggvik, "The Norwegian Oil Experience: A Toolbox for Managing Resources?," Center of Technology for Innovation and Culture, University of Oslo, 2010, 19-23.

state.[278] Many would describe the move as another instance of resource nationalism. However, in the 1980s and 1990s, as the global influence of neoliberalism was increasing, Norway was realizing that efforts to completely localize their energy industry was leading to inflated costs, leading to less profitability on the part of Statoil and dwindling revenues for the state.

Over time the relationship between Norway and Statoil would fundamentally change. At first, government control was more of a priority than profitability. However, as domestic supplies began to dwindle the company was forced to begin competing internationally, which created additional pressures to become more competitive with IOCs. This combined with expanding neoliberalism globally caused the government to view profitability as the greater priority. The government of Norway began to operate at more of an arms-length by allowing the firm to internationalize in the 1990s and to partially privatize in 2001.[279] After partial privatization, Statoil embarked on a wide-ranging program emphasizing global expansion and integration.[280] At the turn of the century, overseas production was less than 100 kb/d but by 2014 that figure reached 744 kb/d.[281] Today the company operates in more than 30 countries globally while producing oil in 11 of them and nearly forty percent of its total production comes from outside Norway.[282] In 2018, the company voted to change its name from Statoil to Equinor, which was meant as a rebranding amid the push for more renewable energy.[283] Equinor, alongside Petrobras, has risen to be considered one of the world's top performing NOCs in terms of technical

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[278] Ibid, 25.
[279] Mark C. Thurber and Benedicte Tangen Istad, "Norway's Evolving Champion: Statoil and the Politics of Enterprise," Program on Energy and Sustainable Development, Stanford University, May, 2010, 5-8.
[280] Richard Gordon and Thomas Stenvoll, "The Changing Role of National Oil Companies in International Energy Markets," James A. Baker III Institute for Public Policy, March, 2007, 33.
[281] Kjetil Malkenes Hovland, "Statoil Profit Hit Beyond Norway's Shores," *The Wall Street Journal,* July, 28 2015.
[282] Equinor, "Fields and Platforms," What We Do, accessed October 16, 2019.
[283] Sarah Kent, "Getting the 'Oil' Out: Norway's Statoil Rebrands," *The Wall Street Journal,* March 15, 2018.

expertise (predominantly in the area of deepwater) and global competitiveness with IOCs, both of which are the beneficiaries of a light touch on the part of their controlling governments.

To be sure, many NOCs around the world are benefitting from less government intervention and noncommercial burdens. Thus, NOCs have become more competitive globally, especially those that have partially privatized. While this trend has taken place in the era of economic globalization and certainly reflects the greater trends towards liberalization, governments maintain control over their industries. This explains how NOCs have been able to boost their efficiency while remaining an important source of revenue for their state. However, this requires extensive discipline on the part of the government. The danger of developing into a rentier state will always be present, as the resource curse remains relevant. This explains why some NOCs are more successful, such as Brazil's Petrobras or Norway's Equinor, and others such as Venezuela's PDVSA, Ghana's GNPC, or Kazakhstan's KazMunayGaz are far less so. It also explains why the data has shown that partially privatized NOCs are generally more efficient than fully nationalized companies. It may be that partial privatization raises the costs of government intervention among the minority shareholders, who could divest if governments too eagerly intervene in business operations. On the other hand, many fully nationalized firms are among the most competitive companies globally despite this advantage. Thus, NOCs are stronger players in the global energy industry when they are afforded greater independence from the state.

Strategic Value

State intervention and noncommercial burdens certainly stifle NOC competitiveness, but they are also the fundamental reason NOCs exist in the first place. As discussed earlier, the rise of NOCs to begin with can be traced back to a reassertion of national sovereignty over energy

resources and the wealth that could be derived from them. Thus, there is a paradoxical relationship between the strength of NOCs and the strength of states. On one hand, the more state intervention and noncommercial burdens, the less competitive the NOC. On the other hand, the strategic value that NOCs present states drives their proliferation globally, which puts more reserves and production in the hands of NOCs rather than IOCs. However, the extent to which a government interferes with its company's activity is different from the underlying reasons why the state nationalizes the industries in the first place. The answer is strategic value, which is to say that states draw strength from NOCs.

One could argue the existence of IOCs is more of a privilege or a consequence of path dependency rather than a result of state policy or economic principle. This is because every IOC that exists today comes from a nation that underwent industrial economic development and had robust democratic institutions before the era of oil began. Consequently, oil and gas companies were simply integrated into an already thriving and diverse economic landscape. In the case of NOCs, these firms exist in states around the world that either industrialized in the late 20th century or operate with high levels of state intervention as a matter of principle. That being said, NOCs continue to offer states a means of power that allows them to economically and politically develop as well as to increase their profile amid contentious regional and global politics. As long as oil and gas resources remain indispensable to the global economy and are a significant source of wealth, states will draw strength from NOCs and these firms will in turn continue to dominate the global energy industry.

States are strengthened by NOCs in three major areas: regime stability, military capability, and foreign policy. When speaking of regime stability, this refers to the resilience of regimes in the face of internal political pressures. Those governments that are infused with oil

and gas wealth have demonstrated a notable difference in longevity when compared to their regional counterparts that do not have the same resource endowments. In terms of military capabilities, this is the traditional realist understanding of hard power focusing on a valuation of military assets. Countries that have been enriched with rents acquired from NOCs have displayed greater military capabilities, having more money to invest in this area. When it comes to foreign policy, this speaks toward the uniquely unbalanced nature of global energy trade and how extreme asymmetries develop in this particular area of global trade. As asymmetries are an easily exploitable source of power in international relations, NOCs allow states to execute their foreign policy goals using energy as a lever of influence. In each of these ways, owning and controlling NOCs profoundly strengthens states, making them valuable strategic assets, which in turn drives nationalization around the world.

NOCs are particularly valuable assets in the hands of autocrats and dictators because they confer wealth that can be spent to quell internal political dissidents. These states demonstrate remarkable stability through the development of rent redistribution on a large scale or through political patronage.[284] Moreover, much of the state-building agenda of these countries emphasizes societal peace and political acquiescence rather than accountability or transparency primarily because energy rents displace reliance on civilian taxation.[285] According to the Center for Systemic Peace's Polity IV dataset, regimes in the Middle East and North Africa (MENA) that are endowed with significant oil and gas wealth have stayed in power for decades, with

[284] Matthias Basedau, "A Paradox of Plenty: Rent Distribution and Political Stability in Oil States," GIGA Working Paper, No. 21, April 2006.
[285] Rolf Schwartz, "The Political Economy of State-Formation in the Arab Middle East: Rentier states, Economic Reform, and Democratization," *Review of International Political Economy* 15 (October 2008): 599-621.

some such as Saudi Arabia not having changed since the founding of the state.[286] The two outliers in the data are Iraq and Libya, both of which are explained by foreign intervention. It is highly likely that both Saddam Hussein and Muammar al-Gaddafi would still be in power had they not been forcibly removed from external forces.

The Arab Spring is a strong example of the disparity in resilience to internal political instability among MENA countries. Beginning in Tunisia and quickly sweeping across the entire region in 2011, the uprising brought down a number of regimes, forced constitutional changes, and produced lasting internal conflicts that are still raging to this day such as in Syria. However, some nations were able to weather the storm far more effectively than others. More specifically, it was the monarchies that had profound oil and gas wealth that fared the best.[287] In fact, the only energy enriched monarch that faced any serious threat was Gaddafi in Libya, who likely would have defeated the rebels if not for western intervention and the establishment of the no-fly zone.[288] He was able to pay numerous mercenaries using the oil wealth he had accumulated while in power.[289] The existence of NOCs in the hands of these regimes makes them more resilient and generally more politically stable. On the other hand, this can also become a double-edged sword as a more resilient autocratic regime is also resistant towards democratization and is susceptible to corruption and kleptocratic governance.[290] Nevertheless, those in power tend to want to stay in power and wealth obtained from NOCs are a proven way to secure one's longevity.

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[286] Center for Systemic Peace, "Polity IV: Regime Characteristics and Transitions Datasets, 1800-2018," INSCR Data Page, accessed October 21, 2019.
[287] Victor Menaldo, "The Middle East and North Africa's Resilient Monarchs," *The Journal of Politics* 74 (July 2012): 702-722.
[288] Michael L. Ross, "Will Oil Drown the Arab Spring: Democracy and the Resource Curse," *Foreign Affairs* 90 (September/October 2011).
[289] Jeffery Gettleman, "Libyan Oil Buys Allies for Gaddafi," *The New York Times,* March 15, 2011.
[290] Hamid Sarmadi, "Negative Correlation Between Economic Structure of Rentier State and Non-Democratization (Case Study: Saudi Arabia)," *Humanities and Social Science Research* 1 (April 8, 2018);

NOCs are valuable strategic assets not just because rents can preserve the rule of those in power but also because it can buttress their military capabilities. In the hands of autocrats and dictators, wealth obtained from NOCs is often spent on building up the military power of the state.[291] As Jeff Colgan has pointed out, energy has a strong connection to both resource wars and also what he calls "petro-agression," the former being an attempt at forceful acquisition of reserves and the latter having to do with the connection between oil wealth and the domestic political control of powerful leaders such as Hussein or in Iraq or Khomeini in Iran.[292] Not only are these regimes able to build their political power and military capabilities, they often aggressively engage in foreign policy adventures. According to Colgan, between one-quarter and one-half of all interstate conflicts since 1973 are connected to one or more oil-related causal mechanisms.[293]

The case of Iraq's invasion of Kuwait in 1990 is one example that illustrates this linkage. While the reasons for the invasion are complicated and certainly many factors played a role such as Saddam's tendency to overreach, his presuppositions about the stance of the US, and his crippling insecurities, one of Iraq's core grievances against Kuwait had to do with oil. Earlier that year at the Arab League Summit, Saddam was critical of the Gulf States, particularly Kuwait. His list of accusations included cheating on OPEC production quotas and keeping prices low, refusing debt forgiveness with respect to his previous decade-long war with Iran, and failing to provide reconstruction credits to assist with rebuilding Iraq's devastated economy.[294] Though

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and Rabah Arezki, Markus Brückner, "Oil Rents, Corruption, and State Stability: Evidence from Panel Data Regressions," *European Economic Review* 55 (October 2011): 955-963.

[291] Beblawi and Luciani, *The Rentier State*, 167.

[292] Jeff Colgan, *Petro-Agression: When Oil Causes War* (Cambridge University Press, 2013).

[293] Jeff Colgan, "Fueling the Fire: Pathways from Oil to War," *International Security* 38 (Fall 2013): 147-180.

[294] FBIS, "Speech by Saddam Hussein to the Arab Summit Conference in Baghdad," Foreign Broadcast Information Service: Near East and South Asia, May 29, 1990, 5.

Iraq's conflict with Iran was a war of aggression, Hussein saw the Sunni gulf monarchies as free riders that were shielding themselves from the revolutionary Iranian Shiite threat with the military might of Iraq.[295] Since Kuwait and Saudi Arabia were half-hearted when it came time to provide postwar economic support, Iraq had sought to pay for its economic reconstruction by reducing OPEC production and increasing the price of oil. This is why his accusations of cheating on quotas and overproducing carried more weight than usual, as they were a direct attack on his efforts at economic recovery.

Making tensions even worse, Iraq accused Kuwait of siphoning oil from its side of the al-Rumaila oil field, to which both countries had a joint claim. According to Saddam, the Kuwaitis were pumping oil from Iraq's portion of the field by constructing oil wells on their side of the border and angling their equipment so at depth they would have crossed into Iraqi reserves.[296] For months after the summit he issued various threats in conjunction with military exercises close to the border, suggesting the possibility of taking military action to resolve the dispute. The war of words, accusations, and Sabre raddling escalated to the point of Saddam suggesting that "to have one's head cut off"[297] was far worse than to go without "one's sustenance,"[298] referring to Iraq's ability to destroy Kuwait while Kuwait merely had the ability to economically needle Iraq. A decade later, Iraq's former Foreign Minister Tariq Aziz who served under Hussein at the time suggested that actions taken against Kuwait in 1990 were warranted and fully justified, citing economic warfare via oil prices and theft of Iraq's resources via slant drilling.[299]

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[295] On Iraq's view, see FBIS, "Statement of Foreign Minister Aziz," Baghdad Al-Thawrah, Foreign Broadcast Information Service: Near East and South Asia, September 12, 1990, 30–31.
[296] Ibid.
[297] FBIS, "Aziz Recounting Saddam's July 16, 1990 Speech," Baghdad Al-Thawrah, Foreign Broadcast Information Service: Near East and South Asia, September 12, 1990, 30.
[298] Ibid.
[299] "Saddam Says He Won the War," *APS Diplomat Recorder* 54 (January 20, 2001).

While it is quite likely that Saddam was overemphasizing these perceived acts of sabotage in order to justify his desire for aggression, the conflict would have been far less likely or perhaps not even possible at all if the country's oil was in the hands of private companies rather than an ambitious autocrat.[300] Much of Saddam's domestic political strength and Iraq's massive military had been built using rents collected from the energy industry. At home, he strengthened the power of the Baathist party and his own position by crushing dissent among the Kurds and the Shiitte Muslims and by investing in cultural myth-making; the latter by investigating and excavating ruins of old glorious Mesopotamian city-states.[301] Particularly, he likened the new Iraq under his rule to the reestablishment of the great legacies of the region, including Sargon and the Akkadian Empire as well as Hammurabi and the Babylonian Empire.[302] In 1990 before the invasion, Iraq had the most powerful military in the region and one of the strongest militaries in the world. It was reported at the time that the Iraq military ranked first in the world in terms of active troops per capita, sixth regarding total active-duty troops, and fourth concerning defense spending per capita.[303] Without the wealth derived from oil and gas, this clearly would not have been possible.

In addition to regime stability and military capability, NOCs are strategic assets for states because they can be utilized to accomplish foreign policy goals. Generally speaking, states have utilized their NOCs in four particular ways. First, one the most traditional uses of NOCs as foreign policy tools is through international organizations, notably OPEC, that emphasize market share dominance. This allows the producer states to exert power over international markets in

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[300] Steve Yetiv, *Myths of the Oil Boom: American National Security in a Global Energy Market* (Oxford University Press, 2015), 154-155.
[301] Claudia Wright, "Iraq – New Power in the Middle East," *Foreign Affairs* 58 (Winter 1979): 257-277.
[302] Ibid.
[303] "Iraq and the World's Biggest Armies," *The Los Angeles Times,* March 6, 1991.

their favor. Second, by exploiting windfalls states are able to invest in various strategic objectives abroad. This is commonly done with the goal of increasing one's international or regional profile and tends to involve funding all kinds of nonstate actors. Third, energy relationships among producers and consumers inclines towards different degrees of asymmetry. Utilizing NOCs, states can abuse asymmetrical interdependence by engaging in coercion with vital energy resources as a bargaining chip. Fourth, some states have used their NOCs to invest in the development of or acquire the rights to energy reserves around the world. This is generally a strategy to Increase overall access to, and at times direct control over, critical energy reserves.

Because energy resources are so vital for the growth and maintenance of the modern economy, and because oil and gas are not easily substituted for, oil consumers are significantly vulnerable to supply shortages and price spikes.[304] States that own and operate the energy companies that do business on the global markets thus possess a source of power that can be used to the advantage of producing nations and at times to leverage the behavior of import dependent nations. The nationalization of oil companies and subsequent founding of OPEC was centered around the recognition of this fact. In fact, the oil dependent western nations that were weary of the rise of NOCs immediately globalized the oil markets, disallowing the posting of prices by the major producing companies.

Thus, the rise of OPEC, which directly seeks to control prices via production quotas and supply management, was tied to this turn of events; and could be described as an ongoing grappling match between producers and consumers over economic vulnerabilities. The Arab oil embargo in 1973 and subsequent founding of the IEA, accompanied by strategic petroleum reserves and oil stocks, was a continuation of this saga. Similarly, hawkish behavior within the

[304] Elias H. Tuma, "Strategic Resources & Viable Interdependence: The Case of Middle Eastern Oil," *Middle East Journal* 33 (Summer 1979): 269-287.

context of OPEC from other actors such as Iran, Iraq, and Venezuela who seek to increase the price of oil and further enrich themselves has proved challenging for global energy security.[305] They have generally been checked by the more dovish members of the organization like Saudi Arabia, Kuwait, and the UAE because they depend on the US as a guarantor of Persian Gulf security.

Today, cooperation among producers to gain the upper hand in terms of market share remains an important strategy. The Saudi strategy to push prices down by overproducing between 2014 and 2017 was a clear move to damage booming US production and regain lost market share,[306] as well as a move against Iran and Russia for their activities in Yemen and Syria respectively.[307] As detailed in the previous chapter, the rise of OPEC+ as a response to the American energy boom has grown the market share of cooperating producers to unprecedented proportions. After failing at reestablishing market share at the expense of American production, as the US boom proved more resilient than expected, they sought out cooperation with Russia. This proved a more successful alternative strategy since the Russians, who have consistently ranked in the top three globally alongside Saudi Arabia and the US, brought a significant amount of production to the table. To be sure, it is not clear how effective this new OPEC+ alliance will be, but without NOCs these states would be unable to influence global markets.

States also utilize their NOCs and the windfalls they receive to project influence abroad. Colgan has pointed out that, in addition to resource wars and petro-agression, oil wealth has

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[305] Daniel Yergin, *The Quest: Energy, Security, and the Remaking of the Modern World* (New York: Penguin, 2011), 120-26.
[306] For reports on the oil price war see Irina Slav, "The Oil Supply Glut Is Here To Stay In 2017," *OilPrice*, January 5, 2017; for reports on the diminishing oil rig count in North America during the same period see "North America Rig Count," Baker Hughes, accessed September 15, 2021.
[307] Elena Holodny, "Oil Climbs as King Salman Makes the First-Ever Visit by a Saudi Monarch to Russia," *Business Insider*, October 5, 2017.

allowed states to export favorable ideologies and finances insurgencies in other states to bolster their own position regionally or globally.[308] The Saudis have been known to fund Wahabi Madrassas across the Muslim world, spreading the Saudi brand of Islamism abroad while giving the royal family more legitimacy among religious fundamentalists at home.[309] Iran is known to fund Islamist insurgency groups throughout the Middle East such as Hamas in Gaza, Hezbollah in Lebanon, Houthi rebels in Yemen, and Shiite militias in Syria and Iraq.[310] This has earned it the145egin145ous title of "the world's leading state sponsor of terrorism."[311] When windfalls swelled the state coffers of Venezuela in the early 2000s, Chavez sought to increase his countries standing in Latin America, challenging the traditional American hegemony by building oil pipelines into numerous neighboring countries, offering energy subsidies, and seeking to nurture its 21st century socialist model of governance throughout the region including fostering close relations with Cuba.[312]

The rise of NOCs and their use as foreign policy tools has also allowed states to abuse interdependence by using energy trade for the purposes of political coercion through threats of, or actual, supply interruptions. Returning to the example of the Arab oil embargo, this was an outright cutoff of oil supplies to the US and its western allies for their support of Israel during the Six Day War. However, the 1973 oil embargo was only somewhat effective at achieving its desired political outcome, mostly because other producers exploited the crisis to achieve

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[308] Colgan, "Fueling the Fire."
[309] Peter Mandaville and Shadi Hamid, "Islam as Statecraft: How Governments use Religion in Foreign Policy," Foreign Policy at Brookings, November 2018.
[310] J. Matthew McInnis, "Iranian Deterrence Strategy and Use of Proxies," United States Senate Committee on Foreign Relations, November 29, 2016.
[311] Ali M. Ansari, "The State and Terrorism in Iran," in Michael J. Boyle, ed., *Non-Western Responses to Terrorism* (Manchester University Press, January 11, 2019), Ch. 14.
[312] Ralph S. Clem and Anthony P. Maingot, eds., *Venezuela's Petro-Diplomacy: Hugo Chavez's Foreign Policy* (Florida University Press, 2011).

different foreign policy goals.[313] Additionally, uncooperative OPEC members like Venezuela saw the price spike as an opportunity to rake in profits by selling to embargoed consumers. When it came to accomplishing their desired political outcome, which was shifting support away from Israel towards the Arab states, the strategy was not very successful. On the contrary, the spike in oil prices created massive windfalls for oil producers, amounting to one of history's largest peaceful transfers of wealth and provided new opportunities for oil rich states; in this sense it was an overwhelming success.[314]

More recently, Russia's renationalization of its NOCs in the early 2000s has led to a number of instances of energy coercion throughout Eastern Europe in many former Soviet Socialist Republics in the late 2000s and early 2010s. These instances mostly involve gas, which is more easily used for the purposes of coercion because of the regional nature of the market. Whereas oil is more complicated because the global market allows for more interconnections between consumer and producers, the gas market is more restricted because the primary means of transportation is by pipeline.[315] As a result, consumers are more vulnerable to supply interruptions and producers in turn have more leverage. Consequently, Russia was more successful in achieving its political objectives than the Arab countries were in 1973.

Alongside the other uses of NOCs as tools of state power, one of the newer developments and perhaps the most potentially significant is the use of these state firms to acquire access to and rights over foreign reserves. For the most part, this is being furthered by China and its

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[313] Rudiger Graf, "Making Use of the "Oil Weapon": Western Industrialized Countries and Arab Petropolitics in 1973–1974," *Diplomatic History* 36 (January 2012): 185-208.
[314] Frank A. Verrastro and Guy Caruso, "The Arab Oil Embargo—40 Years Later," Center for Strategic and International Studies, October 16, 2013.
[315] At present this is the nature of the gas markets, though the global LNG market has been growing slowly. See Gavin Bridge and Michael Bradshaw, "Making a Global Gas Market: Territoriality and Production Networks in Liquefied Natural Gas," *Economic Geography* 93 (March 2017): 215-240.

mercantilist-style acquisitions and upstream investments in the resources of Latin American, African, the Middle Eastern, and Southeast Asian offshore energy reserves.[316] This phenomenon is more reminiscent of the age of imperialism, wherein states took control of and dominated the resources of other lesser developed nations with the purpose of importing those resources back to the home country, than it is of the age of neoliberalism. This has led some energy analysts to question the rise of a quasi-mercantilist energy system to challenge the current US-led neoliberal order.[317] Nevertheless, the resurgence of China and the concomitant rise of Chinese oil consumption has led the nation to utilize its NOCs to engage in a global strategy of resource acquisitions. This has ultimately increased the value of NOCs as strategic assets.

States have been able to gather immense strength through the acquisition of NOCs and the wealth that is derived from them. However, this is not without its limitations and drawbacks. For one, the more reliant a nation is on rents and the less developed its institutions are, the greater it risks the worst possible manifestations of the resource curse.[318] So while regimes may become more resilient with wealth derived from NOCs, becoming excessively reliant can have the overall effect of weakening the state and could lead to the eventual collapse the regime, as in the case of Venezuela. There is also the competitiveness of the company to worry about, underscoring the balancing act states must perform. Too much intervention and the company will

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[316] Dambisa Moyo, *Winner Take All: China's Race for Resources and What it Means for the World* (Basic Books, 2012).
[317] Andrew T. Price-Smith, *Oil, Illiberalism, and War: An Analysis of Energy and US Foreign Policy* (MIT Press, 2015), 54.
[318] Macartan Humphreys, Jeffrey Sachs, and Joseph E. Stiglitz, eds., *Escaping the Resource Curse* (Columbia University Press, 2007); Steinar Holden, "Avoiding the Resource Curse: The Case of Norway," *Energy Policy* 63 (December 2013): 870-876; James A. Robinson, Ragnar Torvik, and Thierry Verdier, "Political Foundations of the Resource Curse," *Journal of Development Economics* 79 (April 2006): 447-468; and Halvor Mehlum, Karl Meone, and Ragnar Torvik, "Institutions and the Resource Curse," *The Economic Journal* 116 (January 2006): 1-20.

become inefficient and bogged down with noncommercial burdens, too little and the company functions like a private entity without respect to the state's desired outcomes.

