OVERVIEW OF THE POLITICAL AND ECONOMIC ARGUMENTS IN FAVOR OF AND AGAINST THE ESTABLISHMENT OF A NOC

WORKING DRAFT – NOT FOR CITATION. The Oil, Gas and Mining Policy Division of the World Bank is undertaking a Study on NOCs and Value Creation, and this draft version of Chapter 2 of the Study has been published to inform the public on progress and invite dialogue. A revised version of this paper will be included in the Study which is expected to be completed by June 2010. For further information on the Study on NOCs and Value Creation please visit our website http://www.worldbank.org/noc.

June 2009
This paper is a working draft of Chapter 2 of the *Study on National Oil Companies and Value Creation* (the “Study”). An updated version of this paper will be included in the *Study* launched in March 2008 by the Oil, Gas, and Mining Policy Division of The World Bank, and expected to be completed by June 2010. The manuscript of this paper has not been prepared in accordance with the procedures appropriate to formally edited texts. Some sources cited in this paper may be informal documents that are not readily available.

The findings, interpretations, and conclusions expressed herein are those of the author(s) and do not necessarily reflect the views of the International Bank for Reconstruction and Development/The World Bank and its affiliated organizations, or those of the Executive Directors of The World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work.

This paper may not be cited, resold, reprinted, or redistributed for compensation of any kind without prior written permission. For inquiries, please contact:

**Oil, Gas, and Mining Policy Division**  
The World Bank  
2121 Pennsylvania Avenue, NW  
Washington DC, 20433  
Telephone: 202-473-6990  
Fax: 202-522 0395  
Email: oPMC@worldbank.org  
# Table of Content

1  **Introduction**  

2  **A brief history of NOCs**  
   2.1 The industry’s founding years  
   2.2 The emergence of NOCs  
   2.3 OPEC ‘revolution’ and post-colonial world  
   2.4 Reactions of the consumer states  
   2.5 A new agenda: liberalization and privatization  
   2.6 The end of history?  
   2.7 Developments since 2000  

3  **The arguments in favor of NOCs**  
   3.1 Historical context  
   3.2 Importance of the petroleum sector  
   3.3 Political gains from state control  
   3.4 Efficiency of monitoring and operations  
   3.5 Maximizing state petroleum rent  
   3.6 Wider socio-economic issues and priorities  

4  **The arguments against NOCs**  
   4.1 Historical context and ideology  
   4.2 Economic cost of political control  
   4.3 Operational inefficiencies  
   4.4 Lack of competition  
   4.5 Non-commercial objectives and subsidies  
   4.6 Corporate governance  
   4.7 Funding strategy and requirements  
   4.8 Conflicts of interest and balance of control  

5  **Conclusion**  

References
Acknowledgments

This *Overview of the political and economic arguments in favor of and against the establishment of a NOC* is intended as a contribution to the *Study on National Oil Companies and Value Creation* (launched in March 2008) by the Oil, Gas, and Mining Policy Division of The World Bank.

The Task Leader of the Study is Silvana Tordo (Lead Energy Economist, Oil, Gas and Mining Division of the World Bank). The paper was written by Christian O. H. Wolf (Consultant). Contributions from the Task Leader, and Olivier Fremond (Country Manager, Gabon, Equatorial Guinea, and Sao Tome and Principe, World Bank) are gratefully acknowledged.
OVERVIEW OF THE POLITICAL AND ECONOMIC ARGUMENTS IN FAVOR OF AND AGAINST THE ESTABLISHMENT OF A NOC

“We never seem to get it right. Something always seems to be missing between government policy, implementation and public expectation (or public perception of what constitutes the common good). (...) As a result, we stagger from one confrontation to the next between policy makers, regulators, actors and customers.”
(Edmund Daukoru)

1 Introduction

Decisions regarding the creation and management of National Oil Companies (NOC) can be appreciated within the general context of government intervention in the economy. Its degree tends to change over time in response to exogenous (e.g. geopolitics, economy) and endogenous (e.g. state objectives) factors, affecting the existence and behavior of NOCs. This chapter will discuss the key arguments – in terms of a priori reasoning and empirical experience – in favor of and against the creation of a NOC, taking into consideration their historical context.

There exists a vast literature on the topic of direct state intervention and participation in the economy, including but not limited to theories and empirical tests of market efficiency and welfare theorems, market and/or government failure, regulation, etc. Whilst a detailed review of this literature is beyond the scope of this chapter, Table 1 provides a summary of generic arguments to justify state ownership. These have enjoyed varying levels of academic, political and popular support over time; the period from after World War II (WWII) to the late 1970s, for example, can be seen as sympathetic towards state ownership (Yergin and Stanislaw 2002). A number of industries were particularly associated with state involvement in the form of state-owned enterprises (SOEs) – e.g. postal services, railways, telecommunications, electricity, water, airlines, coal, steel and petroleum (Jones and Mason 1982) – but the degree of direct state participation also varied with the stage of development of individual countries.¹

¹ In 1980, the contribution of SOEs to GDP was 16 percent for low-income countries and 6 percent for high-income countries. With regard to the SOE share of total employment, low-income countries in 1980 were at 21 percent whilst high-income countries were at 2 percent (Sheshinski and López-Calva 1999).
### Table 1: The generic rationale for state ownership

<table>
<thead>
<tr>
<th>Objective</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcome market failure</td>
<td>Market failure can occur in economic activities that involve:</td>
</tr>
<tr>
<td></td>
<td>• Natural monopolies (electricity, water)</td>
</tr>
<tr>
<td></td>
<td>• Public goods (law and order, national security)</td>
</tr>
<tr>
<td></td>
<td>• Merit goods (education and health)</td>
</tr>
<tr>
<td></td>
<td>• Externalities (positive or negative)</td>
</tr>
<tr>
<td></td>
<td>• Information asymmetry</td>
</tr>
<tr>
<td>Overcome regulatory failure</td>
<td>State ownership is desirable if and when:</td>
</tr>
<tr>
<td></td>
<td>• The state does not have the capacity to regulate effectively</td>
</tr>
<tr>
<td></td>
<td>• The economic activity renders the drafting of contracts incomplete</td>
</tr>
<tr>
<td></td>
<td>• The state cannot credibly promise not to confiscate or tax excessively</td>
</tr>
<tr>
<td>Industrial economics</td>
<td>• Sustain industrial sectors of particular interest for the national economy</td>
</tr>
<tr>
<td></td>
<td>• Safeguard employment</td>
</tr>
<tr>
<td></td>
<td>• Launch emerging industries with significant start-up costs when future property rights are uncertain</td>
</tr>
<tr>
<td></td>
<td>• Control the decline of senile industries</td>
</tr>
<tr>
<td></td>
<td>• Help the private sector carry risk</td>
</tr>
<tr>
<td>Development economics</td>
<td>• Boost the economy of the less developed region(s) of the country</td>
</tr>
<tr>
<td></td>
<td>• Pursue equality and social goals</td>
</tr>
<tr>
<td>Fiscal policy and redistributive objectives</td>
<td>• Invest in a sector, control entry, impose monopoly prices, then use the revenues as fiscal income; or</td>
</tr>
<tr>
<td></td>
<td>• Sell at reduced prices to targeted populations and distribute subsidies</td>
</tr>
<tr>
<td></td>
<td>• Maintain employment</td>
</tr>
<tr>
<td></td>
<td>• Substitute for under developed welfare systems</td>
</tr>
</tbody>
</table>

Source: OECD (2005)

Despite their popularity and seeming early success in some countries, the overall performance of many SOEs proved disappointing. Comparisons with private enterprises showed that SOEs tended to be less efficient, less profitable, more highly leveraged, and prone to influence/capture, in particular by politicians who used SOEs to reward their supporters and maintain their patronage networks (Kikeri et al. 1992; Shleifer 1998; Kikeri 2004). In countries where the same politicians also controlled the financial sector, the SOEs often received heavily subsidized bank loans, giving rise to the so called “soft budget constraint” problem. Studies also highlighted insufficient incentives of SOEs managers, information asymmetries that placed SOE managers at an advantage when negotiating targets, and the lack of credibility of governments’ commitments. In the process, SOEs diverted resources from both the private sector and other state priorities like health and education.

This Chapter will reflect some of these generic arguments for and against the merits of state ownership, focusing on the specific issues and experiences of state participation in the petroleum industry. The aim is a better understanding of the (special) nature of NOCs, and how this may affect their objectives, regulation and behavior. Section 2 provides a chronological account of the emergence (and, at times, disappearance) of NOCs on the global sector map. Section 3 presents the substantive
arguments put forward in favor of NOCs, and Section 4 summarizes the practical differences and setbacks experienced by and with National Oil Companies. Section 5 concludes.

2 A brief history of NOCs

National Oil Companies (NOCs), defined in contrast to Privately-owned Oil Companies (POCs), are the principal subject of this study. This ownership-based taxonomy is historically rooted in the 1970s and remains customary in the literature and industry. NOCs are owned and controlled by governments, which usually implies at least 50 percent of both economic interest and voting power (Linde 2000; Stevens 2004). State ownership affects many aspects of firm incentives and behavior (Al-Obaidan and Scully 1991; Eller et al. 2007; Hartley and Medlock 2007; Victor 2007; Wolf 2009), and might be seen as a proxy for other, more fundamental differences between state-owned and privately-owned enterprises (see also Chapter 4).

The importance of the petroleum industry was widely recognized from the early 20th century, when internal combustion engines and the nascent automotive industry contributed to a prolonged boom in oil demand, and more than over-compensated the loss of the traditional kerosene lighting market after the invention of the light bulb. The use of naturally occurring oil had been widespread in China and Central Asia for centuries, but up to the mid-19th century oil was by and large only collected where it was naturally occurring at the surface. In 1859, the first successful, modern oil well was drilled in Titusville, Pennsylvania.

2.1 The industry’s founding years

Initially the industry was very much shaped by private commercial enterprise and charismatic entrepreneurs. In the United States the Standard Oil Company, founded by John D. Rockefeller in 1870 as refining company in Cleveland, dominated the industry for several decades, reaching a domestic market share of 95 percent in refining by 1880. By that time, Standard Oil had also come to dominate the pipeline,

---

2 The usual designation for large private sector petroleum firms is “International Oil Companies” (IOCs), but there is widespread acknowledgement that this term is confused, as (i) an increasing number of NOCs are also operating outside of their home country; and (ii) some oil and gas companies are neither state-owned nor international. “POC” is thus suggested as a more appropriate term when distinguishing petroleum firms along the lines of state ownership.

3 Dependent on circumstances (such as veto powers, absence of other influential shareholders etc.) effective control could also be achieved by less than 50 percent ownership. The International Accounting Standards Board (IASB) defines control as the “power to govern the financial and operating policies of an enterprise so as to obtain benefits from its activities” (IAS 27). Only 20 percent ownership might suffice to obtain ‘significant influence’, which is the “power to participate in the financial and operating policy decisions but not control them” (IAS 28). For individual firms, then, it might be a matter of judgment as to whether they should be considered NOCs.

4 The history of the petroleum industry is well documented in a number of publications (e.g. Giddens 1938; Anderson 1987; Linde 1991; Yergin 1991; Linde 2000; Mommer 2002; Mabro 2005; Marcel 2006b), from which this overview is collected. Any historical account of the industry is bound to focus on oil rather than natural gas. Whereas crude oil has been a globally traded commodity from the early days of the industry, gas has been somewhat of a late starter, albeit a very successful one by now. Furthermore, with the exception of the North American market and the small traded volumes within Europe, natural gas prices remain linked to oil prices.
shipping and drilling business and in 1879 formed, together with 30 affiliated companies, the Standard Oil Trust. Its economic and political power grew such that, after several years of trials and investigations, the Trust was found to monopolize and restrain trade and in 1911 it was dissolved into 36 independent companies, including the predecessor firms of Exxon, Mobil, Chevron, ARCO and Amoco. The discovery of oil in Texas in 1901 had led to the founding of further oil companies such as the Texas Oil Company (later renamed Texaco) and the Gulf Oil Company, which opened the first filling station of the world in Pittsburgh in 1913.

