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PART I

Introduction

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1 Introduction and overview

DAVID G. VICTOR, DAVID R. HULTS, AND MARK C. THURBER

1 Introduction

An array of state-owned[1] entities – known as "national oil companies" (NOCs) – dominate the world's oil and gas industry. Concentrated in the Middle East but also based in Africa, Europe, Latin America, and other parts of Asia, NOCs own 73% of the world's oil reserves and 61% of production.[2] (Their dominance in gas is similar – 68% of reserves and 52% of production.) In most segments of the world economy, state-owned enterprises (SOEs) have waned in influence, often due to government policies that favor privatization and competition. But in oil and gas (together known as "hydrocarbons") the role of state enterprises is stronger than ever. This book looks at the origins and operations of NOCs, which are a major part of our global energy portfolio and a significant presence in the world economy.[3] Our analysis of NOCs thus has important implications for global oil and gas markets and the shifting balance between market and state.

Despite the common name, "NOCs" play many different roles (see Box 1.1). A few are commercially minded entities little different from their private sector international oil company (IOC) counterparts. These NOCs, like Saudi Arabia's Saudi Aramco or Norway's Statoil, are highly profitable and in some cases worldwide operators themselves. Other NOCs carry many political and social functions alongside their commercial missions. These include Russia's Gazprom – the world's largest gas company and the Kremlin's instrument of choice in the 2000s "gas wars" with the Ukraine – and Venezuela's Petróleos de Venezuela, S.A. (PDVSA), which under President Hugo Chávez is the government's primary agent for providing social services and nationalizing the domestic economy. Some NOCs perform functions that are normally left to government. Angola's Sonangol, for example, is foremost a highly effective regulator of IOC operations within the country; its role as an oil producer is secondary.

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Box 1.1 What's in a name?

For decades, industry and academia have referred to state-controlled oil and natural gas entities that carry out at least some commercial operations as "national oil companies." Yet in practice these entities are often not national, not focused on oil, and not even necessarily companies. The word "national" masks the fact that private interests own a large share of several NOCs, including Brazil's Petrobras and Norway's Statoil; also, some of these firms carry out a large share of activities beyond national borders. "Oil" isn't the only quarry of these NOCs; Russia's Gazprom is predominantly a gas producer, and many NOCs are struggling to produce larger quantities of gas. Many "companies" in the sector also have few commercial functions or other hallmarks of a company. Nigeria's NNPC, for example, has limited financial autonomy and capacity to perform oil and gas operations, and its managers are frequently unable to exert meaningful control over the many individual actors within the enterprise. Until a better acronym comes along – we hunted long and hard for one – we bow to convention rather than clarity and stick with the term "national oil company."

This volume peers beyond the differences among NOCs to find common threads. Using methods of social science, our aim is to explain the variation in strategy and performance of NOCs. We define "strategy" as an NOC's means of achieving long-term objectives. We define "performance," in turn, as an NOC's economic efficiency in finding, developing, and delivering hydrocarbon resources.

In this opening chapter we offer background and lay out our approach in the chapters that follow. We first put NOCs into broad historical context and then describe our research methods. Briefly, our approach rests on a set of hypotheses, drawn from existing research, which purport to explain why some NOCs perform well and others falter. Those hypotheses cover factors such as the relationship between the NOC and its political masters in the government and the types of geology NOCs encounter as they try to find and produce oil and gas. We then test those hypotheses in two ways. First, we look across the whole industry with three cross-cutting studies (see Part II); then we

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look in-depth at fifteen case studies of major NOCs and their host governments (see Part III). At the end of this chapter we introduce some broader themes that a large, systematic study such as this one can illuminate. In the Conclusion we revisit those themes.

2 NOCs in history

NOCs first arose sporadically in the early twentieth century. States, mostly in the industrialized world, justified their initial intervention in oil as part of efforts to control the "commanding heights" of their economies (Grayson 1981; Wolf 2009). Austria established the first NOC in 1908 to process crude oil and develop downstream markets for petroleum products (Heller 1980). Next in line was Argentina, which established Yacimientos Petrolíferos Fiscales (YPF) in 1922 (van der Linde 2000; McPherson 2003).[4] Other NOCs subsequently developed in states with strong corporatist traditions, such as France, which established the Compagnie Française del Pétroles (CFP) in 1924, and Italy's Azienda Generale Italiana Petroli (AGIP, now part of Eni) founded in 1926.

Over the next three decades, a handful of other governments established their own NOCs, but this time in the developing world. In 1938, Mexico expropriated US and Dutch commercial interests to form Petróleos Mexicanos (Pemex), the first major NOC formed via nationalization (see Chapter 7). Governments established several more NOCs following World War II as part of their economic growth strategies that relied on leadership through state enterprises. These NOCs include Iran's National Iranian Oil Company (NIOC, formed 1948), Brazil's Petrobras (1953), and India's Oil and Natural Gas Corporation Limited (ONGC, founded in 1956). Few of these early NOCs had much global influence on energy supplies and prices because they arose in countries that, at the time, barely produced or consumed any oil or gas. There was essentially no international trade in gas, and these new NOCs generally had little leverage over international trade in oil. For much of the early to mid twentieth century, a small number of vertically integrated, privately managed companies – the so-called "Seven Sisters"[5] – exerted near-total control.

