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THE CHANGING ROLE OF NATIONAL OIL COMPANIES IN INTERNATIONAL ENERGY MARKETS

INTRODUCTION AND SUMMARY CONCLUSIONS

Throughout the 1990s and early 2000s, economic liberalization, market economy reforms and Western-style management reorganizations have characterized the oil and gas industries of major energy-producing countries such as Russia, Norway, Canada and Malaysia, as well as the energy industries of major consuming countries in the developing world such as China, Brazil, Japan and India. These emerging hybrid state-owned/private firms, together with the remaining traditional oil and gas state monopolies of the Middle East, Africa and South America, control the vast majority of proved oil and gas resources that remain for future exploration and development.

State-owned enterprises represent the top 10 reserve holders internationally. In fact, in 2005, global proved oil reserves were 1,148 billion barrels, with national oil companies in control of 77 percent of the total (886 billion barrels), allowing no equity participation by foreign oil companies, and partially or fully privatized Russian oil companies in control of another 6 percent (an additional 69 billion barrels). By comparison, Western international oil companies (IOCs) ExxonMobil, BP, Chevron and the Royal Dutch Shell Group rank 14th, 17th, 19th and 25th, respectively, and now control less than 10 percent of the world's oil and gas resource base. The remaining fraction of reserves is being jointly exploited by IOCs and national oil companies (NOCs). According to the annual survey, *The Top 50 Oil Companies*, published by respected oil newsletter *Petroleum Intelligence Weekly (PIW)*, 13 of the top 20

international holders of oil and gas reserves are either traditional NOCs or newly privatized NOCs.

The ownership of reserves also has some bearing on shares of world oil production. In contrast to years past, when privately held IOCs with publicly listed shares, such as ExxonMobil, BP, Royal Dutch Shell and Chevron, represented the largest oil and gas producers worldwide, NOCs now dominate global production. According to *PIW*, of the top 20 oil producers worldwide, 14 are NOCs or newly privatized NOCs and the international majors have been relegated to second-tier status in terms of controlling the world's oil production. *PIW's* ranking shows that Saudi Aramco, Russia's Gazprom, Iran's NIOC, Pemex of Mexico, Algeria's Sonatrach, INOC (Iraq), PetroChina, Kuwait Petroleum Corp., Brazil's Petrobras, Malaysia's Petronas, Rosneft of Russia, ADNOC of Abu Dhabi, Russia's Lukoil, PDVSA (Venezuela) and Nigerian National Petroleum Corporation (NNPC) are among the most important oil and gas producing companies in the world.

The growing importance of NOCs to the global supply-demand balance raises questions about the emerging policies, objectives and priorities of these organizations. In particular, shifts in those policies, objectives and priorities will have great impact on the future development of global oil and gas markets. NOCs 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 Organisation for Economic Cooperation and Development (OECD) continues on its natural 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 within the industrialized West, with the majority of investment being made by IOCs.

The International Energy Agency projects that, over the next 30 years, \$2.2 trillion in new investments will be needed in the global oil sector to meet rising world demand for oil. 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 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 denied access to many of these prolific and promising regions. Moreover, Asian and Russian national oil companies have increasingly begun to compete for strategic resources in the Middle East and Eurasia, in some cases knocking the Western majors out of important resource development plays. This raises the question whether timely development of the vast resources under the control of national oil companies can take place given the constraints imposed by domestic political influences and geopolitical factors.

Admirably, many governments use NOCs as a tool to achieve wider socio-economic policy objectives, including income redistribution and industrial development. In addition, many of these emerging NOCs have close and interlocking relationships with their national governments. This close relationship means that geopolitical and strategic aims in addition to purely commercial considerations are factored into foreign investment decisions. 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 on NOCs and, in some cases, dilute the incentive to maximize profits, hindering the NOCs' ability to raise external capital and to compete at international standards. The result has been stagnation in capacity growth and an inability to maintain or grow the countries' oil production capacity. The absence of explicit pressure to earn a return on capital, often coupled with inadequate financial transparency, has in many cases resulted in the inefficient or wasteful allocation of already scarce investment resources. Many NOCs lack adequate financial transparency as well, limiting their access to external capital that could be used to maintain or expand capacity. These trends are partly responsible for the slow pace of resource development relative to the rapid rise in global demand.

Specifically, to the extent that NOCs must meet the noncommercial objectives of politicians and other political interests, they may not produce at a technically efficient level. In other words, by allocating rents to various special interests, a NOC will be less likely to be able to produce as much as it would have if it had been a private company that could operate without government interference in its decision making. Thus, the strategies and policies of NOCs and their host governments, including interference in the NOC operations by politicians and other localized communities, will have a substantial long-term impact on resource development and national wealth in the coming years.

Awareness of these issues and their consequences for national economic development is prompting many NOCs to reevaluate and adjust business strategies, with substantial consequences for international oil and gas markets. Differences in the goals and priorities of NOCs from those of the IOCs will have a major influence on energy markets in the coming decade.

The James A. Baker III Institute for Public Policy, together with the Japan Petroleum Energy Center (JPEC), released in March 2007 a comprehensive study aimed at providing an effective framework to analyze the strategies, objectives and performance of NOCs. The study consists of 13 case studies examining the history and formation of 15 different state-owned oil companies and two economic modeling studies

aimed at assessing the operational efficiency of NOCs.

In developing the case studies, each firm's asset base, mission, strategies and actions are analyzed to understand the impact on international oil supply, pricing and geopolitics. The studies also examine how the role of NOCs has evolved over time with major events in history and how the historical roots of various NOCs continue to influence their current behaviors. Therefore, case studies were selected to ensure that the four major historical categories of origin were investigated, including:

Pre-1960: State enterprises formed in the 1950s under centralized command and controlled economies as countries grappled with a growing desire for self-sufficiency in oil resources.

1960s–early 1970s: The end to European colonial rule and the rise of nationalist movements gave impetus to several major oil producing nations to nationalize their oil reserves to regain control from foreign oil companies that were not serving the national interests of the host governments. In these cases, NOCs were created to ensure state control over the country's oil resources and to ensure higher revenues from oil production.

1980s: The commoditization of oil, price volatility and falling oil prices decreased the profitability of NOCs, thereby decreasing funds available for national treasuries. Consequently, many oil ministries and NOCs were restructured in an effort to increase efficiency.

1990s–present: With the breakup of the Soviet Union, another group of NOCs was formed to handle the transition from central oil ministry structures and producing associations that were communal oil production entities set up under communist planning.

In addition to historical influences, consideration was given to the nature of the NOCs' current organizational structure. This facilitates comparison of a wide range of representative types of organizations including state monopolies, partially privatized NOCs and fully privatized NOCs.

The remaining criteria examined in the case studies include:

- The size of oil reserves, the quantity of oil sales and the importance to key consuming countries such as the United States and Japan
- The geographical location and flexibility in quantity and geographic direction of oil sales
- The impact of activities on world oil prices, global supply and international security
- Geopolitical influence
- The NOC as a potential business model for other national oil strategies
- The degree of autonomy (or lack thereof) from the national government

Based on these criteria, the case studies examine the factors that influence the behaviors, strategies and priorities of the 15 NOCs, with an eye to evaluating each NOC's ability to expand sustainably its oil production and exports as well as to understand its geopolitical role in the international energy market. The case studies cover the following NOCs: Saudi Aramco; Nigerian National Petroleum Corporation (NNPC); India's ONGC; Russia's Rosneft; Russian privately held firm, LUKOIL; Malaysia's Petronas; Indonesia's Pertamina; Iraq's Oil Ministry; The National Iranian Oil Company (NIOC); Venezuela's PDVSA; China's firms China National Petroleum Corporation (CNPC), Sinopec and China National Offshore Oil Company (CNOOC); Norway's Statoil; and Kazakhstan's Kazmunaigaz.

