

PART TWO

Global Energy and Financial Markets

1ST REVISE



1ST REVISE



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State-Backed Financing in Oil and Gas Projects

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A long process of structural change has been experienced in the international oil industry over the last several decades. Increasingly, control of oil resources has been returning to national governments through the stewardship of their national oil companies. National oil companies (NOCs) now command over 80 percent of the remaining global oil reserves and will overwhelmingly dominate world oil production and pricing in the coming decades. By comparison, Western international oil companies (IOCs), which dominated the world oil scene in the nineteenth and twentieth centuries, now control less than 10 percent of the world oil resources.

According to the respected industry journal *Petroleum Intelligence Weekly (PIW)*, of the top twenty oil companies worldwide in terms of breadth of assets, operations, and production, thirteen are NOCs or newly privatized NOCs. *PIW*'s oil company rankings show that Saudi Aramco, National Iranian Oil Company (NIOC), Petróleos de Venezuela, S.A. (PDVSA), China National Petroleum Corporation (CNPC), Mexico's PEMEX, Russia's Gazprom, Algeria's Sonatrach, Kuwait Petroleum Corporation, Brazil's Petrobras, Abu Dhabi National Oil Company, Russia's Lukoil, Malaysia's Petronas, and Nigerian National Petroleum Corporation are among the largest oil- and gas-producing companies in the world.¹

1. "PIW Ranks the World's Top 50 Oil Companies," *Petroleum Intelligence Weekly*, December 3, 2007.

To be sure, NOCs are not a new institutional phenomenon. The first NOC was *Dirección General de los Yacimientos Petrolíferos Fiscales*, a state oil board formed in Argentina in 1922 to prevent fuel shortages in the country. Other South American countries followed suit, but the most dramatic was the formation of the NOC PEMEX founded in Mexico in 1938 to take control of the country's national resources after a labor dispute pushed the Mexico government to expel foreign companies from the sector. In the 1960s and 1970s many countries either nationalized their energy assets or created new public sector energy companies.

The end of European colonialism and the rise of nationalist movements led to the nationalization of the oil reserves of such oil-producing countries as Saudi Arabia, Iraq, and Iran. Their aim was to regain control from foreign oil companies, which were not serving the national interests. NOCs were able to garner higher national revenue from the sale of the country's oil. Other NOCs were created in the aftermath of the 1956 and 1970s oil crises to help consuming governments like India, Japan, and Brazil protect their access to their fuel supply.

The pendulum swung back toward privatization, or at least partial privatization, of many of these firms over the past twenty years. But the beginning of the twenty-first century was marked by a return to resource nationalism and an empowering of NOCs, which is transforming international relations among major nations. The rise (or reemergence) of NOCs has large implications for the global economy and the governance system that regulates economic relations among nations.

NOCs have become the new ambassadors of international discourse, in some cases overshadowing foreign ministries. They are expected to control a greater proportion of future oil supplies over the next two decades, as oil and gas production in the mature producing regions of the Organization for Economic Cooperation and Development (OECD) continues on its natural geologic decline. The International Energy Agency projects that more than 90 percent of new hydrocarbon supplies will come mainly from the developing world in the next twenty years. By contrast, 40 percent of new production in the past three decades came from the industrialized West, with the majority of investment being made by IOCs.

The International Energy Agency projects that, over the next thirty years, US\$5 trillion in new investments will be needed in the global oil sector to meet rising world demand for oil.² Despite these tremendous capital requirements, many governments continue to intervene in energy markets in a manner that is slowing or even discouraging this needed investment. Large undeveloped oil fields

2. International Energy Agency (2008), p. 323.

exist throughout the Persian Gulf, Latin America, Africa, and Russia, and there remain key areas such as Iraq's western desert that have yet to be explored fully. But the private sector firms in the best position to amass the capital required to make major risky and long-term investments in promising resources have been frequently denied access to many of these prolific and promising regions.

At the same time, Asian and Russian national oil companies have increasingly begun to compete for strategic resources in the Middle East, Africa, and Eurasia. These national oil companies have come to play a pivotal role in the international exploration and production business. Some NOCs have the benefit of state finance to give them an advantage in the global energy business. But generally speaking, in recent years governments have been siphoning oil revenue from their national oil companies to meet domestic requirements for socioeconomic welfare priorities or to meet budget deficits. This is especially true of the NOCs of oil-exporting countries, with their sizable economic rents.

Studies of national oil companies show that many governments use NOCs to achieve wider political and socioeconomic policy objectives. As Valerie Marcel and John Mitchell note in their book *Oil Titans*, "On the home front, national oil companies are often torn between national expectations that they should carry the flag and their own ambitions for commercial success, which might mean a degree of emancipation from the confines of the national agenda."³ In a Baker Institute study Stacy Eller, Peter Hartley, and Kenneth Medlock conclude that noncommercial responsibilities can affect a firm's efficient use of revenues and that other goals, such as income redistribution and industrial development, often become equally important goals in the state firm's calculus of profit maximization.⁴ The diffuse NOC objectives have implications for the financing of future NOC investments. The study notes that "domestically, these emerging national oil companies fulfill various important social and economic functions that compete for capital budgets that might otherwise be allocated to more commercial activities such as reserve replacement and oil production activities. These noncore, noncommercial obligations have imposed costs upon the NOC, and in some cases, dilute the incentive to maximize profits, hindering the NOC's ability to raise external capital and to compete at international standards."⁵

The tendency of oil-dependent governments to use oil revenues from national oil companies for other pressing national spending priorities has in many cases

3. Marcel and Mitchell (2006), p. 2.

4. Eller, Hartley, and Medlock (2007), p. 43.

5. Baker Institute (2007), p. 2.

hindered the firms from sustaining core operations. The list of NOCs with flat or declining oil production capacity is long and includes major resource holders such as Iran's NIOC, Mexico's PEMEX, Venezuela's PDVSA, and Russia's Gazprom. Many NOCs not only are having trouble retaining the necessary funds to increase their resource base and expand oil and gas production but are also facing production problems as older fields reach natural maturity and funds are not available either for enhanced oil recovery techniques in old fields or for drilling new fields. A good case in point is Venezuela, whose government shifted US\$60 billion a year of PDVSA's budget to social welfare programs. Lower investments in oil field projects in Venezuela have translated into a 50 percent loss of production capacity (from 3.6 million barrels a day in 1998 to just over 2 million barrels a day in 2009). Mexico is another example: its lack of funding for new drilling and exploration has resulted in a 25 percent decline in output between 2006 and 2009 (from 3.68 million barrels a day to 2.72 million barrels a day).