Additionally, the quantity of resources a state has and the nature of its relationships with its consumers will color how it views its NOC as a strategic asset and the extent to which it can and will use it as a foreign policy tool. For example, with abundant reserves a state will look for ways to maximize the benefit of its market share, like with the hawkish OPEC members. On the other hand, if they depend on their main consumers for security, like the more dovish Gulf states in OPEC, then taking full advantage of market share is more unlikely. Similarly, energy coercion requires vulnerability interdependence, described by Keohane and Nye as an extreme scenario in which one state relies overwhelmingly upon another within the context of asymmetrical economic interdependence.[319] In the case of pursuing a global resource acquisition strategy, it is the import-dependent actors that generally seek to exploit the opportunity to access cheaper imports.[320] This is the case with countries like Norway, Italy, and most notably China.

To be sure, in overwhelming numbers of states have chosen to pursue the nationalized model instead of the private. This means that despite the restraints and potential drawbacks of the utilization of NOCs as strategic assets, the potential benefits are often too tempting for most countries to abstain. Perhaps within the context of the security dilemma,[321] states want to maximize their power by stockpiling strategic assets through NOCs.[322] Notably, many IOCs exist in nations such as the US, Canada, and countries in Western Europe, where international anarchy

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[319] Robert O. Keohane and Joseph S. Nye, *Power and Interdependence* (Longman, 2011), 13-14.
[320] Aydin B. Yildirim, J. Tyson Chatagnier, Arlo Poletti, and Dirk De Bièvre, "The Internationalization of Production and the Politics of Compliance in WTO Disputes," The Review of International Organizations 13 (March 2018): 49-75.
[321] Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30 (January 1978): 167-214.
[322] Kenneth N. Waltz, *Theory of International Politics* (Waveland Press, January 26, 2010); and John J. Mearcheimer, *The Tragedy of Great Power Politics* (W. W. Norton, January 17, 2003).

and the security dilemma have been tempered to some extent. Realist claims about the structure of the system offer some insight into why most countries ignore the various potential pitfalls pursuing national control over their energy industry. The most intuitive answer is that the possible net benefits outweigh the risks, especially when you have to worry about your neighbors like in the Middle East or when you are economically vulnerable like in Southeast Asia. Internal instability and corruption likely play a role in lesser developed regions like Latin America, Africa, and the former Soviet Union. Nonetheless, countries continue to view NOCs as strategic assets that can strengthen the state. This explains why NOCs have continued to gain ground in the 21st century and more specifically why states use them within the context of organizations such as OPEC(+) and why they invest in spare capacity expansion, both of which are a strategy to dominate the markets and control global supplies and prices.

Conclusion

NOCs in the 21st century have continued to gain momentum in many important areas of strength. The rise of NOCs was initially the result of major systemic changes following the collapse of the previous global economic order and the socio-economic ideology adopted by many states. Similarly, modern globalization is altering the current economic order and the behavior of states in important ways, which has led to a strengthening of NOCs. First, statism has been transformed by economic globalization, where state authority has receded in some areas while expanding in others. The energy industry being one of the chief examples. Countries are pursuing more refined statist policies that also incorporate market economies into the mix. Thus, the rise of state capitalism and the new resource nationalism have had similar effects on NOCs, producing a more sophisticated approach to bargaining with IOCs over development projects and

sites of production. Instead of solely seeking to establish complete control over their national resources and expel IOCs, NOCs have sought to maintain the majority controlling interest while allowing for IOC activity to occur on smaller scales that helps to bolster overall productivity and development. This has led to a continued expansion of NOCs' control over the most important sources of oil and gas around the world, with the exception of unconventional energy.

Second, economic globalization has also reduced the barriers to international economic activity allowing for the proliferation of MNCs. While IOCs have long operated as multinational firms NOCs have joined the game more recently. The internationalization of NOCs has led to a wave of international investment, most notably including M&A activity that has resulted technology transfers and has seen NOCs' technical efficiency advance as a result. Additionally, NOCs are now globally competitive when it comes to overseas production, which the example of international investment in Iraq has underscored. Moreover, NOCs will often invest in places that IOCs are unwilling to operate, primarily because of instability and overall risk. This is because NOCs are often pursuing market dominance strategies or securing access to vital resources whereas IOCs are solely concerned with profits. Consequently, NOCs are scoring significant gains in the area of efficiency while also increasing their strategic control over important oil and gas reserves. As the unconventional boom loses steam, this will serve them well.

Third, countries have adopted a reformed approach in how they deal with their NOCs. In the past, statism was more totalitarian in nature, coloring the relationship between states and the industries they controlled. However, the collapse of the Soviet Union and the general shift away from stringent statism among many nations has produced a greater liberalization in the relationship between a significant number of states and their NOCs. The greater restraint that

many states are showing toward intervening in the commercial pursuits of their energy companies has served to greatly increase their global competitiveness with IOCs. A number of NOCs now operate as efficiently as the most impressive IOCs, which says a lot about how far they have come. Additionally, the 21st century has witnessed the rise of partially privatized NOCs, which is an important development. As a group, these entities have made even more impressive gains than NOCs fully owned and operated by governments. This is because only a handful of the NOCs operate at the highest level, while most companies that have partially privatized perform well. The notable increase in efficiency of both groups speaks towards the importance of government intervention and the dampening effect it can have on the competitiveness of these companies. Therefore, the greater restraint states have displayed accounts for much of NOCs' expanding strength.

Lastly, NOCs continue to prove themselves valuable strategic assets for states. While overreliance on NOCs can trigger the resource curse and weaken a state more than it strengthens it, a balanced approach can manifest the best of both worlds. NOCs have proven valuable entities that have been able to provide states with additional power in the areas of regime stability, military capability, and foreign policy. By contrast, the private oil companies are significantly more independent of governments and thus cannot be instruments of state power nearly as much as NOCs. Thus, the national model for the energy companies has come to dominate the global energy industry around the world. As strategic assets of the state NOCs have become stronger by increasingly pursuing market dominance strategies such as increasing spare production capacity and cooperating with other NOCs through organizations such as OPEC(+).

CHAPTER VI

THE SAUDI ENERGY COLOSSUS

Saudi Aramco has traditionally been one of the world's biggest and most important NOCs ever since the Kingdom gradually took possession of the company in the 1970s and 1980s. Not only was it the owner and controller of a vast reserve of hydrocarbons accompanied by enormous production capacity, but its resources were also the cheapest in the world to produce. In addition to this massive source of wealth, the Saudis have been fortunate to be able to focus almost exclusively on economic development. This is because they have not traditionally had to worry about their security or placating disgruntled civilians. With respect to security, Saudi Arabia and Iran were beneficiaries of US foreign policy in the Persian Gulf as integral parts of Richard Nixon's Twin Pillar policy in the 1970s. After the dual shocks of 1979 consisting of the Soviet invasion of Afghanistan and the Iranian revolution, Washington moved to significantly develop military capabilities in the Gulf with the overall strategic goal of securing the region from external threats and to guarantee access to the vital oil that resided there.[323] American commitment to defend the gulf states and Saudi Arabia in particular was demonstrated when Saddam Hussein was immediately repelled after Iraq's invasion of Kuwait in the early 1990s. With respect to placating domestic pressures, the Kingdom's population was relatively tiny when compared to other regional neighbors such as Egypt, Turkey, Iraq, or Iran, which meant that it had relatively low social obligations. Thus, Saudi Arabia could focus almost exclusively on economic development, including the expansion of its oil production and the efficient operation of its NOC. While NOCs in Iraq and Iran are heavily encumbered by

[323] David Lesch, *1979: The Year That Shaped the Modern Middle East* (Routledge, 2019).

government rents for military and social spending, Saudi Aramco was able to flourish absent such burdens. The confluence of these factors allowed Saudi Arabia to catapult into economic modernity, quickly becoming one of the most developed and influential states in the region. Moreover, within the context of OPEC Saudi policymaking had global reach, as the developed economies of the world are mostly import dependent.

Despite being tested several times in the last three decades of the 20th century with multiple episodes of oil price volatility, Saudi Arabia remained more stable than the majority of analysts had predicted.[324] Since the 1973 Arab oil embargo, the Kingdom has generally been dovish on oil prices and has on multiple occasions used its spare production capacity to provide the global economy with injections of oil to mitigate the effects of supply disruptions emanating from other production centers around the world. After the years of unprecedented high oil prices in the early 2000s and their subsequent collapse following the global recession in 2008, the Saudis were still in a strong position with around USD $481 billion in net foreign assets in 2011, constituting 111% of GDP and three times the government budget, and very low domestically held debt.[325] However, some experts questioned the long-term viability of the Saudi model despite its resilience over the years and relative financial strength. These positions stemmed from very real concerns over the future of oil production,[326] growing population, welfare programs, and ultimately government spending, which has been rising at an annual rate of about 7% since

[324] Chaker Aloui, et. al., "A Multiple and Partial Wavelet Analysis of the Oil Price, Inflation, Exchange Rate, and Economic Growth Nexus in Saudi Arabia," *Emerging Markets Finance and Trade* 54 (January 5, 2018): 935-956; B. O. Al-sasi, O. Tylan, and A. Demirbas, "The Impact of Oil Price Volatility on Economic Growth," *Energy Sources, Part B: Economics, Planning, and Policy* 12 (May 1, 2017): 847-852; and Sel Dibooğlu and Eisa Aleisa, "Oil Prices, Terms of Trade Shocks, and Macroeconomic Fluctuations in Saudi Arabia," *Contemporary Economic Policy* 22 (January 2004): 50-62.
[325] Mohamed A. Ramady, "Kingdom of Saudi Arabia: Risk Analysis," in *Political, Economic and Financial Country Risk* (Springer, Cham 2014), 67-93.
[326] Matthew R. Simmons, *Twilight in the Desert: The Coming Saudi Oil Shock and the Economy* (John Wiley & Sons, 2006).

the turn of the century.[327] Moreover, in the eyes of the Saudis, America has appeared less committed than ever to gulf security. This was demonstrated by the seemingly ambivalent stance of the Obama administration with regards to the Arab Spring, the consequences of the Iran Nuclear Deal (JCPOA), and the miscalculated withdrawal from Iraq leading to the rise of ISIS. The situation only marginally improved during the Trump Administration. While ISIS was mostly eradicated and the US readopted a bellicose stance towards Iran, President Trump has touted US energy dominance and a diminishing reliance on oil from the Middle East on numerous occasions.[328] Combined together with a general desire in the US to withdraw from the region, a common thread running through both administrations, forces the Saudis to engage in additional military spending to ensure their own national security. In short, the two major advantages the Kingdom enjoyed in the past century have slowly eroded away in the last two decades.

Saudi Arabia is far from a basket case, but, as many have pointed, out the confluence of challenges it faces requires bold and concerted action. Moreover, their dependence on the energy industry means that attempts toward reformation will depend predominantly on the reorganization and strengthening of their national flagship Saudi Aramco. Unsurprisingly, the Kingdom has embarked on an ambitious agenda in the past decade to address these challenges, focusing on their NOC and the national energy industry, making impressive progress thus far. First, to counter the increasing threats to their national security interests in the region, the Saudis have begun utilizing their spare production capacity far more aggressively than they have in

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[327] F. Gregory Gause III, "Saudi Arabia Over a Barrel," *Foreign Affairs* 79 (May-June, 2000): 80-94.
[328] President Trump frequently spoke of a diminishing need to protect the Middle East but when faced with serious threats to security did take action, such as the 2018 attacks on the Saudi oil fields by Iran; See Aron Blake, "Trump's Curious Evolution on Saudi Arabia," *The Washington Post,* September 16, 2019.

previous decades. Between 1980 and 2010, Saudi Arabia was the most dovish oil producing nation in OPEC, focusing on servicing global demand rather than achieving political outcomes. This has shifted dramatically in recent years signaled by events such as the oil glut of 2014-2017 and the rise of OPEC+. Second, they have pursued different government policies in the areas of domestic energy consumption that reflect a move towards greater efficiency and less government intervention. Their new policy direction has sought to reconfigure domestic consumption through expanding non-oil sourced energy inputs, reducing fuel subsidies, and internationalizing the R&D arm of their operations. These policy shifts have had a net positive effect on the efficiency of their NOC. Third, as outlined in Mohammad bin Salman's Vision 2030 plan, the process of partial privatization of Saudi Aramco finally began in late 2019. This is expected to yield net increases in operatioinal efficiency making the company even more globally competitive as well as drawing in additional capitalization especially after it achieved a near USD $2 trillion valuation, the largest of any global company in history. This case study will detail the emerging challenges that face Saudi Arabia and its NOC and the various strategies it has employed to mitigate these growing vulnerabilities.

Energy Foreign Policy

Saudi oil production has always been critical to the global energy markets even before Aramco became Saudi Aramco. Officially founded in 1870 when Standard Oil Company of California struck a sixty-year contract for exclusive rights to explore and produce oil from the Eastern Hasa province, Aramco would begin discovering oil in commercial quantities by the 1930s.[329] The Saudis finally took full control of the company's assets in 1976, catapulting the

[329] Daniel Yergin, *The Prize* (New York: Free Press), 633-634.

Kingdom to the forefront of international relations in the Middle East and making it one of the most significant countries for global economic growth. Somewhat ironically, the extremely hawkish move to enact the Arab Oil Embargo of 1973, hastening the Saudi takeover of Aramco, would make the following three decades of dovish behavior and reliance on a US security blanket somewhat curious. However, since 2010 oil production policy has proven more reminiscent of the company's transition years rather than the following thirty. That is to say, the Kingdom has more recently been far more concerned with its national interest rather than those of global consumers. This has dramatically increased the strategic value of the company as the Saudi regime is not only dependent on energy rents but also because it increasingly sees the firm as an essential tool for defending national security.

The greater emphasis on hawkish energy policy since 2010 has mostly been a reaction to the changing balance of power in the Middle East coupled with shifting US foreign policy and the energy boom. The general status quo since the dual shocks of the Soviet Afghan invasion and the Iranian revolution had been one of American preeminence, with the US playing the role of guarantor of many regimes across the region. The Arab Spring was a critical blow to this status quo as it was the first time since 1979 that the US had allowed an allied regime to collapse. When the government of Hosni Mubarak fell, it was a signal to the Saudis that the Americans may no longer be as committed to regional security as they once had been.[330] This concern was exacerbated when the US withdrew from Iraq precipitating the rise of ISIS and the sectarian battle between Sunni and Shia that would engulf both Syria and Iraq.[331] Perhaps most alarming of all to the Saudis was the JCPOA, which released much of the regime's accumulated oil wealth

[330] Nabeel A. Khoury, "Watching Cairo from Washington," *Foreign Policy*, August 23, 2013.
[331] Kenneth Katzman, et. al., "The 'Islamic State' Crisis and U.S. Policy," Defense Technical Information Center, November 12, 2014.

being held back by years of sanctions.[332] Hindsight shows that Saudi Arabia's concerns were well-founded as Iran went on to dramatically increase its regional influence through the funding of substate actors like the various Shia militia groups in Yemen, Lebanon, Syria, and Iraq.[333] With Iraq no longer serving as a bulwark against Iran and Shia militia groups proliferating throughout the region, the Middle East slowly began to be characterized by a greater sectarian struggle for dominance with Iran and the Shia on one side and Saudi Arabia and the Sunni on the other. Thus, the combination of increasing US ambivalence and the growth of Iranian influence has pushed the Saudis to drastically change their approach to national security. As a result, the Kingdom has adopted a more aggressive approach to energy policy that is more concerned with how to wield their NOC as a foreign policy tool rather than how to service the global economy.

The first sign that the Saudis were changing the way they approached energy policy was in November 2014, which kicked off a three year oil glut that saw the price of oil fall from a high of nearly USD $120 per barrel in the summer of 2014 to a low of just under USD $40 per barrel by the end of 2015.[334] OPEC would meet that November amid already falling oil prices as global demand was weakening. Many of the poorer members of OPEC would push for production cuts in order to shore up prices but this move was blocked by the Saudis who were motivated by a number of political calculations that the others were not.[335] Media speculation tended to frame this as a war on US unconventional production, which was beginning to displace OPEC market

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[332] Gary Samore, et al., "The Iran Nuclear Deal: A Definitive Guide," Belfer Center for Science and International Affairs, Harvard Kennedy School, 2015.
[333] Shahram Akbarzadeh, "Iran's Uncertain Standing in the Middle East," *The Washington Quarterly* 40 (October 5, 2017): 109-127; Collin Clarke and Phillip Smyth, "The Implications of Iran's Expanding Shi'a Foreign Fighter Network," *CTCSentinel* 10 (November 2017).
[334] US EIA, "Crude Oil Prices Started 2015 Relatively Low, Ended the Year Lower," Today in Energy, January 6, 2016.
[335] Organization of Petroleum Exporting Countries, "OPEC 166th Meeting Concludes," Press Releases, Vienna, Austria, November 27, 2014.

share and threatening to put the US in contention with Saudi Arabia and Russia for the world's top oil producer.[336] To be sure, the Saudis were concerned with the unprecedented expansion of US unconventional oil production but the move to block production cuts and send prices plunging was far too consequential to only have incorporated the US oil industry into the calculus. Rather the move was likely more focused on establishing regional foreign policy goals aimed at maximizing Saudi interests in the Middle East while also offering the additional caveat of pushing back on US production.[337]

Iran has always been a nefarious actor in the region, even since the revolution in 1979 as it has sought to export its Shia revolution across the region. The Saudis have a Shia minority that populate the eastern province of Hasa that also happens to be the location of their largest oil fields and have been weary of Iranian influence as a result.[338] The growth of Shia militias in Iraq, Iranian support of the Assad Regime in the Syrian civil war, Hezbollah in Lebanon, and the Houthi rebels in Yemen has the Saudis boxed in geopolitically like never before. To make things worse, the Russians began their intervention in Syria on the side of the Assad regime putting a powerful nation on the side of Iran in Syria.[339] The Russian intervention was taking place around the same time that the JCPOA in 2015 was being completed, signaling to the saudis that the US could no longer be solely relied upon to check nations like Russia and Iran in the region. However, both Iran and Russia had one particular vulnerability that the Saudis could directly strike at: their dependence on oil revenues.

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[336] Robert McNally, "For Production Cuts, Oil Market Looks to OPEC, but OPEC Looks Toward US Shale," Center on Global Energy Policy, Columbia University SIPA, November 2014.
[337] F. Gregory Gause III, "Sultans of Swing? The Geopolitics of Oil Prices," Brookings Doha Center, Washington DC, April 6, 2015.
[338] Bryan Perazzo, "On Being Shia in Saudi Arabia," Institute for Gulf Affairs, Washington, DC, 2012.
[339] Angela Stent, "Putin's Power Play in Syria," *Foreign Affairs* 95 (January/February 2016).

According to the World Economic Forum, both Iran and Russia ranked in the top 20 nations for multiple metrics such as fuels as a percentage of total exports and value of crude oil production as a percentage of GDP.[340] Additionally, both nations had very high breakeven costs, both of which were around USD $100 per barrel in 2014.[341] In the case of nations that are extremely reliant on oil revenues to meet government spending goals, this is an important indicator that signals the impact of global oil prices on various regimes. In the summer of 2014, there was around a USD $20 cushion for both countries, yet by the end of the following year the price of a barrel of oil would fall under USD $40. As a result, both the Russian and Iranian economies went into recession with GDP contracting by 2.3% and 1.3% respectively.[342] Along with sanctions in response to Crimea, this precipitated a financial crisis in Russia and forced Putin to slash the federal budget by 10% the following year.[343] In Iran the effects were somewhat mitigated by the exact inverse of the circumstances concerning Russia. After sanctions were lifted as a result of the JCPOA, Iran initially I financial relief but was nevertheless forced to slash their budget considerably to deal with very low oil prices.[344]

In the case of the US oil industry, rapidly expanding unconventional production had boosted US production from 5.4 Mb/d in 2004 to 8.7 Mb/d 2014.[345] The US had come within 1 Mb/d of annual production to the Saudi levels, representing a growing threat to the Saudi market

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[340] Rosamond Hutt, "Which Economies are Most Reliant on Oil," World Economic Forum, Oil & Gas, May 10, 2016.
[341] The breakeven cost of oil is a measure comparing a government's budget to the revenues it will receive from oil exports at a particular price. For Iran's breakeven cost see Federal Reserve Bank of St. Louis, "Breakeven Fiscal Oil Price for Iran," Economic Research, Last updated April 14, 2021; for Russia's breakeven costs See Jacob Shapiro, "Here's the Real Oil Price Russia Needs to Break Even," Mauldin Economics, December 27, 2016.
[342] World Bank, "GDP Growth (Annual %)," Data, accessed January 17, 2020.
[343] Kathrine Hille, "Russia to Slash Budget Expenditure by 10pc After Oil Price Fall," *Financial Times,* January 13, 2016.
[344] Matthew M. Reed, "Sagging Oil Prices and Iran," United States Institute of Peace, The Iran Primer, January 21, 2015.
[345] EIA, "International Energy Statistics."

share, especially since it was non-OPEC production that was on the rise. However, the cost of production for unconventional oil was far higher when compared to Arabian light sweet crude. Since the breakeven oil prices were high for these unconventional American oil wells, similar to the160egin160eion with Russia and Iran, many saw the oil glut as an assault on the burgeoning oil production in the US.[346] In 2014, the breakeven price for US shale oil production was around USD $60 per barrel.[347] Since oil prices before the Saudi-led oil glut hit a high of USD $120 per barrel that year, many American companies were comfortably in the profit margin and this in turn was fueling the expansion of US unconventional oil. However, by the end of 2015 oil prices had fallen below $40 per barrel and many companies in the US were 160egining to feel the pinch. US oil production modestly contracted between 2015 and 2016 as a result of many unconventional oil wells going offline.[348] Contrary to the fears of many, the US unconventional industry adjusted to the lower price environment surprisingly well through company consolidation and methodological improvements. Ultimately, the breakeven cost for US unconventional oil fell to around $30 per barrel by the end of 2016 in response to the low oil prices.[349] In the final analysis, this would serve to strengthen the US unconventional industry and make it more efficient, setting the stage for another boom, which has occurred in the years since 2016.