Simultaneously to the analyses of historical case studies, a group of scholars from Rice University also developed an economic model to examine the interplay between economic, political and geopolitical factors in oil production and investment. As highlighted in the theoretical model of the operation and development of a NOC, many of the behaviors of a NOC can be explained by the different noncommercial objectives it is obligated to meet. When compared with a firm that does not face such constraints, the NOC may have operational requirements that are different. A NOC might, for example, favor excessive employment and/or be forced to sell its petroleum products to domestic consumers at subsidized prices. These outcomes

mean that a NOC is likely to underinvest in reserves and shift extraction of resources away from the future toward the present (see “A Model of the Operation and Development of a National Oil Company”).

The conjectures of the theoretical modeling exercise are verified through empirical analysis using a sample of 80 firms over a period of three years (2002–04). The analysis demonstrates that institutional and structural features reflecting noncommercial objectives are important in explaining how well a firm produces revenue for a given set of inputs (see “Empirical Evidence on the Operational Efficiency of National Oil Companies”). Of note, vertical integration is one of the structural characteristics identified in the empirical exercise as being important to a firm’s ability to capture the maximum value of its production.

The overall study findings can be classified into six broad conclusions that help define the emerging role of NOCs in international energy markets. These include:

- (1) NOCs have noncommercial objectives that differ greatly from those of the private international oil companies. These objectives, which go beyond maximization of return on capital to shareholders, include a) oil wealth redistribution to society at large, b) foreign and strategic policy and alliance building, c) energy security, including assurance of domestic fuel supply and security of demand for producing countries, d) wealth creation for the nation, e) participation in national-level politics, and f) industrialization and economic development.
- (2) NOCs’ noncommercial objectives, while highly important to national goals, tend to interfere with the firms’ ability to produce at a technically efficient level and to maximize the overall value that could theoretically be obtained from their oil resources. In particular, a principal finding of the case studies, which is corroborated by theoretical and empirical evidence, is that the extent to which these noncommercial objectives govern the behavior of a NOC has a huge

impact on its ability to replace its reserves and expand its oil and gas production.

- (3) Certain institutional structures for NOC organization and regulation help to clearly define the roles and responsibilities of management and can thereby minimize the commercial impact of noncommercial objectives on an NOC’s ability to focus efficiently on its core businesses. These institutional structures can greatly reduce the prevalence of corruption and wasteful spending. In addition, the existence of multiple NOCs within a country and/or offering of publicly traded shares of the NOC in Western markets tends to improve the efficiency of the NOC.
- (4) An increasing number of NOCs are financing activities through international capital markets and this is helping improve the NOCs’ compliance with international standards of corporate responsibility. The pressures of trading in public shares will increasingly bring these international institutional and accounting standards to bear on NOCs.
- (5) While certain NOCs are currently enjoying strong control of the upstream sector in international energy markets, downstream refining and marketing assets in key premium consuming markets are still largely disassociated from upstream NOC operations. Thus, NOCs continue to look for opportunities to enhance vertical integration, thereby creating opportunities for IOC/NOC strategic alliances. When a primarily upstream NOC holds an asset position in the downstream market, it is able to capture the value added from the production and sale of finished products. In addition, a downstream position is a strategic advantage in that it provides security of demand, or access to market.
- (6) The growing role of the NOCs in global oil markets has important policy implications for oil importing nations. To begin, if a larger share of global investment in oil production

capability will be influenced in the future by noncommercial factors, then importing nations may need to adjust their national energy strategies to reduce vulnerability to changes or instability in NOC reinvestment rates. In addition, consuming nations also will have to debate the benefits and challenges of having NOCs seek security of demand and other benefits of vertical integration by positioning themselves in downstream markets through the purchase of assets in major consuming markets like the United States, Europe, and China. For consuming countries, a desirable policy will be to promote free trade and utilize multilateral frameworks such as the World Trade Organization and Energy Charter to press NOCs to adopt institutional structures that will enhance their efficiency, promote market competition and curb interference in commercial investment decisions by their national governments.

NOC STRATEGIES AND OBJECTIVES

Many NOCs are in the process of reevaluating business strategies with substantial consequences for international oil and gas markets. Path dependency on the stage of development of the host country's hydrocarbon sector often means that change is forced on the NOC. For example, internal barriers to future growth when a maturing resource base is declining have prompted some NOCs to invest in oil exploration and production outside their own borders (see case study on Statoil). The Chinese NOCs, Petronas and Statoil all demonstrate this pattern of activity.

In other places, a NOC may cope with a maturing oil sector or political constraints on production by developing natural gas resources for export. In particular, in a country where foreign participation in oil development is highly politicized or the oil sector is beginning its natural decline, if the NOC also is endowed with bountiful resources of natural gas, it may choose to shift focus to natural gas development for export. Natural gas development

can be easier to move through a troubled political decision-making process for a number of reasons. Natural gas is often not as closely tied to concepts of national patrimony. Furthermore, natural gas export often requires specialized technology for liquefaction that is not presently owned or developed by the NOC, thus justifying the presence of a foreign partner, who is required for technical reasons. Such infrastructure is also a long-lived and risky investment that might be better suited to private equity than to taxpayers. A foreign investor can then bring both the technology and the working capital needed to bypass the politics of NOC financing problems. Nigeria, Indonesia and, to a lesser extent, Iran stand out as key examples of this trend.

Following along the above described path dependency model, but in contrast to the NOCs that are pushed abroad or into the gas export business by circumstances of geology, some NOCs, such as Saudi Aramco, Kazmunaigaz and Rosneft of Russia, have access to such abundant resources domestically and therefore mainly are focused on the self-sufficient development of those national resources. These NOCs, like Saudi Aramco, Kazmunaigaz and Rosneft exploit their resource base both as a means to support the national economy and as a tool to sustain their country's national importance as a major oil supplier. To the extent that they pursue international investment, as in the case of Saudi Aramco, it is to attain downstream outlets providing market access for their immense production (see case study on Saudi Aramco).

At present, NOCs do not all have the same interests and goals. The highly privatized, mature NOCs such as Statoil and Petronas have well-developed domestic industries and now focus mainly on wealth creation. These firms have corporate management structures that operate in a relatively independent manner from their central governments. These firms now are focusing on expanding their resource base beyond their national borders in the interest of finding better projects and higher profitability in successful foreign oil exploration and development ventures.

In the case of Statoil, investments appear to be selected primarily by commercial criteria (see case study on Statoil). The Norwegian government

derives revenues from the petroleum industry from three major sources: taxes and fees paid by oil companies producing in Norway (58 percent), the government's share in the net cash flow from Norwegian production through its State Directed Financial Interest (SDFI) holdings (39 percent), and dividends from Statoil (3 percent). Between October 15, 2001, and its peak on May 5, 2006, Statoil's American Depositary Shares (ADS) on the New York Stock Exchange increased in value by a factor of almost 6.4 times. While ADS prices have fallen significantly since that peak, they remain up compared to their starting point by a factor of almost five.

This increase in Statoil's value is clearly linked to oil price inflation since 2001. The very large and understandable role of oil prices in the strong value performance by Statoil is clear. However, Statoil's ADS price performance has been even better than one would have expected based solely on the price of oil and, thus, it is safe to say that Statoil has succeeded in increasing the value of the state's shares since the IPO beyond the value attributed to higher oil prices.