The failure of certain governments to adequately finance resource development by their national oil companies has raised questions about global energy security and future oil industry governance. Can oil-consuming countries count on NOCs to make the necessary investments to meet the rise in demand? Will such investments be sufficient to counterbalance the sharp declines in supply being experienced across the globe as oil fields age?

This chapter focuses on possible sources of finance for NOC investments and on how to ensure that this financing is adequate to meet demand for oil in the future. We especially look at the role of international capital markets, at partial privatization, and at direct foreign investment. We consider the experiences of NOCs that have tapped international financial markets. Finally, we examine the operation of NOCs within the framework of the corporate governance literature, with its emphasis on the alignment of interests between principals and managers. This framework addresses the influence of private investors on the internal governance and transparency of NOCs.

Financing Exploration

The organization and operation of national oil companies vary according to the history, the domestic political circumstances, and the economic policy of the country. Generally speaking, oil-producing countries have two ways to finance oil and natural gas exploration and development, internal and external. That is, they can tap into their own cash flow or they can rely on external investors or lenders.

For many NOCs, the economic costs of finding, developing, and producing oil and gas are far below the prices at which these products are sold. The difference is a windfall gain, often referred to as an economic rent. The challenge for the NOC is, first, to separate the economic rent accruing from resource ownership from these costs and, second, to allocate this rent among stakeholders: the firm itself, the public treasury, labor (if it is unionized), consumers, and private shareholders (if any). Unfortunately, true economic costs, in particular the cost of capital, are not transparent, since investments by the government or the NOC itself are not arranged through a market transaction. Yet these investments do have an opportunity cost and should be included in assessing the economic costs of the NOC. In contrast, the cost of private equity capital (return to private shareholders) is determined in a market exchange and hence is explicit and transparent. If dividends or share price appreciation do not at least equal the risk-adjusted return on other comparable assets available to investors, the price of shares will fall and the cost of acquiring private capital in the future will rise.

In practice, the economic rent for a barrel of oil produced under a typical investment framework can be quite substantial. In a market where the price of oil averages \$50 a barrel, the operating costs to the producer/investor are often as low as \$2 a barrel, while exploration and capital recovery costs (including rate of return) could be similarly low, around \$3 a barrel each, leaving overall costs at around \$8 a barrel. This means that the economic rent from the \$50 barrel is \$42 or 84 percent. The cost of capital must be deducted from revenues before one calculates the economic rent. If the NOC has no private equity participation, the rent automatically belongs to the state. Often in these cases return on public investment in the firm is conflated with rent and treated by governments as revenue that can be extracted for its discretionary use.

If private investment is permitted, economic rent can be extracted through lease bonuses, royalties, corporate income taxes, and equity interest ownership. As a capital-intensive industry, the oil and gas sector is extremely sensitive to the cost of capital, which in turn is affected by investors' view of the political, technical, and economic risks of the local economy. A high-risk environment increases financing costs and thus decreases the economic rent to the state. For example, landlocked oil states in the Caspian Basin, whose geographic location increases the risks associated with oil resource development, have been forced to offer foreign investors a higher rate of return and greater stake in their oil fields than comparable oil producers in West Africa and Latin America, whose location is closer to end-user markets.

Self-Investment

One option for NOCs is to finance all of their oil exploration and development through NOC sales revenues or infusions of capital from other government revenues. Before the 2008 global financial crisis, this approach was gaining in popularity in many parts of the world as a resurgence of nationalism turned populations against foreign investment. Rising oil prices between 2002 and 2008 rendered this approach popular in Russia, Latin America, and the Middle East. Nationalists fervently want to protect the domestic patrimony from foreign exploitation and to retain the rents from resource exploitation for the nation and its citizens. These trends are increasingly evident in Bolivia and Russia. And although Venezuela, Nigeria, and Kazakhstan continue to host foreign direct investment, they have reduced the share of rents that accrue to foreign investors. Saudi Arabia, Mexico, and Kuwait maintain a policy of self-financing oil investments, and any adjustment in this policy would face strong domestic opposition.

A problem with a self-investment strategy for oil-producing countries is that it promotes dependence of the national economy on the oil sector. When a high proportion of government investment occurs in the oil sector, it tends to incentivize private capital and labor to focus on businesses and activities related to the oil sector, such as has taken place in Saudi Arabia and Kuwait. In this way, a self-investment strategy can thwart diversification of the economic base. In these cases, the NOC together with its domestic suppliers and subcontractors account for a large share of GDP and—as in all undiversified portfolios—increases the country's exposure to volatility in commodity prices. In addition, large inflows of oil revenue can create asset market and real estate bubbles and drive up the cost of production of tradable goods, which can further thwart the development of other industries. In these circumstances, imports squeeze out both domestic firms that can supply the economy as well as potential export-oriented businesses.⁶

It can be difficult for a country to determine how to maximize the benefits from the development of its natural resources and whether fully financing investment through government is the best use of national revenues. A nation has many worthy projects to consider for its national budget. In an ideal world, any investment in the oil industry would be compared with the economic return that can be gained from other, nonoil, opportunities. Investment in oil would then occur only if the return were higher than on those alternative investments. But this can be problematic for some developing economies. The advantage of continuing to

6. Karl (1998).

invest in an NOC is that returns are very high and immediate and that local people have been trained in the oil business and have acquired the skills necessary to manage and operate an oil firm. Comparable skills would have to be developed in other industries if governments were to pursue such investments. The learning curve can be steep and costly and therefore could discourage countries that already have developed hydrocarbon sectors, or that could have large hydrocarbon sectors, from developing new industries.

An alternative to investing in other sectors of the economy is to set up a sovereign development fund that invests in financial and other assets, often foreign assets. While this might be the most “efficient” or immediately profitable use of the financial resource, such a fund does not contribute directly to economic development because it does not create jobs and opportunities for the country’s citizens in the way that investments in national enterprises would. So regardless of the economic arguments that long-term management of the public wealth should be focused on return to capital and diversification away from a resources portfolio, public support will most likely favor the operation of an NOC.