Outside the U.S., Russia and the Caspian (the area around Baku, Azerbaijan, in particular) were important production areas. Although initially a state monopoly, oil properties were auctioned in 1872, triggering a wave of investments in production, refining and transport infrastructure. Famous names associated with the Russian and Caspian oil industry include the Nobel and Rothschild families. By 1900, railroads had been built to transport oil to the West and Russia briefly surpassed the United States as the world’s largest producer. Elsewhere, private European companies took advantage of their home countries’ colonial presence and protection. Both Shell and Royal Dutch started business in the 1890s in Indonesia, but already in 1907 the two companies merged and rapidly expanded thereafter to countries such as Venezuela (1910), Egypt (1911), Trinidad and Mexico (1913).

### 2.2 The emergence of NOCs

The first NOC is believed to have been created in Austria-Hungary in 1908 when private oil producers faced a situation of excess supply of crude. Emperor Franz Joseph at the time approved the building of a topping plant owned and operated by the government, which helped process the crude and further developed end markets for oil products (Heller 1980). With the further increasing significance of oil as a strategic commodity, governments took an interest in the oil industry. Other European states, particularly the colonial powers, started to set up or participate in oil companies in order to control the domestic markets and pursue upstream operations abroad, usually within their respective colonial domains. In 1914 the government of the United Kingdom (UK) invested £2.2 million for a 51 percent ownership in Anglo-Persian Oil Company (later to become BP), although it was a “passive” stake without management control, and only two appointees on the board of directors. Security of supply was a key argument in this decision at the eve of World War I (WWI), as the latest generation of high-performance naval vessels and warships were oil-powered. As Winston Churchill, at the time the First Lord of the Admiralty, argued: “If we cannot get oil, we cannot get corn, we cannot get cotton and we cannot get a thousand and one commodities necessary for the preservation of the economic energies of Great Britain” (cited in Yergin 1991, p.160). In order to achieve security and diversity of oil supply the state could enter into long-term supply contracts as a temporary measure, but ultimately “the Admiralty should become the independent owner and producer of its own supplies of liquid fuel” (ibid).

The Compagnie Française des Pétroles (CFP) was created in 1924 as a private sector company, but with substantial shareholding and support by the French government. As its key asset CFP assumed the 24 percent share of Deutsche Bank in the Turkish Petroleum Company (later renamed the Iraq Petroleum Company), awarded to France as compensation for German war damages in WWI. The creation of Agip in Italy in 1926 was the first instance of a consuming country aiming to
counter-balance the influence of outside petroleum firms (including fully private and state-backed companies) in its domestic downstream market.

At around the same time Latin America – which had been largely independent since eviction of the Spanish colonial force in 1821, and where important petroleum discoveries were made during the 1920s, particularly in Mexico and Venezuela – was leading the way in terms of the establishment of NOCs in developing nations. Argentina’s Yacimientos Petrolíferos Fiscales (YPF) was the first to be founded in 1922, and others soon followed, including Chile (1926), Uruguay (1931), Peru (1934) and Bolivia (1936). Mexican state petroleum firm Petróleos Mexicanos (Pemex) was set up in 1938 to take over the operations of foreign private firms in the country – this was the first large-scale expropriation/nationalization within the petroleum sector. Table 2 shows the foundation dates of a selected group of NOCs.

Table 2: Selected founding dates of NOCs

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>UK</td>
<td>BP</td>
</tr>
<tr>
<td>1922</td>
<td>Argentina</td>
<td>YPF</td>
</tr>
<tr>
<td>1924</td>
<td>France</td>
<td>CFP</td>
</tr>
<tr>
<td>1926</td>
<td>Italy</td>
<td>Agip</td>
</tr>
<tr>
<td>1938</td>
<td>Mexico</td>
<td>Pemex</td>
</tr>
<tr>
<td>1951</td>
<td>Iran</td>
<td>NIOC</td>
</tr>
<tr>
<td>1953</td>
<td>Brazil</td>
<td>Petrobras</td>
</tr>
<tr>
<td>1956</td>
<td>India</td>
<td>ONGC</td>
</tr>
<tr>
<td>1960</td>
<td>Kuwait</td>
<td>KNPC</td>
</tr>
<tr>
<td>1962</td>
<td>Saudi Arabia</td>
<td>Petromin</td>
</tr>
<tr>
<td>1965</td>
<td>Algeria</td>
<td>Sonatrach</td>
</tr>
<tr>
<td>1967</td>
<td>Iraq</td>
<td>INOC</td>
</tr>
<tr>
<td>1970</td>
<td>Libya</td>
<td>LNOC</td>
</tr>
<tr>
<td>1971</td>
<td>Indonesia</td>
<td>Pertamina</td>
</tr>
<tr>
<td>1971</td>
<td>Nigeria</td>
<td>NNOC</td>
</tr>
<tr>
<td>1972</td>
<td>Norway</td>
<td>Statoil</td>
</tr>
<tr>
<td>1974</td>
<td>Qatar</td>
<td>QGPC</td>
</tr>
<tr>
<td>1974</td>
<td>Malaysia</td>
<td>Petronas</td>
</tr>
<tr>
<td>1975</td>
<td>Venezuela</td>
<td>PdVSA</td>
</tr>
<tr>
<td>1975</td>
<td>Vietnam</td>
<td>PetroVietnam</td>
</tr>
<tr>
<td>1975</td>
<td>Canada</td>
<td>Petro-Canada</td>
</tr>
<tr>
<td>1975</td>
<td>UK</td>
<td>BNOC</td>
</tr>
<tr>
<td>1976</td>
<td>Angola</td>
<td>Sonangol</td>
</tr>
<tr>
<td>2002</td>
<td>Equatorial Guinea</td>
<td>GEPetrol</td>
</tr>
<tr>
<td>2006</td>
<td>Chad</td>
<td>SHT</td>
</tr>
</tbody>
</table>

Notes:
Table excludes communist and former communist countries, most prominently Russia (where the petroleum industry was nationalized in 1917/18) and China (where current NOCs were spun-off from executive government in 1982 (CNOOC), 1983 (Sinopec) and 1988 (CNPC), and restructured in 1998). BP (1914) was a state participation of 51 percent in an existing company (Anglo-Persian). State ownership in CFP (1924) was 49 percent. Pertamina’s two predecessor firms (PT Permina and Pertamin) had already been established during the 1950s. KPC’s was founded in 1980 as successor to KNPC; KPC’s principal upstream subsidiary Kuwait Oil Company was founded in 1934, and fully nationalized in 1974.

5 Mexico was not the first nationalization overall – Bolivia, for example, was one year earlier in 1937, but the first “blanket” nationalization in a major producing state.
During the 1930s further very significant oil discoveries were made in the Middle East – for example in Bahrain in 1932, and in Kuwait and Saudi Arabia in 1938. This marked the beginning of a geographic shift in global production. International oil companies formed private consortia that controlled virtually all petroleum production in the Middle East, including in Saudi Arabia, where five United States (U.S.) companies had set up the Aramco Oil Company. Caused by the rapid economic growth following the end of WWII, the U.S. became a net importer of crude oil in 1948. Already then the U.S. were the most mature, most explored and drilled country in the world. Its well productivity and marginal costs were much less favorable than in the Middle East, whose highly productive and profitable reservoirs had become the key assets for Western POCs. From 1948 to 1972, seven out of every ten barrels of oil added to the world's free reserves were found in the Middle East. This strengthened the bargaining position of the host countries vis-à-vis their POC 'tenants', who were perceived as “far too profitable, isolated and immobile” (Mommer 2002, p.100).

2.3 OPEC ‘revolution’ and post-colonial world

The major oil exporting countries of the world met in Cairo in 1959, resulting in a gentleman’s agreement to consult on important common issues. One part of the agreement recommended the creation of NOCs to ensure direct state participation within the oil industry, although in the Middle East this recommendation was not acted upon until a few years later. At this point in time, standard concession contracts included a royalty payment to the resource owner, i.e. the host nations, plus an income tax of 50 percent, the so-called fifty-fifty profit sharing. The latter had only been introduced in 1943 in Venezuela and in 1950 in Saudi Arabia as a result of the shifting power balance towards the producers, but the profit calculation was usually based on ‘posted’ prices rather than market prices. After the POCs unilaterally cut posted prices twice in 1959 and in August 1960, the major resource-holding countries sought ways to better represent their common interests, and in September 1960 the Organization of Oil Producing and Exporting Countries (OPEC) was established. The five founding member states of Iran, Iraq, Kuwait, Saudi Arabia and Venezuela were subsequently joined by Qatar (1961), Indonesia and Libya (1962), the United Arab Emirates (1967), Nigeria (1971), Ecuador (1973, left in 1992, rejoined in 2007), Gabon (1975, left in 1995) and Angola (2007). Having become a net importer of oil, Indonesia left OPEC in May 2008.

Although OPEC achieved little tangible results for its member states in the initial years – mainly due to the fact that POCs insisted on negotiating separately with host governments and these had divergent opinions on acceptable contract terms, different degrees of oil revenue dependence and different levels of spare production capacities – the global economic growth of the 1960s and the imminent peak of U.S. domestic

---

6 At the beginning of 2000 there were still about 500,000 producing wells in the U.S. with an average production of 14 barrels per day; in the Middle East the average production per well was almost 4,000 barrels per day (CSFB 2002).

7 In May 1951, Iran had briefly nationalized the oil operations of the British Anglo-Persian company, but following the coup against Prime Minister Mosaddeq, the nationalization was reversed and a new British-Iranian agreement was signed in 1954.
oil production substantially strengthened the producer states’ bargaining position. In 1965 three Saudi contracts were the first (outside Venezuela) to be governed by national law and national tax legislation, instead of international law and contractual arrangements. In 1968 OPEC issued a “Declaratory Statement of Petroleum Policy in Member Countries”, summarizing key recommendations regarding area relinquishment, tax reference points, equity participation and host country sovereignty. The policy encouraged OPEC members to directly develop their hydrocarbon resources, but if entering into contracts with outside parties, such contracts should at least contain the right to future revisions. At the time OPEC accounted for almost three quarters of global proved reserves. By the end of the 1960s competition for new concessions had pushed POCs to offer an equity participation of up to 50 percent to the relevant host governments or their NOC. The equity came on top of the already existing royalty payment and 50 percent income tax. In aggregate the new terms ensured that the host governments would receive in excess of 75 percent of the profits plus a significant influence on all entrepreneurial decisions made by their tenants. Furthermore, the NOCs usually did not share the exploratory risk of the project, as their capital expenditure was financed by the POCs as carried interest, to be repaid from the project revenues, should it prove to be successful.

But even these concessions did not prove to be satisfactory to the oil-producing states, and during the first half of the 1970s a wave of forced equity participations and outright nationalizations occurred. The Fourth Arab-Israeli (Yom Kippur) War in October 1973 and the selective oil embargo of key Arab nations against Western nations, which triggered the so-called first oil price shock, further damaged mutual relations. By 1974 the international oil operations in the Middle East had been de facto nationalized, although the legal arrangements would take time and differ from one country to the other. Later the Iranian revolution in 1979 and the Iran-Iraq war from 1980 caused the second oil price shock.

The developments in OPEC states could be seen as part of a wider, global trend towards national emancipation in a post-colonial world. OPEC, after all, included member states from very different regions of the world (Latin America, Middle East, Africa and Asia), and the desire for national control over previously colonial assets was prevalent in many more countries.

Overall, the foundation of state-controlled companies had a significant impact on the ownership structure of the oil and gas industry. Heller (1980) reports that from 1963 to 1975, outside the U.S., Canada and the centrally planned economies, public sector control rose from 9 to 62 percent in production, from 14 to 24 percent in refining, and from 11 to 21 percent in marketing.