In the case of Petronas, whose petroleum reserves are expected to be exhausted within the next two decades, the firm seeks commercially competitive projects but also looks for ways to marry such investments with its foreign policy perspectives in an effort to raise Malaysia's profile on the world stage (see case study on Petronas). International activities account for more than 30 percent of Petronas' corporate revenue, or some \$12 billion for the year ending March 31, 2005, and the company is involved in upstream exploration and production in 50 ventures in 26 countries, serving as operator in 29 of those ventures. By the same token, noncommercial factors also appear to have played a role in the international investment program. Petronas chairman Mohd Hassan Marican has stated that his company always seeks more presence in Organization of Islamic Countries member states and has spent about \$5 billion in the past year in these countries (see case study on Petronas).

The proceeds of NOC investments also can be used to reduce the vulnerability of national welfare

on prices determined in the international oil market. Specifically, in order to support a stable government budget, many NOCs, such as Kazmunaigaz and Statoil, have formed a national oil fund to be tapped like a national savings account when the government take from the oil sector falls during periods when oil prices are relatively low or when resources ultimately decline. For example, Kazakhstan's fund, created in 2001, is currently estimated to be worth \$10.1 billion and consists of foreign-held securities. It is designed to provide long-term support for the Kazakh republic's budget and compensate for uneven earnings caused by fluctuations in the global oil and gas market (see case study on Kazmunaigaz).

Other firms such as Nigerian National Petroleum Co. (NNPC) and Petroleos de Venezuela (PDVSA) face mounting internal management problems and are not shielded from national domestic politics in their management and personnel practices. These firms' activities are focused squarely on seeking to maximize the flow of funds to the government from oil and gas operations. Such government interference and corruption have hampered efforts to expand resource development.

Generally speaking, the higher incidence and ability of the state—or more specifically, powerful politicians and national leaders—to intervene in the business operations of its NOC, the more likely the NOC is to favor noncommercial objectives over commercial imperatives. In the case of Venezuela's PDVSA, for example, Venezuelan president Hugo Chávez was able to institute a restructuring of the oil industry in the aftermath of a politically driven oil industry workers' strike in December 2002. Because senior PDVSA officials had joined the opposition movement and strike, Chávez was able to discredit PDVSA's management team. This enabled him to use presidential powers to replace the minister of petroleum and the head of the state oil company with new officials who would put the government's national development policy ahead of the company's commercial development strategy. By 2004, with new management in place, including Rafael Ramirez, a Chávez ally, as both minister of petroleum and head of PDVSA, two-thirds of PDVSA's budget was dedicated to social welfare instead of petroleum-

related activities. PDVSA's subsidiary that supported social and cultural investment spent \$77.4 million in such activities in 1997 compared to social expenditures of more than \$6.9 billion by 2005 on programs related to education, healthcare, job creation and subsidized food distribution (see case study on PDVSA).

In the case of NNPC, lack of adequate oversight and regulatory structures as well as a problematic subsidiary structure with an overlapping mandate of responsibilities have created an environment where waste, inefficiency and corruption can grow. NNPC's four subsidiary refineries operate at less than 32 percent of capacity, while subsidized petroleum products pricing leads to opportunities for sabotage, fraud, black marketeering and corruption. In the crude oil division, underreporting of crude production volumes or deliveries to refineries also gives way to the practice of "bunkering," where oil deliveries get diverted outside government channels for sale for personal profit. Lack of transparency in the award of oil concessions also has plagued the sector (see case study on NNPC).

Many NOCs, such as Nigeria's NNPC, subsidize domestic fuel in an effort to redistribute oil proceeds to the general population. The programs, all beginning with the noble aim of sharing national wealth and promoting economic development, have met with varying degrees of success across the companies studied. In developed economies, subsidies for petroleum product prices are not the norm, as end-user retail prices are generally driven by the market mechanism and even are taxed to varying degrees. In developing nations, by contrast, many governments implement price adjustment mechanisms to artificially lower prices. These policies are effective in providing inexpensive access to energy commodities, stimulating industrial development and shielding the domestic economy from volatility of the international oil market. However, these subsidies also can serve as a drain on operating budgets of an NOC. Across the case studies, the level of product subsidies varies widely from very large subsidies for Asian and Middle East companies to high taxes on products in developed countries like Norway. On a macroeconomic level,

low petroleum product prices can stimulate growth in energy intensive sectors and limit incentives for energy efficiency, which only exacerbates the budgetary problems faced by the NOC and the government.

Price subsidies in Nigeria have been poorly implemented, with the net result being rampant fuel shortages and little benefit to the average Nigerian. By contrast, citizens in Saudi Arabia have benefited from inexpensive fuel without creating an undue burden on the NOC Saudi Aramco. Beyond supplying consumer fuel, Saudi Aramco also is asked to develop natural gas to feed Saudi industry and support industrialization in the kingdom with an eye to expanding badly needed employment for Saudi citizens. Indeed, in a much politicized battle regarding the public policy of natural gas feedstock and power sector development, Saudi Aramco was pressed to expand its investment in natural gas development and allow foreign investment in its natural gas sector. Moreover, Saudi Aramco was not given the mandate to decide the allocation of new natural gas supplies to Saudi industry. This prerogative, laden with domestic political implications, was instead given to the oil ministry. In addition, Saudi Aramco was overruled on proposals to increase ethane prices to industrial customers to be more in line with the higher value of that product stream when compared to natural gas (see case study on Saudi Aramco).

Similar government subsidies in high population countries like Iran have artificially augmented local consumption of petroleum products in both the transportation and industrial sectors of the economy, harming the ability of the state oil firm, NIOC, to remain profitable. Iran has some of the highest product subsidies in the world, with the price of gasoline reduced to \$0.10 a liter. Due to artificially depressed pricing, Iranian domestic demand for fuel has skyrocketed, forcing Iran to import expensive petroleum products from the international market. NIOC is forced to sell hard currency in order to import gasoline back into the country. Furthermore, high fuel subsidies also create an incentive for arbitrage-related smuggling of Iranian gasoline to neighboring states, putting a further economic drain on NIOC. The country's product import bill now runs

in the billions of dollars, with NIOC predicting that gasoline subsidies will be costing the industry \$15 billion to \$20 billion annually by the next decade. The subsidies, which are extremely helpful to average Iranians, are becoming increasingly damaging to the overall Iranian treasury. The government has had to dip into its future generation fund to cover a mounting budget deficit created by the gasoline import bill. The subsidies also have become such a major factor in Iran's political discourse that even President Ahmedinejad, despite his populist orientation, concedes that a solution to the fuel subsidy problem needs to be found. Otherwise, according to one recent analysis, Iran will no longer be a net exporter of oil by 2015 (see case study on NIOC).

The possibility that high fuel subsidies gone awry can turn an oil-rich country into a net importer is, in fact, a reality in Indonesia—an outcome realized from the mismanagement of the Indonesian oil sector. Strong economic growth, combined with low-priced fuel, caused Indonesian demand for refined products to grow so rapidly that the country became a net importer in 2005. Under President Suharto's New Order regime, Indonesia's government tried to use a portion of its oil revenues as a method to spread development throughout the country by offering fuel subsidies. But the program was implemented without proper transparency and oversight and—in combination with exploration activities that favored cronyism, delays and cost overruns—it allowed for an expansion of corruption, waste and misallocation of resources, ultimately to the detriment of Pertamina. By 1998–99, the value of fuel subsidies had reached almost one quarter of the government's total budget. Looking for a bail-out to Indonesia's severe economic situation, Suharto was forced by the International Monetary Fund to agree to bring domestic fuel prices up to international levels. The decision was seized upon by opposition forces, and in ensuing riots, President Suharto was forced from office. In the aftermath of the crisis, Pertamina was targeted as a cash cow for the previous regime, and its activities were greatly curbed (see case study on Pertamina).