The issue is often framed in terms of what social purpose should be served by a country’s natural resources. Who should participate in the resource rents? And when? The public may have different objectives from those of the administrators of the NOC or of the governing political elites. And, as Terry Lynn Karl points out, governments have difficulty resisting the demands of the population for a share of the resource wealth, especially in those countries where the resource wealth is significant relative to the rest of the economy: “Instead of economic efficiency or political learning, petrodollars are substituted for statecraft. Where this occurs, the capacity to resist demands is eroded, and relative insulation of policy-makers is undermined. In effect, rulers lose the capacity to say no.”⁷

In the 1980s and 1990s, social pressures developed in many oil-producing countries over the failure of governments to deliver adequate social welfare services and an equitable distribution of resource wealth. The result has been that many governments have increasingly reallocated revenue generated by the NOC for investments in such social service sectors as education, health, and infrastructure. Some governments have used NOC revenues to cover federal budget outlays or to repay foreign national debt. In other cases, NOC oil is sold at discounted rates or given away as aid to meet foreign policy goals. Saudi Arabia, for example, gave oil assistance to the Taliban during the Soviet invasion of Afghanistan. More recently Venezuela used part of its oil wealth to further its political objectives

7. Karl (1999), p. 37.

within the hemisphere. President Chavez has created Petro Caribe as a means of providing oil to members at a subsidized price.

Domestically, NOCs are also often asked to divert resources that might have been used for reinvestment in oil exploration and development to meet such non-commercial goals as income redistribution and national industrialization through fuel subsidies or other means.⁸ This is the case in countries as diverse as China, Iran, Saudi Arabia, Nigeria, Indonesia, Venezuela, and Brazil. In fact most NOCs in major oil-producing countries provide subsidized fuel to both consumers and local industry.

Saudi Aramco, for example, provides natural gas for feedstock for the development of private domestic industries at prices that do not justify commercial development of its gas resources. This practice has discouraged the development of Saudi Arabia's natural gas resources and has resulted in distortions, wherein the kingdom uses highly valuable crude oil to generate electricity; whereas it could, instead, export that crude oil to the international market for a substantial profit. Adding to the distortions, the electricity is sold to Saudi businesses and citizens at nominal rates.

In Iran, to sustain the economic fortunes of the population and equitably share the country's oil wealth, NIOC sells gasoline at highly subsidized prices. Low gasoline prices have created soaring demand, but loss of revenues has meant that NIOC has had difficulty expanding to meet the rise in gasoline demand. Instead, Iran has had to import gasoline from international markets to meet domestic demand, at a substantial burden to the Iranian national budget.

NOCs also utilize local-content rules to promote local businesses by requiring their subcontractors and trading partners to buy goods produced in their home country, even though these may be more expensive than alternative sources.

Another characteristic that many NOCs share is overemployment, reflecting the confluence of the interests of politicians, who provide employment for votes, and the public, which sees jobs as a way to share the national patrimony. From the perspective of the public, the creation of jobs is a visible and tangible benefit; and although these jobs are a highly inefficient use of labor, they have the virtue of transferring income directly to the populace.

All of these policies can make it difficult for the NOC to amass the capital needed to replace its reserves and expand its oil production.⁹ As mentioned above, Stacy Eller, Peter Hartley, and Kenneth Medlock find (in an empirical analysis

8. See Baker Institute (2007) for an extensive discussion of this trend. Its chapters cover the specifics of programs for fifteen NOCs.

9. Baker Institute (2007).

using a sample of eighty firms over a period of three years) that NOCs' noncommercial objectives tend to interfere with efficient production and maximum revenues. These outcomes have a negative effect on the ability of NOCs to replace their reserves and to expand production.¹⁰

While some of the social and other expenditures financed with NOC rents can enhance the productivity and growth of the economy and improve the lives of those on the bottom rungs of society, some are unproductive and even regressive in their impact. In many oil-producing countries, NOC revenues are siphoned off to support the consumption of middle- and upper-income groups. Fuel subsidies disproportionately benefit those who own automobiles, a group that does not tend to include the poor. Among the noncommercial objectives that political interests impose on OPEC NOCs, the subsidization of domestic fuel has been among the most debilitating. These subsidies are not only a direct drain on NOC revenues but also an indirect drain, since they promote domestic consumption and hence reduce foreign currency earnings from exports.

On a macroeconomic level, low petroleum prices stimulate growth in energy-intensive sectors and limit incentives for energy efficiency, which in high-population societies only exacerbates the budgetary problems of the NOC and the government. This problem is circular, since the subsidies leave fewer and fewer funds to reinvest in expanding oil production. At the extreme, the combination of rising oil demand and flagging domestic production ends in political and economic crises. The OPEC member Indonesia flipped from a net oil-exporting country to an oil-importing country in the last three years because of flagging oil production in aging oil fields combined with soaring demand driven by fuel subsidies. Those fuel subsidies, which by the late 1990s reached almost one quarter of the Indonesian government's entire federal budget, caused such massive economic dislocation for the Indonesian government that the longtime rule of President Suharto was ended.

Other major oil-producing countries, such as Iran, Mexico, and Algeria, face similar prospects: they could even become net oil importers in the years ahead, which would bring dire economic consequences. Iran is particularly exposed. With Iranian domestic demand for fuel skyrocketing, the state oil company, NIOC, has had to sell hard currency in order to import gasoline back into the country. The country's product import bill now runs in the billions of dollars, with NIOC predicting that gasoline subsidies will cost the industry US\$15 billion to US\$20 billion annually by the next decade. The subsidies, while extremely

10. Eller, Hartley, and Medlock (2007), p. 1.

helpful to middle-income Iranians, are becoming increasingly damaging to the Iranian treasury and have created a mounting deficit that even high oil prices have not been able to countermand.

Fuel subsidies in Mexico are much more modest. But the government has used PEMEX revenues to finance some 40 percent of its expenditures. This practice has allowed the government to avoid the politically difficult task of tax reform but has left PEMEX unable to finance sufficient exploration and development to prevent a rapid decline in its reserves and revenues. Predictably, as a result, Mexico is facing a crisis in public finance and, at a time of worldwide economic recession, a major decline in export of oil and, hence, export revenues.

As mentioned earlier, another problem with a self-investment strategy for oil-producing countries is that it tends to shift dependence of the national economy onto the oil sector. A high proportion of government investment in the oil sector tends to incentivize private capital and labor to focus on service businesses and activities that revolve around oil sector spending. This compounds the dependence of the economy on the international price of oil. In this way, a self-investment strategy prevents the diversification of the economic base and, unless proper institutional frameworks are put in place, promotes corruption. Thus non-commercial criteria become the basis for lucrative subcontracting with the state-run oil industry, as has been seen in Iran, Iraq, and Mexico. The NOC can also suffer from the negative effects of stop-and-start budgeting, which happens when oil prices fluctuate.