---

8 U.S. production hit an all-time high of 9.6 million barrels per day in 1970.
9 One example is Saudi Aramco, where in December 1972 long negotiations were completed for the state to take a 25 percent equity stake, effective in 1973. By 1974, this had been increased to 60 percent, and in 1976 arrangements for complete state ownership of Aramco were reached. Payments to the original U.S. parent companies of Aramco were only completed in 1980.
10 For example, Angola’s Sonangol in 1976 emerged from a nationalized Portuguese oil company, Angol, which later assumed assets previously owned by private operators such as Gulf Oil, Texaco and Petrofina.
2.4 Reactions of the consumer states

In the oil consuming countries of the Western world, the big hike in prices had led
to a significant slowdown in demand growth for oil, but also to a slowdown in growth
of the world economy. According to estimates, the price increases in 1973/74 cost
OECD members 2.6 percent of GDP, whilst the price increases in 1978-80 cost 3.7
percent of GDP (Mommer 2002, p.168). One of the key steps to mitigate OPEC’s grip
on the market was the foundation of the International Energy Agency (IEA) in 1974,
designed to coordinate policies and energy strategies of the main industrialized, oil-
importing nations. The first rules issued by the IEA concerned emergency situations,
and amongst other items introduced mandatory levels of petroleum stocks. In 1976,
the IEA proposed a long-term program, including a reduction in the demand growth
for oil, incentives to use alternative energy sources, and the increase of domestic
supplies. A liberal licensing system was introduced in many new petroleum provinces
outside of OPEC influence (e.g. North Sea, Alaska, Gulf of Mexico).

In addition to coordinated actions such as the IEA, a second important
development was the creation of a new type of NOCs, this time in petroleum-
producing Western states such as the UK and Canada. These were intended to ensure
control over domestic hydrocarbon development, and could be seen as a reaction to
the loss of operating control overseas. The UK government at the time already owned
a majority stake in BP, but because it had an international asset and shareholder base
and was largely run like a private-sector company, it was not seen as a suitable tool to
implement national petroleum policy. In 1975 the Labour government set up the
British National Oil Company (BNOC), which originally was supposed to take a 51
percentage stake in all North Sea oil developments. However, due to fears that the
nationalization of 51 percent of the oil industry could significantly weaken the
incentives for private sector participation and the anticipation of a large financial
burden on the state from meeting half of all North Sea development costs, the scope
of rights and objectives of BNOC was reduced (Vickers and Yarrow 1988). By the
end of the 1970s, among the net importing countries, the U.S. was the only significant
producer without a NOC (Linde 2000).

2.5 A new agenda: liberalization and privatization

In the wider economic and social debate, there was an increasingly critical stance
towards governments since the late 1970s (at least in the Western world). Not only did
economic theory examine more closely the possibility of government failure,11 but in
economic reality many state-owned enterprises performed poorly and governments
had to acknowledge their failure as efficient producers and their weakness in
monitoring capability (Shleifer 1998; Shleifer and Vishny 1998; Yergin and Stanislaw
2002; Stevens 2004).

In the oil and gas sector, it was the industrialized and net consuming countries that
took the first steps towards liberalization and privatization. In fact, in refining and

---

11 New fields of economic analysis such as the theory of politics (examining the behavior of
politicians), theories of public choice (examining the behavior of bureaucrats), and principal-agent
theory (examining the interaction between politicians and bureaucrats) identified government failure as
a problem that was not less severe than the apparent market failure, which had led to the rise of
government in the first place.
marketing most OECD countries already had a policy of liberal market access, which the major POCs used to build extensive downstream portfolios. In 1977 the UK government went further and reduced state ownership in BP from 68 to 51 percent. In 1979, only four years after its inception, the Thatcher government stripped BNOC of many of its powers regarding its special position within the industry, and in 1982 its oil producing assets were spun off and privatized. Like BNOC, many of the consuming countries’ NOCs founded in the 1970s proved to be short-lived as the security of supply increasingly became an international concern at the level of OECD and IEA rather than the nation state (Linde 2000). Many of the larger and older NOCs in the consuming countries, such as Repsol, OMV, Eni, Total and Elf Aquitaine were not privatized until the late 1980s and early 1990s, but these transactions can be seen as a continuation of policies first implemented in the late 1970s, even though the 1986 oil price drop certainly added to budgetary pressures.

Net oil-exporting states took longer to be convinced of the possible benefits of liberalization and privatization. After all, oil producing assets in the Middle East had only recently been nationalized, and other producing regions in Latin America and Africa were no strangers to foreign domination and imperialism either. The historical association of liberation from foreign control over vital resources – symbolized by the state enterprise – made it difficult in many of these countries to be seen shifting direction (Waelde 1995). But low oil prices in the second half of the 1980s triggered pressures for institutional reform in several countries with dominant NOCs.

In a bid to reduce price volatility, OPEC had introduced its quota system in 1982 and successfully managed to keep prices stable up to 1985. But in that year the introduction of the so-called ‘netback pricing’ by Saudi Arabia caused a sharp drop in oil prices and marked the shift from a seller’s to a buyer’s market, which was to prevail up to the turn of the millennium. Non-OPEC producers with less favorable resource endowments and production costs were most vulnerable to the changes in the macro-economic environment, and faced pressure from international creditors - including the World Bank and the International Monetary Fund - to implement stabilization programs. Argentina is often cited as the first major privatization in an oil-exporting country. In 1989, the government declared 32 state-owned companies eligible for privatization, including YPF, at that time the nation’s largest company. In the same year, the oil sector was liberalized, abolishing monopoly right and price controls, opening up the industry to private participation. Over the following years, YPF disposed of non-core assets valued at over US$2 billion and underwent a program to improve commercialization. In 1993, 60 percent of the company was privatized in two separate transactions (an IPO and an exchange offer for government bonds) for a combined value of US$4.2 billion (Grosse and Yanes 1998). The transformation of YPF into a commercial entity was generally considered a great success and other Latin American countries followed to liberalize (Venezuela, Bolivia, Ecuador) or even privatize (Brazil) their respective oil sectors and NOCs.

2.6 The end of history?

In this situation the collapse of the USSR and other centrally-planned economies was a pivotal event, as it made available to the Western POCs new resource-rich areas for investment, particularly in the Caspian. “The liberalization of the oil industry in the former Soviet Union has changed the competitive position of all oil-producing countries” (Linde 2000, p.8). It seemed that the liberal agenda of only lightly
regulated hydrocarbon access, advocated by the POCs, had won the day over the restrictive policies of the producer NOCs. Where the newly created states decided on setting up a NOC, these would not usually have any dominant or monopolist position, but rather take a junior role in POC-led joint ventures (e.g. SOCAR in Azerbaijan, or KazakhOil).

The notion that capitalism had not only won over communism, but also over state-interventionism in a wider sense was prevalent at the time and swept through oil as indeed trough many other industries.\textsuperscript{12} Klein (1999), at the time Chief Economist of Royal Dutch/Shell, expected all NOCs to be privatized by 2040. The first Gulf War in 1990/91 finally convinced many governments that security of supply was no longer an urgent issue on the political agenda. A major military conflict in the Gulf, always considered a worst-case scenario, had been managed with little disruption to oil supply and the wider economy – the IEA strategic oil stocks and the free market and price mechanisms had apparently been shown to work as intended.

Throughout the 1990s, the market saw strong growth in non-OPEC production, particularly from the FSU. OPEC agreements on output restrictions were usually short-lived and suffered from a low compliance ratio. In December 1997, OPEC took the extraordinary decision to increase members’ quotas: a number of them were looking to boost their short-term revenues, but Saudi Arabia (which since 1986 had supported a policy of low and stable oil prices to encourage energy users to return to oil) also wanted crude prices to fall below US$20/bbl in order to discourage further investment in the Caspian and Central Asia. Oil prices subsequently crashed in 1998, when the expansion in supply coincided with the Asian financial crisis and shortly thereafter Russia’s insolvency, with crude oil trading as low as US$10/bbl.

Prices recovered in April 1999, but by that time most NOCs had already reduced their new investment dramatically or were simply refused additional funds from their respective governments; POCs began to test new investments for positive net present values at assumed oil prices of US$10-12/bbl, shelving many projects and setting the scene for a coming shortage of supply a few years later. In 1999/2000, OPEC initiated a period of output restrictions, which benefited from the support of two major non-OPEC producers (Norway and Mexico) and thus proved to be much more successful than earlier attempts to stabilize price. In 2000, the annual average Brent crude price was US$28.5/bbl, up from US$12.2/bbl during 1998.

\section*{2.7 Developments since 2000}

Since the turn of the millennium, two somewhat opposing trends can be observed with respect to the status and importance of NOCs. On the one hand, the economic and political agenda of market liberalization and privatization continued to influence decision-making around the globe. Since the year 2000 several important countries – including China, Brazil, India, Pakistan, Norway and Japan – have partially privatized their NOCs, and others are considering doing so.\textsuperscript{13} Although many key producers

\textsuperscript{12} Fukuyama’s book “The End of History and the Last Man” (1992) is one of the most prominent illustrations of this view.

\textsuperscript{13} Part of this phenomenon might be explained by typically very drawn-out political decision-making processes, as some of these initiatives were conceived in the pre-2000 era of very low oil prices and tight public budgets. Also, up until 2003 most industry participants did not believe in longer-term sustained high energy prices – a typical broker forecast was a mean reversion to around US$20 per
ruled out steps towards privatization, there were important examples of regulatory
sector reform in some of these countries (e.g. Indonesia, Algeria), and at least initial
steps towards allowing foreign participation in others (e.g. the Saudi Gas Initiative or
ongoing political debates in Kuwait and Mexico).

On the other hand, the extraordinarily high petroleum prices (particularly between
2003 and 2008) - largely caused by the lack of supply-side investment in the late
1990s, a very strong Asian demand growth and heightened geopolitical concerns - had
shifted the bargaining power firmly in favor of the exporting states. Many immediate
budgetary pressures for sector reform had been relieved, and the perceived scarcity of
hydrocarbon resources raised these nations’ political profile through increased
investors’ interest. The desire to increase the government share of available petroleum
rents led to widespread increases in taxation, and in some cases, to the nationalization
or quasi-nationalization of petroleum operations (e.g. Venezuela, Bolivia, and
Russia), or the creation of NOCs in emerging oil provinces (e.g. Chad, and Uganda).
Overall, in both exporting and importing countries the awareness of the very political
nature of energy decision-making has been reinforced.14

As of today, the recent extraordinary volatility in oil prices, the global recession
and the uncertain economic outlook make it difficult to accurately define the outlook
for energy demand, petroleum supply additions, international trade policy, or even the
geopolitical landscape, all of which will be critical to determine the future economic
and political role of National Oil Companies. The significantly reduced availability of
debt financing, however, coupled with ongoing volatility in the equity markets and oil
prices not exceeding US$70 per barrel might result in some NOCs not being able to
invest in new upstream capacities as originally planned. The IEA estimates the cost of
exploiting remaining oil reserves from new Enhanced Oil Recovery projects at
US$30-80 per barrel, from deepwater and ultra deepwater at US$30-65, and from
heavy oil and bitumen at US$30-70 per barrel (IEA 2008).15 NOCs are more likely to
be affected if they (i) face restricted access to capital (for example, already high
reliance on debt markets, or inability to raise capital on the financial market, or high
level of the state’s dependence on petroleum revenue), (ii) face high operating costs
(hence less profit from ongoing operations), (iii) face high future investment costs,
and/or (iv) are subject to significant non-commercial objectives.

---

14 Consequently, some net consuming states in the developing world, such as China and India, have
supported their NOCs in actively pursuing acquisitions of overseas petroleum sources, and Russian
Gazprom’s export dealings appear to be shifting from a purely commercial to an increasingly political
arena (Victor 2008).