The Saudi move to flood the global markets with oil certainly achieved the goal of putting pressure on the Russians, Iranians, and US unconventional companies, but the results were a somewhat mixed basket. The Russian and Iranian regimes were forced to make difficult

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[346] James Conca, "U.S. Winning Oil War Against Saudi Arabia," *Forbes,* July 22, 2016.
[347] Rystad Energy, "North American Shale Well Cube," Energy Themes, Supply Chain, Wells, accessed March 2, 2019.
[348] US EIA, "Expected Decrease in Lower 48 Oil Production is Partially Offset by Rising GOM Output," Today in Energy, April 20, 2016.
[349] Rystad Energy, "North American Shale Well Cube."

budget cuts and curtail their regional operations in the Middle East, although their interference did ultimately persist. This was a strong signal demonstrating both regime's resolve to remain committed to their regional operations. In the case of the US companies, they certainly faced an uphill battle to remain competitive amid low oil prices and many companies were forced to sell to larger more efficient companies. However, US energy industry as a whole was ultimately made stronger as a result and national production has since far exceeded the lost oil production between 2014 and 2016. Despite the mixed results, this Saudi policy was a unilateral measure that utilized its NOC as a strategic asset to implement foreign policy objectives.

Immediately following the oil glut of 2014 and 2015, the Saudis began negotiating the formation of OPEC+, making it their second major strategic move of the decade utilizing their NOC. By the end of 2016, Saudi Arabia had led OPEC into a cooperative production agreement with important non-OPEC producers, chief of which was Russia. This was a counterintuitive turn of events considering that the previous two years of Saudi oil policy was driven, at least in part, as a desire to impose economic reprisals on Russia for their activity in Syria. However, with the destruction of ISIS due to increased American involvement under the Trump Administration, perhaps the Saudis were less concerned with the Russian and Iranian support of the Assad regime. Perhaps also, they saw the opportunity to draw the Russians more into their orbit and away from the Iranians by establishing cooperative agreements with them. Despite the abruptness of their policy change, the combined production power of OPEC and the non-OPEC cooperating parties such as Russia, Kazakhstan, and Mexico became very important for reasserting the dominance of NOCs over global market share. The traditional dominance of OPEC since its rise in the 1970s has been threatened since the turn of the century primarily because of skyrocketing US and Canadian unconventional production, but also because of rise of

Brazil's Petrobras and the collapse of Venezuela's PDVSA. Thus, the negotiation of OPEC+ signaled a massive swing of market share power back into the hands of NOCs. This strength was immediately demonstrated in December 2016 when oil prices began to slowly rise to USD $50-$60 per barrel.[350]

For most of the 2010s OPEC's share of the global supply of oil had been fluctuating between 33% and 35%.[351] Traditionally their share of production had been slightly over 40% but had fallen because of expanding non-OPEC production. Consequently, when US unconventional production proved more resilient in the face of low oil prices than initially expected, the strategy to recapture market share shifted to incorporating more non-OPEC producers rather than waging a price war against them. On the geopolitical front, the strategy had become feasible because of the Trump administration, which was far more hawkish towards Iran and serious about intervention in Syria. This allowed the Saudis to focus less on confronting regional rivals and the geopolitical landscape and more on reestablishing its strength in the global oil markets. Ultimately, Saudi negotiations with a number of non-OPEC producers would become known as the Vienna Group but has been popularly referred to as OPEC+.

Continued cooperation will not be easy to manage. Even among traditional OPEC members cooperation has always been shaky at best. For example, the Venezuela increased oil sales to the West during the 1973 oil embargo. This resulted in massive windfalls for PDVSA and allowed for decades of prosperity and expansion in Venezuela until Chavez came to power. National interests are likely to always fuel disputes among member states because of the self-interested nature of nation-states and the unique challenges confronting each member.

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[350] "Crude Oil Prices - 70 Year Historical Chart," Macrotrends, accessed September 21, 2021.
[351] Organization of Petroleum Exporting Countries, "World Oil Outlook 2018," World Oil Outlook Archive, September 2018.

Historically, this has produced two different approaches to energy policy among OPEC members: price hawks and price doves. While each state is unique and has its own set of interests that push it in one direction or the other, there are some common threads that tend to cause these two groups to coalesce. Price hawks tend to be larger countries, both in terms of territory and population, with larger militaries and greater social commitments. To put it plainly, they spend more money, so they need more oil revenues to meet their budgetary requirements. Price doves tend to be just the opposite, which are smaller in terms of territory, population size, and military capacity. Their smaller population factors into far less social spending as well as a smaller military, which usually has the additional effect of military dependency on the West and especially the US. This means that they must incorporate the interests of consumer countries into their calculus to a far greater extent than the price hawks. Over the years this has resulted in a rivalry between the price hawks, who push for production cuts that lead to price increases, and price doves, who push for exactly the opposite.

These internal disputes among OPEC members have diminished cooperation among member states, manifesting itself in traditional prisoner's dilemma fashion. In this case, cheating on production quotas, which has been a longstanding issue among OPEC nations since the inception of the organization.[352] In more recent years, quota cheating has emanated from Iraq and Nigeria, which the Saudis have so far struggled to curtail.[353] Adding more states into the equation that resemble the more hawkish nations in size, population, and budget expenditure is likely to make quota compliance even more difficult than it has already proved to be. For example, since Russia, Kazakhstan, and Mexico began cooperating with OPEC in December

[352] James M. Griffin, "The Incentive to Cheat: An Empirical Analysis of OPEC," *The Journal of Law and Economics* 40 (October 1997): 289-316.
[353] Julian Lee, "Policing OPEC's Oil Deal Risks a Price Crash," *Bloomberg*, December 8, 2019.

2016, the only country that has been fully compliant has been Mexico.[354] Russia and Kazakhstan have been far less so, at around 66% and 55% quota compliance respectively.[355] Of course, Mexico has a more developed economy and greater trade activity with the US and Canada, while Russia and Kazakhstan are far more dependent on oil revenues, so this is a somewhat expected outcome.

The Russian dependence on oil revenues would play out exactly as one might suspect when in the midst of the Coronavirus pandemic. At the March 6th 2020 OPEC meeting in Vienna Russia would refuse to slash production in order to defend prices as a response to falling demand.[356] In response, Saudi Arabia would immediately offer extraordinary discounts to buyers and threaten to increase its production. The oil price war between the two countries would lead to the steepest drop in crude oil futures since the 1991 Gulf War, leading to the price of oil falling below USD $34 per barrel after floating between USD $50-$60 per barrel the previous year.[357] According to Bob McNally of Rapidan Energy Group, "Russia's refusal to support emergency supply cuts would effectively and fatally undermine OPEC+'s ability to play the role of oil price stabilizing swing producer."[358] Yet, while Saudi Arabia may have more tolerance to hemorrhaging oil revenues than Russia and they have traditionally used this to their advantage as a coercive negotiating tactic, there is more to loose from allowing OPEC+ to disintegrate. In fact, the Saudis have proven that they believe this to be true as they were able to negotiate an

[354] Brian Wingfield, et. al., "New Decade, New OPEC Oil Curbs. Same Mixed Results," *Bloomberg*, last updated February 25, 2020.
[355] Ibid.
[356] Maria Nicola, et. al., "The Socio-Economic Implications of the Coronavirus and COVID-19 Pandemic: A Review," *International Journal of Surgery* (April 17, 2020).
[357] Avie Schneider and Camila Domonoske, "Oil Prices, Stocks Plunge after Saudi Arabia Stuns World with Massive Discounts," *NPR*, March 8, 2020.
[358] Rania El Gamal, Alex Lawler, and Olesya Astakhova, "OPEC's Pact with Russia Falls Apart, Sending Oil into Tailspin," *Reuters*, March 6, 2020.

agreement with Russia, Mexico, with the US as mediator only a month later.[359] What this episode highlights is that OPEC relationships are messy and OPEC+ will be no different, especially considering the new parties are nationally constructed more like price hawks rather than doves. However, as long as the benefits of cooperation outweigh those of noncompliance, we can expect these nations to cooperate with one another in order that they will maximize their strength in the area of global oil prices. It would also be a mistake to confuse inefficiency with impotence. Their policies will be quite consequential though their internal disputes will certainly hamstring the overall efficacy of them. Moreover, as long as production from IOCs continues to threaten the longstanding market share power of NOCs, they will attempt to ban together in greater numbers to rebalance the scales back in their favor.

When it comes to Riyadh's use of Saudi Aramco as a foreign policy tool, the last decade has provided two strong examples of how a NOC can prove itself a strategic asset to the state. While the Saudis were not able to achieve the most favorable geopolitical outcomes across the board during the Oil Glut of 2014-2015, they were at worst marginally successful. Without a doubt, Russian and Iranian activity in the region was curtailed assuming what would have been possible with far more funds at their disposal. In the case of OPEC+, the Saudis were able to capitalize on changing US Middle East policy and draw the Russians more towards their sphere of influence and away from the Iranians, who had found common ground in Syria only a few years beforehand. Both instances had the added benefit of probing the rapidly expanding US unconventional oil industry for weakness and rebalancing against it. These examples ultimately demonstrate the usefulness of Saudi Arabia's NOC as a strategic asset of the state and more

[359] Clifford Krauss, "Oil Nations, Prodded by Trump, Reach Deal to Slash Production," *The New York Times,* April 12, 2020.

generally serves to bolster the attractiveness of the NOC model to many regimes in global politics.

Government Policies and Efficiency

From the time that the Saudis assumed control of Aramco in the 1970s, government policies have heavily weighted towards interventionism. In most cases concerning NOCs, heavy government intervention stifles these companies with respect to operational efficiency, technical capacity, or global competitiveness, and tends to be more symptomatic of those NOCs that are the most heavily burdened by their governments. Counterintuitively, the data not only contradicted this expectation but proved the opposite was true. Saudi Aramco is actually among the most efficient companies in the industry on par with major US IOCs like ExxonMobil. Of course, this is in stark contrast with other Gulf states such as Iran or Iraq, whose companies operate at a far lower level of efficiency. Some of this is explained by the natural advantages they have enjoyed for so long, but demographics and security dynamics have been shifting. Another explanation is solid leadership and decision-making behind the veneer of absolute government control. While countries like Iran, Iraq, and Venezuela were fueling their regional hegemonic ambitions through very different but expensive spending programs, Saudi Arabia was building its export capacity and achieving one of the highest scores globally on the Human Development Index.

On one hand, oil rents still account for around 85% of the Kingdom's overall revenues, which translates to about 93% of Saudi Aramco's profits paid in the form of royalties and dividends.[360] Like the majority of NOCs, even though retained earnings are sufficient for daily

[360] Valerie Marcel, Oil Titans: National Oil Companies in the Middle East (Washington DC: Brookings Institution Press, 2006), p. 133.

operations, the company is ultimately dependent on the size of the national budget and the overriding power of the King if it needs to invest in expanding commercial operations. In other words, it is the King and not the company executives who has the "final decision-making power on all matters involving oil production, investment, external policies, domestic energy pricing and subsidies."[361] On the other hand, Saudi leadership has thus far been very good about not losing themselves to non-commercial spending. This is predominantly the result of carefully calculated policies. While Iraq was building a massive military and participating in adventurism, Iran was funding its regional proxies and weapons programs, and Venezuela was supporting a massive public welfare system and regional infrastructure, Saudi Arabia kept focused on servicing the global oil markets. However, growing population is increasing the size of welfare spending and regional conflicts, particularly in Yemen, have seen military spending increase as well. In the last ten years, Saudi Arabia has been challenged in ways that it never has before.

The last decade has not only seen a change in circumstances but also a change in leadership. King Abdullah passed in 2015 and Crown Prince Muhammad bin Salman assumed power. He is faced with the dual problems of needing to keep Saudi Aramco efficient and globally dominant as well as the changing needs of the nation that require more government intervention and expanding the non-commercial burdens it places on the company. The first five years of his reign have been impressive. The Crown Prince's Saudi Vision 2030 plan will see a massive expansion across the entire energy sector in terms of diversification as well as an emphasis on efficiency. So far, he has continued the Saudi tradition of a greater focus on commercial spending rather than non-commercial, though operations in Yemen and a resurgent

[361] Amy Myers Jaffe and Jareer Ellas, "Saudi Aramco: National Flagship with Global Responsibilities," Joint Baker Institute/Japan Petroleum Energy Center Policy Report, The Changing Role of National Oil Companies in International Energy Markets, Rice University, March 2007, 3.

Iran has put tremendous pressure on the new regime. Much of the continued success of Saudi Aramco will depend on the current regime's ability to balance the need to address the novel challenges it faces while also continuing to spend its revenues wisely, particularly with respect to non-commercial investments.

One of the first and perhaps most prominent challenges Saudi Arabia faces is its capability to upkeep and expand its oil exports to service the growing global oil demand. At the turn of the century, most projections of Saudi oil production were astronomical in comparison to where they have ended up two decades later. Moreover, many of these projections have been seriously downgraded over time. For example, in 2004 the IEA predicted that Saudi oil production would grow to 22.5 Mb/d by 2025.[362] For perspective, this figure is nearly triple today's production levels and around double the production of both the US and Russia. It would not take long for these projections to be revised significantly. New unforeseen challenges such as the global economic downturn in 2008, increasing domestic consumption, and geopolitical issues in the Middle East, limited the ability of the Saudis to expand production. By 2012, the IEA's projections were less than half of what they were in 2004, predicting that Saudi production would remain around 10.6 Mb/d by 2020.[363] This projection would turn out to be mostly accurate as the Kingdom's production fluctuated between 8 Mb/d and 11 Mb/d between 2012 and 2021.[364] To be fair, many of the projections could not have predicted the 2008 financial crisis, the unconventional energy boom in North America, or the Coronavirus lockdowns.

When it comes to production capacity, one can observe a similar turn of events. Between 2000 and 2006, the EIA slashed its outlook for 2020 Saudi production capacity from 22.1 Mb/d

[362] IEA, "World Energy Outlook 2004," Analysis, Flagship Report, November 2004.
[363] IEA, "World Energy Outlook 2012."
[364] EIA, "International Energy Statistics."

to 14.5 Mb/d.[365] So far, their maximum production capacity remained around 12 Mb/d with plans to marginally expand this capability to around 12.5 Mb/d.[366] The inability to meet the earlier predictions highlights many of the challenges that scholars have begun to point out in the last decade, much of which centers around rising domestic consumption and a growing dependence on oil as a primary energy source. Historically, the Kingdom's depletion rate of oil reserves stands at about 7-8% annually,[367] despite new discoveries in the last decade, as well as longstanding subsidies for domestic oil prices that have driven up fuel consumption by about 8%.[368] This suggests that a huge amount of investment is necessary just to maintain the current output, let alone expansion.

However, domestic fuel consumption is only one end of the problem. Most domestic electricity comes from burning oil, amounting to an average of 0.5 Mb/d and topping out at about 0.9 Mb/d during summer months.[369] Domestic electricity consumption, along with domestic fuel consumption, has been exacerbated by the dramatic rise in population, which has grown from a little over 4 million in 1960 to 33.7 million in 2018.[370] This has resulted in a rapid increase in overall domestic oil consumption representing a nine-fold increase over the last forty years,

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[365] US EIA, "International Energy Outlook 2000," International Energy Outlook Products – Archive, September 2000; and US EIA, "International Energy Outlook 2006," International Energy Outlook Products – Archive. September 2006.
[366] Bassam Fattouh and Andreas Economou, "Saudi Arabia's Oil Productive Capacity: The Trade Offs," Oxford Institute for Energy Studies, Publications, October 2019, 3.
[367] Glada Lahn and Paul Stevens, "Burning Oil to Keep Cool: The Hidden Energy Crisis in Saudi Arabia," Chatham House, December 2011.
[368] Moshen Mehrara, "Energy Consumption and Economic Growth: The Case of Oil Exporting Countries," *Energy Policy* 35 (May 2007): 2939-2945.
[369] Arash Farnoosh, Frederick Lantz, and Jacques Percebois, "Electricity Generation Analyses in an Oil-Exporting Country: Transition to non-Fossil Fuel Based Power Units in Saudi Arabia," *Energy* 69 (May 2014): 299-308.
[370] World Bank, "Saudi Arabia: Population, Total," Data, accessed January 31, 2020.

which amounts to about a quarter of its production capacity.[371] Some experts even began predicting that if Saudi Arabia continued to consume over 25%, or about 2.8 Mb/d, of its own oil production, and that if the alarming rate of consumption continues to increase, then it risks becoming a net oil importer by 2038.[372] It was this set of challenges that Saudi Arabia faced over the last decade, and has done so by dramatically shifting its government policies concerning its energy sector and Saudi Aramco.

The Saudis realized that both the efficiency of their NOC could be maximized and export capacity increased if they simply changed their domestic energy policies. For one, it would be more costly to invest in expanding production when not dealing with the ballooning consumption issues. In other words, instead of trying to spend their way out of a deepening hole, they began looking at how to fill in the hole itself. To give this some perspective, the current cost of expanding production capacity by 1 Mb/d is estimated to be around USD $20 billion, with about USD $2 Billion a year in maintenance.[373] Thus, the Saudis began looking at how to reduce domestic consumption through energy diversification rather than purely expanding oil production. Particularly, natural gas is cheaper, burns cleaner, and has the added benefit of freeing up crude oil for more efficient uses such as direct exports or for downstream refined products.

The expansion of Saudi Arabia's "Master Gas System," a grouping of non-associated natural gas mega projects, has been at the forefront of making use of the estimated 219 Tcf of

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[371] Dermot Gately, Nourah A. Al-Yousef, and Hamad M. H. Al-Sheikh, "The Rapid Growth of Oil Consumption in Saudi Arabia and the Opportunity Cost of Oil Exports Forgone," *Energy Policy* 47 (November 2011): 57-68.
[372] Lahn and Stevens, "Burning Oil to Keep Cool," 2.
[373] Denis Pinchuk, Dmitry Zhdannikov, and Olesya Astakhov, "Saudi Arabia to Invest $20 billion in Spare Oil Production Capacity," *Reuters,* October 4, 2018.

conventional reserves.[374] These mega projects, including Wasit and Midyan, have already added about 4 Bcf/d of natural gas production between 2010 and 2018.[375] During the same period direct crude oil burn for electricity generation decreased by 41%.[376] The newest natural gas mega project scheduled for completion by the end of 2019, Fadhili, is estimated to bring an additional 5 Bcf/d of natural gas production at the price tag of USD $13 billion.[377] This will have an even greater impact on domestic crude oil burn for electricity considering the impact of the previous 4 Bcf/d from the previous two projects. So far, the project is half complete reaching the 2.5 Bcf/d of production in 2020.[378] Considering the price tag of USD $13 billion compared to USD $20 billion for 1 Mb/d for crude oil production capacity, Riyadh benefits more from investing in efficiency rather than expanding production. Moreover, the crude oil that was being used for domestic consumption, which can top out at nearly 1 Mb/d, is a net benefit saving the Kingdom a USD $20 billion investment.

More notably, Saudi Arabia has sought to take a page out of the North American playbook and have begun pursuing unconventional gas production. Establishing a global network of 11technology offices located at home and abroad in Europe, China, and most importantly North America.[379] According to the Saudi Vice President of Upstream Technologies, "R&D and innovation underpin our intent to emerge as truly global, integrated energy and chemicals company by the end of the decade."[380] Out of the many research centers opened around the

[374] Robert Mabro, "Saudi Arabia's Natural Gas: A Glimpse at Complex Issues," The Oxford Institute for Energy Studies, accessed September 22, 2021.
[375] Saudi Aramco, "Wasit – The Master Gas System," Mega Projects, accessed September 22, 2021; and Saudi Aramco, "Midyan: An Engineering Landmark," News, October 17, 2016.
[376] Saudi Aramco, "Energy Efficiency," Sustainable Business Operations, accessed September 22, 2021.
[377] "Saudi Aramco CEO Signs off on $13-billion Gas Project," *WorldOil*, September 20, 2016.
[378] Saudi Aramco, "Fadhili," Mega Projects, accessed September 22, 2021.
[379] Saudi Aramco, "Annual Review 2014," Publication, May 11, 2015, 48.
[380] ibid, 46.

world, perhaps the most consequential was inaugurated on September 19, 2014 in Houston Texas, the premier hub for the American oil and gas industry.[381] The research center is operated by the Saudi US-based subsidiary Aramco Services Company, whose stated objective is to conduct upstream unconventional energy research in exploration, drilling, field development, and project management.[382] They have also targeted American expertise through direct and indirect recruiting efforts, by specifically hiring workers from the US shale industry.[383]

In the northern region, also known as the Empty Quarter, Saudi Arabia launched its own unconventional gas program in 2011.[384] In 2013, their unconventional gas became operational and was ready to commit shale gas production to a 1000 Megawatt power plant.[385] The Saudi Minister of Petroleum and Mineral Resources, Ali al-Naimi, has estimated that the Kingdom possesses around 600 Tcf of shale gas reserves,[386] which would give Saudi Arabia the world's fifth largest shale gas reserve.[387] The following year, Saudi Aramco raised its investment from USD $3 billion to USD $10 billion to begin seriously developing its unconventional program.[388] In their 2014 annual report, the company referred to their shale gas program saying it was

[381] Slavka Atanasova, Aramco Opens New Research Centre in Houston," *Oil & Gas Middle East*, September 21, 2014.
[382] Heather Saucier, "Aramco Seeks Innovation at US Research Centers," *American Association of Petroleum Geologists*, November 2013.
[383] James Henderson, "Aramco "Shrewd" to move for US Shale Workers: Job Postings for Unconventional Resource Roles Attracting Interest," Oil & Gas Middle East, Products and Services, March 31, 2015.
[384] US EIA, "Country Analysis Brief: Saudi Arabia," Independent Statistics & Analysis, last updated October 20, 2017.
[385] Abdelghani Henni, "Saudi Aramco Progresses on Shale, Confirms Red Sea Find," Journal of Petroleum Technology, June 30, 2014.
[386] Ali al-Naimi, "Natural Gas: A View from Saudi Arabia," International Energy Forum, Mexico, November 12, 2014.
[387] US EIA, "Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries Outside the United States," Independent Statistics & Analysis, June 10, 2013.
[388] Mike Bird, "Saudi Arabia is Putting Aside Billions For its Own Gas-Fracking Revolution," *Business Insider*, January 27, 2015.

"continuing to gain momentum,"[389] with al-Naimi adding that "the Kingdom has made promising shale gas discoveries and acquired the technologies to produce it at a reasonable price."[390] They began commercial production of unconventional gas in 2018[391] and have aimed to seriously ramp up production throughout the next decade a centerpiece of replacing oil in their domestic energy sector.[392] Most recently, the Saudis announced the massive USD $110 billion Jafurah shale gas field project, set to be the largest site of unconventional gas production outside of the US.[393] According to their production targets, this shale gas field will make Saudi Arabia the world's third largest gas producer by 2030.

The Saudis have also tackled increasing domestic energy needs by expanding into renewables. As part of Crown Prince Muhammed Bin Salman's Saudi Vision 2030, the Kingdom aims to have 58.7 Gigawatts of renewable energy capacity by 2030.[394] These will comprise of solar, wind, and nuclear energy resources and are being directed by the recently created Renewable Energy Projects Development Office. With a heavy emphasis on solar power, the Kingdom is planning to have 25% of its total power generation comprised of renewable energy by the target 2030 date.[395] Considering, projections for the Kingdom's electricity needs are trending towards doubling between now and 2040, the Saudis are seeking to diversify their energy consumption to avoid the "net-importer fate" that some have predicted.