The tide turned in the 1960s and 1970s, when the developing countries that were home to most of the world's oil and natural gas supplies took on a more assertive role. Fueled by resource nationalism,

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then-popular state-led economic development theories, and the hope for cartelization of the world oil market through the Organization of the Petroleum Exporting Countries (OPEC), these countries established NOCs en masse (Bentham and Smith 1987; Wolf 2009). Even countries such as Saudi Arabia that disfavored full-blown nationalization of oil assets were caught in the strong nationalistic currents flowing against foreign ownership (see Chapter 5). Most of the NOCs under study here date from this time period: Sonatrach (1963), Saudi Aramco (nationalized in three stages between 1973 and 1980), Statoil (1972),[6] Petronas (1974), PDVSA (1975), Kuwait Oil Company (later part of Kuwait Petroleum Corporation, or KPC, in 1975), Sonangol (1976), and Nigerian National Petroleum Corporation (NNPC) (1977).[7] Almost without exception, these states created their NOCs by nationalizing the operations of IOCs.[8] Indeed, nationalization of the oil sector was far more common than of other sectors of the economy (Kobrin 1984). Not all NOCs arose through nationalizations – Petrobras is among the few exceptions – but most find their origins in nationalist sentiment that remains popular today. Mexico's date of nationalization is still commemorated as a civic holiday more than seven decades after the event.

The NOCs formed from these nationalizations radically upended the structure of the energy markets. In 1970, IOCs had full access to 85% of the world's oil reserves; NOCs barely had access to 1% (Diwan 2007). By 1980, the situation had nearly reversed. IOCs had full access to only 12% of the world's oil reserves, and NOCs could access 59% (Diwan 2007). Most of the same governments that had been active in nationalization also used their state controls to influence oil price, at least over the short term: OPEC-coordinated supply restrictions in 1973 (following the Arab-Israeli war that year) and an Iranian production drop in 1979 (resulting from the Iranian Revolution) sent oil prices soaring twice that decade. For periods since the 1970s OPEC has played a central role in influencing prices.[9] During periods when the oil cartel has been strong, the fact that most OPEC production was controlled by state enterprises probably made it easier for governments to pull the levers needed to keep oil off the world market.

After the initial wave of NOC nationalizations, the pace of new NOC formation slackened, in part because there was little left to nationalize. A few oil-importing states (e.g., Germany), shaken by oil crises, established NOCs in the 1970s to promote security of supply.

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And in the late 1980s through early 1990s, several states that were formerly part of the Soviet Union founded their own NOCs, including Gazprom (1989) – which was not nationalized but merely recognized as a distinct entity that, previously, had been a government ministry. Generally, however, the list of NOCs today is much the same as it was during the late 1970s.

During the 1980s, oil prices declined, and NOCs pursued divergent strategies to cope with falling revenues. Some NOCs, like PDVSA or Petronas, became vertically integrated and made inroads into international markets, ostensibly to secure downstream markets and compete with IOCs (Stevens 2005). Between 1983 and 1989, PDVSA, for instance, acquired significant equity interests in eleven European and American refineries and took ownership of a large US distributor, CITGO (see Chapter 10). This growth did not come without controversy, however. Critics accused the globalizing NOCs of seeking to avoid payment of taxes in their home country and, more generally, of acting like "states within a state" without regard for broader national objectives that originally inspired governments to create NOCs (Philip 1982; Boué 1993).[10] Other NOCs, such as Algeria's Sonatrach, stayed largely at home and spent much of the 1980s seeking to attract foreign oil investment to generate badly needed new revenues (Fattouh 2008).

During the 1990s, state control over oil waned. Low oil prices stripped government revenues and created an impetus for change; the ideas behind the "Washington Consensus" favoring economic liberalization and a shrinking of the state offered a ready remedy. Liberalization particularly took hold in Latin America: Argentina privatized its NOC, YPF, in 1992, and both Pemex and PDVSA lobbied their governments for greater private sector involvement (Howell 2007; Chapter 10). Other states, including China and India, allowed private investors to take minority shares in their NOCs. Russia also sold off much of its oil sector to private investors, though in most cases these new owners kept close links to the country's political masters (Aslund 1999; Chapter 15). Liberalization in the Middle East lagged by comparison, but even there some reforms occurred (Stevens 2008a). Nevertheless, hydrocarbons saw less liberalization on the whole than other infrastructure sectors like telecommunications or electricity (Kikeri and Solo 2005).

When oil prices rose again in the early 2000s governments responded in many different ways. Some sought a greater role for state ownership

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in the newly lucrative sector. Many added new social obligations for their NOCs, such as procurement requirements, domestic gasoline subsidies, and sometimes quite significant extrabudgetary spending programs. Many states invited or pushed their NOCs to become, in effect, quasi-governments.[11] Still others have kept an interest in reforms. For example, Abu Dhabi's ADNOC has welcomed a few new private sector projects into the country.