15 The cost of tapping new conventional reserves in the Middle East and North Africa is estimated at
less than US$30 per barrel.
3 The arguments in favor of NOCs

NOCs come in many different forms – in terms of their monopolistic or competitive market standing, their business profile along the value chain, their role as asset operators or mere financial holding companies, their degree of commercial orientation, internationalization, etc. – so any argument about NOCs inevitably risks being overly generic or simplified. To contain the extent of this caveat, most of the arguments put forward below (and in Section 4) assume NOCs to have a significant or even dominant role in their domestic petroleum sector. In fact, although “[p]ublic ownership does not imply state monopoly and private ownership does not entail competition” (Vickers and Yarrow 1988, p.45), both concepts are nevertheless frequently intertwined in practice (Beesley and Littlechild 1983).

A review of the literature offers numerous reasons as to why governments chose to set up a NOC rather than opting for more liberal governance regimes. These have been aggregated under six categories, namely (i) the historical context of NOC creation; (ii) the importance of the industry; (iii) political benefits of state control; (iv) general sector efficiency levels; (v) rent capture by the state; and (vi) wider socio-economic issues and priorities.

3.1 Historical context

In many countries, including the Middle East and Mexico, the formation of NOCs went largely hand in hand with a wave of asset nationalizations. The POCs were perceived to be backed by foreign, imperialistic governments, hence opposed to national interests (Grayson 1981; Hartshorn 1993). If national sovereignty over natural resources was to be restored, it seemed logical for the government to create a domestic company which could replace the former operators (Olorunfemi 1991; Stevens 2004), and act as a national symbol of independence. This sense of a national mission, combined with the inherent weakness of the private sector in most developing countries, largely ruled out the option of domestic, but privately-owned operators in the oil and gas sector (Linde 2000). To some extent the setting up of NOCs could also be explained by an element of mimicry: creating symbols of independence became quite fashionable in the post-colonial world (Jaidah 1980; Stevens 2004).

Looking beyond the oil and gas sector, the proliferation of NOCs after WWII up to the late 1970s was embedded in a wider political view, which suggested that the state could and should actively tackle social and economic issues, and supported a strong belief in the benevolence of such state action (Yergin and Stanislaw 2002). In later years the mainstream economics view of the state changed considerably: public ownership per se was seen to result in lower economic efficiency, and possible market failures should be addressed through regulation instead (Shleifer and Vishny 1998). It is important to note, however, that at the time of the founding of most NOCs theories of regulation were not as advanced, and therefore regulation was simply not considered a realistic option.

---

16 Even in Norway, which in the early 1970s had a sufficiently developed private sector and was not laden with post-colonial trauma, private (Norwegian) leadership of the petroleum sector was never really an option in the political discourse, although this partly reflected the Scandinavian tradition of state involvement across industries.
3.2 Importance of the petroleum sector

For a large number of countries in the world, oil and gas is a key industry to determine economic, social and political outcomes, and this is particularly true in the developing world. In exporting countries, the sector accounts for high percentages of GDP, government revenues and foreign exchange earnings. In importing countries, it typically accounts for a large share of foreign exchange expenditures. Furthermore, taxes on oil consumption contribute importantly to fiscal revenues – or, in some cases, the subsidies on oil consumption cause large fiscal deficits (McPherson 2003; IEA 2008). Table 3 shows, for most net exporting countries, the contribution of upstream revenues and fiscal take (excluding taxes on oil products) to GDP in 2003, when Brent crude averaged a modest US$28.8 per barrel.

When the sector constitutes a significant share of the domestic economy – be it in production or consumption – there inevitably exist strong incentives to impose comprehensive state involvement or even direct state control, in order to secure both political and financial advantages. Petroleum is frequently portrayed as one of the “commanding heights” in the international context, a “strategic” industry that might be used and abused as an economic or political weapon.\(^{17}\) Hence, it is “too important to be left to the market” (Robinson 1993, p.57).\(^{18}\)

\(^{17}\) The term “commanding heights” goes back to Lenin and refers to industries that effectively control and support the others.

\(^{18}\) The original quote that oil is not an ordinary commodity and is too important to be left to the market is often ascribed to Sheikh Ahmed Yamani, Saudi oil minister from 1962-1986.
Table 3: Importance of O&G sector for exporting countries (2003)

<table>
<thead>
<tr>
<th>Country name</th>
<th>Oil and Gas exports as % share of world exports</th>
<th>Fiscal oil and gas revenues as % share of country GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Arabia</td>
<td>13.5</td>
<td>38.3</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>11.8</td>
<td>17.0</td>
</tr>
<tr>
<td>Norway</td>
<td>6.5</td>
<td>18.4</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>4.7</td>
<td>36.8</td>
</tr>
<tr>
<td>Iran</td>
<td>4.3</td>
<td>19.8</td>
</tr>
<tr>
<td>Nigeria</td>
<td>4.3</td>
<td>46.1</td>
</tr>
<tr>
<td>Algeria</td>
<td>3.9</td>
<td>36.2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>3.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3.4</td>
<td>4.0</td>
</tr>
<tr>
<td>Venezuela</td>
<td>3.3</td>
<td>24.6</td>
</tr>
<tr>
<td>Kuwait</td>
<td>3.0</td>
<td>44.8</td>
</tr>
<tr>
<td>Mexico</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.4</td>
<td>6.3</td>
</tr>
<tr>
<td>Canada</td>
<td>2.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Libya</td>
<td>1.9</td>
<td>47.6</td>
</tr>
<tr>
<td>Iraq</td>
<td>1.6</td>
<td>38.4</td>
</tr>
<tr>
<td>Qatar</td>
<td>1.5</td>
<td>47.0</td>
</tr>
<tr>
<td>Oman</td>
<td>1.5</td>
<td>43.1</td>
</tr>
<tr>
<td>Angola</td>
<td>1.4</td>
<td>65.3</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>1.1</td>
<td>23.6</td>
</tr>
<tr>
<td>Argentina</td>
<td>0.9</td>
<td>4.3</td>
</tr>
<tr>
<td>Bahrain</td>
<td>0.8</td>
<td>53.9</td>
</tr>
<tr>
<td>Syria</td>
<td>0.7</td>
<td>19.3</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>0.6</td>
<td>80.0</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Vietnam</td>
<td>0.6</td>
<td>9.8</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>0.6</td>
<td>34.4</td>
</tr>
<tr>
<td>Yemen</td>
<td>0.5</td>
<td>30.5</td>
</tr>
<tr>
<td>Colombia</td>
<td>0.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Egypt</td>
<td>0.5</td>
<td>3.9</td>
</tr>
<tr>
<td>Turkmenistan</td>
<td>0.5</td>
<td>26.6</td>
</tr>
<tr>
<td>Equatorial Guinea</td>
<td>0.5</td>
<td>96.6</td>
</tr>
<tr>
<td>Ecuador</td>
<td>0.4</td>
<td>9.7</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>0.4</td>
<td>31.5</td>
</tr>
<tr>
<td>Congo</td>
<td>0.3</td>
<td>59.1</td>
</tr>
<tr>
<td>Sudan</td>
<td>0.3</td>
<td>12.3</td>
</tr>
<tr>
<td>Gabon</td>
<td>0.2</td>
<td>42.6</td>
</tr>
<tr>
<td>Cameroon</td>
<td>0.2</td>
<td>7.6</td>
</tr>
<tr>
<td>Côte d’Ivoire</td>
<td>0.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Bolivia</td>
<td>0.1</td>
<td>6.1</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>0.1</td>
<td>13.0</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>0.1</td>
<td>3.8</td>
</tr>
<tr>
<td>Congo, Dem. Rep.</td>
<td>0.0</td>
<td>4.4</td>
</tr>
<tr>
<td>Chad</td>
<td>0.0</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Total: 44 Countries</strong></td>
<td><strong>90.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: IMF (2005)
3.3 Political gains from state control

The political importance of the petroleum sector has been evident throughout its history as briefly set out in the previous section. Consequently, the political incentives for direct state control over the industry are generally very strong. Whether or not such enhanced state control actually leads to better decision-making and value-creation is a different question.

Externally, petroleum wealth can be used in international dealings to secure financial, political or military support, and direct state control over the sector enhances the government’s international standing and bargaining position. Internally, direct sector participation via NOCs should allow for better control of the domestic petroleum sector along the value chain – including control over: technical and commercial decision-making; resource development and depletion policy; product prices and subsidies; employment decisions and scope of activities. In downstream operations, direct control over the pricing of oil products is an area of great political and social sensitivity which directly impacts on the daily lives of consumers and voters (McPherson 2003). Furthermore, in oil importing countries, the creation of NOCs is seen to address (or at least moderate) concerns about the security of supply and to balance the power of the exporting nations and their NOCs, but also of powerful POCs.

OPEC members are, of course, a prominent example of the blending of political motivation and economic policy. Saudi Arabia has long used its oil trading relationship with the U.S. as a means to acquire political and diplomatic capital, as well as military assistance. In order to support its special relationship with the U.S., for example, since at least the early 1990s Saudi Arabia’s goal was to be its number one crude supplier on a month-by-month basis. While such strategy was costly (the volumes could have been sold elsewhere at a higher price), it was only abandoned during 2003 following a range of political issues that changed Saudi views as to the geopolitical payoffs of the “number one supplier” policy (Jaffe and Elass 2007). In Nigeria, nationalization of petroleum assets occurred against the general ideological backdrop of post-colonialism, but was also encouraged by tangible political interests linked to Biafra civil war (Nwokeji 2007, p.14).

Outside of OPEC, Norway is a much-cited example of how the state can use a National Oil Company to tightly control the pace and modalities of petroleum development. In the early 1970s there was widespread concern over the macro-economic and cultural consequences of overly rapid oil development, which led to a deliberate “go-slow” policy. This included a restrictive licensing system, and a strong NOC (Statoil founded in 1972) which in the early years had a majority interest in all production licenses, and a veto power on development decisions (Dam 1974; Al-Kasim 2006; Wolf and Pollitt 2009).

Malaysia – which quite early recognized the limits to its resource base and the need for conservation measures – implemented a “National Depletion Policy” in 1980 in order to cap the rate of petroleum production. The policy initially limited annual production of oil from larger fields (reserves greater than 400 million barrels initially in place) to 1.75 percent of the initial reserve base. In 1985 the ceiling was revised upwards to an annual 3 percent of the initial reserve base. The national depletion policy was later extended to also include natural gas reserves, where an upper limit of 2,000 million cubic feet per day has been imposed in Peninsular Malaysia. As with
the OPEC quotas, such policy could be implemented and enforced under different types of sector organization, but from the government’s perspective it is arguably more convenient if a dominant NOC operator can simply be instructed to comply.19

Downstream product pricing and subsidies, which are discussed later in this Chapter, are another widespread tool for political intervention in consumer-sensitive areas. The IEA estimated the total 2007 energy subsidies of the twenty largest non-OECD countries (net importers and exporters) to be US$310 billion (IEA 2008).

Given the intensely political nature of the sector throughout its history, it is unsurprising that national petroleum policies tend to include considerations beyond economic efficiency. But as indicated above, an important question is whether direct state ownership always is the instrument of choice to implement such political guidance, or whether the difficulty of having to regulate a competitive sector might be offset by better incentives for cost efficiency, innovation and value creation.

But even where foreign (private) participation is allowed, the presence of a strong and competent NOC might be perceived as a political asset because it represents a credible alternative to foreign operatorship and thus increases the state’s bargaining power on a broad range of issues.

3.4 Efficiency of monitoring and operations

The presence of a strong NOC, supporters say, benefits overall efficiency levels in the industry, and thus improves total value creation. The most commonly cited argument in this context is the role of NOCs in reducing the state’s informational asymmetries vis-à-vis private operators, which leads to better sector regulation and less opportunities for rent seeking and rent skimming. When a government deals directly with private investors in the petroleum sector significant information asymmetries exist between the parties: the private operator usually has much better knowledge of the geology (after initial exploration has been conducted), appropriate production schedules, technology and associated costs, minimum environmental impact etc. In order to effectively perform its industry oversight, the government would require a comparable level of expertise and information (Stevens 2004), which is highly unlikely if the state has no direct operational involvement in the industry. In order to reduce the bargaining power of private operators, a producer state should ultimately be in a position to run the industry itself (Nore 1980). The establishment of NOCs enabled governments to gain first-hand information on the operational and financial conditions facing all companies, and to establish a benchmark against which they could judge the performance of the POCs. NOCs thus provided the producing states a “window to the oil industry” (Grayson 1981, p.10).