There are other manners in which NOCs

redistribute oil wealth to the society at large beyond fuel subsidies. As already mentioned, Venezuela's PDVSA spent more than \$6.9 billion in 2005 on programs related to education, healthcare job creation, and subsidized food distribution. NOCs also are charged with creating public infrastructure, such as roads and pipelines, and Malaysia's Petronas was even asked to help revive the city of Kuala Lumpur during the Asian financial crisis by constructing a new "Twin Towers" office headquarters to make use of land previously part of the Selangor Turf Club in the middle of a fast-growing section of the city. Petronas also was asked to finance construction of the new national government administrative center Putrajaya (see case study on Petronas).

Russia's Rosneft also has been tapped as a tool of domestic development to fortify the Russian state. Rosneft's activities in remote regions are an instrument of domestic policy, which federal authorities use unofficially for strengthening the vertical power of the state, particularly in the "troubled regions." The activity of Rosneft in the south of Russia, with its old and depleted resources, is viewed less as a commercial endeavor than as a contribution to the Russian state, which is concerned with the distant region's strategic and geographic importance. Rosneft also is active in the development of gasification infrastructure to build up the economies of Kamchatka and the Russian Far East. The investments are in line with the Kremlin's push to consolidate power in remote regions in an effort to ensure the territorial integrity and unity of Russia through economic development across the entire country. Rosneft also was charged with the difficult task of rebuilding the energy industry of Chechnya (see case study on Rosneft). It is speculated that Rosneft is compensated for these less-than-commercial activities by being assigned the state's share of attractive acreage in other locations, such as the Sakhalin Islands.

Local content rules, training programs and loans to the sovereign are other ways NOCs contribute to the redistribution of wealth to the underlying society. A clear mission for Norway's Statoil was to promote technology transfer through its oil and gas partnering, while China's state oil companies employ hundreds of thousands more than needed to run

their operations.

NOCs also are called on to be sponsors and role models for economic development and industrialization. Local content and technology transfer rules can assist with this process. In addition, the national oil company may be among the first entities to participate in international trade agreements or investment deals, serving as a conduit for codifying foreign investment laws and procedures or use and demonstration of systems of procurement, accounting and financial organization.

This pattern of activity is clearly demonstrated in Kazakhstan, which, in the aftermath of the breakup of the Soviet Union, is in the process of developing a new national industry from scratch. In a statement on its origins on its corporate website, NOC Kazmunaigaz (KMG) explains that it was created with the aim of comprehensive development of the republic's petroleum industry to ensure rational and efficient operation of hydrocarbons, which in turn, will contribute to social and economic development of Kazakhstan and its successful integration into the world economy. The geographic location of Kazakhstan has prompted its government to seek membership in nearly every Asian and European multilateral organization that it is eligible to join as a means to promote its marketing plan as a bridge between Europe and Asia energy markets. The Kazakh NOC was used to demonstrate sound accounting, financial and judicial systems to promote foreign investment. KMG was further charged with increasing the share of domestically produced goods, works and services supporting the country's large oil and gas projects and with helping increase the number of Kazakhstani staff directly engaged in these projects. KMG has obligations to help develop cadre, to which ends it created a Center for the Development of Personnel to provide the opportunity for employees to raise their technical qualifications. KMG exploration and production also is subject to the State Procurement Law, like all other subsoil contract holders, which requires a tender for all goods, works and services, including even the hire of external experts, which gives the government of Kazakhstan substantial ability to ensure that local cadre and service providers get

sufficient consideration.

Beyond economic and national development tasks, case studies reveal that NOCs also are also being tasked with national security and foreign policy objectives by their national governments. Some NOCs are searching for oil field exploration and development opportunities abroad to respond to national energy security concerns about declining domestic resources and rapidly expanding domestic demand. The Chinese companies China National Petroleum Corp. (CNPC), China National Offshore Oil Corp. (CNOOC) and Sinopec all fall into this category, as does the Indian state firm ONGC (see related case studies on the industries of China and India).

With a long-term target of acquiring 1.2 million barrels per day (b/d) of equity oil and gas overseas by 2025, Indian state ONGC's overseas subsidiary, OVL, is currently working toward a goal of 400,000 b/d by 2010. OVL now has 25 oil and gas properties in 15 countries and has invested as much as \$3 billion since 2000 in overseas exploration and energy projects.

Similarly, China's top leadership ultimately recognized the importance and significance of international business to China's sustainable economic and energy development and national security in the late 1990s. The country's "Going Abroad" strategy was formed as a national strategy in late 1997 and paved the way for Chinese oil majors to expand their businesses abroad. The Chinese government offered a series of investment incentives to encourage the Chinese NOCs to go global, including the gradual liberalization and reform of regulatory systems and financial regimes (involving liberalized taxation and foreign exchange policies) and of administrative rules (see "Chinese NOCs' Overseas Strategies").

CNPC alone has oil and gas assets in 23 countries, including Sudan, Algeria, Ecuador, Nigeria, Chad and Kazakhstan. In 2005, the company announced its goal to invest a further \$18 billion in foreign oil and gas assets between 2005 and 2020. Despite ongoing controversy, CNPC has invested more than \$8 billion in Sudan's oil sector, including investments in a 900-mile pipeline to the Red Sea. China's CNOOC has also been a major investor, purchasing Repsol-YPF's

Indonesian oil field interests for \$585 million and signing an agreement with the Nigerian National Petroleum Corp. to purchase for \$2.3 billion a 45 percent stake in a deepwater oil and gas block in the Niger Delta region that contains the giant Akpo field. China's Sinopec also has looked overseas for oil exploration and production opportunities, purchasing assets in Colombia and Canada. Sinopec also bought a 97 percent stake in Russian's Udmurtneft, a mid-sized unit of TNK-BP, for a reported \$3.5 billion (see case study on Chinese NOCs).

Foreign asset purchases by NOCs also can focus on security of demand, rather than diversification of supply. It is this area of business that holds the most promise for IOC–NOC partnering and collaboration. The empirical evidence demonstrates the importance of vertical integration to an NOC's ability to capture the maximum value of its production. Vertical integration decreases transaction costs and allows firms to capture value from wellhead to gasoline pump. In addition, since relative profits from upstream to downstream business units may vary over time, vertical integration allows a firm to diversify and help mitigate risk. During the 1970s, as reserves were nationalized and the OPEC cartel gained market power, the oil industry became split between NOCs controlling upstream operations and IOCs concentrated downstream. During the 1980s, IOCs began to focus on upstream investment while simultaneously restructuring refining and distribution business units and even mothballing refining capacity. For the NOCs, the opportunity to invest in downstream assets was seen as a way to capture value in new areas of the industry and to diversify income. Joint ventures and wholly-owned refineries in consuming countries also gave NOCs guaranteed access for their exported crude oil and increased global market share.