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[389] Saudi Aramco, "Annual Review 2014," 25.
[390] Slavka Atanasova, "Saudi Aramco to Supply Shale Gas to Industrial Projects," Oil & Gas Middle East, Products and Services, May 7, 2015.
[391] Carla Sertin, "Saudi Aramco will Ramp up Unconventional Gas Production by End of 2018," *Oil & Gas Middle East*, November 25, 2018.
[392] Trent Jacobs, "Saudi Aramco Moving Forward on Unconventionals," Journal of Petroleum Technology, December 31, 2015.
[393] Rania El Gamal and Simon Webb, "Saudi Aramco Launches Largest Shale Gas Development Outside U.S.," *Reuters*, February 24, 2020.
[394] Oxford Business Group, "The Plan to Turn Saudi Arabia into a Renewable Energy Leader," Saudi Arabia | Energy, Economic News, April 26, 2019.
[395] IEA, "World Energy Outlook 2018," 69.

Regarding their domestic energy market, Saudi Arabia has issued government policies expressly focused on improving operational efficiency in their national energy sector. According to their National Industrial Development and Logistics Program, they are investing about USD $26.3 billion to boost the efficiency of electricity generation, ranging from the use of crude oil and its refined products to the efficacy of their infrastructure.[396] Between 2010 and 2016, these strategic initiatives have succeeded in improving the system's efficiency from 31.3% to 37.9% overall and reducing the consumption of about 13 million barrels of diesel fuel per year.[397]

Perhaps most importantly, the Kingdom has moved to reduce domestic fuel subsidies, which are the greatest contributor to the nation's inefficient consumption. According to the 2017 annual BP statistical review of world energy, Saudi Arabia ranked fifth in the world for most barrels of oil consumed per day behind the United States, China, India, and Japan.[398] When comparing population size, Saudi Arabia is four times smaller than Japan, nearly ten times smaller than the US, and more than forty times smaller than India and China.[399] Yet they consume about as much oil annually as Japan and India, about a third of what China consumes, and around a fifth of US consumption.[400] In terms of energy intensity, the amount of energy consumed to produce a unit of GDP, Saudi Arabia is more than double the amount of the OECD countries.[401] The absolutely staggering inefficiency of Saudi domestic oil consumption is borne out of years of domestic fuel subsidies, which have held gasoline prices artificially below the

[396] Saudi Vision 2030, "National Industrial Development and Logistics Program: Delivery Plan 2018-2020," Vision Realization Programs, accessed January 31, 2020, 207.
[397] Ibid.
[398] BP, "Statistical Review of World Energy 2017," News and Insights, Reports, June 2018.
[399] World Bank, "World Population, Total," Data, accessed February 21, 2020.
[400] Justin Fox, "The Gulf Oil Kingdoms are Having Their Own Crisis," *Bloomberg,* February 25, 2019.
[401] Eckart Woertz, "Trouble in Oil Paradise: Domestic Challenges in Saudi Arabia and their Global Implications," *Energypost,* April 25, 2014.

global market average price. As a result, domestic consumption has skyrocketed because governance inefficiencies are being exacerbated by a rising population.

In response, Saudi Arabia has moved to reverse its longstanding domestic policies. In 2015, they began to seriously address subsidies by releasing a five-year plan to drastically reduce domestic energy subsidies. The plan's ultimate goal is to completely eliminate subsidies over time while balancing the need for cheap energy to support strategic industries.[402] However, subsidies are a difficult addiction to kick. On one hand, the economy has grown comfortably for years with access to cheap energy but on the other, it has become equally dependent on these low prices. Changing the status quo can create massive reverberations throughout the system and can be difficult to juggle alongside intervening variables such as foreign policy, regional dynamics, and the international energy markets. In fact, when the economy began contracting in 2017 due to oil output cuts, the Saudis were forced to extend their timeline for subsidy cuts out to 2025.[403] Nevertheless, the bold steps taken to phase out government intervention in the domestic energy markets will greatly increase the efficiency of not only their resource consumption but also their NOC.

Over the last decade, Saudi government policies have advanced a strategy of greater efficiency by strategically developing more energy resource alternatives and by lessening government intervention. While under the new leadership of Muhammad bin Salman, commercial investment and national transformation are the upmost priority, even considering the mounting pressure for non-commercial commitments. This best encapsulated in his Saudi Vision 2030 plan and spans from developing natural gas and renewable energy to investing in more

[402] Oxford Business Group, "Saudi Arabia Sets Out Strategy to Reform Subsidies and Reduce Domestic Energy Usage," Saudi Arabia | Energy, Analysis, accessed February 21, 2020.
[403] Vivian Nereim and Yousef Gamal El-Din, "Saudi Arabia is Reviewing Its Plan for Energy Subsidy Cuts," *Bloomberg*, December 10, 2019.

efficient infrastructure and improving government policies. The scope of these initiatives will vastly expand the performance of their NOC in a couple significant ways.

First, the wasteful consumption of oil in the domestic energy market will eventually be replaced by natural gas and renewables. When completely free of oil for electricity generation, this will free up the 0.5 to 0.9 Mb/d for exports. To date, they have been able to reduce consumption in this area by about 0.2 to 0.3 Mb/d.[404] Second, removing domestic subsidies and improving domestic infrastructure efficiency will greatly decrease the amount of annual expenditure on keeping energy prices artificially low, inefficient consumption of energy, and on expensive annual infrastructure maintenance. These two sets of effects are at the core of Saudi Arabia's uneasy future and are central to the Vision 2030 campaign to eliminate the alarming rise of domestic consumption. Current overall oil consumption increased from 1.6 to 3.8 Mb/d between 2000 and 2015 but in the last five years has reversed direction, decreasing for the first time in the country's history.[405] Moreover, these two approaches are expected to reduce domestic consumption by another 1.5 to 2 Mb/d by 2030,[406] which would return national consumption to levels not seen since the turn of the century.

Ultimately, much of the progress Saudi Aramco has achieved in the last decade is the product of a massive internationalization effort in the areas of foreign service company subsidiaries, R&D research institutes, and foreign talent recruitment. This is especially the case with respect to unconventional energy and renewable energy. Much of the progress the company has made in the areas of general efficiency are the product of shifts in government policies.

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[404] US EIA, "Saudi Arabia Used Less Crude Oil for Power Generation in 2018," Today in Energy, June 3, 2019.
[405] CEIC, "Saudi Arabia Oil Consumption," Countries/Regions, Saudi Arabia, accessed February 25, 2020.
[406] Rania El Gamal and Stanley Carvalho, "Saudi Arabia Sees Domestic Energy Use Falling, Plans Renewable Push," *Reuters*, January 15, 2019.

Specifically, the shifting away from non-commercial intervention and a movement in the direction of a free market model. This is exemplified in the plan to diminish and ultimately abolish domestic fuel subsidies. Once realized, these policy goals stand to strengthen the position of Saudi Aramco considerably in a number ways. For one, less domestic consumption of oil means more spare production capacity. This directly translates to more oil market power and reestablishes Saudi Arabia's role as the global swing producer, both within the context of the OPEC cartel and the greater global energy markets. Additionally, it means a greater preparedness for meeting future global energy demand amid a growing need for investment to ensure global consumption is serviced. More efficient domestic consumption also means more efficient allocation of financial resources. Instead of reallocating funds from their NOC to subsidize the domestic market and exacerbating inefficient consumption, which is lose-lose, they can better invest those funds on expanding operations in upstream or downstream production, on R&D, or on developing their massive unconventional gas reserves and becoming a major player in global LNG. So far, the twin strategies of taking advantage of globalization by internationalizing the activities of their NOC and reforming government policies to increase efficiency have greatly strengthened Saudi Aramco and will continue to do so into the future.

Partial Privatization

Saudi Aramco became fully owned by the national government in the 1970s, beginning with the 1973 Arab oil embargo. The embargo caused a spike in oil prices that resulted in significant windfalls for oil producers around the world, including the Saudi regime which had a 50/50 profit sharing agreement with Aramco. The very same year the Saudis used their newly acquired wealth to purchase a 25% interest in Aramco's assets and very quickly increased their

interest to 60% the subsequent year. By 1976, the Saudis had purchased the remaining 40%, making them the sole owners of the company, though Aramco would continue to operate and service their oil fields for about another decade. In 1988, the Kingdom created the "Saudi Arabian Oil Company" by royal decree to take control of operational management of the former Aramco interests, thus creating what is known today as Saudi Aramco.[407]

While NOCs have tended to be less efficient enterprises in general when compared to IOCs, Saudi Aramco has traditionally been amongst the most successful and competitive companies in the world despite the trend. Meanwhile, partially privatized NOCs have quickly joined the ranks of top performers among all firms in the oil industry, especially with respect to other national firms. As a result, this particular strategy of increasing the performance of the NOC has risen to become one of the favorite strategies among nations globally for several reasons. First, partial sale of a minority interest to private investors or to the greater public doesn't involve relinquishing the decision-making powers of the national government, which maintains a controlling interest in the company. Second, the discipline associated with answering to shareholders, having to mitigate for stock market forces, and the transparency required to attract investors all incentivize these companies to strive for more effective business practices and greater overall efficiency.[408] Third, it has the additional benefit of maximizing the company's market capitalization. The inflow of new capital can have a substantial effect on the NOC in terms of expanding production capacity, international operations, or R&D. Though Saudi Aramco stands to benefit far less in terms of efficiency when compared other country's NOCs such as Venezuela's PDVSA, Nigeria's NNPC, or Iran's NIOC, partial privatization

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[407] Chad H. Parker, *Making the Desert Modern: Americans, Arabs, and Oil on the Saudi Frontier, 1933-1973* (University of Massachusetts Press, 2015).
[408] Jeffrey M. Davis, Annalisa Fedelino, and Rolando Ossowski, *Fiscal Policy Formulation and Implementation in Oil-Producing Countries* (International Monetary Fund, 2003), 194-196.

would have a net positive effect. Moreover, because of the record setting valuation of the company, around 1.9 trillion USD, the amount of capital the company could attract would be massive. In short, states are able to take advantage of some perks associated with privatized firms while not fully surrendering control over their coveted NOC.

The possible benefits of a partial privatization have not gone unnoticed by the Saudi leadership. In fact, the move towards an IPO for Saudi Aramco was the cornerstone of the greater national economic transformation project laid out in the Saudi Vision 2030. It was intended to encourage a deluge of investment that could subsequently provide the necessary capital to fund all of the different arms of the national transformation plan over the next decade. The IPO was reportedly ready to go since the beginning of 2018 but was continually delayed. According to the Energy Minister Khalid al-Falih, the Kingdom has been waiting on the "optimum time to execute," referring to the state of the global markets, the price of oil, and geopolitical circumstances.[409] Other critics wondered if Crown Prince Salman had overextended with his initial expectation of a 2 trillion USD valuation and underestimated bureaucratic resistance to transparency requirements associated with public offerings.[410] Despite the setbacks, the IPO would go ahead in December of 2019.

A month ahead of the IPO Saudi Aramco announced that it would be offering only a 1.5% share, significantly less that the initially envisioned 5%, and that investors could make offers within a range of $30-$32 SAU per share.[411] An IPO of this magnitude and the offered price range would be the equivalent of a USD $1.7 trillion valuation. Though less than the

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[409] A. Z. Mohamed, "Saudi Arabia: Challenges for Vision 2030," Gatestone Institute International Policy Council, October 16, 2018.
[410] James M. Dorsey, "The Two-Trillion Bubble: What Aramco IPO reveals about MBS's 2030 Vision," *Al Jazeera Centre for Studies*, September 18, 2018, 2.
[411] Eckart Woertz, "Aramco Goes Public: The Saudi Diversification Conundrum," GIGA Focus, Middle East, No. 2, November 2019, 2.

expected USD $2 trillion valuation, this still generates the greatest market capitalization of any company in the world. Apple (USD 1.14 trillion) and Google (USD 1.13 trillion) struggle to compare and the next largest publicly traded oil company ExxonMobil (USD 295 billion) pales in comparison.[412] The IPO went ahead in December 2019, seeing share prices reach their highest on the 18th at around $35-$38 per share range, but has since contracted back to the initial offering price because of coronavirus related global market contractions.[413] The offering was successful in raising USD $29.5 billion, a record setting IPO even trumping the USD $25 billion IPO of China's Ali Baba.

With the success of Saudi Aramco's public offering the Kingdom was able to pull off the first major step towards completing a set of important goals. First, partial privatization will have a positive effect on the efficiency of the company for all the aforementioned reasons. This will undoubtedly augment the company's ability to compete among the world's elite energy firms. Second, the IPO was able to raise nearly USD $30 billion, which was necessary to fund many of the transformational projects envisioned in the Saudi Vision 2030. This involves expanding renewable energy production, natural gas production, additional upstream production, and downstream petrochemical products. These projects will drastically increase the efficiency of the Saudi energy industry, restructure domestic resource consumption, and globally integrate their NOC in ways it has never been before.

[412] Ibid.
[413] Wire Services, "Gulf Stocks Dive as Coronavirus Hits Oil Price, Saudi Economy Grows Just 0.3% in 2019," *Daily Sabah*, March 1, 2020.

Conclusion

At the turn of the century, Saudi Arabia was presented with numerous challenges that, if left unattended, threatened to destabilize the country, its NOC, and the global energy markets. Many predicted the worst, but the last decade has witnessed ambitious and bold action on the part of Riyadh to address these challenges. In terms of national security, the Saudis responded to regional threats by first instigating the 2015 oil glut and then pursuing a greater OPEC+ expansion including Mexico, Kazakhstan, and Russia. These actions have served to increase their overall market power and their foreign policy objectives. While the greater noncommercial utilization does not necessarily strengthen the NOC directly, especially with respect to the company's commercial activities, it does increase the strategic value of the NOC to the state which indirectly strengthens it. For example, when the Arab Oil Embargo in 1973 was implemented, the subsequent rise in oil prices generated one of the greatest peaceful transfers of wealth in history from the OECD countries to the OPEC producers. With respect to government policies and efficiency, the Saudis have been impressively bold. The effort to internationalize Saudi Aramco's operations as well as reduce noncommercial interference in the domestic energy markets amount to the most consequential reforms to ever be pursued by the Kingdom in its history. In particular the diversification of energy production in combination with the massive potential reserves for unconventional gas and solar energy stand to move their energy industry ahead by leaps and bounds. The revolutionary implications of these policies cannot be overstated. Finally, the Saudis have experienced great success in the move to partially privatizing their NOC. The additional transparency requirements associated with IPOs and with being a publicly traded company will serve as a net positive for Saudi Aramco in the area of efficiency. Additionally, the investment capital raised from the public offering are providing the seed

investment funds for many of the aforementioned revolutionary projects. As a result, one of the world's largest and most consequential NOCs historically has begun to grow even stronger and become more influential in the 21st century.

CHAPTER VII

THE RESURGENCE OF RUSSIA'S NOCS

During the reign of the Soviet Union the energy resources and infrastructure was fully owned and operated by the regime. Following its collapse in 1991 there was a massive effort to achieve privatization across a multitude of industries, including the energy industry. From a macroeconomic perspective, it was part of a larger policy effort on the part of Boris Yeltsin that represented a capitulation of the Soviet style command economy and a general push towards something that would resemble a market economy.[414] However, this rapid transformation would play out as a somewhat messy affair and would ultimately exacerbate corruption. One might describe the Russian economy of the 1990s as a crony capitalist oligarchy. As one scholar has put it, the process was a transition period in which many "political elites traded their party credentials for top-paying positions at rapidly privatizing former state-owned enterprises."[415]

With respect to the state oil and gas companies, corruption was perhaps the most transparent considering the Russian "loans for shares" scandal in 1995 and 1996, which was a scheme by which the government offered shares in these companies for loans from banks in order to fund the presidential campaign.[416] Of course, these so-called "loans" were never actually repaid which highlighted the scandalous nature of the program. The government was raising money by auctioning off the nation's energy assets to various interested parties, mostly elites that would make up the new class of oligarchs in Russia. By the time Vladimir Putin was elected president in 2000, many of the former Soviet state-owned energy companies had been fully

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[414] Ira W. Lieberman, "The Rise and Fall of Russian Privatization," in Ira W. Lieberman and Daniel J. Kopf, eds., *Privatization in Transition Economies: The Ongoing Story* (Elsevier, 2008).
[415] Mike Olsen, "The Future of National Oil Companies in Russia," 621.
[416] Daniel Treisman, "Loans for Shares Revisited," NBER Working Paper No. 15819, March 2010.

privatized. However, Putin would set himself to the task of reestablishing national control over these industries as he considered it the cornerstone to rebuilding Russian state power.

The turn of the century marked an important moment of evolution of the Russian energy sector. Putin would reassert control over the industry by first targeting the most vulnerable oil and gas companies on the verge of failure. Once the national takeover of these companies was complete, they would be used consolidate control over the leftover companies that were better off. The case of Russia's NOCs is a twenty-year story that involves carefully considered and implemented strategies that have resulted in the resurgence of their energy firms to global prominence. This study will examine the three significant aspects of how Russia's NOCs were able to regain much of their lost strength and how they have been able to surpass their previous global prestige during the Soviet Era. First, after coming to power Putin would immediately begin a gradual process of renationalization of Russia's NOCs that had been scandalously auctioned off only 5 years earlier. However, this would not turn out to be a return to the former Soviet model of complete control over these industries. Rather, he would pursue the partial privatization model which resulted in the process of renationalization looking more like the new resource nationalism and less like the old. Second, Russian NOC activity would begin to internationalize despite massive reserves at home. Their international operations have been most notably focused on the Middle East, where much of the worlds cheapest energy resides, but also across Latin America and Africa. Third, Vladimir Putin's use of Russian NOCs as strategic assets has been perhaps the most conspicuous of any nation deploying its energy firms in such a way. Russian NOCs utilization as foreign policy tools have been aimed predominantly at former Soviet socialist republics and more recently in the context of OPEC+, which has been more global in nature. In these three ways, Russian NOCs in the 21st have evolved from

underperforming enterprises hamstrung by severe corruption into partially private, internationalized instruments of the Russian government that have expressed more strength and competence in the global energy industry than most NOCs to date.

Renationalization with a Twist

Vladimir Putin held the view that the energy industry was the primary means by which Russia could reassert its regional and global dominance after the collapse of the Soviet Union.[417] In fact, before his rise to power he advanced this argument regarding Russia's energy companies. In his dissertation, submitted in 1997 to St. Petersburg Mining Institute, he argued "the process of restructuring the national economy must have the goal of creating the most effective and competitive companies on both the domestic and the global markets" and that this was "probably the best way to reestablish Russia's status as a superpower."[418] Thus, it was no surprise that when Putin became president that he would immediately go about reasserting Russia's authority over its oil and gas companies. He encountered relatively little political resistance or social outrage, with the exception of Mikhail Khodorkovsky in the Yukos acquisition, which some scholars argue is part of a greater socio-political tendency of Russian culture.[419]

Putin would begin to implement his vision for Russia by first acquiring Rosneft, as it was the perfect place to start due to its position relative other Russian energy companies. It had fallen behind the other privatizing firms with respect to commercial skills and competitiveness during

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[417] Olsen, "The Future of National Oil Companies in Russia," 622.
[418] Marshall I. Goldman, *Petrostate: Putin, Power, and the New Russia* (Oxford University Press, 2008), 97.
[419] Thomas Ambrosio, *Authoritarian Backlash: Russian Resistance to Democratization in the Former Soviet Union* (Routledge, 2016); Alexander Buzgalin and Andrey Kolganov, "Russia and Ukraine: Oligarchic Capitalism, Conservative Statism and Right Nationalism" *Socialist Register* 52 (2016); and Vladimir Gel'man, *Authoritarian Russia: Post-Soviet Regime Changes* (University of Pittsburg Press, 2015).

Russia's transition to a market system in the 1990s, thus it was Putin's low hanging fruit.[420] The consolidation of Rosneft's assets under CEO Sergei Bogdanchikov and the new Russian regime would begin in 1998. Just two years later, Moscow had acquired up to, and in some cases more than, 75% of the shares in Rosneft's remaining holdings by targeting specific assets, utilizing opaque pricing methodologies, and purchasing the remaining shares at a fraction of the original value.[421] Rosneft's general underperformance and failures at privatization throughout the 1990s would make it the least costly, both politically and economically, to subsume by the government as well as serve as the initial steppingstone from which the other better performing companies could be targeted.

Following Rosneft's consolidation, Yukos and its CEO Mikhail Khodorkovsky would be the next meal on Putin's plate.[422] The nationalization of Yukos' assets and the dissolution of the company itself was the next economic and political stage of Putin's grand strategy. By 2003, Yukos had risen to become the best Russian privatized company in terms of market capitalization and reserves.[423] Therefore, Rosneft had much to gain as a result of the takeover as mergers and acquisitions often benefit NOCs in terms of efficiency and competitiveness. Politically, Khodorkovsky was keenly aware of Putin's intentions for the Russian energy industry and had been financially supporting his political opposition.[424] It would follow that eliminating a political adversary and weakening opposition parties were an added bonus that the

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[420] Nina Poussenkova, "Lord of the Rigs: Rosneft as a Mirror of Russia's Evolution," Study prepared in conjunction with an energy study sponsored by the Japan Petroleum Energy Center and the James A. Baker III Institute for Public Policy, March 2007, 17-18.
[421] Ibid, 26.
[422] Steven Fortescue, *Russia's Oil Barons and Metal Magnates: Oligarchs and the State in Transition* (Palgrave Macmillan, 2006), 121-148.
[423] Olsen, "The Future of National Oil Companies in Russia," 625.
[424] Jason M. Waltrip, "The Russian Oil and Gas Industry after Yukos: Outlook for Foreign Investment," *Transnational Law & Contemporary Problems* 17 (2008): 575, 582.

new Russian regime would not be likely to pass on. Similar to how the Rosneft consolidation had unfolded, which is to say characteristically authoritarian and abusively corrupt, the Yukos acquisition would follow. In fact, the actions taken against Yukos by the Russian government would be described by the International Tribunal at the Permanent Court of Arbitration as "not driven by the genuine exercise of its tax power" and that they "constitute gross abuses."[425] Khodorkovsky would be arrested for tax evasion and Yukos would receive punitive tax penalties amounting to more than a year's worth of annual revenue.[426] In order to cover the levied penalties, Yukos would be forced to sell off most of its assets at fractions of their value to Baikalfinansgroup, who shortly thereafter completed a merger with Rosneft, finalizing the government takeover.[427]

The strategy to renationalize Gazprom was similar to Rosneft in that the government used favorable political appointments and would ultimately use the company as a vehicle to consolidate the other industries it wanted to nationalize. However, instead of acquiring shares through a devaluation scheme and installing politically loyal leadership, the reverse was true in the case of Gazprom. Putin would first orchestrate the takeover of the vast majority of the company's management committee with Kremlin loyalists and follow with a government majority stake. Beginning in 2001 with Dmitry Medvedev, who would go on to become prime minister a decade later, and shortly after Alexei Miller and his team from St. Petersburg, Putin had replaced all but three of the original nineteen members of the company's management

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[425] Sheila A. S. Gunther and Samuel P. Gunther, "The Russian Spin on the Yukos Decision," *Dispute Resolution Journal* 70 (2015): 41.
[426] Waltrip, "The Russian Oil and Gas Industry after Yukos," 582-583.
[427] Brenden Marino Carbonell, "Cornering the Kremlin: Defending Yukos and TNK-BP from Strategic Expropriation by the Russian State," *University of Pennsylvania Journal of Business Law* 12 (2009-2010): 257.

committee by 2005.[428] That same year, following the consolidation of power over the company leadership, the Russian government would increase its stake in Gazprom to over 50% by purchasing an additional 10.74% through Rosneft.[429] Therefore, the Rosneft nationalization played a role in the government takeover of Gazprom and produced two major NOCs by which the government could consolidate most of the remaining elements of the industry. After Gazprom's nationalization many of the natural gas elements of the former Rosneft purchases would be moved under its ownership including those from Surgutneftegas, Slavneft, Sibneft, and some of the remaining assets from Yukos.[430] For perspective, these acquisitions drove exponential growth of the company's market capitalization from USD 54.24 billion in 2004 to USD 270 billion in 2006.[431]

In 2006, Russia would take two monumental steps forward in strengthening its two national flagships Rosneft and Gazprom. First, it would make another significant acquisition, that of TNK-BP at a 51% stake. [432] Up until this point most the of consolidations that occurred were in the form of mergers and acquisitions that methodically brought much of the formerly Russian privatized oil and gas assets back under the control of the regime. However, with the acquisition of TNK-BP and the division of its assets between Rosneft and Gazprom, including the massive Sakhalin-2 development project, this was the first time a western privatized company's holdings were subsumed by Russian NOCs. This would serve to increase their efficiency by absorbing infrastructure and personnel that operate at higher standards. Second,

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[428] Victor Nadejda, "Gazprom: Gas Giant Under Strain," Program on Energy and Sustainable Development, Stanford University, January 2008, 51.
[429] Philip Nahernak and John Simpkins, "The Russian Government and Gazprom," *Cornell International Affairs Review* 1 (2008).
[430] Nadejda, "Gazprom: Gas Giant Under Strain," 51.
[431] Nahernak and Simpkins, "The Russian Government and Gazprom."
[432] Poussenkova, "Lord of the Rigs," 50.