Ultimately, trade-offs are difficult to assess. It is particularly difficult to place a value on the services, such as education and health care, that are provided to the most disadvantaged and to compare that with the returns from investing NOC revenues in oil- and gas-related activities. However, oil revenues can be used for social welfare services without the state's controlling 100 percent of resource investment. It has been demonstrated in many oil-producing nations that investment in the oil and gas sectors can be left to the private sector, while the nation still derives economic rent through taxation. These governments are thus able to divert some resources to other needy sectors without hindering investment in the oil and gas sector.

Foreign Direct Investment

Given national budgetary pressures, even in light of nationalistic trends, most major oil-producing countries still permit foreign direct investment. This includes not only oil-producing countries within the OECD (Canada, Australia, Norway, and the United Kingdom, where exploration acreage leasing is common) but also developing countries such as Nigeria, Angola, Brazil, Abu Dhabi, Algeria, Kaza-

khstan, Azerbaijan, Indonesia, and Malaysia and to a lesser extent Iran and Venezuela. For developing countries with needs for large amounts of capital, foreign direct investment is one way that the country can increase total investment and enhance development prospects without sacrificing other government programs.

Private investors must be compensated for risk taking, so the distribution of revenues will reflect the allocation of risk between private investors and the government. The less risk the direct investor takes in undertaking exploration and development, the less the national government will have to share a portion of the economic rent. On the other hand, if the investor encounters a high level of risk, he will expect a commensurate share of the revenues. So for example in the case of Azerbaijan, where investors faced high geological risk, great distance from markets, and a lack of well-developed political institutions and governance, higher returns were required than in, for example, Abu Dhabi, which has more stable government institutions, an export infrastructure, and a forgiving and oil-rich geology.

Generally speaking, there are three kinds of foreign direct investment contracts: concession agreements, production-sharing agreements, and service contracts. Concession agreements are typically used in OECD countries, where title to the oil is not a national constitutional issue. Under a concession agreement the investor receives legal title to the oil and gas, while the state is shielded from all risk, collecting instead fixed royalties and taxes but leaving the investor with the windfall if oil prices rise significantly over the life of the investment. This kind of contract has been widely used in the United States, the United Kingdom, and Australia.

Production-sharing agreements typically include terms that allow the host government to take an increased share as production increases and to get a larger share over time as cumulative targets for revenues and volumes for the projects are reached. Thus typically under production-sharing agreements, the more profitable the venture, the higher the return will eventually be to the host government, but the government also shares in the risks of project costs and long-term oil prices along with the investor. Legal title to the oil and gas remains with the state, while the contractor receives the right to share in ongoing production. Many production-sharing agreements have provisions that allow the investor to recover his costs of exploration, development, and operations before profits are distributed.

Finally, some oil-producing countries favor service contracts in which investors are compensated for development and production through a direct fee. Such contracts were implemented successfully in Algeria and with mixed results in Colombia and Venezuela. Payment is typically linked to the volume of hydrocarbons produced or discovered, and the contract specifies a particular type and amount of work to be performed under a field development plan.

The government retains ownership and assumes all market and price risks. When development cost risk exposure is high, a “cost-plus” service contract is sometimes employed. Under this contracting structure, contractors or investors are given assurance that they will recover costs associated with implementing the service contract plus a fixed profit payment, typically linked to unit production performance.

In a twist on the service contract, Iran has offered buy-back service contracts, under which the investor or contractor provides all the finance for the project and in return receives a share of oil and gas production in a manner that provides a fixed rate of return. After the contractor or investor has recouped his costs and return, the operation of the field is fully transferred to the state. Again, as in all service contracts, the state retains legal title of the oil and gas.

Each type of contract has its disadvantages in terms the efficient exploitation of resources. A key downside to service contracts from the state’s point of view is that the contractor or investor has no incentive to hold investment and operation costs down, and this can affect the state’s rate of return from the project over time. On the other hand, production-sharing agreements provide disincentives for the efficient production of oil and gas because the firm bases its extraction decision on the marginal benefits and costs to itself, not the benefits to society or government. The share that must be paid to the government lowers the marginal benefit to the firm, and it will, as a result, produce less than the socially optimal amount. International oil companies tend to favor production-sharing agreements, which allow them to book hydrocarbon reserves on their balance sheets and thereby enhance the value of their corporate stock shares on public markets. However, these agreements are among the most controversial of the contract types and are increasingly being rejected by countries whose populations are skeptical of the benefits to foreign investment in the oil sector.

Initial Public Offerings and the International Capital Market

While it is possible for national oil companies to borrow money to finance exploration and development spending, this has not typically been the practice of most NOCs. Some countries, notably Mexico, have issued bonds from their NOCs, but the money raised was not used to cover or expand PEMEX’s investment budget but rather to finance national spending. In recent years an increasing number of governments have viewed their NOCs as vehicles to raise international capital for a variety of purposes, including reducing foreign debt and supplementing national budgets. Rather than borrowing as a sovereign entity, these governments have been able to raise capital more cheaply by leveraging the intrinsic value of the assets of their NOCs.

A range of mechanisms have been used to cash in on capital by leveraging NOCs. As mentioned, Mexico simply issued bonds. But other countries have undertaken the direct sale of state-held assets or the sale of shares on domestic or international markets. Issuing the latter through initial public offerings (IPOs) has been a favored approach, with major state-run oil and natural gas companies in China, Russia, Norway, Brazil, and India offering equity shares on domestic and international financial markets. This strategy has been appealing to many emerging market countries because it has lowered their costs of borrowing while at the same time increasing the prestige and visibility of their national companies. But it is important to note that the motive for IPOs in most cases was not to raise capital for the NOC itself to engage in oil and gas exploration but rather was a mechanism for governments to raise additional resources for other expenditures. The notable exception is Norway's Statoil, whose share sales allowed the company to expand its international businesses.

When the NOC is wholly owned by the state, the amount of revenue that can be siphoned off by the government is ultimately limited by the current revenue stream of the NOC. But private investors are willing to pay a price for shares in the company that reflect the present discounted value of future revenue streams. In other words, by making an IPO the government can collect in the present some of the future revenues of the firm. In many cases a hybrid approach to selling equity is taken, with direct sales of shares to one or more strategic investors (often another international oil company or NOC) as well as offerings in public equity markets (table 6-1).

During the period 2002–07 when oil prices were rising, the global investment community was receptive to NOC shares, and indeed they experienced strong appreciation of share values even in comparison to the privately held, publicly traded international oil companies such as ExxonMobil, BP, and Shell. Share markets rewarded NOCs for their strong reserve position and also especially those NOCs that were well managed and expanding investments such as Petrobras and Statoil.