One example where this consideration has been documented is the creation of Statoil in Norway in 1972. Although some had advocated Statoil to be a holding company only for the state’s direct interests in petroleum assets, the Ministry of Petroleum and Energy was of the opinion “that only through ‘learning the ropes’ as an operator would the national company be able to assist the country in ensuring national control.” (Al-Kasim 2006, p.48). Another example is Petronas, where the Malaysian

---

19 OPEC member states with substantial POC operator interests (such as Libya, Angola or Nigeria) usually have contractual stipulations on the compliance with overall production caps, but disputes might still occur.
state officials were dissatisfied by the information policies of the POC concessionaires: all they received was revenue, rather than information on new discoveries and developments, making it difficult to properly inform parliament and to develop suitable national petroleum policies (von der Mehden and Troner 2007).

There are other ways in which NOCs can support overall efficiency levels in a domestic petroleum sector. They can develop well-trained domestic labor beyond their immediate needs, or conduct research and development (R&D) to generate know-how, both of which will have positive spill-over effects. Private firms also engage in these activities, but their investments might be socially sub-optimal. - training and R&D have some characteristics of public goods - in which case state intervention in the form of regulation or direct involvement could be justified.

3.5 Maximizing state petroleum rent

The state’s rent capture from petroleum operations is in principle determined by two main variables: the total amount of rent created in the petroleum industry, and the relative share captured by the state and its agent (NOC). Political control and economic efficiency of the industry were discussed above, both of which can be seen to impact on the total value created in the sector. We now turn our attention to the state’s ability to capture an appropriate share of such value creation.

A fundamental trade-off for the state in setting appropriate fiscal systems (which is the main mechanism for rent extraction) is the balance between short-term monetary gain and longer-term implications for the attraction of incremental investment, which in turn determines the future tax base. However, governments often want to secure the highest possible share of the economic rent (or value-added, in the case of downstream operations), and are hesitant to pay significant returns on investment to outside operators. Even if governments appreciate the efficiency of private operators, they are frequently concerned about the ability of licensing/tax regimes to secure a “fair share” of petroleum rent for the state. Such contractual or fiscal systems might not be flexible enough to collect all excess rent from private operators through what often are rapid and significant changes in commodity prices, technology and geopolitics, resulting in a monetary loss for the state.

Fiscal and contractual frameworks, if well designed and implemented, can promote sector development and value creation whilst being efficient in capturing part of that value for the public purse. But many of the agreements and regulations drafted during the 1990s (and before) are largely regressive and not flexible enough – from the point of view of the state these regimes often fail to capture an appropriate share of the rent if significant changes in project and economic conditions occur.20 Such rigidity often increases pressures to renegotiate existing agreements. A state-owned NOC monopoly would in principle be able to capture the entire value (Stevens 2004), but it might differ from private players in terms of operating efficiency, and create new issues of sharing rent between the NOC and the state as shareholder.

20 Many fiscal systems around the world use sliding scales for the determination of parameters such as royalties, bonuses, profit oil/gas split, cost recovery, and taxes; but in most cases these sliding scales are linked to production volumes rather than economic variables, and are thus inadequate to account for substantial changes in oil prices and/or cost basis (Tordo 2007).
A point related to the quality of the fiscal system concerns the administrative capacity and expertise to effectively regulate and oversee private petroleum operators on an ongoing basis. The absence of such regulatory competencies can be particularly pronounced in developing nations, including Sub-Saharan Africa. To avoid these issues altogether, or to allow the bureaucracy some years to get up to speed and develop sector familiarity and in-house expertise, some countries have opted for the creation of a dominant NOC that is intended to advance national development.

### 3.6 Wider socio-economic issues and priorities

Governments are fond of NOCs because their perceived cash-richness allows for the introduction of company objectives other than profit. Such other objectives might be of (geo-)political nature, as was discussed above, or serve wider socio economical goals of the government.\(^{21}\) Examples for the latter category include employment generation for locals, development of commercial and technical capacity, provision of social (schools, hospitals.) and other infrastructure (roads, bridges, water supply), income redistribution through subsidized prices, and assistance in state borrowing (Nore 1980; Grayson 1981; Horn 1995; McPherson 2003). In countries where welfare systems are under-developed or non-existent, employment and subsidies on oil products (or related measures) can serve as primary social safety nets and re-distribution measures. In many ways the corporate purpose of the NOCs has thus been “tied to the national purpose” (Khan 1987, p.188), and the existence of non-commercial objectives and obligations is often cited as a defining characteristic of NOCs versus their private-sector peers.

Non-commercial objectives are widespread within the NOC universe, but come in many different forms.\(^{22}\) While some are explicitly mandated by the government, others are embedded within the NOCs’ corporate culture.\(^{23}\) For some, the NOCs essentially serve as convenient sources of funding for government-run programs, whereas others are actually implemented by the NOCs themselves. Some involve straightforward re-distribution of wealth, whereas others aim to develop economic linkages around the oil and gas sector to advance longer-term capacity building and economic diversification. It is worth noting that recent research seem to indicate that, compared to earlier decades, NOCs today act less frequently as direct providers “of last resort” for services and infrastructure projects. Instead, NOCs have increasingly been focusing on their core business, and many non-commercial activities today are sponsored indirectly via funds transferred to the state treasuries (Marcel 2006b; WB-CEE 2008). It should also be emphasized that in order to justify any national mission related expenditure by the NOC, the societal benefits need to outweigh the corporate costs, and/or no other public body should be capable of assuming such obligations more effectively or efficiently.

In recent years one particularly prominent case has been Venezuela’s NOC PdVSA. According to the NOC research program at Rice University, the PdVSA

---

\(^{21}\) Non-commercial activities do not always follow explicit government guidance, frequently they just develop based on the broader corporate culture.

\(^{22}\) CEE (2007) collects some explicit NOC mission statements, including non-commercial objectives.

\(^{23}\) Some NOCs, including Algeria’s Sonatrach have in recent years begun voluntary expenditure programs very much comparable to corporate social responsibility initiatives of the private sector. In interviews conducted by Marcel (2006b), Sonatrach managers emphasized the corporate citizenship aspect of programs such as healthcare provision, sport sponsorship or emergency relief aid.
subsidiary tasked with social and cultural programs only spent US$77m in 1997, but in 2005 total expenditures for education, healthcare, job creation and subsidized food distribution were US$6.9bn (Baker Institute 2007). The researchers conclude that the company has come to prioritize national development over corporate development.

Elsewhere Saudi Aramco, which has a reputation for operational and commercial efficiency, still plays an important societal role as sponsor of technical education and training. Its HR mission statement declares investment in Saudi nationals “as a national obligation and a strategic goal” (Jaffe and Elass 2007, p.68), and Aramco consequently spends more than US$1bn per year on programs to recruit, train and retain its workforce. Since 1953 it has built more than 130 government schools, and since 1994 its Aramco College Preparatory Center has awarded over 4,800 full scholarships for international universities to Saudi nationals. In a different HR context, Aramco does not usually fire poorly performing employees, but instead keeps them in “shadow offices” with nothing much too do, keeping them “away from important business” (Marcel 2006b, p.68).

In many African states the NOCs not only provide a significant share of government revenues, but frequently also are the most competent and effective public sector entities in the country. Consequently these firms are often called upon to perform essential tasks of the executive, or to invest on behalf of the government. Angola’s Sonangol, for example, counts a national airline, a telecom and an insurance company among its subsidiaries, and in the past it has been involved in raising debt finance for the state budget, as well as conducting large-scale military equipment purchases on behalf of the government during the Angolan civil war (Heller 2009).

The linkages (backward and forward) of NOCs to the rest of the economy are critical in developing domestic technical and commercial capacity outside the NOC, and to encourage a sustainable and balanced economic development. Backward linkages generally relate to the procurement of input goods and services, and forward linkages include for example the reliable and affordable provision of energy, or the physical supply of oil and gas to certain industrial users such as petrochemicals, heavy industry or power generation. One of the key measures to encourage backward linkages is the preferred treatment of “local content” in state-led developments.

Norway may provide a successful example. In the initial years after its founding, Statoil had a veto right on all upstream development decisions. Due to a strong preference for local content the Norwegian share of delivered services to petroleum operations increased from 28 percent in 1975 to 62 percent in 1978 (Storting Report No. 53, quoted in Al-Kasim (2006, p.60)). It should be pointed out, though, that local content in Norway had preferential status by law, whether or not the NOC was

---

24 One of the key political attractions of channeling social spending through PdVSA is the ability for discretionary spending outside the official state budget and its approval process.
25 Ali Naimi, head of Saudi Aramco, has emphasized on several occasions that “the objectives of the state are better served if the national oil company is commercially structured and run.” (Jaffe and Elass 2007, p.70)
26 During her detailed fieldwork research on Saudi Aramco, Kuwait’s KPC, Iran’s NIOC, Algeria’s Sonatrach and Abu Dhabi’s ADNOC, Marcel in fact found that ADNOC was the only one of these companies to fire underperforming staff.
involved, and that Norway’s economy was uniquely placed to implement such policies, with a healthy industrial base and offshore-related industries (e.g. shipping) already present at the time of the first petroleum discoveries.

Nigeria, on the other hand, has been much less successful in fostering a domestic industrial base around its petroleum operations, and despite huge overall investment the contribution to local GDP growth has been minimal. According to the NNPC website this “is largely due to low Nigerian Content in the industry, evident from the over 80 percent of work value carried out abroad. This has led to a dearth in jobs, skills development, capacity building / utilization and lack of sustained national economic development.” To address the situation, the Nigerian government in 2003 set local content targets for the oil and gas industry of 45 percent by 2006 (which has been missed) and 70 percent by 2010 respectively. These targets are currently implemented and monitored through the “Nigerian Content Division” at NNPC, but overall progress seems questionable, owing to a number of reasons, including the achievability of the targets vis-à-vis local industrial capacity. Furthermore, there has been criticism that overseas imports are merely channeled through local administrative joint ventures in order to designate them as “local content” (Stevens 2008b).

4 The arguments against NOCs

Despite the host of apparently good reasons to set up a NOC, the performance and commercial efficiency of these state enterprises has in most cases not lived up to expectations and quite often has been disappointing. This issue is related but not equivalent to the recurrent and apparent failure of many states to translate a wealth of natural resources into sustainable economic development, the so-called “resource curse” thesis. Resource curse can affect any resource-holding nation, but some would argue that nations with heavy direct state involvement and limited access to outside competitors are more prone to the phenomenon.

4.1 Historical context and ideology

While it is true that theories and practice of regulation were less well developed in the 1960s and 70s, when many influential NOCs were set up, there arguably has been

---

27 Article 54 of the Royal Decree of 8 December 1972 specified that: “Licensees shall use Norwegian goods and services in petroleum operations to the extent that these are competitive in terms of quality, service, delivery time and price.” (Al-Kasim 2006, p.60)
28 Resource curse has been described and analyzed in detail elsewhere (see e.g. Wijnbergen 1984; Auty 1993; Karl 1997; Leite and Weidmann 1999). Stevens (2003) contains a good review of the previous literature, and Humphreys et al. (2007) provide a recent and comprehensive treatment of related issues. Sachs (2007) points out that the idea of petroleum being a “curse” is only partly true. While the economic performance of oil economies has fallen well short of potential, oil-rich states have often outperformed their neighbors that lack oil, not just in GDP terms, but also regarding development indicators such as life expectancy, child mortality, school enrolment and infrastructure provision. In contrast, Collier and Goderis (2007) find long-term negative effects of resource-led booms on economic output.
substantial progress in regulatory design which should encourage changes to the original institutional arrangements.\textsuperscript{29}

It is also plausible that the historical context of NOC establishment (as outlined earlier in this Chapter) makes these firms’ decision-making susceptible to ideology, which can interfere with the maximization of economic efficiency and the generation of social welfare. Particularly in the Middle East, the memories of foreign domination through international consortia, and of the sometimes arduous nationalization process, continue to influence perceptions and decision-making. POCs have traditionally sought title to reserves and production, emphasizing the need for property rights; the NOCs, on the other hand, have tried to avoid granting equity rights.\textsuperscript{30} POCs have also frequently been accused of producing reserves too quickly, focusing on short-term profits and disregarding the longer-term wealth of the host nation; of using deliberately low future price scenarios that underestimate the profitability of any joint projects; and of a general degree of arrogance (Marcel 2006b). Such strongly held opinions on both sides obviously make cooperation and rational decision-making more difficult.