Russia would also begin the partial privatization of its NOCs in 2006. Originally, Putin planned to merge Rosneft and Gazprom into a single titan of global energy, but rather opted to keep them separate and focus on improving their efficiency and global competitiveness.[433] After the TNK-BP acquisition Russia would move to liberalize the foreign ownership rules for shared ownership and BP would take a significant stake in Rosneft as a result of the TNK-BP deal. Today, of the 49% of the remaining shares about 20% are owned by BP, 19% by Qatar, and about 11% are publicly traded by numerous smaller shareholders.[434] In their IPOs, both Rosneft and Gazprom would benefit from an influx of investment and market capitalization[435] but more fundamentally the measures the companies would take to attract prospective investors in the first place would prove transformational. These reforms would amount to a more equitable balance between state responsibilities and commercial interests as well as increasing transparency, identifying areas of inefficiency, and nominating politically independent members to the Board of Directors.[436]

These events – the combination of nationalization via M&A activity and partial privatization – signified the new attitude of the Russian government with respect to its companies and to foreign involvement in their energy industry. As one expert has put it, "our assets for your money but under our control."[437] In a way, this is the essence of the new resource nationalism of the 21st century. States seek to take advantage of privatization up to a point, mostly through attracting investment from more liberalized market driven economies, but retain decision making power through majority ownership so that companies can still be directed in

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[433] J. Robinson West, "The Future of Russian Energy," *The National Interest* 80 (Summer 2005): 125-127.
[434] Stratfor Worldview, "Oil Boom? Russia Moves Closer to Privatizing Rosneft," *National Interest,* April 18, 2020.
[435] Rosneft for example floated around USD $10.7 Billion amounting to the fifth largest IPO in history at the time, See Rosneft, "History of Rosneft," About Rosneft, accessed September 26, 2021.
[436] Olsen, "The Future of National Oil Companies in Russia," 619, 626.
[437] Poussenkova, "Lord of the Rigs," 50.

accordance with the political objectives of the state.[438] Moreover, partial privatization has had positive effects on these companies. NOCs have been forced to improve their business practices, resource allocation, and transparency in order to attract investment. These are some of the core reasons privatized businesses are more competitive and perform more efficiently in the first place. Strengthening the States' NOCs while balancing the regulatory authority of the regime and the commercial activity of the company is no easy task. In this regard, Russia has been less successful when compared to Saudi Aramco or the Chinese NOCs, mostly stemming from the Kremlin's high fiscal dependency on these industries. The chapter 4 datasets confirmed this reality, where Russian NOCs scored lower in terms of efficiency. However, what has been achieved should not be taken lightly. Russia's NOCs have been successful overall in taking advantage of these two methods of strengthening their energy firms. They are as productive and far more efficient than at their height under the Soviet Union. Furthermore, the following sections will address the ways in which they have surpassed their former achievements and now compete on a global stage with western international companies, at times outdoing the competition.

Investment Abroad and Offshore

In the years of renationalization, the plan to make Russian energy the nexus of state power began to take material form. Between 1999 and 2013, the share of Russia's GDP that was comprised of oil and gas gradually rose from 12.7% to 16%.[439] This sudden expansion of the

[438] Others have described this shift as a neo-institutionalist approach to energy governance; See for example Catherine Locatelli and Sylvain Rossiaud, "A Neoinstitutionalist Interpretation of the Changes in the Russian Oil Model," *Energy Policy* 39 (September 2011): 5588-5597.
[439] World Bank, "World Development Indicators: Contribution of Natural Resources to Gross Domestic Product," Data Catalog, accessed September 26, 2021.

energy sector grew to account for more than 50% of the federal budget and about 70% of exports.[440] However, while production and revenues were reaching historic highs, many of the West Siberian oil fields that were responsible for the robust expansion were being substantially depleted. According to the Russian Ministry of Energy, an estimated USD $600 billion would need to be invested through 2030 to maintain production in West Siberia and to develop East Siberia and Sakhalin.[441] Additionally, Lukoil estimates that about USD $1 trillion in investment over the next twenty years would be necessary just to maintain production at the current 10 mb/d level.[442] These figures suggest that as domestic depletion continues to become a larger problem, the amount of upfront investment necessary to maintain and expand production will substantially increase.

The growing costs of maintaining their position of energy dominance through relying predominantly on their traditional domestic reserves puts Russia in a difficult position. This is especially the case for two reasons. First, because energy dominance has been made into the primary pillar of Russian national power. Therefore, increasing maintenance and expansion costs forces Moscow to choose between protecting its strategic industry or face a reality where national power slowly dwindles away. Second, it has been extremely difficult to attract international investment since 2014 when western sanctions were applied in response to the Crimean annexation. Without the ability to attract foreign investment, most of the expanding costs of maintaining the industry have been shouldered by the national government, a less than ideal scenario for the Kremlin to say the least. These difficulties have generated a powerful

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[440] EIA, "Country Analysis Brief: Russia," Independent Statistics & Analysis, Last modified October 31, 2017.
[441] Anders Åslund & Steven Fisher, "New Challenges and Dwindling Returns for Russia's National Champions, Gazprom and Rosneft," Atlantic Council, June 5, 2020.
[442] Leonard Coburn, "Russian Oil – A Long Term View," IAEE Energy Forum, Third Quarter, 2010, 24-25.

impetus for Russian oil companies to begin a process of internationalization. Looking to develop cheap resources both offshore and in other nations has turned out to be a solution that has the potential to solve both of these challenges simultaneously.

Currently Russian energy firms are involved in upstream projects in nearly every region of the world with significant projects in 15 countries.[443] Perhaps most notably, are those that have been negotiated in the Middle East. More than anywhere else in the world, the Persian Gulf contains the cheapest energy to produce and refine. In fact, there is no larger supply of light sweet petroleum anywhere else on the planet. Other continents may contain comparably large supplies but often these reserves are either heavy or sour in nature, both of which increase the costs of production. Consequently, Russian NOCs' international expansion have especially focused on the Gulf states as well as areas that western IOCs tend not to go because of risk or international sanctions, such as Venezuela. Their companies are currently active in every Persian Gulf nation albeit to varying levels.

Iraq is one country where Russian NOCs are highly active, and for good reason. Because of historical circumstances, it has become the largest and cheapest undeveloped source of oil in the world. Years of underinvestment under Saddam Hussein during the Iran-Iraq war in the 1980s, international sanctions in response the invasion of Kuwait in the 1990s, and the invasion by the US during the 2000s has meant that one of the most opportune sources of energy in the world has sat idly by decade after decade. However, as the US occupation was nearing its end and the Iraqi government was establishing its new Oil Ministry, much of the world looked to capitalize on many of the new oil contracts that were being offered. As the Iraqi oil industry

[443] The total number of international projects was calculated by combining those from the top three companies Rosneft, Gazprom Neft, and Lukoil, see Rosneft, "Production and Development," Business, accessed July 2, 2020; Gazprom Neft, "Oil and Gas Production," Petroleum Exploration and Production, accessed July 2, 2020; and Lukoil, "International Projects," Business, accessed July 2, 2020.

grew into a center of international investment, one of the chief foreign investors has been Russia through their internationalizing energy firms.

Iraq's West Qurna oil field is thought to be the world's largest undeveloped conventional oil field, with a reserve of about 13 billion barrels. In 2009, Russia's Lukoil won the contract to develop the West Qurna-2 oil field, with an aim to invest about USD $4.5 billion and to raise production up to 1.2 mb/d.[444] In the initial contract Lukoil partnered with Norway's Statoil, holding 56.25% of the project while Statoil held 18.75%. However, in 2012 Statoil transferred its stake in the project to Lukoil.[445] In March 2015, oil production in the West Qurna-2 project came online for the first time. That same month, Lukoil President Vagit Alekperov met with the Iraqi Oil Minister Adel Abdul Mahdi in Baghdad about the second phase of development and explicitly stated the long-term status of the burgeoning relationship.[446] In 2019, Lukoil commenced the drilling of 57 new production wells as part of the second development phase, which aims to expand production by 80 kb/d in 2020.[447]

In addition to the massive West Qurna-2 project, Moscow has eyed the hydrocarbon riches in the autonomous region of Kurdistan. In October 2019, Russian Foreign Minister Sergei Lavrov, along with a delegation that included the head of Gazprom Neft, Rosneft, and Soyuzneftgaz, met in the Kurdish capital Erbil reaffirming previously negotiated bilateral energy projects negotiated in 2011.[448] Since the original negotiations, Russia's Gazprom Neft have taken significant shares of three development projects in the autonomous Kurdish region of Iraq. In the

[444] Lukoil, "West Qurna-2," Business, accessed June 16, 2020.
[445] Bob Tippee, "Lukoil gets Statoil's West Qurna 2 Oil Field Stake," Oil & Gas Journal, June 1, 2012.
[446] Daniel J. Graeber, "Russia's Lukoil Committed to Long Term to Iraq," *UPI*, March 24, 2015.
[447] Lukoil, "West Qurna-2."
[448] Interfax, "Lavrov Reaffirms Fulfillment of Military-Technical Contracts with Iraq," October 6, 2019.

Halabja and Shakal blocks the company owns an 80%[449] as well as a 40% share of the Garmian block and a 30% share of the Badra block.[450]

Russian NOCs have also expanded operations in the United Arab Emirates and Saudi Arabia. Rosneft's first presence in the Middle East was in the UAE, established in 2010 when the company entered into a joint venture with Crescent Petroleum to develop the Emirate of Sharjah's onshore concession.[451] Rosneft was awarded a 49% share in the concession and has, along with Crescent, invested around USD 60 million thus far in accordance with the joint investment plan.[452] In Saudi Arabia, the Russians are assisting in natural gas development, which, as noted in the previous chapter, is a massive piece of the Saudi Vision 2030 development strategy for the future of the country. They have been operating in close partnership since 2002 when the Russians began offering the Saudis their technologies associated with oil and gas extraction.[453] In 2004, Lukoil was awarded the contract for the Rub-al-Khali field and subsequently signed a 40-year contract to develop the "Zone-A" natural gas field as well as having recently announced plans for two unconventional exploration wells.[454]

Russia has also been keen to invest in nations under international sanctions such as Iran, Venezuela, and Cuba,[455] as there is limited competition from other companies who are willing to disregard the demands of the international community and also because they themselves are under sanctions and considered an international pariah by many western nations since the

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[449] OGJ Editors, "Gazprom Neft to Conduct Seismic Survey on Kurdistan's Halabja Block," Oil & Gas Journal, May 24, 2015.
[450] Gazprom Neft, "Annual Report 2018," April 19, 2019.
[451] Tamsin Carlisle, "Crescent and Rosneft in Sharjah Gas Venture," *The National*, June 5, 2010.
[452] Crescent Petroleum, "Onshore Sharjah Concession," accessed June 16, 2020.
[453] Andrej Kreutz, "Russia and the Arabian Peninsula," *Journal of Military and Strategic Studies* 7 (Winter 2004): 131.
[454] Hart Energy, "Aramco Announces Plans for Two Unconventional Exploration Wells," accessed June 17, 2020.
[455] Reuters Staff, " Russia's Gazprom Neft Eyes Iran, Cuba Oil Projects," *Reuters*, June 29, 2010.

annexation of Crimea. Thus, attracting other geopolitical pariahs into the Russian sphere of influence has played a role in directing the pattern of internationalization of some Russian NOCs. Initially, many Russian companies including Gazprom, Rosneft, Lukoil, and Surgutneftegas collectively committed to a massive development project with Venezuela's PDVSA projecting a USD $20-30 billion investment over a 25-year period. [456] However, as the domestic stability of Venezuela has frayed since the original negotiations, Rosneft bought out the other companies stake in 2014 for around USD $800 million.[457] As of July 2019, Rosneft has invested a total of USD $1.1 billion in the Venezuelan oil fields, primarily in the area of upstream development.[458] Interestingly, the Kremlin has adjusted its strategy for investment in Venezuela overtime, first shielding many of its NOCs aside from Rosneft in 2014 and later took the step of fully privatizing much of the investments in order to avoid the escalating US sanctions and further shielding Rosneft in 2020.[459]

Russia's strategy concerning Iran has been similar to that of Venezuela although with more mixed results. In 2007, Lukoil expanded their presence into Iran signing agreements to invest directly into their oil fields.[460] Two years later, Gazprom Neft signed an agreement with Iran's NIOC to jointly develop the oilfields Azar and Shangule.[461] Under the agreement Gazprom would develop the North Azadegan field, build an oil refinery, and handle trans-

[456] Vladimir Rouvinski, "Russian-Venezuelan Relations at a Crossroads," Wilson Center Kennan Institute, February 2019, 7.
[457] Ibid.
[458] John E. Herbst and Jason Marczak, "Russia's Intervention in Venezuela: What's at Stake?," Atlantic Council, September 12, 2019.
[459] Gabrielle Tétrault-Farber and Olesya Astakhova, "Rosneft Sells Venezuelan Assets to Russia after U.S. Sanctions Ramp Up," *Reuters*, March 28, 2020.
[460] Terry Macalister, "Russia, Iran and Qatar Announce Cartel that will Control 60% of World's Gas Supplies," *The Guardian*, October 21, 2008.
[461] Interfax, "Interview with Boris Silbermints, Deputy CEO for Exploration and Production of Gazprom Neft," January 28, 2010.

Caspian energy transportation, a deal analysts projected to be worth about USD $3 billion annually.[462] However, Russian investment in Iran has been more uncertain than with Venezuela, primarily because the Iranian regime has been more difficult in negotiations. In 2010, Lukoil ceased operations on the oil project citing international sanctions as the primary cause.[463] After Iran forced out Gazprom and replaced it with a consortium of Iranian companies it became clear that international sanctions were not the sole cause of the breakdown in relations.[464] Since this incident, relations have been inconsistent. In February 2013, Iran invited Russian companies once more to invest in Iranian oil fields, this time with the added caveat of making domestic legislative changes that would allow Russian companies to acquire ownership stakes of extraction sites.[465] However since 2014, tightening of international sanctions have halted most international activity in Iran once again.[466] In 2018, relations began to warm again with Russian NOCs signing a USD $4 billion deal and beginning negotiations on an additional set of deals worth around USD $10 billion while simultaneously announcing their willingness to commit up to USD $50 billion in total to the Iranian energy industry.[467]

Another way that Russia has directed its international investments has been to gain influence with its possible competitors in the natural gas industry, a market with tighter regional structures than that of the more global oil market. This empowers monopolistic actors, such as Russia's NOCs, to more effectively dominate various nodes in the regional energy markets

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[462] ITAR-TASS, "Russia, Iran to Boost Energy Cooperation," The Information Telegraph Agency of Russia, October 15, 2008.
[463] Konstantin Rozhnov, "Will Sanctions Against Iran Hit Russian Firms?," BBC News, April 28, 2010. https://www.bbc.com/news/10089746.
[464] "Gazprom Neft Forced Out of Iranian Project," *The Moscow Times*, October 11, 2011.
[465] "Iran Again Invites Russia to Join its Oil and Gas Projects," *RT*, February 12, 2013.
[466] EIA, "Iran Energy Profile: Holds Some Of World's Largest Deposits Of Proved Oil, Natural Gas Reserves – Analysis," *Eurasia Review*, June 19, 2015.
[467] Henry Foy and Najmeh Bozorgmehr, "Russia Ready to Invest $50bn in Iran's Energy Industry," *Financial Times*, July 13, 2018.

around the world. While Russia wields its NOCs for political purposes more so than perhaps any other nation, which will be examined more fully in the next section, it has some relevance here as well. This is because the expansion of LNG as well as alternative pipeline networks threaten Russia's market dominance and jeopardize the political power they expect to gain.

Qatar has been a primary target for these reasons as it has become the premier LNG exporting country, ranking first among all other nations. Qatar currently hosts six LNG plants,[468] and in 2010 increased its share of the European market by 49%, rising fastest in countries importing LNG such as the UK and Belgium.[469] Unsurprisingly, Russia's Gazprom suffered a 25% decrease in exports to Europe that same year when compared to 2009. [470] Thus, over the last two decades as Russia consolidated power over its energy industry and began internationalizing operations, the Kremlin has sought to maintain close ties with Qatar. In April 2010, the Russian-Qatari committee for cooperation in gas and energy was formed.[471] This was an initial step in what many thought would materialize into a greater OPEC-like cartel for natural gas.[472] Two months later Gazprom joined a consortium conducting a geological-economic evaluation of Qatar's north field "Block D."[473] In 2013, Gazprom opened a representative office in Doha and the board chairman Viktor Zubkov stated that the company "will contribute to stronger partnership ties and will provide an additional impetus to closer mutually beneficial cooperation with the states in the region."[474] The potential for Russian-Qatari cooperation with the additional

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[468] Global LNG Info, "Global LNG Database," accessed June 19, 2020.
[469] Interfax, "Gazprom Maintained Market Share in Most of Europe in 2010 – IEA," *Russia & CIS Business and Financial Newswire*, Mar 15, 2011.
[470] Yulia Latynina, "The Main International Confrontation of the XXI Century is Between Hydrocarbon Despotism and Pipeline Democracies," *Novaya gazeta,* March 29, 2011.
[471] Interfax, "Russia, Qatar Ink Joint Gas-Cooperation Declaration," April 18, 2010.
[472] Vladimir Socor, "A Russian-led "OPEC for Gas?" Design, Implications, Countermeasures," *Lithuanian Foreign Policy Review* 20 (2008): 112-119.
[473] Interfax, "Gazprom May Join Consortium to Bid in Qatar," March 23, 2010.
[474] "Gazprom Sets up Shop in Qatar," *UPI,* February 12, 2013.

nation of Iran at the time had the potential for unrivaled control over in the European, Asian, and other Pacific Rim countries' markets for natural gas.[475] However, international sanctions on Russia and Iran alongside a souring of relations between the GCC and Qatar and Iran have dampened the prospects of this geopolitical alignment.

Bahrain has also been a target of Russia for similar reasons as Qatar, but to a far lesser extent. In December 2008, Gazprom and Bahrain's National Agency for Oil and Gas signed a letter of intent to jointly explore various emerging opportunities in the oil and gas markets that could benefit both countries. [476] The agreement was expanded in the following two years, most notably with respect to exploration and development of the Awali field.[477] Since the original agreement, this relationship has developed at a far slower pace than many of Russia's other relationships, primarily because of geopolitics. The Arab Spring in 2011 saw Saudi tanks rolling into the Bahraini capital Manama in order to shore up the Sunni monarchy that rules over a Shia majority. This was a status quo move to protect the GCC and prevent another gulf nation from falling under the influence of Iran. Additionally, Bahrain is home to the largest US naval presence in the Persian Gulf. Thus, Bahrain is careful not to appear to be drifting into the Russian sphere of influence. Nevertheless, in March 2012, cooperation continued to progress as Bahrain discussed imports of 400 million cf/d of LNG from Russia's Gazprom[478] through a new terminal which began operations at the end of 2019.[479]

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[475] Interfax, "Russia, Qatar to Discuss Gas Cooperation, Business, Political Issues," *Russia & CIS Business & Investment Weekly,* November 8, 2010.
[476] Ministry of Foreign Affairs of the Russian Federation, "Russian-Bahraini Relations," October 10, 2011.
[477] Katerina Oskarsson and Steve A. Yetiv, "Russia and the Persian Gulf," *Middle East Journal* 67 (Summer 2013): 381-403.
[478] Reuters Staff, "Bahrain in Talks to Buy 3 mln t/yr of LNG from Gazprom," *Reuters,* March 6, 2012.
[479] Jessica Jaganathan, "Bahrain LNG Terminal to Start Operations by Year-End," *Reuters,* November 13, 2019.

Lastly, Russia has pioneered Arctic offshore operations to a far greater extent than any other country. This area of energy exploration and development has the greatest future potential yields, as it contains one third of the world's remaining natural gas and thirteen percent of the world's remaining oil.[480] This will increasing become the next great frontier in energy geopolitics as Arctic ice recedes and the costs of exploration and extraction decrease. As of January 2019, Rosneft alone has 56 licenses for offshore development projects, more than half of which are in the Artic, amounting to 730 billion barrels of oil reserves.[481] So far, Russia has shown itself the standalone innovator in this area of international energy and it will certainly pay massive dividends in the future.

Internationalization, while spurred on by rising domestic maintenance costs and difficulties attracting foreign investment, has strengthened Russian NOCs over the last decade to a considerable extent. Possibly the most profound development was the ability of these companies to capitalize on the US opening of the Iraqi energy industry to foreign investment. While investing nothing in the liberation of the nation and the quelling of the insurgency, Russia was able outbid US companies in the most lucrative contracts offered by Iraq. Additionally, Russian NOCs have slowly internationalized their operations over the last ten years operating in numerous countries across the world, dwarfing the scope of operations that their companies had ever achieved previously. As a consequence, their national energy firms have not only maintained their status as some of the world's largest energy producers, but they have been able to accumulate power for the Russian state unlike ever before.

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[480] Hari M. Osofsky, Jessica Shadian, and Sara L. Fechtelkotter, "Arctic Energy Cooperation," *U.C. Davis L. Rev.* 49 (2015-2016): 1431-1510.
[481] Rosneft, "Offshore Projects," Business, accessed July 2, 2020.