Downstream acquisition has been an effective strategy for many NOCs and has been a key priority for large, effective oil-producing NOCs such as Saudi Aramco and Lukoil. Saudi Aramco, for example, has set a target to achieve 50 percent integration for its vast oil production. Lukoil of Russia has acquired oil processing facilities and gasoline retail networks in

Romania, Bulgaria, Ukraine, the Baltics, Finland and former Yugoslavia, and it established a foothold in the U.S. downstream in 2000 when it bought a chain of gasoline outlets on the East Coast formerly owned by Getty Petroleum. As part of this same strategy, Lukoil began building a partnership with U.S. firm Conoco—now ConocoPhillips—in the late 1990's within the framework of the Gore–Chernomyrdin Commission. These efforts reached a climax in 2004 when ConocoPhillips bought a 7.9 percent packet of Lukoil shares from the Russian government, a \$3 billion deal that moved the Russian company fully into private hands. ConocoPhillips has since acquired more Lukoil shares boosting its holding close to 20 percent. The partnership remains a constructive model for IOC/NOC partnering. Lukoil and ConocoPhillips have formed a venture jointly to tackle huge oil reserves in the Timan Pechora Basin. In return, ConocoPhillips is opening up downstream opportunities for Lukoil outside Russia. Lukoil bought a network of gasoline stations from the company in 2006 and is hoping to move into the U.S. oil refining business. Lukoil's downstream activities mirror Russian national policy; President Vladimir Putin has called on the West to allow investments by Russian firms in OECD markets as a quid pro quo for stable energy exports from Russia.

NOCs AND OIL GEOPOLITICS

That oil is a strategic commodity of high relevance to geopolitics has been clear in modern world history, starting with World War II and extending to current global power relations. Thus, it is no surprise that NOCs, with their vast access to the world's resources, are becoming important players in global power politics. NOCs are increasingly being called on by their governments to engage in activities to support foreign policy objectives. The examples are multifold, such as Saudi Aramco's efforts to raise oil output in the aftermath of Iraq's invasion of Kuwait and China's courtship of Russia, Venezuela and Iran. Sometimes, NOC-to-NOC oil deals are designed to build ties that can be tapped in adversity, such as Iran's efforts to offer oil fields to Chinese, European and Indian NOCs. Others, such as Lukoil's deals in

the Caspian Basin or Malaysia's investments in the Islamic world, are meant to cement regional ties and bolster the influence of national governments.

The use of oil operations to geopolitical ends can be complex and multifaceted. PDVSA's geopolitical role includes protecting President Chávez and his Bolivarian Revolution. Chávez recognizes that the international political context of increased globalization and the promotion of liberal democracies, as well as the foreign policy activism of the U.S. administration, pose a risk for the consolidation of the Bolivarian Revolution at home. Thus, Chavez has adopted an aggressive foreign policy of his own to create countervailing pressures against globalization and U.S. pressure on his regime. This foreign policy activism, in Latin America, the Caribbean, the Middle East and Asia, is based on promises of economic aid and joint energy projects. In both, PDVSA plays a fundamental role. Deals with the Morales government in Bolivia include the petroleum, mining and fertilizer industries. Recently elected Ecuadorian president Rafael Correa is looking for aid from Chávez to deal with a severe debt and economic crisis, perhaps in a fashion similar to Venezuela's purchase of Argentine bonds to help that country out of its financial crisis. Chávez also recently promised aid to Daniel Ortega's government in Nicaragua that could amount to billions of dollars. PDVSA also is increasing oil sales to China, the Caribbean and South America. It is doing refinery deals in Uruguay, Brazil, and possibly Peru and Chile (see case study on PDVSA).

Geopolitical objectives can be a double-edged sword, however, as in the case of Iran's threat to cut off all oil exports to the West in response to discord over Iran's pursuit of nuclear weapons. The threat to paralyze global oil markets is a core component of Iran's concept of geostrategic deterrence. Prominent members of Iran's security establishment have threatened that Iran could block the vital oil transitway, the Strait of Hormuz, if Iran's interests are endangered. Such rhetoric has prompted NIOC to respond with counterassurances of supply reliability, but clearly, NIOC stands to lose from the perceptions of its proximity to the political risk of its home nation, as is witnessed in the drop in its credit

rating, the drying up of foreign investors in its oil and gas sector and the loss of financing from lending agencies previously involved with Tehran (see case study on NIOC).

The powerhouse of geopolitical NOCs is Saudi Aramco by virtue of its position as the purveyor of Saudi swing oil production. Saudi Aramco has been a tool of Saudi foreign policy since its inception and the state concern even has had its hand in the formation of foreign policy as the chief technical advisor on oil matters. The Saudi firm is the only state oil company that is truly a global oil swing producer. It is the main possessor of spare crude production capacity in the world. Indeed, this enables Saudi Arabia to replace the exports of any small- or medium-sized oil producing nation within days or weeks. The kingdom, of course, also has the power to pull significant volumes off the market as well.

Saudi Aramco's strategies and aims have been greatly tailored to meet the foreign policy needs of the state. The company geared up production in the 1980s when the Saudi royal family decided that an oil price war would be the best means to grab back Saudi market share from new emerging oil producers such as Norway and the United Kingdom. Lower oil prices also suited the kingdom's desire to ensure that cash-strapped Iran did not have the resources to wage a successful war against neighboring Iraq and to pressure the Soviet Union, whose foray into Islamic Afghanistan was seen as another geopolitical event out of step with Saudi Arabia's long-term religious and strategic interests.

In the years following, Saudi Aramco continued to serve the kingdom's foreign policy priorities, ensuring, for example, for many years that the Saudi Arabia stood as the number one supplier of oil to the United States month after month in a policy designed to shape public opinion about the importance of close U.S.-Saudi relations. During the Gulf War in 1990, ensuring Saudi Arabia's role as a key ally in the international coalition, Saudi Aramco—through superlative efforts—replaced in less than 90 days more than 3 million b/d of the Kuwaiti and Iraqi oil production lost in the aftermath of Iraq's invasion of Kuwait, working with contractors around the clock

to reopen mothballed Saudi oil fields and expand output at operating facilities.

Saudi Aramco currently is engaged in a major upstream expansion program that finds its roots in the kingdom's requirements for spare capacity as it pursues a global and regional leadership role at a time of conflict and instability in the Persian Gulf. Some Saudi analysts have suggested that it is important to the kingdom to be able to replace Iranian oil exports, should an international conflict with Tehran result in a loss of oil to the market. Saudi analyst Nawaf Al-Obaid, who was the managing director of the Saudi National Security Assessment Project, published an article, "Saudi Arabia's Strategic Energy Initiative," in which he asserts that Saudi Arabia will be able to replace all of Iran's exported oil, if necessary. "Saudi Arabia not only has a strategic interest in reining in Iran, but it is well positioned to do so. With the price of oil at a high, the kingdom's influence as the world's central banker of energy is at its apex, making it the economic powerhouse of the Middle East," the article said.

In both its foreign policy role and its responsibilities at home, Saudi Aramco provides an interesting illustration of how NOC aims, behaviors and strategies can answer to more than the imperatives of achieving profitable commercial performance. Saudi Aramco engages in solid commercial management practices, considering realistic threshold rates for investment and reviewing its business opportunities through the lens of best corporate practices and evaluation procedures. But, its priorities still yield to the needs of the state and the welfare of the overall Saudi polity.

In recent years, the company has managed to achieve these noncommercial goals with a minimum of interruption to its ability to fulfill core oil functions such as raising overall production rates and providing the right mix of petroleum products for domestic markets and for export on a profitable basis. But questions remain as to whether the company will continue to be able to balance these conflicting goals as the call on its oil rises to new highs. The U.S. Department of Energy predicts that Saudi Arabia will have to produce 17.1 million b/d by 2030, a more than 100 percent increase from today's

levels of around 9 million b/d, to meet rising world oil demand (see case study on Saudi Aramco).