In the case of Norway's Statoil, the company has succeeded in increasing the value of the state's shares since the IPO, and some significant portion of this increase is not linked to higher oil prices according to analysis by Richard Gordon and Thomas Stenvoll in a Baker Institute case study on the corporation (figure 6-1).¹¹ Statoil management and the Norwegian government first considered a partial privatization of Statoil's shares in 1999, in an effort to improve competitiveness and raise capital for an expansion of the company's international activities

11. Gordon and Stenvoll (2007).

Table 6-1. *Equity Sales, National Oil Companies, Various Years*

<i>National oil company</i>	<i>Equity sales</i>
YPF	July 1993, IPO for 58.00% of company's equity January 1999, Repsol acquires 14.99% in secondary offering, government of Argentina retains 5.40% interest April 1999, Repsol tenders for all YPF shares
PetroChina, CNOOC, Sinopec	2000–01, IPO: international majors are largest purchasers, with BP purchasing 20% of PetroChina's shares; ExxonMobil, Shell, and BP purchasing 57% of Sinopec shares; Shell purchasing 20% of CNOOC shares
ONGC	2004, IPO of 10.0%, 8.3% going to institutional investors
ENI	1995–2001, five offerings of IPO shares
Statoil	June 2001, IPO via 49% issuance of new shares, 51% through sale of government's existing shares
Petron	February 1994, sale of 40% equity to Saudi Aramco September 1994, IPO for 20% of shares on the Philippine stock exchange
Lukoil	December 1995, places securities in the form of American depository receipts 2000, offers shares on London stock exchange 2004, sells 7.9% of remaining government shares to ConocoPhillips
Rosneft	2006, IPO on London and Moscow stock exchanges

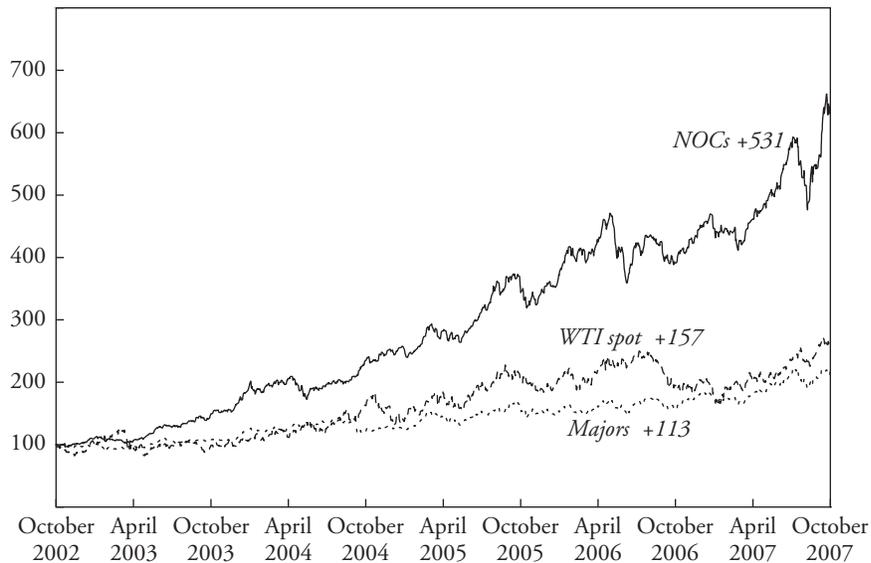
Source: Baker Institute (2007).

in the face of declining oil production and diminishing opportunities in the Norwegian North Sea.

On the back of political scandals involving huge cost overruns on two major projects—Mongstad oil refinery and Aasgard field development—political will was gathering behind a restructuring plan that would provide an increased return to capital. This change in philosophy mirrored gradual changes in domestic politics in the 1990s, as Norway moved away from Labour Party politics, which had favored national industrialization, toward new elites, who favored a more liberal, market-oriented economy.

Figure 6-1. *Share Price Performance of Oil at US\$50 a Barrel, NOCs, WTI Spot, and Major Companies, 2002–07*

Percent (October 2002 = 100)



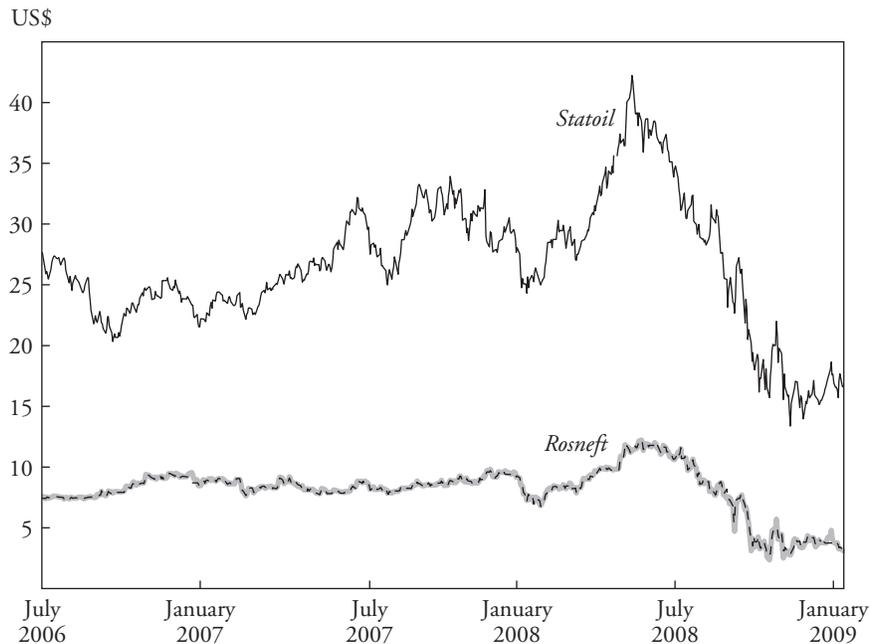
In the spring of 2000 the Labour Party presented a plan for Statoil to be partially privatized. The sale of Statoil shares in 2001 and subsequent trading on public exchanges as American Depositary Shares not only provided an influx of capital but also established a clear, external valuation of the government's shareholdings in Statoil. In the years after partial privatization, the company further reorganized to enhance its profitability by consolidating and rationalizing its Norwegian holdings and expanding its international investments. It also expanded its natural gas businesses and moved to expand its downstream operations to enhance the operational and financial benefits of vertical integration. During, and in the aftermath of, its partial privatization, Statoil began to lose some of its national status, as its monopolistic control of all pipeline infrastructure was stripped away in favor of open access for all participants on equal terms.