Russian Energy Coercion

The linkage of the energy sector to the governing regime leads to what many energy experts refer to as politicizing energy. While this often carries a number of consequences for the state itself, the inverse is also true. On one hand, the realization of Putin's mission to rebuild Russian national power and global prestige through establishing elite energy companies certainly has made Russia stronger than it was in the 1990s. On the other, the companies themselves are far more powerful as well as having been particularly consequential in the arena of foreign policy.[482] While Putin's vision was to reestablish Russian superpower status, his goal was intrinsically tied to first rebuilding and strengthening its NOCs and to subsequently utilize this strength to further expand the influence of these companies over regional and global markets.[483] In fact, Putin explicitly stated his ideas on energy in 1999 when he said that Russia's vast energy resources can serve "as an instrument to implement domestic and foreign policy."[484] It's unclear the extent to which he understood at the time these policies would become energy 200entric as a consequence of the marriage of energy firms and the state. Nevertheless, this process works to further expand and strengthen a state's NOCs as the strategic interests of the firm become that of the state as well. In the case of Russia, this process is more apparent than any other in the world. To be more precise, Russian NOCs have engaged in energy coercion on at least 55 occasions in

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[482] Goldman, *Petrostate*.
[483] Margarita M. Balmaceda, *Energy Dependency, Politics and Corruption in the Former Soviet Union: Russia's Power, Oligarch's Profits and Ukraine's Missing Energy Policy, 1995-2006* (New York: Routledge, 2008); Leon Aron, "The Putin Doctrine," *Foreign Affairs* (March 11, 2013).
[484] Roman Kupchinsky, "Energy and the Russian National Security Strategy," *The Jamestown Foundation Eurasia Daily Monitor* 6 (May 18, 2009).

the post-Cold War period, often as a punishment for non-compliance with broader political or economic demands.[485]

Initially, a number of factors allowed for Moscow's strategic power over its European and Asian neighbors. These include the tightening of the global energy supply, Russian control over strategic transit chokepoints in Eurasia and Eastern Europe, and Europe's overwhelming reliance on Russian energy.[486] This was primarily a consequence of the economic development around energy and resources in these regions occurring during the 20th century in the Soviet Era, when many of the former socialist republics followed the dictates coming from Moscow. Thus, Russia is beneficiary to a legacy inheritance in which much of the energy transit infrastructure throughout Eastern Europe and Eurasia was constructed with a Russia-centric frame that has allowed its NOCs to play a powerful role in regional and global markets.

Between 2004 and 2006, Moscow began deploying its NOCs aggressively using energy diplomacy to reassert greater control over the regional energy markets of many states from the former territories in the Soviet Union.[487] Much of the post-Soviet era saw these former socialist republics receiving gas for cheap, which Putin saw as an attempt to subsidize these former nations and keep them in the Russian sphere of influence.[488] As a means of expansion and further aggrandizement of its NOCs, Russia began elevating these gas prices and reducing them again once their demands were met. These demands usually involved accumulating greater control

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[485] Agnia Grigasoline, "Legacies, Coercion and Soft Power: Russian Influence in the Baltic States," Russia and Eurasia Programme, Chatham House, August 2012, 4-7.
[486] Goldman, *Petrostate.*
[487] Karel Svoboda, "Business as Usual? Gazprom's Pricing Policy Toward the Commonwealth of Independent States," *Problems of Post-Communism* 58 (2011): 21-35.
[488] Jim Nichol, Steven Woehrel, and Bernard A. Gelb, "Russia's Cutoff of Natural Gas to Ukraine: Context and Implications," *Congressional Research Service* (February 15, 2006), 2.

over the energy infrastructure running through these nations, a move aimed at expanding the power and influence of Russian NOCs over strategic regional markets.

Beginning with Belarus, Gazprom was embroiled in a dispute with the pipeline infrastructure running through the country. The Russian company sought to reacquire the assets at book value, which Belarus refused to accept. However, as a monopolistic supplier, Russia via Gazprom was able to coerce the country. In January 2004, Gazprom shut off gas deliveries to Belarus in a campaign to force the nation into compliance.[489] Negotiations continued and two years later, after another threat to cut off supplies in 2006, the two countries were able to come to an agreement. The next year they signed a five-year contract where Belarus would get the cheapest natural gas compared to any other the former socialist republics in exchange for Gazprom acquiring a fifty percent stake in the Belarusian pipeline company Beltransgaz.[490] During the same two-year period, Gazprom was also working to absorb much of its lost infrastructure in Georgia and Armenia. In the case of Georgia, who refused to cede any control to the Russian firm, faced a near doubling of natural gas prices. In 2005, the Georgians were paying a rate of USD $60 per Tcf of natural gas, but the following year were required to pay USD $110 per Tcf.[491] Similarly, Armenia saw a rise from USD $65 per Tcf to $110 per Tcf.[492]

Perhaps most infamously of all, the Russian-Ukrainian dispute saw multiple instances of energy supplies being cut which also had serious impacts on western European customers further downstream. In 2005, Russia entered into negotiations with Ukraine to raise the price of gas in line with the price raises to Belarus, Armenia, and Georgia. However, Ukraine rejected the

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[489] Olsen, "The Future of National Oil Companies in Russia," 628.
[490] David R. Marples, "Is the Russia-Belarus Union Obsolete," *Problems of Post-Communism* 55 (2008): 25-35.
[491] Nina Poussenkova, "The Global Expansion of Russia's Energy Giants," *Journal of International Affairs* 103 (2010): 117.
[492] Ibid.

proposal leading to the first supply cutoff in January 2006.[493] Ukraine responded by siphoning gas meant for central and western Europe from pipelines passing through their country. Gazprom accused Ukraine of stealing gas supplies by insisting that all contractual volumes to other nations were being met. Meanwhile, Ukraine denied taking any extra gas for itself that it was not entitled to. Of course, the implication made by Ukraine was that it was entitled to take a portion of the gas moving through its country, 15% to be exact.[494] Negotiations would continue for years and in 2009 Russia would again cutoff supplies to Ukraine to punish their noncompliance. Eventually, the nations would come to an agreement which saw Ukraine paying the highest price of all the CIS countries at USD $230 per Tcf.

In 2007, a dispute between the Czech Republic, the United States, and Russia flared over the issue of NATO's eastern expansion and missile defense. As the US began to negotiate the placement of interceptor missile systems and radar facilities in Poland and the Czech Republic,[495] Russia responded aggressively. In addition to threats of missile development programs aimed at circumventing NATO defense systems and the deployment of long-range missiles at Kaliningrad, Moscow immediately announced disruptions to energy exports to the Czech Republic the same day they announced their participation.[496] Broader fears arose that Russia's energy coercion would expand to Western European nations in response to NATO naval operations in the Black Sea.[497] Russia was able to extract a great deal of concessions out of

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[493] Nichol, Woehrel, and Gelb, "Russia's Cutoff of Natural Gas to Ukraine," 2.
[494] Jonathan Stern, "The Russian-Ukraine Gas Crisis of January 2006," *Oxford Institute for Energy Studies* (January 16, 2006), 8.
[495] Rashad Shirinov, "US Missile Defense Shield and Russia: Second Cold War as a Farce," *Caucasian Review of International Affairs* 2 (Spring 2008): 98.
[496] Sean Kay, "NATO's Missile Defense – Realigning Collective Defense for the 21st Century," *Perceptions: Journal of International Affairs* 17 (Spring 2012): 42.
[497] Ambrose Evans-Pritchard, "Russian President Dmitry Medvedev May Use the Oil Weapon," *The Telegraph,* August 29, 2008.

the US both because of its energy diplomacy and because of the incoming Obama administration's Russia Reset policy.

Undoubtedly, some Russian political influence was exchanged for greater control over adjacent regional energy markets as well as some significant profit windfalls from nearly doubling natural gas prices across the board. Eliminating the longstanding subsidized energy for the CIS countries has already led to new geopolitical formulations, such as the Three Seas Initiative.[498] In the Russian calculus however, this expenditure of "soft power" was a worthwhile exchange for more fungible power resources such as buttressed cashflow that would be used to rebuild and modernize the military, balance the federal budget while stabilizing the Russian economy, and secure Russian energy dominance over specific regional markets while strengthening their NOCs.[499] In fact, the focus on reigning in CIS countries and reasserting control over these existing pipeline infrastructure transit routes was coupled with an agenda aimed at negotiating new pipelines projects that would further increase their companies' bargaining power. This would be accomplished by using the new projects to circumvent the existing infrastructure in place in the CIS countries that gave them bargaining power as transit nations to Western Europe.

The Nord and South Stream pipeline projects were Moscow's initial vision for implementing this expansion. The Nord Stream pipeline was a Baltic Sea transit project negotiated with Germany that would simultaneously allow Russia to bypass Ukraine and Poland

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[498] Marek Gorka, "The Three Seas Initiative as a Political Challenge for the Countries of Central and Eastern Europe," *Politics in Central Europe* 14 (March 16, 2019): 55-73; Bartosz Wiśniewski, "The Three Seas Initiative after the Warsaw Summit: What Next?," *The Polish Quarterly of International Affairs* 26 (2017): 55-64.

[499] Fiona Hill, *Beyond Co-Dependency: European Reliance on Russian Energy* (Washington, DC: The Brookings Institution, 2005); Anita Orban, *Power, Energy, and the New* Russian Imperialism (Westport, CT: Praeger, 2008).

when supplying Western Europe and create a new complex web of interdependence with the Baltic States.[500] Much of the political nature of the project was revealed when the German Chancellor Gerhard Schroeder became the Shareholders' Committee Chairman and Matthias Warnig, the Board Chairman of Dresdner Bank and alleged former friend of Vladimir Putin during their time in East Germany, was made the Managing Director.[501] The South Stream pipeline had some initial success but was competing with the Nabucco pipeline, whose purpose was to counter expanding Russian influence.[502] However, Moscow was able to prevail by bringing Turkey into the fold. By signing an agreement to disallow the construction of the Nabucco through Turkish territorial waters and instead constructing the formerly proposed South Stream now entitled the Turkish Stream through Turkey, the Russians were able to triumph.[503] In Russia's acquisition of supply routes to Europe and the recent projects allowing for an expansion of market-making monopolistic capabilities, Gazprom has concurrently either intervened in or played middleman between Europe and other producing nations.[504]

The Russian expansion over various regional energy markets, especially the European, has not gone unfettered and is worth mention. While Moscow has been successful when it comes to pipeline politics, they have been less so concerning the growth of LNG. As discussed in many other portions of this study, the American energy boom has had multiple implications across a

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[500] Stefan Bouzarovski, "Landscapes of Paradox: Public Discourses and Policies in Poland's Relationship With the Nord Stream Pipeline, *Geopolitics* 15 (February 2010): 1-21; Andreas Heinrich, "Securitisation in the Gas Sector: Energy Security Debates Concerning the Example of the Nord Stream Pipeline," *Energy Security in Europe* (October 14, 2017): 61-91.
[501] Olsen, "The Future of National Oil Companies in Russia," 630.
[502] Vladimir Socor, "Sourcing the Nabucco Pipeline to Prevail Against South Stream," *Eurasia Daily Monitor* 5 (August 2, 2008).
[503] Jonathan Stern, Simon Pirani, Katja Yarimava, "Does the Cancellation of South Stream Signal a Fundamental Reorientation of Russian Gas Export Policy?," *Journal of Self-Governance and Management Economics* 3 (2015): 30-49; Theodoros Tsakiris, "The Energy Parameters of the Russian–Ukrainian–EU Impasse: Dependencies, Sanctions and the Rise of Turkish Stream," *Southeast European and Black Sea Studies* 15 (August 2015): 203-219.
[504] Olsen, "The Future of National Oil Companies in Russia," 631.

number of aspects of global energy and in this case, LNG exports from the US have been one of the only checks on monopolistic Russian expansion. Alongside the US, LNG exports from Qatar have also played a role, which is why Russia has been courting Qatar so closely. Between 2008 and 2018, Russia's share of the EU market increased slightly to around 40%, with the lowest point falling to 35% in 2010 and the highest rising to just over 45% in 2013.[505] During that period, Qatar's exports to the EU more than doubled. This development, as Günther Oettinger, the EU CommissIoner for Energy put it, has already decreased prices, dampening Russian leverage.[506] Moreover, during this time the US boom was beginning to substantially expand as it was becoming a net exporter as well as planning the construction of numerous LNG export terminals. The first LNG shipments began arriving in 2016 and have grown exponentially in the last few years. In 2017, US LNG accounted for 4% of EU imports but by 2019 this figure grew to 16%.[507] Nevertheless, Russia has been able to maintain a powerful stranglehold over the EU market, primarily because of economic growth increasing overall demand coupled with gas replacing coal in the greater energy mix.[508]

In addition to energy coercion, Russia's strategic use of NOCs in the context of OPEC+ should also be mentioned. Because the previous chapter highlighted this newly expanded institution from the original OPEC in detail, it will only be mentioned briefly here. Russia's NOCs will have far greater global reach in the context of OPEC+, especially when compared to the first decade of the century as they mostly were at the whims of OPEC in the same way that

[505] European Commission, "Energy Production and Imports," last modified June, 2020.
[506] European Commission, "A Transatlantic Energy Revolution: Europe's Energy Diversification and U.S. Unconventional Oil and Gasoline," Speech by EU Commissioner for Energy, Günther Oettinger, July 17, 2013.
[507] European Commission, "EU-U.S. LNG Trade," January 8, 2020.
[508] James Henderson and Jack Sharples, "Gazprom in European – Two 'Anni Mirabiles,' **B**ut Can it Continue," Oxford Institute of Energy Studies, March 2018.

many IOCs were. However, in the context of this institution Russia will be able to play an active role in setting global energy supply and price through cooperation with Saudi Arabia and the other OPEC members. The dispute during the economic turmoil in the initial weeks of the Coronavirus pandemic was a sign that internal disputes will always be a messy affair, but the final analysis suggests that Russia will ultimately favor cooperation over noncompliance as long as expanding the strength of its NOCs remains a national priority.

Energy foreign policy is one of the few ways in which the marriage between energy firm and state can buttress the strength of a NOC. The interests of the firm become that of the state as well. As the state becomes more concerned with protecting and aggrandizing its strategic industry, it will utilize its other power resources to bolster these efforts. In the case of Russia's NOCs, Moscow has shrewdly conducted energy foreign policy, expanding its NOCs control over the energy infrastructure and neighboring regional markets utilizing energy foreign policy. While increasing competition from the US in the last few years is threatening to jeopardize these efforts, the jury is still out on how much the American companies will cut into European markets, especially, if hostile legislation on fossil fuels continues to gain popularity. In the area of global oil, Russia is seeking greater influence over global supply and price controls through the context of OPEC+. These two developments have positioned Russia's NOCs to play monopolistic roles in a number of regional gas markets as well as to oil policies that will have greater global reach than ever before.

Conclusion

The energy firms of the Russian Federation have achieved a level of strength that is unmatched in their previous history, even when compared to the height of the Soviet period. This

was achieved through renationalization in congruence with the new resource nationalism that transitions NOCs towards a partially privatized model, internationalization of NOC operations, and the strategic utilization of energy as a means of aggrandizing the influence of their NOCs. In the 21st century, state-owned enterprises and their national controllers have learned to co-opt the free market economies to their own advantage instead of pursuing autarkic self-sufficiency. Russian NOCs have done a good job of this, though they do not lead the pack. In terms of internationalization, they have been strikingly impressive expanding throughout the energy-rich Middle East, capitalizing on the opening of the Iraqi energy sector more so than any other nation, and investing in places where Western companies avoid for political and economic reasons. With respect to utilizing energy as a foreign policy tool, Russia has been able to vastly expand the influence of its NOCs over regional and global energy markets. It has been more successful in this area than any other nation in the last twenty years. These three factors have produced stronger, more competitive, and strikingly more influential Russian NOCs than have existed in the past.

CHAPTER VIII

THE GROWING POWER OF CHINESE NOCS

In the 1980s Deng Xiaoping began a series of economic reforms in China intending to open its markets to the larger global economy. Growth was slow but steady through the 1990s and early 2000s but began skyrocketing year over year around 2005. In terms of GDP growth, the Chinese economy grew from USD 2.3 trillion in 2005 to USD 11.2 trillion in 2015.[509] Since it began integrating into the global market, becoming the largest center of manufacturing in the world, the national market has grown fifteen-fold and is now the second largest economy in the world.[510] As a further compounding factor, it is a nation of 1.4 billion people that is rapidly transitioning economically from one whose population was predominantly rural to one that is becoming increasingly urban. Since the initiation of economic reforms, the share of China's population living cities has grown from around 18% in 1978 to a little over 60% in 2020.[511] This amounts to 700 million people transitioning from rural to urban life. For perspective, that's twice the size of the entire US population.

What the Chinese have been able to achieve in such a short time is extraordinarily impressive. However, these transformations can be a double-edged sword. Robust economic development on this scale combined with rapid urbanization of such magnitude requires substantial material and more importantly energy inputs to initiate and expand the transition. This has led to skyrocketing energy demand in China, as it has become the second largest oil

[509] IMF, "World Economic Outlook," April 2019.
[510] Yergin, *The Quest*, 191.
[511] Yiping Xiao, Yan Song and Xiaodong Wu, "How Far has China's Urbanization Gone?," *Sustainability* 10 (August 2018).

consumer behind the US and the largest overall energy consumer in the world.[512] Unfortunately for China its energy reserves are nowhere near sufficient to supply their growing domestic consumption. In terms of oil reserves, China has only 25.9 billion barrels or about 1.5% of total proved reserves globally.[513] With respect to conventional natural gas, they are in a better position with a little under 300 Tcf or about 3% of the total global reserves.[514] Considering their upside for production is severely limited due to their lacking domestic reserves, it comes as no surprise that their national production figures fall drastically short of covering their consumption. To date, China has only been able to supply about 35% of its oil consumption and about 57% of its natural gas consumption from domestic sources. As a result, China has become the most import dependent nation in the world by far.

The severe import dependence that China is faced with has produced a powerful sense of insecurity within the regime and has provided the impetus for raising up a set of NOCs that can provide the sorely needed resources from abroad. The natural gas shortfall is more easily solved than that of oil. To meet their energy needs the Chinese have turned to coal, producing 1.8 billion metric tons accounting for nearly half of global production.[515] While this has some serious ramifications environmentally in terms of air and water quality as well as contributing to global carbon emissions, the country has nevertheless solved electrical component of its energy dilemma. Therefore, Chinese NOCs have not expanded their operations in the areas of natural gas in the way that has been observed in the cases of Saudi Arabia and Russia. The overall makeup of China's energy inputs are a somewhat separate problem and are not examined here. Concerning oil, which cannot be substituted for like electricity inputs, imports have been

[512] US EIA, "Country Analysis Executive Summary: China," last modified September 30, 2020.
[513] BP, "BP Statistical Review of World Energy 2019, News and Insights, Reports, June 2019.
[514] Ibid.
[515] US EIA, "Country Analysis Executive Summary: China."

growing at a staggering pace. Between 2000 and 2014 imports grew from 29% to 60% of annual consumption.[516] In 2019, China imported 10.1 Mb/d accounting for 75% of its consumption that year.[517]

The extreme nature of Beijing's oil insecurity has led to a global strategy that utilizes NOCs to secure oil reserves abroad and they have thus far been very successful. The internationalization of their NOCs has seen numerous projects in nearly every major region of the world including Central Asia, the Middle East, Africa, Latin America, and even North America. Additionally, China's NOCs operate with a surprising level of efficiency, despite being fully nationalized, that are on par with the most competitive companies in the world. This is primarily a result of the allowances China's government policies grants to these companies to operate in ways that mirror the practices of fully privatized firms as well as their international merger and acquisitions strategies that secure groundbreaking technologies and methods. Lastly, China intentionally uses these companies as strategic assets. This often involves targeting some of the most promising contracts across the world by outbidding their privatized competitor, at times even overpaying for contracts that are deemed strategically valuable. In this way, Chinese NOCs have ascended to rival the most dominant oil companies in the world as both CNPC and Sinopec are listed among the top ten oil producers globally.

The "Going-Out Strategy" and China's NOCs

Unlike any other country, China's NOCs have embarked on a rapid and extensive international expansion that has seen successes to such an extent that these companies,

[516] IEA, "World Energy Outlook 2013."
[517] US EIA, "China's Crude Oil Imports Surpassed 10 Million Barrels per Day in 2019," Today in Energy, March 23, 2020.

comparatively irrelevant just two decades ago, now compete and outperform many of the world's largest and most prominent oil and gas companies. The move to expand the operations of their NOCs abroad was a center piece of the "going-out strategy" adopted in 2003 and a large part of a greater foreign policy objective that seeks to expand and magnify China's political and economic influence internationally.[518] This topic is discussed in further detail later in this chapter. However, it is important to note that the rapid internationalization of China's NOCs is driven by this strategic objective before discussion the extent to which they have internationalized and how much these companies have strengthened as a result.

It should also be pointed out that the going-out strategy China adopted at the turn of the century is fundamentally related to the oil shortages produced by economic growth.[519] This is because a disruption in the supply of oil or a stark rise in prices, both of which China has little control over, could precipitate a collapse of the national economy as well as endanger the power of the regime. Oil markets are infamously tight, meaning supply and demand rarely deviate too far from one another, primarily because of the oversight of the OPEC oil cartel that closely manages supply so as to express its power over market price. This can affect countries in different ways as discussed earlier. Mostly it depends on whether a nation is a net importer or exporter and the extent to which the government and/or economy is dependent on those imports/exports. In the case of China, the extreme import dependence of the national economy makes for a severe insecurity. Thus, Beijing resolved itself to expand its NOCs abroad as a counter to this new reality.

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[518] Hongying Wang, "A Deeper Look at China's 'Going Out' Policy," Center International Governance Innovation, March 2016.