This brief account raises the question of why states with large NOCs have fluctuated so markedly in their approach to private oil companies over time. While there are many confounding factors at work, it appears that price has been a key factor (Manzano and Monaldi 2008; Stevens 2008a).[12] Prices have a particularly large effect on hydrocarbons, relative to other economic sectors, because hydrocarbons projects have high: 1) excess returns, or *rents*; 2) non-recoverable costs of investment, or *sunk costs*; and 3) risk. (See Manzano and Monaldi, 2008, for discussion.) These factors give governments an incentive to seek out private investment when prices are low and renegotiate private sector arrangements when prices are high. In Chapter 4, Nolan and Thurber consider in more detail how price may affect the NOC–IOC balance in hydrocarbon activities.

Looking to the future, forecasts are for NOCs to become even more dominant. The International Energy Agency projects that almost 80 percent of the increase in global oil and gas output to 2030 will come from NOCs (IEA 2008). NOCs have proved to be a durable and important form of enterprise.

3 Surveying the scholarship on NOCs

NOCs are hardly a new topic for scholarly research. Here we briefly sketch some of the major questions that previous studies have examined, engaging a wide range of disciplines, including political science, public administration, and economics. We look not only at studies that focus on NOCs but also scholarship from the much larger literature on state-owned enterprises (SOEs).

3.1 Why form an NOC?

Various studies, drawn mostly from political science, consider the rationales for forming NOCs and other SOEs.[13] One of the more

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common explanations for SOE creation is that left-leaning governments worldwide adopted statist ideologies between the 1950s and 1970s.[14] According to this view, SOEs reflected the belief that state ownership would better allow governments to promote and control economic development, redistribute income, and advance national pride; this model is contrasted with private ownership and redistribution through taxation (Toninelli 2000). Similar explanations have proven popular among NOC scholars (Jaidah 1980; Auty 1990). Another theory is that governments, particularly in the developing world, created SOEs principally as a tool for marshaling popular support (Smith and Trebilcock 2001). From this perspective SOEs such as state oil companies were seen as convenient political instruments that offered large reservoirs of jobs for dispensation to favored groups as well as other useful products and services that governments could readily control for political purposes (Peltzman 1989; Eller *et al.* 2007). A third rationale – rooted in early views about the "principal–agent problem" in public administration and applied with vigor to NOCs – is that governments found it hard to control foreign oil firms as their agents for developing the country's oil and gas resources. These foreign firms had their own interests and vastly greater amounts of information about a nation's hydrocarbon resources and the sources of value in the world market. Many governments feared that foreign ownership would result in lost rents, lost control over the pace of resource extraction, and – in a more nefarious variant – threats to the security of their rule. NOCs, it was often thought, would be comparatively easier to tame (Grayson 1981; van der Linde 2000).

3.2 *Why maintain an NOC?*

Scholars have wrestled with the question of why NOCs have thrived even as SOEs in other areas of economic activity have proved less resilient. Some of the key factors initially underpinning state control of NOCs were vestigial statist ideologies and the fact that NOCs remained convenient for political patronage (Auty 1990). Many of the same factors also applied to SOEs generally (Werenfels 2002). By the 1980s and 1990s, however, the storylines for NOCs and other SOEs began diverging. Highly industrialized countries privatized the bulk of their SOEs in the 1980s, and many developing countries followed suit, albeit more unevenly, in the 1990s.[15]

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One explanation is that SOEs were often big money losers and thus a drain on public budgets – a factor at work, for example, in the electric power industry that saw broad efforts at restructuring and privatization across the developing world in the 1990s (Victor and Heller 2007).[16] NOCs, by contrast, often generated huge profits that made them more sustainable, though sporadic privatizations nevertheless occurred.[17]

This explanation for NOC survival, while suggestive, assumes that political leaders would be content to maintain an NOC so long as it generated some profit. However, the explanation becomes less satisfying because evidence suggests that an alternative form of organization – i.e., a privately managed oil company – could generate even greater profits over time. Theoretical studies find NOCs tend to underperform relative to their private sector counterparts in hydrocarbons operations (Hartley and Medlock 2008).[18] Empirical research points in the same direction, though NOC variation is substantial and comparisons across NOCs are difficult (Eller *et al*. 2007; Victor 2007; Wolf 2009).[19]

Thus there is a puzzle as to why NOCs endure. It may be that NOCs provide political elites with rents that are easier to capture and non-core services that are difficult to replicate.[20] Or NOCs may be more resistant to change than other entities because of their deep political connections and healthy revenue streams. One of the goals of this study is to assess whether these or other explanations for NOC survival make sense.

3.3 How do governments and NOCs interact?

The interests of NOCs and their host states are not identical, and another thinner line of scholarship has examined how these interests clash as well as how governments and their NOCs interact. Some NOCs, such as 1970s Pemex or 1990s Gazprom, became known as "states within a state" for their independence from government control and, on occasion, for their ability to politically undermine a government's standing. Studies have probed the reasons why this phenomenon occurs and have found that politically powerful NOCs often form in large, organized resource sectors over which the state bureaucracy has little knowledge or regulatory control (Philip 1982; Mommer 2002).[21]

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