Once partially privatized, Statoil's role in noncommercial activities such as foreign policy formation and national industrialization policy was reduced. Norway's ascension to the European Economic Area, under which Norway gained access to the Common Market, meant that the country was bound to follow common competition directives. Statoil was no longer allowed to act as the controlling party to

set natural gas prices and customers for all long-term sales of gas from Norway. The withering of Statoil's noncommercial national responsibilities, state-oriented status, and government interference in its operations after privatization contributed to the company's ability to focus on international activities and the restructuring that improved operations and profitability.

The disappearance of government interference in national oil company operations after privatization is not a given, and other NOCs have had differing experiences from those of Statoil. A good example of a firm whose foray into international capital markets has come with less favorable results is Russia's Rosneft, which moved to raise US\$10 billion in 2006 through an initial public offering in London and Moscow (figure 6-2). The goal of the IPO was to pay back US\$7.5 billion to four western banks, which had lent Rosneft the money for its purchase of a controlling stake in Russia's Gazprom. These shares, which represented about a 14 percent stake in the company, traded initially at the value the company was seeking

Figure 6-2. *Rosneft and Statoil Share Prices, July 2006 to January 2009*^a



Source: Gordon and Stenvall (2007).

a. Rosneft is listed on the London Stock Exchange; Statoil is listed on the New York Stock Exchange.

(in the range of US\$7.55 a share). The IPO was helped by initial sales to other oil firms, including British Petroleum, China National Petroleum Corporation, and Malaysia's Petronas.¹² Those share purchasers were said to be seeking closer strategic alliances with Rosneft because of their interests in investing in Russia.

While the Rosneft IPO offering was successful, the offering sparked some controversy, with some European advisory firms and even the financier George Soros warning investors to stay away due to high political risk.¹³ Rosneft share prices were volatile in 2008, falling to a low of US\$2.11 a share in October 2008, before recovering to US\$4.54 in March 2009. Rosneft had to seek assistance from the Russian government to avert a funding crisis and to restructure its US\$20 billion debt. The price volatility in Rosneft's shares also partly reflects geopolitical risk associated with the impact of perceptions of Russia's foreign policy on the company's fortunes and its ability to pursue business opportunities.

Theory versus Practice

Studies published in the academic literature support the notion that the partial privatization of firm shares brings more efficiency to national oil company operations. The focus has traditionally been on the modern private corporation, termed by Alfred Chandler *managerial capitalism*, which separates ownership of the firm—the shareholders—from the professional managers who run it.¹⁴ State-owned firms can also take this corporate form, when an independent board runs the firm as distinct from the case where the firm is run as a division within a government ministry. In practice the distinction can be blurred, as governments can interfere in the management of even corporatized firms and state-owned firms can subcontract work to private suppliers.

Until relatively recently the debate over the merit of private versus state-owned firms was mostly theoretical (and often polemical), since there were few data to test the theories. Now with the wider availability of data the number of empirical studies has increased, but there remains an important barrier to settling the issue with any finality. That barrier concerns the nature of the firm's objective. In the case of a private company, it is generally accepted that the firm's objective is (or should be) to maximize profits (the value of the firm for shareholders). For state-owned firms, this may not be the sole objective. We have already discussed many

12. Steven Mufson, "Russian Oil Firm IPO Ends Early," *Washington Post*, July 13, 2006, p. D5.

13. Roman Kupchinsky, "Russia: All Eyes on Rosneft ahead of Controversial IPO," Radio Free Europe (www.rferl.org/articleprintview/1068027.html).

14. Chandler (1990).

other objectives that have been assigned to state-owned forms. But there are others. For example, in the decades bracketing World War II the creation of many Canadian state-owned firms in rail, air, broadcasting, pipelines, and so on was to promote east-west trade and communication in a country in which natural economic forces favored a north-south flow. Because of the thin population density in the western part of the country, these industries were not profitable in a strictly business sense and hence would not have been undertaken by private capital.

Thus in many countries state-owned companies are created to forge a national identity and to foster national economic development. Nationalization is promoted precisely because private ownership did not fulfill these larger public goals. In the case of some undeveloped countries with weak public institutions, foreign resource owners or investors and domestic political elites exported the net revenues from the national resource production, thereby creating a dual economic structure with a small, wealthy enclave, leaving the rest of the country virtually untouched by resource development. This process is currently seen in several West African countries, including Angola and to some extent Nigeria. It occurs less in Latin America, but in the 1970s the process was behind the nationalization of the Chilean copper mines. Currently in Bolivia this phenomenon has caused a call on the part of the population for the nationalization of resources.

Nationalization, by transferring control to national interests, is seen by the public as the best means to redirect profits into sectors of the country that would most benefit lower- and middle-income groups. Political elites respond to these demands in order to maintain public support for their continued rule. In the best of circumstances there is a serious effort to evaluate investments and social programs and make choices that would, on a rational basis, further economic and social development. At the other extreme are populist leaders who see resource revenues as a means to blatantly buy political support. It is not easy to disentangle these motives, and indeed they may both exist at the same time. Public policy seldom reflects a single point of view. But these other objectives make comparisons with private firms difficult. NOCs are often called upon to provide employment and to subsidize their output—or even to meet obligations that lie outside their main line of business. In comparing the performance of state-owned and private firms one ideally would need to know what value to place on these noncommercial outputs. At best, one can calculate the difference in the firms' efficiency using traditional performance measures and view this difference as the cost of the other objectives.

The economic issue that arises in the large modern corporation, with its separation of ownership and control, was popularized in 1932 by Adolph Berle and

Gardiner Means.¹⁵ They point out that firm managers, who may own relatively few shares of the company, and the majority of shareholders can have differing goals and objectives. Managers are tempted to operate the firm in ways that further their own interests and that do not maximize profits, even though that is the key objective of shareholders. This issue was further developed within the principal-agent paradigm introduced by C. M. Jensen and W. H. Meckling.¹⁶

In response to this principal-agent problem, institutional features of modern capitalism have emerged to constrain managerial behavior and to provide incentives to better align managerial and shareholder interests. These include monitoring requirements, such as financial reporting, that provide information to shareholders about managerial performance.¹⁷ In some models of corporate governance, the performance of the share price is sufficient, since “the price set in the financial markets for a company’s shares fully and efficiently reflects all the available information about the company and is thus the best measure of the net value of the firm.”¹⁸ Failure to maximize profits will be reflected in the share price of the firm, inviting other investors to assume control either by a proxy fight or by outright purchase or merger of the firm. The signal provided by the share price also works in the managerial labor market, where the manager’s wages are determined in such a way as to ensure incentive compatibility. While this model is a simplification of reality—as all models must be—the market for corporate control does function this way.