A mitigating factor is that in many cases – with the exception of openly nationalist initiatives – the cultural and operational gap between NOCs and POCs seems to have narrowed. Chinese state companies PetroChina and Sinopec have joint ventures with Western POCs to build retail networks and petrochemicals plants in China, and run upstream operations around the world. Middle East NOCs such as Saudi Aramco and KPC have acquired equity interests in private overseas refining and marketing assets (e.g. Showa Shell in Japan). Even the large-scale takeover of private firms and assets through NOCs, for a long time considered impossible for cultural and political reasons, has become a regular feature of the industry.\textsuperscript{31}

\subsection*{4.2 Economic cost of political control}

The importance of the petroleum industry is a much-cited argument in favor of direct state intervention. But this is a political rather than an economic argument, and any political benefits from control often come at substantive economic costs.

\textsuperscript{29} North (1991) points out the path dependency of institutions, and how institutional change often reflects changes in the external environment. New institutions may arise when groups in society see a possibility of availing themselves of profits that are impossible to realize under prevailing institutional conditions.

\textsuperscript{30} According to (Marcel 2006a), many NOCs consider the compensation paid to the POCs in the 1970s nationalization processes to have been excessive. For many resource-holding states this issue has certainly contributed to the popularity of contractual (incl. PSCs) over concessionary legal systems. While contractual and concessionary systems could be designed to provide equivalent economic returns to the government, their psychological connotations clearly differ.

\textsuperscript{31} The first asset acquisition by a producing NOC was KPC’s purchase of some of Gulf Oil’s European downstream assets. When KPC acquired 22 percent of BP’s shares in 1989, the fear of producer dominance in consuming markets was such that the British government ordered the stake to be reduced to 9.9 percent (Al-Moneef 1998). In 2005 China National Offshore Oil Company (CNOOC) attempted a US$18.5bn takeover of U.S. firm Unocal, which was effectively blocked through political opposition in the U.S. Congress. China Petroleum and Chemical Corporation (Sinopec) recently agreed the US$7.2bn acquisition of Swiss-Canadian Addax Petroleum, which among other assets has a production license in Northern Iraq. Russia is a special case, both in the history of its privatizations and the recent return of many of the key assets into state hands (acquisition of main production unit of Yukos by state company Rosneft, and of Sibneft by Gazprom).
As set out in the concept note for this Study, the creation of a NOC would be economically justified if, by virtue of its existence, the government was able to maximize the rent for its country over time. This would only be the case if either the NOC is inherently more efficient than private sector firms, and/or if the licensing and fiscal system is inherently inefficient in allocating risks and sharing benefits between the state and private investors, systematically favoring the latter. Conversely, at least in theory, ownership structure does not matter from an economic perspective if complete contracts can be written (Williamson 1985; Grossman and Hart 1986). But as with all state-owned enterprises, the ultimate owners of the NOCs face a double-agency problem: between the citizens and their government on the one side, and between government and NOC management on the other. In addition, citizen ownership of NOCs is highly diffused, all of which makes the writing of complete management contracts particularly difficult, and might thus be responsible for inefficient behavior (Shleifer 1998).32

As to the quality of licensing and fiscal arrangement, developing countries in the past have frequently been unable to establish efficient regulatory, contractual and fiscal frameworks. But as the general understanding and appreciation of these contractual issues has much improved in recent years (Johnston 1994; Johnston 2007; Tordo 2007), from an economic point of view there seems to be no a priori reason to opt for a NOC instead of a competitive market with a well-designed fiscal system.

More generally, the notion of creating value by “cutting out the middle-man” (in this case the private sector) is misleading: NOCs don’t operate for free either, and any public sector investment in the petroleum sector has a cost of capital associated with it (which in an efficient market is similar to the private operator’s return) as well as an additional opportunity cost due to the fact that public funds tend to have a higher shadow welfare multiplier (Jones et al. 1990; Newbery and Pollitt 1997).

## 4.3 Operational inefficiencies

If NOCs operated equally efficient as POCs, or better, this would constitute a strong argument for their existence. Unfortunately, however, NOCs are frequently accused of sub-standard operational efficiency based on – amongst others – inadequate technical and managerial capabilities as well as misguided human resources policies (Jaidah 1980; Al-Mazeedi 1992; Gochenour 1992; also see many NOC case studies by Rice and Stanford Universities).33

After the POCs had lost their prime assets in the nationalizations of the 1970s, high oil prices over a number of years provided a shelter to restructure and improve efficiency levels; a large part of windfall profits from this benign pricing environment was invested into research and development of new technologies, enabling huge cost savings and productivity gains. The price at which POCs could profitably find, develop and produce non-OPEC oil, and in particular oil from frontier fields, came down significantly from US$25 per barrel in the 1980s to US$10 in 1999, both in 1999 prices (Linde 2000, p.18). NOCs on the other hand tended to manage and maintain the asset base that was handed to them, and most failed to invest in

32 Critics might rightfully argue that complete management contracts don’t exist in either case, but the relative deviation from this ideal scenario does matter in terms of incentives for efficiency and control.
upgrading facilities or new technologies. It was during this time that many of the NOCs fell behind in technical competency, and lost the ability to take on some of the more advanced projects on their own (Stevens 2004). In terms of human resources, NOCs often tend to be overstuffed and to pay above-average wages compared to other government entities and state owned enterprises (Waelde 1995), but are also accused of recruiting according to family, tribal or religious considerations rather than based on qualification and performance, which limits their performance (Al-Mazeedi 1992). It is easy to make undue generalizations about these criticisms of NOCs, but because robust estimates of efficiency differentials are very rare (see the overview of NOC research in the Preface of this Study) we have to rely to some extent on individual case evidence. Among the state petroleum firms that have very publicly struggled with operational performance are Pemex and Pertamina (see Box 1).

**Box 1: Examples of NOCs’ operational inefficiency**

**Pemex**

According to a Stanford case study, Pemex severely lacks modern technology and only performs limited research and development. The company thus has little internal expertise in technological development or implementation, and heavily relies on outsourcing to international service providers (Stojanovski 2008). In a recent performance benchmarking of five NOCs over the period 2002 to 2005 Pemex exhibited the worst track record in replacing reserves (CEE 2007). The main options for offsetting rapid production decline at its mature Cantarell field include enhanced oil recovery at mature fields and deepwater offshore developments, but these require specialist technical knowledge and project management skills. Pemex upstream production cost per barrel (US$6.93 in 2005) was only slightly higher than PetroChina’s, where production is also heavily dependent on a single aging field, but significantly higher than CNOOC’s and Petrobras’, and more than double Statoil’s, whose respective portfolios are biased towards higher-cost offshore areas (CEE 2007). Another indication of technical deficiencies is the poor environmental performance of the pipeline network, which suffers from frequent leakages. About one third of the network is more than 30 years old and some pumping equipment is so antiquated that Pemex cannot find spare parts (McKinley and Malkin 2005).

In addition to technical deficiencies, the Stanford report also identifies a shortage of human capital, a very slow adoption of management best-practices, and wasteful excess employment.

**Pertamina**

In the wake of the Asian financial crisis, between 1998 and 2000, Indonesian NOC Pertamina was scrutinized by a number of outside reports and audits. The Boston Consulting Group (BCG) in 1997/98, in a report called “Pertamina Restructuring”, analyzed the potential cost savings from streamlining procedures and organizational structures. In 1999 PriceWaterhouseCoopers (PWC) conducted a special audit of Pertamina in order to assess its operational efficiency. Its findings were leaked to the press and caused substantial public outrage: it calculated losses of US$6.1 billion due to corruption and inefficiencies over two years time, which for each year was in excess of 10 percent of the national budget (Linde 2000; McPherson 2003). The World Bank provided the Indonesian government with detailed analysis and recommendations on four key aspects of the sector (World Bank 2000a).

---

34 Pemex’ domestic Mexican refineries perform very unsatisfactory. But when Pemex had the opportunity for a regular staff exchange with Shell in the context of the 1991 refining JV at Deer Park, Texas, the idea was apparently turned down because the board failed to see value in such a process.
35 Internal transfer pricing, a pre-requisite for departmental profit/loss calculations, was only introduced in 1992, and it took until the year 2000 for Pemex to rank different investment projects by profitability.
36 Unions are traditionally very powerful at Pemex. According to a senior executive it employs more than 4,000 workers at a refinery that could be run with only 800. Half of the staff are “unspecialized” (i.e. uneducated or untrained) with no clear job descriptions or duties (Stojanovski 2008).
37 These were (i) the creation of efficiency-based pricing structures for fuel products; (ii) a review of contractual approaches in the upstream, including improvements to the PSC regime; (iii) liberalization of downstream activities; and (iv) drafting a new oil and gas law and supporting regulations.
As to some indicators of operational efficiency, the reports estimated industry average direct oil production cost (for Indonesia's onshore fields from 1993-1995) at US$1.20 per barrel, whereas Pertamina's unit cost was US$5.00. For gas, the industry's average direct production costs were US$0.03 per million cubic feet, and Pertamina's were US$0.14. Upstream overhead costs per barrel were also significantly higher at Pertamina. In the downstream, operating costs of a typical Pertamina refinery were about US$2.56 per barrel compared with US$1.31 for average South East Asia refineries. The margin for a hydro-cracking type refinery in Singapore was US$1.41 per barrel, compared with a loss of US$0.89 per barrel for a similar refinery in Indonesia (World Bank 2000a). Overall, the PWC special audit report estimated the opportunity for savings and value creation (future gains Pertamina could realize from optimizing its operation) at US$1.3-US$2.0 billion, of which 70 percent would come from the upstream unit.

In addition to constraints on operational capabilities and cost efficiency, McPherson (2003) points out a number of further issues which contribute to the low levels of commercial performance and efficiency of NOCs: lack of competition, the assignment of non-commercial objectives, governance issues, funding requirements and funding strategy, and conflicts of interest embedded within the domestic industry structure. These are analyzed below.

### 4.4 Lack of competition

The important role of competition for the performance of a company is well documented both in theory and empirical work (Boardman and Vining 1989; Galal et al. 1994; Nickell 1996). Competition allows improved monitoring through a comparison of managerial performance, it encourages innovation of new products and processes, and it has a disciplining effect due to the need to fight for market share and the threat of bankruptcy (Hayek 1948; Beesley and Littlechild 1983; Vickers and Yarrow 1988; Pollitt 1995). The lack of competition has been found to be the biggest barrier to economic growth in developing countries (Palmade 2005). In order to ensure the appropriate standing of their NOC, governments in most cases nevertheless granted monopoly rights, or at least a highly protected business environment. Even where there existed potential competitors, especially in the downstream, NOCs were able to create significant barriers to entry often by manipulating the regulatory environment to their advantage (Stevens 2004). There are also powerful interest groups within a public enterprise – including management, employees and unions – that have an incentive to oppose the introduction of competitive forces. On the other hand, groups with an explicit interest in such competitive pressure – e.g. potential market entrants and the wider consuming public – often are not as effective in arguing their case (Vickers and Yarrow 1991). The justification for privileges has often been to offset non-commercial obligations imposed on state-owned enterprises.