NOCs AND THE FUTURE OF WORLD OIL SUPPLY

The critical question for the future is whether Saudi Aramco, along with other major NOCs, will be able to continue to invest adequate amounts to meet the projected rise in oil demand in the United States, Europe, China and emerging economies in Asia and elsewhere. This issue is relevant given that there is no question that the pull of noncommercial obligations detracts from the NOCs' abilities to use their revenues to foster technically efficient use of capital.

In general, the ability of a NOC to meet its evolving business strategies will be challenged by its obligations to support national interests. The results of the theoretical and empirical analyses highlight this point. As noted in the theoretical model of the operation and development of a NOC, many of the behaviors of a NOC can be explained by the different noncommercial objectives it is obligated to meet. When compared with a firm that does not face such constraints, the NOC is more likely to favor excessive employment and to be forced to sell oil products to domestic consumers at subsidized prices. In addition, a NOC is likely to underinvest in reserves and shift extraction of resources away from the future toward the present (see "A Model of the Operation and Development of a National Oil Company").

The conjectures of the theoretical modeling exercise are verified through empirical analysis using a sample of 80 firms over a period of three years (2002–04). The analysis demonstrates that institutional and structural features reflecting noncommercial objectives are important in explaining how well a firm produces revenue for a given set of inputs (see "Empirical Evidence on the Operational Efficiency of National Oil Companies"). The empirical exercise also demonstrates the importance of vertical integration to a firm's ability to capture the maximum value of its production.

However, not all NOCs share common interests, goals or degree of commercialization, and these are likely to be shaped by the structure and strength of the relationship between the NOC and its national

government. Economic research shows that many institutional features of corporations can be explained as mechanisms aimed at encouraging managers to maximize shareholder wealth. For example, a wider range of monitoring actions is an important element, such as the imposition of stricter accounting and financial reporting practices. Thus, as demonstrated in many of the NOC case studies, international funding activities that force NOCs to engage in more transparent accounting and financial record keeping have a beneficial effect on corporate efficiency. Managers of government-owned firms can be fired, and government-owned firms can be required to produce audited accounts or use formal control systems, analogous to private corporations. Providing explicit performance-related compensation, including shares or share options, could be used as a way of aligning the interests of the managers more closely with those of the shareholders (see "A Model of the Operation and Development of a National Oil Company").

Trading ownership claims in a corporation provides a number of benefits, including placing pressure on managers to maintain profitability. The price of shares reflects investor opinions about how well managers are using the firm's assets to generate income. Since investors substantiate their opinions about managerial competence by placing their own wealth at risk, they have an incentive to ensure that those opinions are well founded. In addition, the possibility of earning income by improving monitoring of managerial performance leads to the development of specialists who can invest in improved monitoring technologies. Poor managerial performance thus reduces share prices, which can encourage the installation of new managers. Debt also pressures managers of private firms to maintain adequate cash flow, since default on interest payments will send the firm into bankruptcy and impose substantial costs on managers (see "A Model of the Operation and Development of a National Oil Company").

The time horizons of politicians and investors in a private firm are likely to differ. Politicians who do not care about the performance of the firm beyond their own term of office may be tempted to use the

return on capital for other purposes even though it would leave insufficient funds to finance additional investments. Although reduced investment (including reduced maintenance expenditures) will compromise future firm profitability, the thinking is that the problem will be left to future politicians to address. By contrast, in a private corporation, even if an investor intends to hold shares for a short period, the resale value of the shares will depend on the likely future profitability of the firm. Shareholders therefore have an incentive to encourage management to make an efficient trade-off between current income and future profitability.

Another benefit of traded ownership shares is that the rate of return on shares reflects the compensation that investors require for bearing the risk inherent in that firm's investments. The rate of return thus signals to management the opportunity cost of their investments. New investments will raise share prices, and thus investor wealth, only if investors expect them to yield a positive net present value when discounted at the firm's cost of capital. By contrast, managers of government-owned enterprises lack direct information about the rate of return required to compensate for the risks inherent in their investments. In particular, although government-owned firms (with debt guaranteed by the government) can borrow at the government bond rate, this rate primarily reflects factors other than the risk of capital investments made by government-owned firms. Thus, the profitability of the investments made by government-owned firms will be a minor factor in the calculations of investors in government bonds.

Managers of private firms have an incentive to innovate in producing higher-quality goods or reducing costs through productivity improvements. Failure to do so could lower share prices below what they otherwise would have been. Decisions that turn out to be unprofitable or profitable opportunities that are missed could raise the probability of bankruptcy or a takeover. In the public sector, however, the lack of an agreed and readily measured objective makes rewards and punishments more asymmetric. When mistakes are made, resources are expended to discover and discipline those judged as responsible.

On the other hand, many claim credit for successes, and it is difficult for those truly responsible to obtain their just rewards. The result is that managers of public sector firms tend to be more risk averse than are their private sector counterparts and much more concerned with avoiding mistakes than in seeking success. Managers of government-owned firms, therefore, are likely to be less entrepreneurial than are their private sector counterparts. The more risk-averse attitude of managers of government-owned firms may reinforce the tendency of the firm to discount future income at a very high rate (see “A Model of the Operation and Development of a National Oil Company”).

The notion that politicians aim to maximize efficiency, or social welfare more broadly defined, may be especially deficient for explaining why some developing countries establish a NOC to exploit domestic hydrocarbon resources. For example, political institutions within such countries are profoundly influenced by the rents accompanying oil and gas production. The “paradox of plenty,” written about extensively by political scientist Terry Karl, is that the existence of large rents engenders a political system that relies on maintaining and expanding the flow of petroleum revenue. Domestic politics comes to be dominated by the redistribution of petroleum rents to favored political groups. The weak administrative structures, insecure property rights and nonexistent judicial constraints in developing countries exacerbate the tendencies to promote redistribution at the expense of economic efficiency. Yet, such economically inefficient decision-making is not necessarily a miscalculation when viewed politically. Instead, it can be an important aspect of the calculation of politicians to maintain public support.

A new trend among NOCs is to balance the needs of social welfare and corporate efficiency by instituting some elements of private sector constructs into state-run NOCs. Several case studies indicate that functioning 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. Statoil’s board, while

nominated by the government, has from the very beginning maintained a professional role separate from the government or ministry.

Offerings of IPO shares, partial privatizations, and even commercial bonds bring NOCs into the monitoring systems of international financial markets, improving transparency, accounting and public reporting systems and corporate governance (see “National Oil Companies and Corporate Citizenship”). It is the lack of access to these kinds of institutional mechanisms that allows government interference in NOC activities to hurt the firm’s ability to meet core functions and commercial goals. Institutional mechanisms of auditing, reporting, monitoring and corporate governance, including a well-functioning, independent board of directors, can be used to block the grab for rents by any particular set of power elites inside the home polity and safeguard the firm’s ability to set long-term strategies that will ensure its continued profitability.

The commercial benefits of at least partial privatization of shareholding to produce greater technical efficiency are demonstrated empirically. Data suggest that a level of government ownership reduces the ability of a firm to produce revenues for a given quantity of inputs (see “Empirical Evidence on the Operational Efficiency of National Oil Companies”). On average, for the sample of NOCs analyzed, those that both are fully government-owned and sell petroleum products at subsidized prices will be only 35 percent as technically efficient as a comparable firm which is privately-held and has no obligation to sell refined products at discounted prices. While individual firms may vary in efficiency, on average the modeling shows that a composite comparison for fully government-owned firms is that they might only exhibit about 60 percent to 65 percent of the efficiency of a privately-held IOC (see “Empirical Evidence on the Operational Efficiency of National Oil Companies”).