Peter Hartley and Kenneth Medlock note that the principal-agent framework also can “be used to examine the likely behavior of government-controlled business enterprises.”¹⁹ They argue that, in the case of national oil companies, oil production and pricing decisions could be part of the “objective function of politicians” and that the political objectives of politicians overseeing the operations of the firm can take precedence over the maximization of shareholder wealth—where the shareholders are the government and, by extension, the general public. There is however no automatic mechanism to correct the principal-agent problem in the case of state-owned enterprises. By definition a government firm cannot be taken over by other investors. And since debt issued by national oil companies is ultimately guaranteed by the government, financial failure cannot send the firm into bankruptcy. Management can be replaced in cases where failure is clear, but because there is no market-determined price for the equity of

15. Berle and Means (1932).

16. Jensen and Meckling (1976).

17. Holmstrom (1979).

18. Blair (1995), p. 107.

19. Hartley and Medlock (2007), p. 16.

the firm, which is in essence the collective judgment of financial analysts and others of the manager's performance, it is difficult to know whether the firm is producing at its potential.

This theory of corporate governance as it applies to private firms depends on the precision with which markets can evaluate firm performance relative to the potential of the firm and the objectives and actions of investors. An alternative theory about the failure of corporate governance posits investor myopia, which results in investors' focus on the short-term performance of the firm at the expense of its long-term profitability. Investor orientation toward short-term price performance provides strong incentives for management to also focus on short-term performance. This tendency can be aggravated by compensation schemes that use stock options, thus providing a strong incentive for management to focus on raising share prices in the short term so that they can maximize and monetize their own personal compensation. This is a controversial theory, but the volatility of share prices lends credence to the idea that markets do not always set the appropriate value for a company's stock.

The same focus on the short run can also occur in the context of state-owned firms. "Politicians who do not care about the performance of the firm beyond their own term of office may be tempted to use the return to capital for other purposes even though it would leave insufficient funds to finance additional investments."²⁰ Such behavior can make sense for the managers of NOCs, who are often members of the governing elite and wish to maintain their power. Terry Lynn Karl remarks, "Such economically inefficient decision-making is not a miscalculation when viewed politically. Instead, it is an integral part of the calculation of rulers to retain their support."²¹

Another difference between privately owned firms with publicly traded shares and state-owned firms is that new investment by private firms will be reflected in higher share prices only if investors expect them to yield a positive net present value when discounted at the firm's cost of capital. Government-owned firms can borrow at the rate offered for government bonds. This rate is set not by perceptions of the economics of future investments but by a more complex set of variables related to the country's overall debt levels and political risk. Andrei Shleifer also finds that managers of state-run firms have less incentive to innovate or reduce costs than managers of private firms.²² Indeed, government ownership can motivate managers to pursue nonfinancial objectives such as the well-being of the nation.²³

20. Hartley and Medlock (2007), p. 18.

21. Karl (1999), pp. 31–48.

22. Shleifer (1998).

23. Aharoni (1981); Vernon (1979).

The empirical literature comparing private and state-owned firms shows that state firms are less profitable and more labor intensive than private firms. One of the earlier studies is by Kathryn DeWenter and Paul Malatesta, using data primarily from the more industrialized countries.²⁴ Among their conclusions is the fact that the return on sales of private firms is more than twice that of government firms. Similarly, they find a significant difference in return on equity. Labor intensity, as measured by employment per unit sales, shows that government firms have a higher level than private firms, although the differences are much smaller than in the case of profitability. The employment-to-assets ratio is also higher but is not statistically significant.

The authors also look at leverage, as measured by the ratio of total liabilities to assets, and find that state-owned firms have significantly higher ratios. This is consistent with the fact that a government firm can borrow at lower interest rates than private firms. It also suggests that the capital investment of government firms comes more through borrowing than through injections of capital from the government's budget. In contrast private firms acquire capital from both borrowing and selling shares.

The more interesting findings were obtained in studies that look at a time profile for these variables. DeWenter and Malatesta find that increases in profitability and declines in employment intensity and leverage occur *before* privatization and typically do not continue afterward. These results suggest that governments restructure their firms and improve profitability before privatization, possibly with an eye to increasing the attractiveness and price of the shares to be sold. It also suggests that government-owned firms are capable of operating with higher profit and less labor even without the structural benefits of privatization. However, without some mechanism to monitor firm behavior, such improvements might dissipate over time.

George Yarrow suggests that one reason for privatizing is to preserve these efficiency gains through market discipline.²⁵ It is possible, nonetheless, for a government to create an incentive structure for NOCs to sustain efficiency gains through public scrutiny by requiring firms to publish quarterly performance and annual reports (as required, for example, under the rules of the Securities and Exchange Commission of the United States) and by subjecting them to oversight by parliamentary or other government regulatory bodies.

One finding of the Baker Institute study on NOCs is that the structure of governance for an NOC can have significant impact on its abilities to "focus efficiently on its core businesses" and "greatly reduce the prevalence of corruption

24. DeWenter and Malatesta (2001).

25. Yarrow (1986).

and wasteful spending.”²⁶ The study concludes that independent corporate boards of directors “play a positive role in bringing transparency and performance measures into the oversight structure of NOCs such as Statoil, Saudi Aramco, and CNOOC [China National Offshore Oil Corporation].”²⁷ The study also finds that competition plays a strong role in promoting best practices.

This finding is supported by research conducted by Miranda Wainberg and Michelle Foss at the University of Texas’s Center for Energy Economics.²⁸ Their study concludes that for commercialization goals, “upstream competition matters” and that “the coordination and competition among commercial players often yields the best results in activities that include many complicated decisions of a commercial and technical nature.” The study also concludes that, in places where NOCs compete or cooperate directly with foreign direct investors, “there was an initial strong element of knowledge transfer from foreign oil companies and supply/service companies.”

Christian Wolf and Michael Pollitt apply a similar framework to oil companies, using a database with twenty-two measures of firm performance.²⁹ Their conclusions are similar to those of DeWenter and Malatesta. Specifically, they find that “over a seven-year period around the initial public offering, return on sales increases by 3.6 percentage points, total output by 40%, capital expenditure by 47%, and employment intensity drops by 35%.” The study demonstrates that most of the improvements in profitability and employment intensity begin to occur several years before the sale of shares but taper off afterward. These gains occur despite the fact that the government may still hold the majority of shares and hence operating control. Significantly, Wolf and Pollitt do not find comparable efficiency gains with subsequent share sales as governments reduce their stake in the firms.