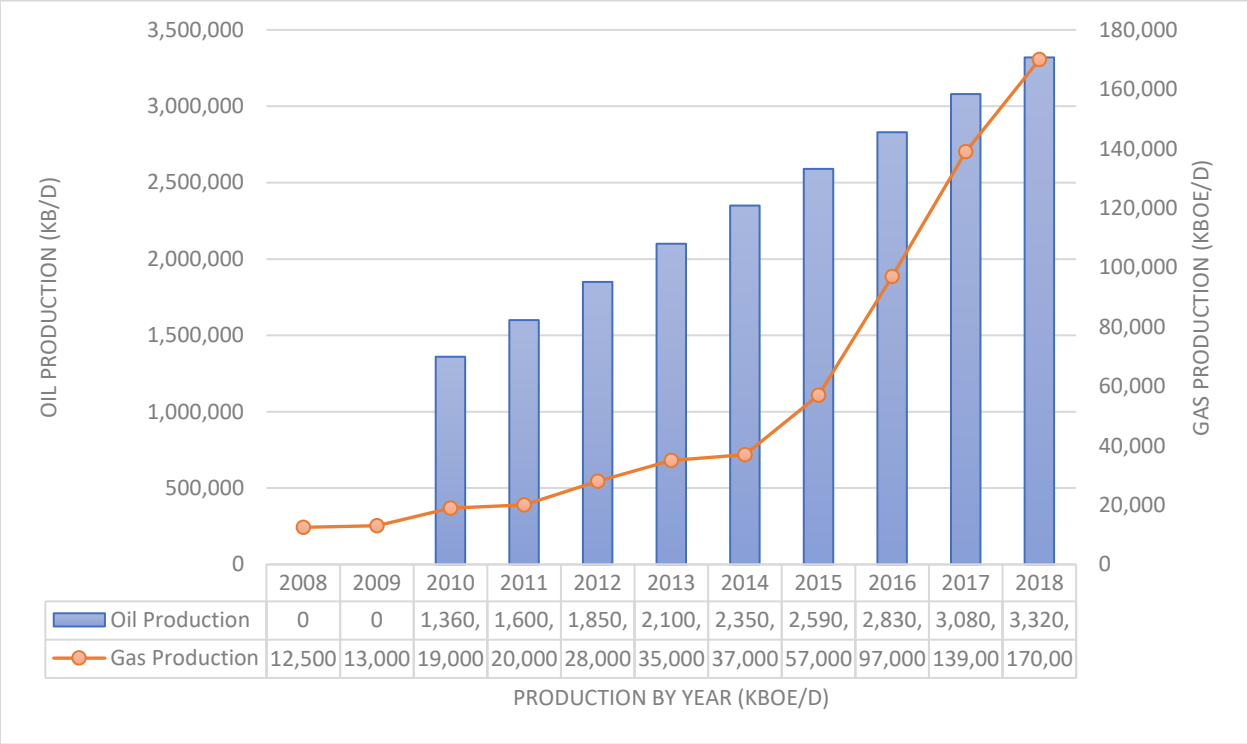
[519] Zhong Xiang Zhand, "The Overseas Acquisitions and Equity Oil Shares of Chinese National Oil Companies: A Threat to the West but a Boost to China's Energy Security?," *Energy Policy* 48, (September 2012): 698-701

Less than a decade after the initiation of the so-called going-out strategy, China had already scored a number of wins. By 2011 Chinese NOCs, including Sinopec, CNPC and CNOOC, had operations in over 30 countries while possessing equity stakes in oil production in at least 20 of them.[520] According to an EIA analysis, Chinese overseas production, which was nonexistent in 2009, reached 2.1 Mb/d in 2013,[521] (see figure 13) which is roughly equivalent to the production of such major oil companies as ExxonMobil (US), Petrobras (Brazil), ADNOC (UAE), Chevron (US), and Pemex (Mexico).[522] In addition to equity stakes in overseas production, Chinese NOCs have also pursued a loan-for-oil strategy to lock in oil supplies in cases where they are not allowed to buy equity shares. Since 2009, Beijing has concluded at least 12 of these loan-for-oil deals that rest on promises to sell an agreed amount of oil directly to China instead of selling it on international energy markets or to other countries. The Chinese government has politically and financially backed these deals between its NOCs and a variety of countries in the former Soviet Union, Africa and Latin America, and they accounted for more than $90 billion in 2010.[523] It should be noted that Chinese NOCs often overpay for oil equity positions by around 10% or in extreme cases 20-30% compared to IOCs,[524] while often suffering losses.[525] Nevertheless, these firms have been able to absorb up-front losses with

[520] J. Jiang and J. Sinton, "Overseas Investments by Chinese National Oil Companies: Assessing the Drivers and Impacts," Standing Group for Global Energy Dialogue of the International Energy Agency, February 2011.
[521] Energy Information Administration, "China Analysis Brief."
[522] Umair Ali, "Top Ten Companies by Oil Production," Offshore Technology, last modified January 31, 2020.
[523] Jiang and Sinton, ''Overseas Investments by Chinese National Oil Companies,'' p. 22-23.
[524] Ibid.
[525] "China: State Firms Face Scrutiny for Overseas Losses," Oxford Analytica, October 20, 2011. Another issue is related to wide concerns about huge losses incurred when investing abroad. A study by China University of Petroleum suggests that China's "big three" oil corporations (CNPC, Sinopec, CNOOC) had invested in some 144 overseas projects totaling US$70 billion by the end of 2010, but two-thirds of such overseas investments suffered losses.

support from Beijing in order to meet China's burgeoning energy consumption through the internationalization of their companies.

Figure 13. Chinese NOCs' Overseas Oil and Gas Production



Source: IEA, "Update on Overseas Investments by China's National Oil Companies: Achievements and Challenges since 2011."

Mergers and acquisitions (M&A) have also bolstered China's NOCs globally. According to the IEA, Chinese NOCs invested an estimated USD $73 billion in global upstream M&A deals between 2011 and 2013.[526] Moreover, they have been successful in acquiring some unconventional upstream production in North America and Canada. Between 2015 and 2018 Chinese NOCs production grew from around 180 Kb/d to 375 Kb/d in North America.[527] In

[526] Julie Jiang and Chen Ding, "Update on Overseas Investments by China's National Oil Companies: Achievements and Challenges since 2011," International Energy Agency, 2014.
[527] Ibid.

particular, the Nexen deal for USD $15.6 billion represents a substantial penetration of Canada's energy industry,[528] and is China's largest overseas acquisition to date.[529] It is worth pointing out that breaking into foreign markets in the Global South is one thing but entry into the North American market represents a more substantial play for power and influence. Moreover, it requires operating at the highest levels of efficiency and facing down serious market competitors whereas in developing countries where the energy industry is relatively dilapidated do not require the highest level of competitiveness for survival. Thus, it is reasonable to interpret success in North America as a significant sign that China's NOCs have indeed risen to new levels of prominence.

One of the most critical regions of investment for Chinese NOCs in recent years has been the Middle East. They have been successful at integrating themselves in terms of upstream, mid- and downstream production through various partnerships and agreements with IOCs and other NOCs. CNPC holds the most equity production and investment in the region of all the NOCs, although Sinopec and CNOOC as well as a handful of smaller companies also participate. Similar to the Russia case, Iraq has become the primary country of interest as it holds the world's last known large scale cheap-to-develop oil fields in the world. In the first oil field auction in 2009, China's NOCs won a number of the country's most important oil contracts. CNPC in partnership with BP won the contract to Iraq's biggest oil field in Basra to expand production from 985 Kb/d to 2.85 mb/d within seven years at a cost of USD $15 billion.[530] For perspective, this would make the Basra oil field the world's second largest oil field behind Saudi Arabia's

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[528] Dean Cheng and Derek Scissors, "China Buys Canadian Energy: Lessons for the US," The Heritage Foundation, July 26, 2012.
[529] Since the takeover Nexen announced that it "will continue to be responsible for managing all of Nexen's existing assets as well as CNOOC Limited's North and Central American assets." Nexen Inc., "Press Release: Nexen Announces Completion of Acquisition by CNOOC Limited," February 2013.
[530] "Iraq Considers Lessons from First Bid Round," *Petroluem Intelligence Weekly*, July 13, 2009.

Ghawar. Sinopec alongside ENI, Oxy, and Kogas won out on the bid for the Zubair oil field with a proposal of USD $10 billion to raise production from 195 Kb/d to 1.1 mb/d, another massive production site along with the previous Basra deal.[531] A consortium of CNPC, France's Total, and Malaysia's Petronas won the bid for Iraq's Halfaya oil field to increase production from 3.1 Kb/d to 535 Kb/d. [532] In May 2010, CNOOC and Turkey's TPAO were awarded the contract to the Maysan complex of oil fields along the Iran-Iraq border region, which proposed an expansion of 350 Kb/d of production.[533] Iraq has become such a focal point that in 2013 it accounted for about 26% of all Chinese overseas oil production.[534]

Upon completion, the Chinese NOCs' Iraq projects have the potential to increase access to as much as 1.9 mb/d, which would turn Iraq into China's largest supplier of crude oil. As of 2020, this figure was around 1.05 Mb/d behind Saudi Arabia's 1.24 Mb/d and Russia's 1.37 Mb/d after falling about 20% from the previous year due to the OPEC+ supply reduction agreement.[535] Seemingly foreshadowing China's preeminent role in Iraq's energy industry, PetroChina announced a USD $50 billion investment project at the West Qurna field, a deal that would elevate the company to the single biggest foreign investor in Iraqi oil.[536] The company has also been holding talks with Ko Lukoil OAO Holdings, Russia's second-biggest oil producer, over joint development of the currently stalled West Qurna-2 project after Norwegian oil company Statoil ASA sold its 18.75% stake in 2012.[537] Ko Lukoil head Vagi Alekperov told

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[531] "Eni Secures Zubair as Iraq Re-Offers Previous Round's Fields on Bilateral Basis," *IHS Markit,* October 14, 2009.
[532] Catherine Hunter, "Halfaya Contract Signed Off in Iraq as Ministry Works to End-January Deadline, Global Insight, January 28, 2010.
[533] Samuel Ciszuk, "CNOOC, TPAO Sign Development Contract for Iraq's Maysan Oilfields," Global Insight, May 18, 2010.
[534] Jiang and Ding, "Update on Overseas," pp. 13-15.
[535] "Iraq Ranks the Third as a Supplier of Crude Oil to China," *Shafaq,* September 25, 2020.
[536] "PetroChina to Develop West Qurna Oilfield in Iraq," Oil Review Middle East, August 12, 2013.
[537] Du Juan, "PetroChina Poised to Dominate Iraqi Oil," *China Daily,* August 13, 2013.

Reuters in January 2013 that an "attractive partner for us would be China, where there is stable demand growth." Due to the massive and virtually untapped potential, West Qurna was vital to Iraq's goal of increasing production from about 3 Mb/d to 12 Mb/d by 2017. Of course, many of these projects were delayed first because of the rise of ISIS during this period, especially those in the west of the country where the Islamist group was most active, and second because of shifts in OPEC+ policies to moderate production in the face of shifting political-economic environments and Covid lockdowns. Nevertheless, Iraq has still managed to rise to become the world's seventh largest producer and the long march to rival Saudi Arabia and Russia continues. Additionally, Chinese NOCs will undoubtedly continue to play the central role in this process.

Chinese NOCs, through the process of internationalization, have largely outmaneuvered IOCs, which will likely bolster these companies' profitability going forward. This is true across many vital regions of the world were there exists sizable untapped and newly discovered resources. It was most apparent in the example of Iraq, where one would expect IOCs to benefit from the work of the US and its allies in liberating the country. Yet NOCs, mostly those of Russia and China, capitalized more so than any of their competitors. In addition to higher profitability, the most significant benefit is gaining greater control over reserves and production, which will expand the influence of these Chinese companies in global markets.

China's Mixed Model of Governance

The scope of China's foreign exploits via their internationalizing NOCs as well as their meteoric rise in the Middle East energy industry has brought serious notoriety. But less attention has been given to these companies for their surprising efficiency, both technical and operational, and competitiveness vis-à-vis IOCs. In chapter 4 dealing with efficiency as an indicator of

strength, the studies measuring efficiency have scored the Chinese NOCs among the most efficient companies in the industry. Exempting CNPC, which scores moderately, both CNOOC and Sinopec rank among the best performing firms in the industry. Particularly, Sinopec is one of the four most efficient companies in the world alongside ExxonMobil, BP, and Statoil. These developments are the result of Beijing's shifting policy prescriptions with regard to their energy companies. The broader Chinese economic reforms that have opened up the economy and afforded companies far more autonomy to operate free of government intervention than ever before have certainly played a dramatic role. [538] This has allowed for a partial privatization model that still maintains full government control but limits intervention with the exception of strategic acquisitions.[539]

Efficiency scores and gains have varied across the energy industry more broadly. Partially privatized NOCs such as Sinopec, PTT, and Statoil have achieved the same efficiency score as the most efficient IOCs. On the other hand, Russia's Rosneft and Lukoil have benefitted to a lesser extent, for reasons discussed in the Russia case study. Thus, the extent to which an NOC will improve relies primarily on the relationship between the government and the company. In the case of China, there is mounting evidence that the government has increasingly afforded its NOCs a great deal of autonomy.[540] One study, comparing the NOCs of India and China, found that Chinese NOCs are particularly competitive because the government rarely steps in as a veto player but rather opts to assume the role of resource (capital) supplier.[541] Interestingly, the

[538] IEA, "Chinese National Oil Companies' Investments: Going Global for Energy," November 2013.
[539] Conglin Xu, "Chinese NOCs' Expansion," Oil & Gas Journal, April 22, 2013; and Xin Ma and Philip Andrews-Speed, "The Overseas Activities of China's National Oil Companies: Rationale and Outlook," *Minerals and Energy – Raw Materials Report* 21 (August 2006): 17-30.
[540] Bo Kong, *China's International Petroleum Policy* (ABC-CLIO, 2009), Ch 4.
[541] Jonas Mekling, Bo Kong, and Tanvi Madan, "Oil and State Capitalism: Government-Firm Coopetition in China and India," *Review of International Political Economy* 22 (October 2015): 1159-1187.

authors coin a phrase "coopetition," referring the co-existence of both cooperation and competition that arises between increasingly entrepreneurial companies and partially supportive national governments. The tension between private and public decision-making is important to highlight because in a world where ownership is increasingly mixed between the two, this friction becomes a deciding factor. That is, political considerations still stifle commercial activities regardless of whether an NOC is public or partially private.

The unique mix of government intervention and private enterprise is worth teasing out in the case of China because it is central to the profound success of the country's NOCs thus far. These companies have increasingly been characterized "as complex political economic agents that carry dualistic features of furthering political mandates and simultaneously showing autonomy from the government to gravitate toward corporate objectives."[542] A study investigating both sides of the literature, that is studies focusing on the attainment of strategic assets and studies focusing on natural resource acquisition, offers a mixed hypothesis to explain how China's NOCs have overcome the latecomer's comparative disadvantage.[543] Coining the "sectoral strength" hypothesis, the authors argue that Beijing's approach utilizes both strategies based on circumstance. When it comes to upstream production, NOCs and subsidiary firms will employ the natural resource acquisition strategy, while those that engaged in downstream production will pursue the attainment of strategic assets. Their findings are significant because they highlight the mixed approach that has been largely pioneered by China. This unique approach utilizes clearly identified national strategic goals as a broad directive to the companies,

[542] Wenyuan Wu, *Chinese Oil Investments in Latin America: Corporate Social Responsibility* (Springer, 2018), 182.
[543] Hongyi Lai, Sarah O'Hara, and Karolina Wysoczanska, "Rationale of Internationalization of China's National Oil Companies: Seeking Natural Resources, Strategic Assets or Sectoral Specialization?," *Asia Pacific Business Review* 21 (August 2014): 77-95.

representing a form of government intervention, but allows the firms to go about achieving these goals in a manner that corresponds with free enterprises. Moreover, the government provides up-front funding for many of these acquisitions that would otherwise be considered unwise economic decisions from a business standpoint. Therefore, Chinese NOCs are able to secure profitable deals in the long-run even if they have to overpay in the short-run, while the national government covers the up-front losses.

As a general rule, limiting government intervention will seriously improve operational efficiency but is only a part of the overall picture. Acquiring the technical expertise and intellectual know-how plays an equally significant role when it comes to industry competition and market dominance. Developing technical capabilities and groundbreaking innovations is usually the result of investment in R&D but it can also occur as the result of technological transfers via partnerships as well as mergers and acquisitions. China has pursued both strategies with full force. Regarding traditional R&D, China's NOCs have completely restructured their technology innovation systems from the ground up. One study focusing on the analysis of these systems indicated that there was a strong emphasis on establishing a stable stream of investment in R&D, technical talent, and the commercialization of new indigenous technologies.[544] Particularly, the development of entire industries around the NOCs themselves, such as innovation labs and pilot projects in both upstream and downstream, have played a pivotal role. With respect to technological transfer via M&A, China's NOCs have aggressively sought technical expertise and intellectual know-how by targeting well-developed firms across the world.[545] The aforementioned case of the Canadian Nexen acquisition was the most noteworthy

[544] Yang Hong, L. V. Jianzhong, and Zhang Jianjun, "The Construction of Indigenous Technology Innovation Contributes to NOCs' Transition," 21st World Petroleum Congress, Moscow, Russia, June 2014, 15-19.
[545] Hartley and Medlock III, "Changes in Operational Efficiency."

because it was one of the most efficiently operated companies in the world prior to the deal. In addition, due to the predominance of tar sands and oil shale reserves in Canada, the company was among the pioneers of IOCs that specialize in unconventional technologies. Considering that unconventional energy technology was the primary means by which IOCs have seen a resurgence in the last decade, gaining access to this expertise is a monumental achievement.

While the outward push to partner with, and in some cases acquire control of, IOCs abroad have accelerated the transfer of important cutting-edge technologies, the opposite is also true. The increased activity of IOCs in China itself has also allowed for similar partnerships that facilitate the transfer of methods and technologies, albeit to a lesser extent. China's energy needs have not only driven interest in developing access to resources abroad but also at home. While Chinese energy companies have the technical capacity to exploit coal to a high degree, which explains why they have solved their electricity needs primarily utilizing this resource, they lack the capacity to exploit unconventional sources of oil and gas. The ability to exploit these resources will be key for ensuring stable and more environmentally sustainable energy for the national economy going forward. Since there is an estimated 1695 Tcf of unconventional natural gas in China,[546] there is tremendous upside to developing their capacity in this area of the energy industry. China has sought to acquire this expertise by going abroad, as discussed above, but also by allowing those with the expertise to come to China. According to the IEA, IOCs such as Shell, ConocoPhillips, Eni and Total have signed agreements with NOCs in China to conduct seismic surveys, exploration, and joint research to develop shale oil and gas blocks.[547]

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[546] Zhengmeng Hou, et. al., "Unconventional Gas Resources in China," *Environmental Earth Sciences* 73 (2015): 5785-5789; and Min Zheng, et. al., "China's Conventional and Unconventional Natural Gas Resources: Potential and Exploration Targets," *Journal of Natural Gas Geoscience* 3 (December 2018): 295-309.

[547] Julie Jiang and Chen Ding, "Update on Overseas Investments by China's National Oil Companies: Achievements and Challenges since 2011," International Energy Agency, 2014.

To be sure, China's NOCs have greatly benefitted from the government's unique model of partial privatization. It is interesting to observe that among their three most prominent NOCs, Sinopec, CNOOC, and CNPC, each company's performance has a strong negative correlation to the level of government intervention that exists. The studies examining NOC efficiency have clearly highlighted that Sinopec, which enjoys the most commercial freedom and the highest efficiency score, has a different relationship with the government than that of CNOOC or CNPC. In fact, they seem to operate under a tiered system where Sinopec operates almost fully free of intervention, CNOOC partially free but favoring commercial priorities, and CNPC partially free but favoring intervention. This is best explained by China's dual-purposed objectives that try to maximize global competitiveness on one hand and make strategic acquisitions on the other. However, it should be pointed out that strategic acquisitions, while stifling operational efficiency on the front-end, have the added benefit of assisting in technological transfers and buttressing intellectual know-how on the back end.

The Strategic Necessity of China's NOCs

There is little doubt that China's NOCs are strategically valuable to the regime. For example, the pursuit of strategic acquisitions has contributed to the growing control of reserves and production abroad as well as technological transfers. But these are fundamentally a smaller part of the larger trends of internationalization and partial privatization. Strategic value as a component of NOC strength, similar to the case studies of Saudi Arabia and Russia, highlights the importance of these firms to the state itself in terms of political and economic interests, which drives the state to protect, fund, rely on for rents, empower, and/or utilize as foreign policy and geopolitical tools. While this component of strength has typically taken the form of "energy

foreign policy," as described in the Saudi and Russian cases, the Chinese case differs in a very important way. The previous two countries have relatively small national economies and overall GDP with less domestic energy consumption. In other words, they are net energy producers critical to the global energy ecosystem. Conversely, China is a net energy consumer with a massive domestic economy that craves stable, uninterrupted supplies of cheap energy. This creates a very different set of dynamics between the state and the NOC.

The combination of net consumer status and extreme import dependence drives Beijing to view its NOCs through a strategic lens that differs substantially from the previous two case studies and more generally most NOCs across the world. Usually, NOCs are significant sources of rents that tend to fund substantial portions of a country's annual budget. This forces the state to adopt a parasitic relationship with the energy firms under their authority. However, China has an expansive economy with well-developed industries outside of energy. In fact, instead of extracting rents from its NOCs, China injects funding to bolster their activity abroad. Another strategic use of NOCs involves utilizing the companies and their associated infrastructure, usually pipelines, as a means of controlling the supply, price, and flow of energy resources. This has been referred to as energy foreign policy but generally entails leveraging these industries to maximize political power in a bilateral context, in particular regions, or over global markets. Here China also does the opposite of the norm. Instead of using outward flows of energy to enhance its political influence over other nations or the global market, it uses political and economic influence to redirect bilateral, regional, and global energy flows back home.

It is this second aspect of China's NOCs strategic value that is of significance here as it is the nexus of Beijing's strategic thinking concerning these companies. It begs questions such as (1) to what extent are these NOCs engaged in genuine mercantilist style economics, neoliberal

global economics, or both; (2) what circumstances would push the regime to favor one system over the other; and (3) how do the current global flows of energy structure the strategic thinking of China and what do they gain from trying to alter the status quo? In order to highlight the strategic value of China's NOCs, these relationships must be broken down and analyzed in detail because they are at the heart of a number of intersecting interests that ultimately constrain the regime's behavior. Thus, it follows that if they are successful at disentangling themselves from dependence and vulnerability, there is much to be gained strategically.

First, consider the dual problems of the present state of import dependence and flows of energy to China. In 2019, oil imports grew to about 70% of total consumption amounting to about 10.1 Mb/d on average.[548] Of the imported oil, 62% comes from the Middle East and Africa,[549] all of which is transported through the Strait of Malacca, a strategic chokepoint located between Indonesia, Malaysia, and Singapore. From there it travels through the South China Sea and the Taiwan Strait, another strategic chokepoint, where it ultimately is delivered at Shanghai and the province of Shangdong. Therefore, Beijing's energy security faces a multi-tiered threat. Imported oil must face the threat of the Indian Navy, a major rival of China, as it passes through the Indian Ocean. Additionally, the straits of Malacca and Taiwan present an even greater threat as both Singapore and Taiwan are US allies who regularly participate in joint naval exercises. Even the South China Sea, which China has been readily militarizing with the aim of increasing energy security, faces freedom of operation missions by the US Navy. China as far back as 2003 recognized this vulnerability when then President Hu Jintao coined the phrase "The Malacca

[548] US EIA, "China's Crude Oil Imports Surpassed 10 Million Barrels per Day in 2019," Today in Energy March 23, 2020.
[549] US EIA, "Country Analysis Executive Summary: China."

Dilemma."[550] In fact, much of China's initiatives, including the "Going-Out Strategy," "New Silk Road," "String of Pearls," and the past two decades of development concerning their NOCs have been driven by this sense of energy insecurity.[551]

These policies, especially over the last decade, seek to use their NOCs and the foreign deals they execute to not only increase the reserves and production China has control over but more importantly to tactically shift the flow of energy to China away from the strategically vulnerable Southeast Asian sea lanes to pipelines through Central Asia, Russia, Pakistan, and Myanmar. Beijing has struck deals with each of these countries to create new energy corridors that serve two important strategic goals.[552] First, they reduce their near complete reliance on the aforementioned sea lanes. In particular, the Gwadar-Kashgar pipeline in Pakistan will be able to deliver energy from the Persian Gulf while completely circumventing the Indian Ocean and the strategic chokepoints in Southeast Asia. The Myanmar-China Pipeline still requires traversing the Indian Ocean. The various pipelines though Central Asia and Russia will further diversify their energy inflows. These are all important because in times of conflict a naval blockade of these sea lanes would devastate the Chinese economy in mere months. The other strategic benefit is the ability to shift more energy imports from tankers to pipelines. This is beneficial because it makes the flow of energy less elastic, which means the transport of these resources cannot be

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[550] Old Writer, "The Malacca Dilemma: A Hindrance to Chinese Ambitions in the 21st Century," *Berkley Political Review*, (August 26, 2019).