Still, too much can be made of the benefits to technical efficiency and commercial performance for NOCs. As has been shown in the case studies as part of this broader analysis, the noncommercial objectives and goals of NOCs are an important element, if not the most important element, of their role in society

and for national goals. No one can question the benefits of an NOC that can effectively redistribute oil wealth throughout a society, promote economic development, build national infrastructure or bring technical training and technologies to a nation. Clearly these tasks have economic value that is not captured in an assessment of corporate efficiency. Moreover, it is hard to quantify the benefits that ensue from an NOC's activities to enhance energy security, regional relationships or geopolitical power. All of these goals may take precedence over commercial efficiency in the eyes of the citizens of the NOC's home nation.

However, as the case studies on Pertamina, NIOC and NNPC so patently demonstrate, attainment of noncommercial objectives and provision of national services can best serve a country's interests if such activities can be sustained over the long term. To permit this, consideration must be given to how best to ensure that the company's future and finite resources are not ransacked by the political imperatives of the immediate term. Companies like Statoil, Saudi Aramco and Petronas seem to be able to meet a wide range of goals, commercial and noncommercial, in a manner that has not jeopardized the companies' corporate future. In studying their trajectory, NOCs can learn valuable lessons about the institutional structures and governance mechanisms that can be used to enhance the value of having an NOC and allow the NOC to meet both social and political goals as well as the corporate commercial achievements and investment targets needed to sustain the company itself and the nation's oil industry.

The gulf between the immediate goals and objectives of NOCs when compared to IOCs has hindered partnering between the two entities in various settings over the history of the NOCs. Perceptions that IOCs are not interested in the broader goals of their NOC partners or are working against the needs of the host country's best interests have hindered relationships off and on over the past 50 years. Such perceptions have led to policies that deny IOCs access to prolific resources in important regions of the world. In some cases, this cacophonous dialogue that has ensued today in many parts of the

world about what constitutes an appropriate rate of return to a privately-held explorer or where the line for environmental protection or community service should be drawn by a private corporation has prompted host oil producing governments to shun IOCs in favor of a new NOC-to-NOC dialogue. IOCs, in turn, complain to their own governments about the uneven playing field for future investment where oil exploring NOCs from China and elsewhere are receiving government assistance in outbidding the IOCs for acreage. This has led some policy makers to question whether the United States itself needs to have its own NOC to be able to stay competitive in the future international oil scene.

There is no question that NOCs may find that partnering with other NOCs can be more comfortable culturally as the understanding of complex NOC priorities will be innately understood by NOC partners and thereby not the subject for a wider debate on the line to draw on corporate responsibility for privately-held firms. Governments also can meet to facilitate NOC-to-NOC partnering, as happened between China and India in January 2006, in an effort to contain the bidding wars between Indian and Chinese NOCs. The comfort of similar objectives and noncommercial values is certainly a reason why the world is seeing a larger number of NOC-NOC deals, including India's ONGC's recent stake in Sakhalin-I, or the memorandum of understanding (MOU) with the Iranian government to acquire a 51 percent stake in the large Yadavaran oil field by a partnership of Chinese and Indian NOCs. NOCs also are partnering in the Caspian Basin and more recently in Syria. So whence go the IOCs?

A POLICY FRAMEWORK FOR WORKING WITH NOCs

As a study of corporate efficiency shows, there is a clear benefit to IOC involvement in upstream investment. Moreover, the IOCs still hold control to key downstream assets in growing markets, leaving open the possibility for integration synergies by sustaining their upstream involvement. In addition, the problems of corporate responsibility and positive community engagement are not unique to IOCs. One has only to look at the troubled involvement of

China's CNPC in war-torn Sudan and its placement of thousands of irregular military and construction personnel in the country to consider that investment by NOCs is no panacea (see "National Oil Companies and Corporate Citizenship"). Nor are NNPC's problems in the Niger River Delta related only to the activities of IOCs. NNPC is also a target now for dissatisfaction based on its own inability to meet basic transparency and corporate responsibility standards (see case study on NNPC).

NOCs' transnational activities have affected the global human rights regime and international relations in important ways. NOCs' investments in countries with ongoing human rights, sustainability and environmental challenges have complicated international efforts to create a more effective architecture to address rights crises, conflict management over energy resources and environmental stewardship. It is imperative that NOCs be gradually co-opted into the corporate citizenship ethos (see "National Oil Companies and Corporate Citizenship").

Current international corporate citizenship initiatives represent a major breakthrough in the creation of forums for discussion, development of policies and review of new and improved practices on 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 would indicate they will remain supporters of corporate citizenship at the international level. In comparison, CNPC, ONGC and PDVSA have largely been inactive. The fact that the Chinese and Indian NOCs are not active participants is especially problematic (see "National Oil Companies and Corporate Citizenship").

On a multilateral basis, it may serve the interests of the United States to open a dialogue with countries that have NOCs operating abroad and discuss how to enhance corporate citizenship measures by all stakeholders in the international energy market. If the United States does not take a leadership role, such a missed opportunity might well signal to other parties seeking scarce energy supplies that human rights do not matter. A development of this nature not only would be detrimental to international peace

and security but also likely would hinder progress made in corporate citizenship (see "National Oil Companies and Corporate Citizenship").

Efforts to enhance international corporate citizenship through civil regulation are best placed to address fundamental human rights (e.g., personal security, property and livelihood) and environmental protection. Attempts to establish binding international guidelines on the economic dimensions of corporate citizenship, however, are well-intended but impractical. Equally important, the discussion of future directions for corporate citizenship must move beyond the dialectic of regulation versus voluntary cooperation. Other, potentially more comprehensive approaches should be considered.

In this context, setting a benchmark of standards with adjacent oversight might help identify, target and arbitrate liable corporate behavior. The International Criminal Court, or a new tribunal, could potentially be a venue to target corporate leaders, or even corporations themselves, when malfeasance that crosses international boundaries is not properly dealt with at a national level. Perhaps the most pragmatic approach is to blend the binding and voluntary approaches. A minimum level of standards could be set, high enough to offer basic human rights and environmental protections, while leaving that standard low enough that companies not only will comply to avoid penalties but also will seek greater social legitimacy by exceeding the "average" standards. The ongoing normative debate over voluntary corporate citizenship initiatives and standards can provide key insight into the specific content of what such international civil regulation could be (see "National Oil Companies and Corporate Citizenship").

Finally, international standards have not been codified to define irresponsible behavior by transnational corporations, while they have been codified for both nation-states and individuals. Once nearly inviolable in theory, state sovereignty has been circumscribed by the United Nations' adoption of an international "responsibility to protect" civilian populations from genocide and other forms of mass violence. At least conceptually, limits to state

sovereignty may open a door to more precisely defining corporate responsibilities in a globalizing world as a way to encourage good corporate citizenship and exercise a check on irresponsible behavior across borders.

Flexible solutions, of which corporate citizenship is but one, are needed to alleviate governance and development dilemmas that involve national capacity gaps and institutional failures. A comprehensive framework that blends the best elements of civil regulation with voluntary cooperation and engages multiple stakeholders may be a more fruitful approach at the international level.