Governance, Efficiency, and Transparency

From the perspective of the developed world, policy should facilitate the development of natural resources to ensure that supplies can grow with demand at fairly stable prices. There is no doubt that at least some of the rapid increase in world oil prices during the years 2005–08 is the result of insufficient investment in oil producing capacity; much of that failure occurred in countries with dominant NOCs. The concentration of large reserves by one national monopoly eliminates

26. Baker Institute (2007), p. 4.

27. Baker Institute (2007), p. 14.

28. Wainberg and Foss (2005); quotations on p. 30.

29. Wolf and Pollitt (2008); quotation on p. 36.

the possibility that local competition of firms will enhance the efficiency of all and promote an adequate pace of investment. From the perspective of the larger OPEC oil producers, one advantage of an oil monopoly is precisely that it can control the pace of investment and the expansion of capacity, thereby having some influence on price.

Over the past thirty years the policy of the United States and international organizations such as the International Monetary Fund and the World Bank has been to promote and encourage (or during periods of debt crises, even force) the privatization of state-owned firms in many developing countries and has had the effect of transforming many of these firms into more aggressive, commercially oriented global competitors.

The developed oil-importing countries also have an interest in promoting the efficient operation of NOCs, since more efficient firms are more likely to be able to finance and plan capacity expansion. Privatization, even partial privatization, has enhanced the performance of several NOCs, resulting in higher production. IPO shares, partial privatization, and even commercial bonds can bring NOCs into the monitoring systems of international financial markets, thereby improving transparency, accounting, and public reporting systems and corporate governance. Once shares are publicly traded, government interference in NOC activities will damage the value of the firm's shares and invite public criticism and exposure. To the extent that noncommercial objectives interfere with the firm's ability to meet core functions and commercial goals, related noncommercial practices will similarly weigh on the firm's market value. As in the case of Rosneft, concerns about the actions of the Russian government were reflected in the performance of Rosneft shares on the London Stock Exchange. Over time such problems could result in limiting access of the firm to international capital markets and in generating financial losses for the Russian government.

It can be argued that the institutional mechanisms of auditing, reporting, monitoring, and corporate governance, including a well-functioning independent board of directors, can discourage a diversion of rents to a favored political group and can build the constituency for long-term strategies that will ensure the firm's continued profitability and productivity. However, the benefits of at least the partial privatization of shareholding to produce greater efficiency are demonstrated empirically. Data suggest that government ownership reduces the ability of a firm to produce revenues for a given quantity of inputs.³⁰ In effect, accessing international capital markets forces NOCs to engage in more transparent accounting and financial record-keeping.

30. Eller, Hartley, and Medlock (2007), p. 31.

Conclusion

Given the importance of NOCs to world oil production, continued access of NOCs to international financial markets is an important element in improving governance and transparency and, thereby, operational efficiency. Especially in an environment in which oil prices are moderating, more resource-holding governments will want to tap IPOs as a means of raising capital for investment or to retire debt. If oil prices remain relatively low for a period of time, many oil-producing countries will be under greater pressure to generate revenues to maintain social investments and services to rapidly growing populations. Borrowing money will be costly, given the quantities involved and the perceived risk of government debt. Selling off part of the NOC will be seen as a politically palatable way of raising cash without sacrificing control over the country's patrimony.

Oil-consuming countries can also promote best practices for NOCs through existing and emerging bilateral and multilateral trade mechanisms, such as the World Trade Organization, the Energy Charter, the North American Free Trade Agreement, and other international architectures. These will be important elements in ensuring that there is sufficient investment to meet global demand in the years and decades ahead.

The World Trade Organization, while technically covering trade in energy goods, has not been tapped in any significant manner to structure international trade and investment in oil and natural gas.³¹ The opportunity to make energy more central to international trade talks is better today than at any time in recent years, because the extreme price volatility of 2008 harmed the economies of both consumer and producer nations equally, highlighting the benefits to both sides of an improved international architecture for energy markets. While oil producers may have enjoyed rising state revenues from 2004 to mid-2008, the sudden collapse in oil prices in July 2008 and through early 2009 left state budgets and national economies of many oil-producing countries in crisis. So while producing countries might appear to have a short-term interest in unilateral pricing and investment policies, over the longer term it is clear that securing stable long-term revenues is preferable to the peaks and valleys seen in the last two decades. Russia's default on its sovereign debt during the oil price plunge in 1998 is but one example. The current financial problems of Venezuela and Iran are another.

An international architecture to promote an adequate and steady investment in oil and natural gas is sorely lacking in the existing financial and global economic

31. Goldthau and Witte (2009).

system. More consideration should be given to how to remedy this deficit. As discussed, functioning independent corporate boards of directors, greater reporting requirements, greater transparency for NOCs within their home regulatory frameworks, and expanded participation of NOCs in international capital markets will play a positive role in the oversight of NOCs. Such practices should be encouraged and supported by international institutions, nongovernmental organizations, and trading partners through an international architecture modeled along the lines of the European Energy Charter Treaty and other multinational trade agreements.

Trade agreements need to aim for not just fair competition within energy sectors but also adequate investment in upstream sectors. At present no major multinational trade policies address the prevalence of fuel subsidies in oil-producing countries and their debilitating effect on the ability of national oil companies to reinvest in new productive capabilities, nor is there any proposal for a multilateral agreement on cross investment that would guarantee removal (or even easing) of investment restrictions in many major oil-producing countries. As countries address the global financial crisis and increased market contagion among global commodities and economies, the cross investment in energy resources will become more relevant to the discussion. Large oil-consuming nations should insist that cross investment be on the agenda as part of an overall framework that keeps their markets open to global trade and investment in downstream energy businesses, nonoil commodities, financial services, and other goods.

International nongovernmental organizations should also open a dialogue with countries that have NOCs operating abroad and discuss how to institute corporate citizenship measures by all stakeholders in the international energy market. Current international corporate citizenship initiatives represent a major breakthrough in the creation of forums for discussion, the development of policies, and a review of practices to enhance human rights and sustainability. Statoil and Petrobras, for example, have been major contributors and participants in these forums, and their public statements and sustainability records indicate that they will remain corporate international citizens. In comparison, China National Petroleum Corporation, Oil and Natural Gas Corporation Limited, and PDVSA have largely been inactive.

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