### 4.5 Non-commercial objectives and subsidies

As discussed earlier in this Chapter, many governments assumed that NOCs would be able to successfully deliver on both commercial and non-commercial objectives. This perception was partly based on the size of the NOCs (often the largest

38 “Governments can – and typically will – use their regulatory and taxing powers to extend special privileges to their own enterprises” (Horn 1995, p.135).
local enterprise) and the significant available rents, particularly in the upstream. However, the incompatibility of these dual roles first became apparent during the oil price fall in 1986, and again in 1998, and has been one of the drivers for tentative institutional reform in net exporting countries. The imposition of multiple objectives also runs counter to one of the other justifications of setting up a NOC, namely to provide an industry benchmark for POC performance. Loaded with non-commercial objectives, NOC performance is inevitably skewed to the downside and they become inappropriate measuring devices (Grayson 1981).

For net-importing countries, fuel subsidies present one of the principal non-commercial obligations, and these countries are particularly hard-hit in times of high commodity prices (Coady et al. 2006; ESMAP 2006; Mati 2008). It has been shown that subsidies largely benefit the better-off at the expense of the poorest, increase fuel adulteration and smuggling, and reduce overall social welfare (Bacon and Kojima 2006). The same applies to net-exporting countries: in 1999, 13 out of the 15 major oil exporting countries in the world were subsidizing domestic petroleum prices (IMF 2002). In a recent study the 2007 energy subsidies of the 20 largest non-OECD countries (net importers and exporters) are estimated at US$310 billion, often creating an unsustainable economic burden as well as exacerbating negative environmental effects (IEA 2008). Iran (with domestic oil and gas subsidies valued at more than US$50 billion), Russia, China, Saudi Arabia, Venezuela, Indonesia and Egypt are among the countries that make most use of fuel subsidies.

Similar to fuel subsidies, other social expenditure programs of NOCs have been criticized as ineffective, inefficient, and/or for being sources for patronage. For example, an analysis of Sonangol’s overseas university scholarships determined that they covered technical degrees that were pertinent to the oil industry (such as engineering), but were often dispensed to the children of politically-connected families only. During the final years of the civil war, from 1997 to 2001, overseas scholarships accounted for 18 percent of total government expenditure on education, more than what was spent within the country on technical education and higher education combined (Hodges 2003; Heller 2009).

Non-commercial objectives will always affect commercial performance and NOC profitability, but they don’t necessarily have negative implications for efficiency. Not-for-profit activities can of course be delivered efficiently, and overall efficiency levels should always be measured relative to corporate objectives. Instead, the argument against non-commercial objectives rests on the fact that, according to most empirical studies, NOCs typically are not very efficient in delivering on non-commercial objectives, and that other public sector bodies would be better placed to perform such duties. Where “money is spent haphazardly, without strategic guidance, or without concern for measuring the success of the expenditure” (Marcel 2006b, p.129), there will be inefficiencies in the delivery of both commercial and non-commercial objectives. It has also been argued that dual objectives constitute a distraction for management, and serve as a convenient excuse for financial under-performance, thus diluting incentives for efficiency improvements.

4.6 Corporate governance

There is ample anecdotal evidence that the governance of NOCs typically compares unfavorably to private sector standards, whether it is regarding transparency, accountability, internal financial controls, commercial oversight or
management structures.\textsuperscript{39} This is a consequence of both the NOC managers and the politicians in government not having strong incentives to enforce such governance standards. An example of corporate governance related issues is shown in Box 2.

NOC managers strive to maximize their scope of discretionary decision-making, whilst the government often has an interest to obscure the exact uses of cash for political purposes (Stevens 2004). Boards of directors are frequently appointed on political grounds and lack independence. As an example, McPherson (2003) reports that in Nigeria, due to the government’s concern to exercise more direct political control over NNPC, the company for 10 years did not have a board of any kind (see also Nwokeji 2007).

In addition to causing inefficiencies, weak governance arrangements (both formal and informal) frequently result in corruption and cronyism. Once again, Pertamina illustrates this point. The PWC special audit report in 1999 found numerous irregularities such as excessive mark-ups on contracts, sales of natural gas below market price, or questionable fees to trading companies partially owned by the President’s family. Following the change in regime and the oil and gas sector reform law of 2001, Hertzmark (2007) reports that Pertamina until 2006 cancelled or retendered more than 150 contracts with former President Suharto’s family members and associates and ordered such parties to sell their stakes in petroleum projects.

Box 2: Example of corporate governance issues

\begin{center}
\textbf{Société Nationale des Pétroles du Congo (SNPC)}

SNPC was founded in 1998 and is the NOC of the Republic of Congo (ROC). Among the conditions for securing debt relief through the Highly Indebted Poor Countries program, the ROC has undertaken to improve the transparency and governance of its NOC. To this end, the government has allowed the publication of certain oil sector data and has agreed regular independent audits, conducted by KPMG. The audits to a large extent confirmed a lack of transparency and governance. In the 2003 audit, for example, KPMG found ‘significant risks of errors and fraud related to weak internal controls and current governance’.\textsuperscript{40} Due to SNPC’s poor control systems and systematic obstructions to KPMG’s data gathering process, the auditors declared the accounts for the years 1999 to 2003 to be ‘unauditable’. Later audits show some improvement. But while the accounts for 2004 and 2005 were auditable, they were ‘uncertifiable’ according to international standards.\textsuperscript{41}

In West Africa, an audit of NNPC for the World Bank estimated annual losses in 1999 of between US$800 million and US$1 billion due to inefficiency and corruption (World Bank 2000b; McPherson 2003). In his NNPC case study Nwokeji (2007, p.44-58) highlights numerous incidents of waste, graft and corruption since the company’s inception. Nonetheless, it should be pointed out that, on a country level, Nigeria has

\textsuperscript{39} See for example the extensive case studies mentioned earlier in this paper conducted e.g. by Rice University, Stanford University, Marcel (2006b) or ESMAP (2007).

\textsuperscript{40} All published audits and related documents are available in French from the website of the Finance and Economics Ministry: http://www.mefbc-g.org/petroles/transp_gest_petroleire.html

\textsuperscript{41} When in 2004 private creditors of the ROC raised concerns about a possible discrepancy of US$300 million between what the ROC treasury should have received from SNPC vs. what it had actually received, the International Monetary Fund requested KPMG to reconcile the differences, but the auditors were only able to do so based on specially prepared statements by the Congolese Ministry of Finance, rather than based on primary bank account statements. Unable to access the primary data, KPMG was not in a position to guarantee the veracity of information prepared by the Ministry.
made important advances in terms of revenue transparency in recent years, including the 2006 publication of the first report of the Nigeria Extractive Industry Transparency Initiative (NEITI), which audited oil sector financial flows in the years 1999-2004. It was able to reconcile virtually all financial flows between international oil companies and the federal government (Hart Group 2006). The auditing of NNPC’s internal organization and financial flows, however, remain unsatisfactory.⁴²

A criticism often directed at NOCs is their lack of public transparency. While this is an important issue, one should distinguish between transparency towards its owners (the state, or more precisely, its citizens) and transparency towards outside parties. Some countries such as Saudi-Arabia have chosen not to disclose much information towards the outside world, but insist on comprehensive ‘internal’ NOC disclosure vis-à-vis the relevant authorities (Jaffe and Elass 2007). From a corporate governance perspective, adequate oversight and control exercised by the owners seems to be of primary importance (in order to reduce information asymmetries and the potential for managerial rent-seeking). But fuller external disclosure can provide additional monitoring devices, for example via involvement of civic society or the press. Moreover, in light of the double agency relationship at NOCs (see Chapter 3) external disclosure can help to minimize the moral hazard risk associated with the former.

4.7 Funding strategy and requirements

Most net exporting NOCs should be able to fund investment out of operating earnings and cash flow, if they are allowed to retain a sufficient share of profits.⁴³ In reality, however, NOCs are frequently used as mere revenue collectors for the government, which in turn allocate investment capital through its central budget (Randall 1987; Karshenas 1990; Gochenour 1992; McPherson 2003). Corporate tax rates for NOCs are often set on a government-needs basis. In some cases, such as Mexico and Venezuela, the after-tax resources that remain available to the NOC are inadequate for capital replacement, let alone investment in new projects, which results in sub-optimal output capacities. Over the past five years, Pemex has paid out slightly over 60 percent of its total revenues in royalties and taxes, and finances almost 40 percent of Mexico’s entire federal budget. Evidence from investment data, as well as interviews, show that the company focuses on short-term production maintenance to maximize current-day revenue (Moody's 2003; Stojanovski 2008).

At Saudi Aramco, normal operational expenses and investments are financed out of retained earnings, but additional funds for major projects need to be allocated through the national budget via the Ministry of Finance (Jaffe and Elass 2007). These arrangement seems to work reasonably well in the Saudi case, as there is little evidence of long-term investment being suppressed: the most recent government targets are to increase upstream production capacity to 12.5 million barrels per day (mb/d) by mid-2009, and to 15.0 mb/d by 2015 (although this is also contingent on reducing the natural decline rate in producing fields from 7-8 percent to 2 percent).⁴⁴ US$50 billion of investment have been earmarked for this upstream expansion. In the

---

⁴² For a comprehensive and more general discussion of corruption in the petroleum sector see McPherson and MacSearraigh (2007).
⁴³ This might not be true for very large and infrastructure-heavy developments, which don’t see first hydrocarbon production for very many years. These cases are further discussed below.
⁴⁴ In May 2009, Aramco’s Senior VP for E&P confirmed in a Reuters interview that the 2009 capacity target will be met by the end of June.
downstream the target (announced in 2006) is to double domestic and international refining capacities within 5 years to 6 mb/d, and a total of US$20 billion has been set aside for this purpose. The case of Saudi Aramco shows that government allocation of NOC investment funds can be made to work, but other cases such as Pemex, PdVSA or KPC in Kuwait highlight that this is unlikely to be the norm (Hults 2007; Stevens 2008a; Stojanovski 2008). Furthermore, Saudi government decision-making is autocratic, which might accelerate and streamline decision-making but clearly is undesirable from numerous other perspectives.

In some cases current cash flows might not suffice (or simply do not exist yet) to provide upfront financing of large and infrastructure-heavy developments. More generally, the oil and gas industry is highly capital intensive and the budgetary demands can be daunting for developing nations and relative to other government tasks such as health, education or transport. Petroleum sector investment can thus crowd out social programs, to the detriment of national welfare. Hence, if government funds are scarce, if the state does not yet sufficiently provide social and public goods such as health and education, and if public investment in petroleum is crowding out private investment, then there exists a strong argument against such state investment.

External sources of financing for NOCs can also be restricted vis-à-vis the private sector: borrowing from private sources usually requires government approval and/or the provision of government guarantees; the NOC may be constrained by the level of existing foreign debt of the government; if oil production is used as loan collateral, the extent and availability of the resource base will affect the level of possible financing.

Some of the widespread NOC funding arrangements tend to negatively impact the timeliness and effectiveness of investment decisions and thus inhibit NOCs’ ability to fund their daily operations. Conversely, other typical funding arrangements may provide false comfort to the NOCs, and disincentives for cost reductions and efficiency improvements. For example, it is very common for NOCs to sell the state’s share of production on behalf of the government, given that NOCs have, in principle, both the market knowledge and existing sales channels. But if sales and/or transfer prices are not market-based or reflect the actual marketing costs incurred, then transparency and/or efficiency might be compromised. Box 3 outlines two possible arrangements (Indonesia and Norway) in this regard.

---

45 In Nigeria in 1999, budgetary allocations for Health, Education and Transport were less than 20 billion Naira each, while the state share in the NNPC JVs with foreign oil companies required a total investment of close to 350 billion Naira (McPherson 2003).