More broadly, the answer to the problem of the future oil market structure, given the rise of NOCs and the challenge of NOC-IOC relations, is complex. It should not give way to simplistic analysis that IOCs will manage investments more efficiently, and hence more properly, and should be invited in around the globe, nor should it be arbitrarily claimed that NOCs can best exploit a nation's oil patrimony because they hold national interests in mind. This "me first" line of debate will not bring successful solutions to the global energy dilemma. The reality is that more than one-third of the world's population has no access to modern energy services whatsoever, and we will need a far better integration of the industry in the future if there is any hope that rising world energy demand and the concomitant global economic development is to be met in the coming decades.

From the point of view of U.S. policy, it does not make sense to create a national oil company to compete globally with the rising NOCs of China, India and Russia. As this study has demonstrated, the privately-held corporations that look for oil worldwide are more efficient and productive organizations than any new government-run entity that is likely to be created by a U.S. federal government initiative. The question of the future competitiveness of American oil companies in a new world where noncommercial features come to bear in ensuring access to resources is best answered by U.S. government actions in areas where the U.S. government already has jurisdiction and experience. In particular, the U.S. government should take an increased role in promoting bilateral

and multilateral trade treaties in an effort to increase competition in energy trade and investment. The competition itself will foster increased efficiency in the operations of NOCs. In addition, the United States should consider how to use increased foreign aid to supplement U.S. energy company investments in places where social and economic development assistance is badly needed, and also to take action to enhance the profile of multilateral agencies such as the World Bank, Asian Development Bank or other multinational institutions that can assist privately-held oil firms to promote sustainability in the developing world through both aid programs and through assistance and training on transparency and governance measures and methods.

If the United States were able to wish into existence a world that would favor its terms of trade and superpower status, all NOCs would be privatized, foreign investors would be treated the same as local companies and OPEC would be disbanded, allowing free trade and competitive markets to deliver the energy that is needed worldwide at prices determined solely by the market. But it is hard to imagine why major oil producing countries would agree to that since it likely would mean, as has been speculated, less oil revenue for most of the smaller producers lacking the ability to boost production to garner revenues from higher sales. In light of this reality, the United States will have to accept the existence of NOCs as a fact of life but should encourage steps to make their activities more businesslike, transparent and—to the extent possible—free of onerous government interference (see "NOCs and U.S. Foreign Policy"). As has been discussed, the problem is not that NOCs have complex and competing priorities. The problem is whether those priorities stand in the way of timely resource development.

It should certainly be in the U.S. mission to promote best practices for NOCs through existing and emerging bilateral multilateral trade mechanisms such as the World Trade Organization, the Energy Charter, NAFTA and other similar international architecture. These agreements already bar uncompetitive energy subsidies and barriers to open investment in energy projects. This would be an important element in ensuring that there is

sufficient investment to meet global demand in the years and decades ahead.

The case of Norway's Statoil is instructive to this point. For Norway to join the European Economic Area (EEA), in which Norway would receive access to the common market, it was forced to follow common competition directives. Before EEA entered into force, Norwegian oil and gas companies constituted a monopolist sales organization that regulated marketing and sales of Norwegian gas into the continent. This meant that Statoil, as the controlling party, was able to act as a monopolist and set natural gas prices and customers for all long-term sales of gas from the Norwegian Continental Shelf. With entry into force of the EEA, this changed as Norway had to mirror the European commission in the fields of competition, state aid and public procurement. This affected Norwegian oil policy in two important respects. First, it meant that the state lost its ability to direct companies' investments and expenditures. Second, as this occurred in tandem with the first steps to liberalize European natural gas markets, it meant that Statoil had to give up its monopoly power of gas sales to the European Union. But in fact, the post EEA fate of Statoil has not been to disband the company because, without its monopoly benefits, it cannot serve its purpose to Norway. If anything, Statoil is likely to be able to continue to grow, providing higher returns and augmentation to the Norwegian government's remaining shareholding. Statoil's future still looks bright, but the EU's insistence that Norway join the club without making an exception for its national oil company ensured that Statoil promoted transparent and competitive practices, permitting the firm to make efficient investments in future production capacity.

More broadly, the United States also needs to distinguish between our economic and strategic concerns in dealing with NOCs. While the United States should certainly care whether its sources of oil supply are sufficiently diverse to prevent a single supplier or group of suppliers from exercising monopoly power, perhaps at the risk of geopolitical threats, it is not all that obvious whether the United States needs to care whether its oil companies have

a dominant role in exploiting the world's energy reserves to achieve this goal. Unlike the Cold War days, there no longer is a major superpower enemy state from which the United States wishes to protect the world's oil supply. Fears of alliances between a handful of competing powers—say between a grouping of China, Russia and Iran—are creating concerns about the geopolitical impact of the rise of NOCs in international discourse. But realistic scenarios on how NOC alliances would harm the U.S. access to oil supplies are hard to construct in a manner that would justify creation of a U.S. national oil company or even a proactive policy that ensures American companies win competitive bids.

While there is no question that a cartel of powerful countries armed with NOCs could try to disrupt oil supplies to the United States and its allies, it is hard to imagine what would be achieved by having U.S. companies engaged in drilling around the world if their host countries suddenly announced, for reasons of war, that they were not allowed to produce and export production. The lesson of Aramco in 1973 is that American firms would have no choice but to comply with host government embargoes.

The flip side is equally true. It is unclear what benefit China is really getting from having its NOCs own or produce foreign equity oil, the shipments of which could easily be interdicted by the U.S. Navy during a time of war or cut off by a host country embargo or civil unrest.

More fundamentally, the United States does need to protect itself from the geopolitical and strategic implications of collective action by a large exporter or group of exporters. One solution is a healthy American oil industry looking abroad to more diverse sources of oil supply. But there are other means to break up the monopoly power of oil producers as well. The advent of nuclear power in the 1970s was an effective policy tool. So was the creation of strategic stockpiles of oil. In today's scene, an effective and broad-based American effort to reduce oil use by adopting more efficient transportation technologies or shifting to nonoil fuels would be extremely effective in limiting the monopoly power of any imaginable alliance of NOCs from hostile nations.

As political scientist John Ikenberry points out, a state like the United States, unlike smaller, less-powerful countries, can attempt to externalize its response to challenges like oil supply cutoffs. In the crises of the 1970s and early 1980s, the United States organized a coordinated response to the energy crises of the era. More recently, the United States has undertaken a variety of measures—from ejecting Iraq from Kuwait to encouraging production in Central Asia—aimed at ensuring a more diverse and stable supply of moderately-priced oil to world markets. This ability by the United States can be a great advantage, not least because it creates, at least in theory, the opportunity for collective action: the United States can use its international influence to foster joint policies with other interested countries. But U.S. power in the international arena also bears a risk: it can permit domestic policy to drift. This has certainly been the case over the course of the last two decades (see “NOCs and U.S. Foreign Policy”). A greater political effort domestically to create a more comprehensive domestic energy policy would have two key effects: the United States would benefit from this policy and it would enhance U.S. credibility on the world scene. Other countries must certainly have grown weary of the United States hectoring them on their own domestic energy policies when Washington itself seems unprepared to participate in valuable solutions inside its own borders.

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WORKING PAPERS IN THE STUDY

- “The Changing Role of National Oil Companies in International Energy Markets”
- “Chinese NOCs and World Energy Markets: CNPC, Sinopec, and CNOOC”
- “Chinese NOCs’ Overseas Strategies: Background, Comparison and Remarks”
- “Empirical Evidence on the Operational Efficiency of National Oil Companies”
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