[551] Changping Zhao, et. al. "The Evolution of the Port Network along the Maritime Silk Road: From a Sustainable Development Perspective," *Marine Policy* 126 (April 2021); Yong Zhao, Xunpeng Shi, and Feng Song, "Has Chinese Outward Foreign Direct Investment in Energy Enhanced China's Energy Security?," *Energy Policy* 146 (November 2020); Eugene Gholz, Umul Awan, and Ehud Ronn, "Financial and Energy Security Analysis of China's Loan-for-Oil Deals," *Energy Research & Social Science* 24 (February 17, 2017): 42-50; and Lei Wu, "The Oil Politics & Geopolitical Risks with China "Going out" Strategy toward the Greater Middle East," *Journal of Middle Eastern and Islamic Studies* 6 (2012): 58-84.

[552] Fei-fei Guo, Cheng-feng Huang, and Xiao-ling Wu, "Strategic Analysis on the Construction of New Energy Corridor China–Pakistan–Iran–Turkey," *Energy Reports* 5 (2019): 828-841.

shifted easily even under extreme conditions. Events that may spark supply disruptions or price spikes in the global market are less impactful on the regional markets that remain inelastic due to the rigid nature of pipeline systems.

Second, the extent to which China is utilizing its NOCs to establish a neo-mercantilist energy system to exist outside of, or in opposition to, the current neoliberal global energy market is mixed. On one hand, it has been well documented that China, through its NOCs, is dominating energy resources at home and abroad as well as appropriating assets worldwide in accordance with long-term state objectives.[553] On the other hand, China has so far forcibly shipped relatively little energy resources back home, instead opting to sell the majority on the open markets.[554] This is because of the economic realities associated with profitability. Therefore, in order to understand exactly how to define Beijing's strategy it is important to consider the circumstances under which they comply with or challenge the current global economic status quo.

From a regional perspective, China seems to lean towards participating in the global markets in some areas while in others their behavior looks more like a neo-mercantilist model. For example, in the Middle East and Central Asia, where China is constructing a new energy corridor, much of the infrastructure being built will funnel resources to China's western provinces via pipelines. Specifically, these pipelines do not divert resources towards any other major consumer markets in Asia, such as India, South Korea, or Japan. Moreover, pipelines lock resource supply and price into particular regional ecosystems that often function, to varying extents, outside of the larger global market. However, their interests in Africa and Latin America

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[553] Elizabeth C. Economy and Michael Levi, *By All Means Necessary: How China's Resource Quest is Changing the World* (New York: Oxford University Press, 2014).
[554] Mikkal Herberg, "China's Global Quest for Resources and Implications for the United States," Testimony before the US–China Economic and Security Review Commission, Washington DC, January 26, 2012.

are the opposite. These resources are sold on the global market and shipped via tankers through maritime trade routes that are flexible in where they can export and whose supply and price are subject to the global system. Therefore, Beijing's mixed approach to energy imports can best be described as a strategy to reduce their dependence on the global market system rather than to fully upend it.[555]

However, the threat of China's energy foreign policy to the prevailing economic order has become very real in the case of oil transactions. Between 2012 and 2013 Beijing began using its own currency, the Yuan, instead of the dollar, to buy oil from Iran and Russia.[556] This is a potential mechanism by which China could circumvent the global markets to obtain energy, especially with respect to sanctioned energy exporting nations. In the case of Iran, China has been able to purchase oil from Iran, outside of the global economic system and international sanctions, which fundamentally undermines the established US-led order. Before the reapplication of sanctions in 2016, Iran quickly grew to become the third largest supplier of crude oil to China.[557] While Beijing cooperated to some extent with the economic sanctions between 2016 and 2020, it continued to purchase crude oil from Iran, albeit to a lesser degree.[558] Moreover, China has rapidly increased the purchasing of Iranian crude oil after the 2020 election, despite ongoing negotiations between the Biden administration and Tehran.[559] Insofar

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[555] Michel Gueldry & Wei Liang, "China's Global Energy Diplomacy: Behavior Normalization Through Economic Interdependence or Resource Neo-mercantilism and Power Politics," *Journal of Chinese Political Science* 21 (May 2016): 217-240.
[556] "China Buying Oil from Iran with Yuan," *BBC News*, May 8, 2012.
[557] Erica Downs and Suzanne Maloney, "Getting China to Sanction Iran," *Foreign Affairs* 90, no. 2 (2011): 15-21.
[558] Anjli Raval, David Sheppard, and Najmeh Bozorgmehr, "China Defies US Sanctions by Tapping Iran Oil Supplies," *Financial Times*, June 26, 2019; and Tim Daiss, "Why China Will Continue to Buy Iranian Crude," OilPrice, August 14, 2018.
[559] Bloomberg News, "China Buying Record Volumes of Iran's Sanction-Discounted Crude," World Oil, March 11, 2021.

as practices, such as utilizing NOCs to purchase global energy assets and equity oil alone, are aimed at bypassing the prevailing system, the picture is murky. However, when combined together with the practice of increasingly purchasing energy in the Chinese Yuan, especially in defiance of international sanctions, a more confrontational strategy seems to come into focus. This is not meant to suggest that Beijing is pursuing a grand strategy that seeks a toppling of the international economic order. Rather, it appears to be using small-scale tactics that can chip away at the hegemony of the neoliberal order and market mechanisms while also reducing the regime's overall reliance on the system.

Third, reducing their reliance on the global energy markets via NOCs is key to alleviating their strategic vulnerability that constrains their capability to act on other foreign policy goals. Beijing's foreign energy policy could signal a future age of neo-mercantilism backed by countries deploying a state-led capitalist economic model intent on challenging the status quo. However, a more accurate analysis would underscore the particular strategic goals of pursuing this kind of policy. For one, it can begin to limit the economic vulnerabilities associated with being a net energy importer. Oil supply disruptions or price spikes in the international markets could quickly bring the Chinese economy to a halt. Very much like the US, net oil consumer economies are very reliant on the stability of the global market. History shows that the US has been forced to constantly involve itself in the regional politics of the Middle East because of this dependence. China, in reducing their reliance on this system, both mitigates the possible economic damage from a market crisis scenario while also reducing the necessity of involving itself too much in the unstable Middle East. The ability to circumscribe the market crisis scenario is particularly salient to explaining Beijing's mixed approach. In times of normalcy, it makes more economic sense to utilize the free-market approach but in times of crisis a separate

mercantilist-style system can operate as a failsafe. In these scenarios it makes more sense from the perspective of national security to have the option to either pursue profit maximization or to guarantee consumption needs based on the circumstances of the global system.

In addition to operating as a failsafe under market crisis scenarios, the mercantilist approach allows Beijing to expand state autonomy, enabling the regime to pursue controversial foreign policy goals that risk international conflict. If a nation is highly dependent on material or resource imports, without a significant naval presence to function as a guarantor, its economic vulnerability is extreme. Take for example the Germans in the world wars, particularly in the first world war. Nations that cannot maintain economic stability without a large quantity of foreign imports cannot pursue a foreign policy that risks international conflict. This is the fundamental analysis of neoliberal institutionalists with respect to the mitigation of international conflict via trade.[560] On the other hand, measures that China is taking to reduce its reliance on the system reflects the regime's intent to diminish the constraints of economic interdependence. Copeland's theory of trade expectations, which argues that states reduce interdependence when they expect future conflict,[561] suggests that Beijing may hold the view that many of their foreign policy goals carry a high risk of conflict. This greater autonomy allows China to both pursue highly contested energy-related and nonenergy-related claims abroad.

The rise of Chinese NOCs and Beijing's desire to control energy resources and assets abroad is a driver of numerous territorial disputes in Northeast and Southeast Asia. Some scholars, while acknowledging that conflict between states has become less likely overall in recent decades, argue that energy security has become an area where conflict is actually more

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[560] Bruce Russet and John R. Oneal, *Triangulating Peace: Democracy, Interdependence, and International Organizations* (W.W. Norton, 2001).
[561] Dale Copeland, "Economic Interdependence and War: A Theory of Trade Expectations," *International Security* 20 (Spring 1996): 5-41.

possible.[562] Beijing's pursuit of energy abroad has the potential to intensify conflict with nations such as Japan, S. Korea, Taiwan, Vietnam, the Philippines, Brunei, and Malaysia.[563] In the South China Sea, Beijing has already made claims to vast tracts in the area that contains most of the region's energy resources where many in China expect to make significant additional discoveries in the future.[564] Pressing these claims alongside the ongoing militarization of the artificial islands in the area has been a serious point of contention with rival claimants.[565] To date, the most serious clashes have been with Vietnam.[566]

The same is true of the East China Sea, where the Senkaku/Diaoyu island dispute has flared tensions on numerous occasions between China, Japan, and Taiwan. [567] Additionally, historical grievances and memories of past Japanese aggression add to potential conflict over disputed territories.[568] There is also the increasing rhetoric coming from Beijing referring to the unification of China and Taiwan,[569] suggesting that China is seriously considering the possibility of engaging in regional conflict to reacquire the island. Moreover, the US has a number of long-standing security treaties with many of the nations in the region and a potential conflict has the potential to escalate into a larger Sino-American war. This poses a critical risk to many of the sea lines of communication that China relies on to import much of its energy because of US naval

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[562] Daniel Moran and James A. Russell, *Energy Security and Global Politics: The Militarization of Resource Management* (New York: Routledge, 2009).
[563] Economy and Levi, *By All Means Necessary*; and Charles L. Glaser, "How Oil Influences U.S. National Security," *International Security* 38, no. 2 (2013): 112-46.
[564] Economy and Levi, *By All Means Necessary*, Ch. 8.
[565] Blaise Zandoli, "Oil in the Hourglass: The Energy-Conflict Nexus in the South China Sea," *Journal of Energy Security* (Spring 2014).
[566] Ernest Z. Bower and Gregory B. Poling, "China-Vietnam Tensions High over Drilling Rig in Disputed Waters," Center for Strategic and International Studies, Washington, DC, May 7, 2014.
[567] Hongyi Harry Lai, "China's Oil Diplomacy: Is It a Global Security Threat?" *Third World Quarterly* 28, no. 3(2007): 519-37.
[568] Ibid.
[569] Yew Lun Tian and Yimou Lee, "China's Xi Pledges 'Reunification' with Taiwan, Gets Stern Rebuke," *Reuters* (June 30, 2021).

power.[570] Therefore, because many of China's regional claims pose a serious risk of conflict and threaten to cripple the regime in the event of a naval blockade, they stand to gain a great deal of autonomy to pursue a more aggressive foreign policy by reducing their economic dependence on the global system.

Conclusion

In the last two decades China has massively grown its economy as well as experienced a rapid urbanization of its population. While their economic development has been impressive, they have also become the world's largest energy importer as a result. This extreme dependence on the international economic system has made Beijing vulnerable to the vagaries of the global energy markets as well as serving to shackle their foreign policy. In response, China has pursued an international policy utilizing NOCs to achieve a more dominant position in global energy. This result has seen its three primary NOCs added to the ranks of the world's most prominent energy companies in terms of control over supplies and production. Moreover, the unique Chinese model of governance that maintains state control but allows for considerable autonomy for companies has allowed their NOCs to quickly become some of the most profitable, competitive, and efficiently operated companies in the world. These factors have proven successful at strengthening their NOCs to the extent that two of the three are regularly ranked in the top ten oil and gas companies globally. Additionally, these companies provide immense strategic value to the regime which guarantees a steady flow of financing from the regime. These NOCs allow China to reduce their reliance on the global system and reduce their economic

[570] Sea lines of communication are the primary maritime routes between ports, used for trade, logistics and naval forces. See John J. Klein, "Maritime Strategy Should Heed U.S. and UK Classics," *US Naval Institute Proceedings* (2007), 67–69.

vulnerability overall. Not only have China's NOCs grown in strength considerably when compared to IOCs but have contributed to a massive shift in the balance of power between NOCs and IOCs more generally. NOCs in the Middle East, Latin America, and Russia have been around for some time and IOCs have maintained a relevant position while competing over the years. However, the rise of Chinese NOCs adds a number of highly competitive and influential firms that have greatly contributed to tipping the balance of power away from the western IOCs and towards NOCs.

CHAPTER IX

CONCLUSION

The purpose of this study was to complete three objectives. The primary objective was to measure the extent of NOC dominance in detail, to tease out the nuances of this apparent hegemony. The 20th century saw the rise to prominence of NOCs but the 21st century has, thus far, had a somewhat different story to tell. This study aimed to chronicle the important events of this story. If indeed these companies had risen to prominence, then in whose stead had they gained this power? This question underpinned the reasoning for the comparison with IOCs, who had ruled over the industry prior to the 1970s. Therefore, a diachronic comparative approach was deemed most appropriate for engaging with the primary objective. This approach was buttressed with five variables, referred to in this study as indicators of strength: (1) reserves, (2) production, (3) unconventional capability, (4) spare capacity, and (5) efficiency.

The secondary objective was to engage with and explain the findings of the first objective. These explanations were derived from the data of the diachronic comparative assessment. While the primary approach simply deployed a quantitative method of measuring the power of energy firms, the secondary approach used a qualitative method. Here the goal was to examine some of the divergences among NOCs and IOCs expressed in the data and formulate observations that hold explanatory power. Arising out of the data, four explanations for the strengthening of NOCs became apparent: (1) the resurgence of the state, (2) internationalization, (3) government policy, and (4) strategic value. The study then moved to three prominent case studies, that of Saudi Arabia, Russia, and China, which provided an in-depth look at these

nations' NOCs and how the previous explanations specifically applied to each of the case studies.

The third objective was to draw on some of the broader implications of the first two objectives with respect to the structure of the global political economy and to the centrality of the state in modern politics. To what extent is the global economic order neoliberal? Does the further strengthening of NOCs and the fundamental transformations of these firms in the 21st century represent a rising challenge to this international system? If so, then how? Has the state truly become anachronistic as many globalists claim? These questions formed the basis of this final objective. Admittedly, this goal got the least attention of the three objectives, as no chapter was itself dedicated to this pursuit. Rather attempts at alluding to some of these implications were made throughout the dissertation particularly with respect to the first and fourth sections of chapter 5. These chapters dealt with the resurgence of the state and the strategic value of NOCs as explanations for NOCs' strength. Each contained discussions of how these explanations translated regarding the three case studies. However, some additional effort at tying together some of these threads is necessary.

When it comes to measuring the strength of energy firms in the 21st century, this study has found that, on the whole, NOCs have risen to become the dominant and most influential actors in the global oil and gas industry. These firms have maintained a leading position in the areas of global reserves, production, and spare capacity. Additionally, some NOCs have scored important gains in the areas of unconventional capability and efficiency, while others have lingered behind. On the other hand, IOCs have reinforced their position by dominating in the areas of unconventional capability and efficiency, which has likely prevented their passing into obscurity over the last two decades. The unconventional energy boom in North America was

especially significant in this respect. However, the majority of projections indicate an upcoming ceiling to the growth of the unconventional revolution at around 2030, with the effects beginning to significantly taper off in the 2040s. It should also be noted that there is a much greater variance among NOCs' performance than among IOCs. For instance, all IOCs generally operate with high levels of efficiency and unconventional capability, but many NOCs underperform across various measures of strength while some have exceeded what experts though possible. This is especially true in the area of efficiency, where some NOCs have risen to the level of IOCs while others remain significantly behind.

Concerning explanations, the first major conclusion to draw is that state-centric governance has undergone both a transformation and a resurgence. This is fundamentally due to the rise of state capitalism and, as it is expressed in the energy industry, the new resource nationalism. These processes, instead of favoring either market dominance or state control, have opted for a blending of the two. State-centric approaches to economic globalization describe state authority as a voluntary process that expands and contracts whenever and wherever necessary in order to produce a more stable and powerful polity. The energy industry has become one of the chief examples in the modern global economy where states have expanded their control and influence. Secondly, economic globalization has reduced barriers to international economic activity and has led to the proliferation of internationalized NOCs. This turn of events is significant as it has allowed NOCs to encroach in areas where IOCs have traditionally dominated. Moreover, it has contributed to increases in technical capacity, which is related to unconventional capability, and operational efficiency primarily because of mergers and acquisitions. Thirdly, government policies that stifle NOCs with noncommercial burdens have lessened over time. Those NOCs that have made significant gains in strength over time,

particularly in the area of efficiency, are those that have either partially privatized or have state controllers that refrain from intervention more so than in the past. Lastly, the strategic value of NOCs gives states the impetus to exert control over these industries, driving the process of nationalizations globally. The ability for states to utilize their energy firms as instruments of political and economic power has manifested itself in the form of production cartels that can express control over global pricing and supply mechanisms such as with OPEC(+), asymmetrical interdependence between producers and consumers that can be exploited advantageously, and control over strategic flows of energy that can be shifted or regionally locked so as to increase or decrease interdependence in accordance with the interests of the regime. Additionally, these firms can be a necessary source of capital that can be temporarily deployed to fortify regime stability and augment the state's military capabilities.

Regarding the presumed challenge to the prevailing economic order and the centrality of the state in modern politics, these are two separate though somewhat interrelated issues. First, the idea of a prevailing neoliberal economic order is a tenuous claim and, by extension, that of a rising neomercantilist order that seeks to undermine or challenge it. From its inception at Bretton Woods there was already a powerful challenger in the Soviet-led centrally planned communist international, which persisted until 1991. While the collapse of the latter led many to proclaim the triumph of neoliberalism, the results have been mixed with respect to both democratization and trade liberalization. However, it is fair to say that the global economy has been liberalized to a greater extent than ever before. It is most certainly more so when compared to the European-led mercantilist order of the 19th century. Moreover, while the collapse of the Soviet-led system may not have been the triumph as it was proclaimed, many states have undoubtedly abandoned centrally planned economics and import substitution industrialization. Therefore, to the extent

that the global economic order is predominantly characterized by a particular ideology, neoliberalism would qualify as the prevailing force. So then, what to make of claims that the spread of state-led capitalism, and in this case the new resource nationalism, raises the specter of a neomercantilist challenge to the prevailing order? This study suggests that the strengthening of NOCs around the world plays a significant role. The rise of OPEC+ and its unprecedented power over global price and supply is one major example. Another is the increasing frequency that states are utilizing asymmetrical interdependence in global energy to extract political and economic concessions out of others. Perhaps the strongest example is that of China, where attempts to structure the strategic flows of energy to reduce their dependence on the international system, coupled with the trade of oil in Yuan, allows them to bypass sanctions and undermine the US petrodollar. However, one should remain modest in asserting that the global economic order is in fact fully neoliberal or ever was to begin with. One should be equally modest to claim that a rising neomercantilist order seeks to topple it. Neoliberalism has been challenged since its inception and continues to be. The rise of state capitalism and resource nationalism are just the newest challenges in a long line of contenders that may or may not overcome neoliberalism as the prevailing characteristic of the global order.

Second, the centrality of the state in modern politics is a debate primarily arising out of the globalization literature. Since the end of the Cold War, economic globalization has been one of the most defining features of the international economy. This has led some to conclude that the power of the nation-state has been undermined as a result of markets shifting control away from the state. Some hyper-globalists have even suggested that non-governmental actors, such as trans- and multi-national corporations, are replacing nation-states as the dominant economic actors in the international system. It appears that some scholars have already written the epitaph

for the nation-state. Yet, this study tells a different story. While oil, and to a far lesser extent gas, are global commodities traded on de-territorialized markets which have diminished state power, the rise of NOCs, and particularly production cartels, have strengthened the ability of states to influence these markets. Additionally, it is true that trans- and multi-national corporations have reduced the importance of national economies while magnifying those of the global and regional economies. It is also fair to say that many of these companies have divided interests that no longer lie solely with the nation. However, in the critically important energy industry states have magnified their power through NOCs. The reduction in non-commercial burdens via partial privatization and more hands-off government policies has done well to increase efficiency but have not necessarily reduced instances of utilizing these firms as a means of magnifying political and economic state power. Moreover, the internationalization of NOCs has increased the number of trans- and multi-national firms that operate with a greater focus on state interests. To be sure, the state has lost some ground in certain areas and the debate over its centrality is a much larger and more complex issue than purely political-economic considerations. Nevertheless, the rise of NOCs in the energy industry provides an interesting example of a counter narrative that is beyond being dismissed as inconsequential.

Finally, the broader implications of the rise of NOCs regarding the global energy industry itself should be mentioned. First, NOC dominance over the world's reserves and supply make them critical for investment and expansion of commercial activities and, in turn, meeting future demand and maintaining price stability. Whether or not they can meet this challenge is less clear given relative efficiency and the staggering pace of development in China and India. This means these firms will require massive investments and these economic burdens will fall on the states who control them. The more demand rises without a subsequent rise in supply, the more prices

will also rise. When prices rise too high, countries begin seeking alternatives, which is even more problematic for energy producing states as their most lucrative export loses its importance. Second, while NOCs hold the dominant position, it is not as if IOCs have nothing to offer. Indeed, both NOCs and IOCs stand to gain much by increasingly working together as the former needs access to greater technical methods and intellectual know-how and the latter needs access to resources. In this way a symbiotic relationship can form between the two company types over time, where IOCs can gain access and profitability allowing them to continue to innovate and NOCs can pay a modest premium to have these cutting-edge methods put into practice for them. Third, the strategic value of NOCs creates an energy-security intersection. Unlike other commodities, oil and gas are a major factor in international politics and security. Resource nationalism at home and mercantilism abroad have boosted autocrats by putting more money and power in their hands. From Eurasia to the Middle East to Southeast Asia, the likelihood of NOCs being deployed for political and economic power is increasing. Fourth, the divergence among NOCs, particularly in areas of unconventional capability and efficiency, is significant. Whether or not many of the NOCs that are lagging behind catchup will have tremendous consequences in the future. Take for instance Venezuela's PDVSA, the sheer size of reserves going unexploited is putting serious upward pressure on prices.

As long as economic growth and development are powered by hydrocarbons, NOCs' and their controlling states will be the most essential actors in the area of global energy. This will remain the case for the next few decades for a couple reasons. First, while environmental imperatives have gained steam in western countries, international cooperation still escapes the global community. Countries such as Russia, China, and India have little impetus to sign on to any form of climate accords or to comply with such measures. Russia's economy is too

dependent on the export of hydrocarbons and both China and India are focused on economic development. In fact, Russia and China didn't even show up to the most recent 2021 COP26 UN climate summit. Second, hydrocarbon substitutes, nuclear energy aside, are intermittent on the supply side. Therefore, they cannot deliver a steady supply of energy to power most cities. If battery technology advances this may help solve the problem of storage, but this solution leads to other problems. For example, batteries are made from rare earth minerals, an environmentally destructive mining process, whose global reserves are overwhelmingly owned by China, which will have political and strategic consequences. Thus, nearly all projections still weigh heavily in favor of the continued use of hydrocarbons up to and beyond 2040. As a result, the NOCs that control the overwhelming majority of the world's oil and gas reserves will be the most critical energy suppliers and the lifeblood for sustained global economic growth for the foreseeable future.

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