46 Despite these frequent funding issues, most of the literature on NOCs highlights the fact that NOCs often become very powerful entities within the state and have a significant margin for pursuing their own agenda, both politically and financially. These two apparently contradicting assessments can be reconciled, for example, through ‘operational’ expenses, which are deducted from taxable profit and for which NOC managers often have considerable discretion. “Only what the enterprise did not consume itself was subject to appropriation by the government as such” (Waelde 1995).
Box 3: Example of sales arrangements of government oil

**Indonesia**

Before the 2001 sector reform, Pertamina marketed the government’s share of PSC production volumes and retained a 5 percent of income as a marketing fee, which after taxes still was 2 percent. This fee typically accounted for at least half of Pertamina’s profits, and a substantial part of other profits came from charging a per barrel service fee for all products refined and marketed in the country (World Bank 2000a). Both arrangements thus boosted Pertamina’s financial and socio-economic standing, but did nothing to encourage efficient operational behavior. The 2001 reform re-assigned the right to the government’s share to the newly founded upstream regulator BP Migas. Receipts from the sale of the state output now go directly to the Central Bank rather than through Pertamina’s accounts. The rationale for this was not only to make the flow of funds more transparent, but also because there was a widespread view that Pertamina had lived well beyond its means, and that such behavior had been – intentionally or not – encouraged by the terms of its sector involvement (Hertzmark 2007).

**Norway**

In Norway the state has substantial direct equity interests in Norwegian production – the State Direct Financial Interest (SDFI) – which historically (and even since Statoil’s part-privatization in 2001) has been processed, transported and marketed by the NOC. By means of a written owner’s instruction, Statoil is now mandated to sell state volumes alongside its own production in a way to maximize their combined value. Statoil also explicitly needs to ensure an equitable distribution of the total value creation between the Norwegian State and itself; needs to ensure that any costs and revenues related to these sales are transparent and possible to measure; and to ensure an efficient and simple administration and execution (Statoil 2001, p.156). All prices are market prices (or achieved prices), the state does not pay any specific consideration for these services other than reimbursement of a proportionate share of actually incurred marketing expenses. In order to achieve a neutral weighting between gas volumes from state and company fields, a linear optimization program is regularly updated to determine the optimal ranking of fields in terms of production order and volumes.

It is important to underline that such arrangements are possible and workable due to the overall institutional environment in Norway: a very knowledgeable oil ministry, an arm’s length relationship between the ministry and the NOC, one of the lowest propensities for corruption in the world, full sector transparency, multi-party democracy, and a genuinely well-informed and vigilant public that ensures that neither of their two agents – government or NOC – is using privileges for personal/institutional rather than societal gain. Notwithstanding, the pressures of part-privatization of Statoil were required in order to formalize these arrangements.

---

4.8 Conflicts of interest and balance of control

Conflicts of interest potentially embedded within the domestic industry structure may affect the efficiency and mandate of NOCs. In many countries the NOC devises and implements sector policy, and even in countries where a ministry is formally in charge, the NOC often contributes substantially to the decision-making process due to its superior resources and industrial expertise. As an example, Marcel (2006b) describes the boundaries between NIOC and the ministry as “famously blurred”.

The NOC thus frequently has been writer of the rules, enforcer of the rules and game participant all at the same time, raising the likelihood of decisions not being taken in the best public interest. NNPC, Pertamina or Algeria’s Sonatrach once were examples of this “all-in-one” institutional set-up, although all of them have also been subject to reform, in the cases of Indonesia (2001) and Algeria (2005) in recent years. In Nigeria NNPC was created in 1977 through a “merger” of the previously existent NOC – Nigerian National Oil Corporation – and the Ministry of Petroleum Resources and Energy, including its regulatory arm, the Department of Petroleum Resources (DPR). But NNPC’s performance in managing
regulatory powers from the NOC to newly formed executive (or independent) bodies, and to eventually aim for an institutional set-up that separates policy-making (which is responsibility of the government) from corporate strategy (NOC) and sector regulation (independent regulatory body) (McPherson 2003; Marcel 2006b).

For Pertamina, BCG in its 1997/98 restructuring report estimated that redefining the NOC’s role in the upstream (away from operator-cum-regulator) would yield net benefits of about US$25 billion on a present-value basis over four years, of which 80 percent would accrue to the government. The report saw substantial incremental value in: (i) introducing faster approval processes, shorter discovery/production cycles and increased production rates, valued at US$6bn; (ii) improving industry-wide performance through sharing facilities/equipment, lowering costs and adopting new tender/procurement processes, valued at US$16bn; and (iii) increasing recoverable reserves, valued at US$3 billion. The massive potential procurement savings in the industry were related to the centralized and cumbersome approval process in place for PSC costs, which had to be approved by Pertamina. This created opportunities for favoritism and patronage. The World Bank study (2000a) estimated these sector-wide excess cost alone at US$2 billion annually.

An independent regulatory body is conceptually appealing, with the promise of overcoming conflicts of interest, but there are significant hurdles to properly implementing such an arrangement in many countries: it needs support from strong governance principles, regulatory freedom from political intervention, strong training and human resources policies in order to competently staff two sets of institutions, etc. Consequently several prominent NOCs with comprehensive powers over the petroleum sector continue to exist, including Petronas and Sonangol. According to the protocol of a series of producer countries’ roundtables at Chatham House London (Lahn et al. 2007) there exists a consensus today that the regulatory role should be separate from operations, but there is no consensus as to whether this should be achieved through separate departmental responsibilities at the NOC or the ministry, or through a truly independent body.

A second conflict of interest is often observed between the state/government and the NOC. Although NOCs were originally set up as mere instruments of the state to reduce the information asymmetries between government and foreign operators, they have become over time – probably inevitably – “major actors on their own, interposed between the government per se and, mostly foreign, oil companies” (Waelde 1995). As such, NOCs are often seen to capitalize on the principal-agent relationship and information asymmetries between the domestic government and itself (Linde 2000; Stevens 2004). When government control becomes more relaxed, NOCs tend to seek

the sector was so abysmal that the Ministry was re-instated in 1985 to provide some form of oversight, and in 1988 NNPC’s Petroleum Inspectorate, a regulatory unit acting in parallel to the DPR, was transferred to the Ministry. As of today, DPR is officially the main regulator with responsibility for monitoring compliance, processing license applications and enforcing environmental regulations, but we had seen earlier in this chapter that NNPC maintains some functions in relation to the entire sector, such as the implementation and oversight of local content provisions. Furthermore, Nwokeji (2007) reports that there are serious doubts as to DPR’s ability to fulfill its tasks. As late as 2006, DPR still lacked “computer systems”, still kept its records manually, and generally maintained inadequate accounting records. Nwokeji also points out some obvious overlaps between DPR and NNPC, for example that as of Summer 2006 the Technical Assistant to the Oil Minister, whose regular position is a deputy director at DPR, had his office inside NNPC’s corporate headquarters in Abuja.

48 Total Indonesian E&P activities for that period were valued at US$85 billion
their own organizational benefits over the benefits of the government or wider society. When the government becomes aware of this and reigns in more strictly, e.g. by taking budgetary control and frequently intervening in commercial decision-making, the NOC will degenerate into a mere extension of the civil service (Grayson 1981) with a high likelihood of inefficient operational management.

Several examples exist for state control mechanisms, which were originally intended to prevent conflicts of interests or corruptive practices, but do considerable damage to the commercial decision-making processes at the NOC. Pemex, for example, is stringently controlled in its operations and business decisions by various ministries, including the Ministry of Public Functions (known by its acronym SPF). SPF appoints Pemex's external auditors, oversees procurement decisions, but also determines its organizational charts, salaries, and even its employment positions. Any newly created jobs – whether managerial or low-level union jobs – require the agency's regulatory approval. Stojanovski (2008, p.32) observes that “[w]hile the stringent oversight (…) may, in some ways, be fitting for a country with a vast bureaucracy and significant potential for political corruption, it also clearly clips Pemex’s autonomy and restricts the flexibility and risk-taking that are essential to running a business.” At KPC, any purchase over 5,000 KD (approx. US$17,000 – a figure set in 1964 and not adjusted since) requires a public tendering process, which can take up to one year. Additionally any expenditure greater than 100,000 KD requires pre-approval by the State Audit Bureau (SAB). The law requires the SAB to respond within one week but according to Stevens (2008a, p.56), “in practice on day 6 or 7 the SAB comes back with some ‘query which effectively stops the clock’ (PESD Interviews 2007). The final decision can often take ‘a couple of months’.”

The balance between NOC entrepreneurial freedom and effective monitoring and control thus is a very delicate one and inherently difficult to get right.

5 Conclusion

In order to understand NOCs, one has to consider the historical, political and socio-economic context in which many of them were set up and have developed over time. NOCs differ on a number of very important variables, including their monopolistic or competitive market standing, their business profile along the value chain, their degree of commercial orientation and internationalization, etc., and one thus needs to be mindful of possible over-generalizations. On the other hand, most NOCs share at least some core characteristics: for example, they are usually tied to the “national purpose” and serve political and economic goals other than maximizing firm-level profitability. Whilst in earlier decades NOCs had often been the provider “of last resort” for certain services and infrastructure projects (because the other parts of the state administration lacked the resources and ability to do so), in recent years it seems that NOCs rather act as indirect providers via funds transferred to their state Treasuries (Marcel 2006b; WB-CEE 2008).

Following a brief historical review of the emergence (and at times disappearance) of NOCs on the global industry map, this Chapter reviewed some of the central

---

49 Because of the large cash flow available to them, their tendency to attract skilled domestic manpower and best locally available technology, their interests and activities well outside their core industrial sector, but also because of their often openly stated political ambition some NOCs have been portrayed as powerful “states within the state” (Mommer 2002).
arguments in favor of NOCs. Direct state intervention could thus be justified based on the historical context of the decision; the overall importance of the industry to many nations and the political benefits of state control; the potentially beneficial impact of NOCs on sector-wide economic efficiency; the enhanced rent capture by the state; and the ability to pursue wider socio-economic priorities with the help of the NOCs’ operational and financial clout.

Despite these apparently good reasons for setting up NOCs, their performance and value creation has in many cases not lived up to expectations and quite often has been disappointing. Some of the key issues identified for NOCs and a state-led petroleum sector include: the economic cost of political intervention; the operational inefficiencies of NOCs, including the lack of technical and human resource capabilities; the unsatisfactory delivery on non-commercial objectives; inadequate corporate governance arrangements; inappropriate industry structures, creating conflicts of interest, and a lack of competitive incentives; and issues related to funding arrangements and the scarcity of public funds.

Examples were provided in support of the various arguments. While a collection of cases by itself does not constitute universal proof, it can nevertheless, provide anecdotal evidence and illustrate the issues at hand.

The observed shortcomings have historically been associated with NOCs. But few are inevitably tied to them: appropriate institutional arrangements can mitigate or resolve some of these issues, and certain states/NOCs have succeeded in doing so. But the implementation of such mitigating measures has generally proven to be difficult, and their success depends to a considerable extent on the wider national context, which is not always conducive. The very fact that numerous recent and current research efforts, including this one, are investigating the relationship between NOCs and value creation is testament to these difficulties.

50 Private-sector solutions are not without shortcomings either: the objectives of private operators and the host society are not necessarily aligned, and in fact are quite likely to diverge; the licensing and fiscal systems used to engage with the private sector, and the regulatory framework more general, might be sub-optimal in design and promote inefficient (or short-term oriented) behavior; the trust in the efficient allocation of markets might not always be justified, as evidenced by the current financial crisis and, by the investment failures of private oil firms around the turn of the millennium. Private petroleum companies have principal-agent issues of their own regarding the accountability of management to shareholders, and have been complicit in numerous corruption cases (McPherson and MacSearraigh 2007).
References


Resource Curse: Reconciling a Conundrum. CSAE Working Paper 2007-15, 
University of Oxford.

CSFB (2002). Oil and Gas Primer. New York, Credit Suisse First Boston Equity 
Research.


Operational Efficiency of National Oil Companies. Houston, The James A. Baker 
III Institute For Public Policy, Rice University.

The World Bank - Energy Sector Management Assistance Programme.

ESMAP (2007). Investing in Oil in the Middle East and North Africa: Institutions, 
Incentives and the National Oil Companies Report No. 40405-MNA. Washington 

Press.


Company.


Extractive Industries Transparency Initiative.

of a National Oil Company. Houston, The James A. Baker III Institute For Public 
Policy, Rice University.

University Press.


