

New Multinationals from Emerging Asia: The Case of National Oil Companies

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The history of global foreign direct investment (FDI) and of the rise of multinational enterprises is, to a large extent, the history of the global oil industry. In the twentieth century, oil-producing Asia was one of the main destinations of global oil FDI flows and in the early twenty-first century Asia, including both producer and consumer countries, is home to some of the most dynamic oil companies worldwide. This paper first examines the oil industry in Emerging Asia to identify the main actors in terms of production, ownership, and governance. The main features of the multinational expansion of the largest Asian national oil companies, in terms of country of operation, patterns of integration, and entry mode, are discussed. The concluding section outlines some of the main implications of this international drive, comparing it with the rise of the Italian energy company Eni in the 1950s.

I. INTRODUCTION

Analyzing the growth and development of multinational oil companies is crucial for analyzing changes in the geography of international business.¹ The oil sector was one of the first sectors to become global in terms of trade and foreign direct investment (FDI) flows. In fact, some of the world's largest multinational corporations (MNCs) developed in petroleum (Jones 2005). In 1973, the top five American oil companies were making 80 percent or more of their profits abroad

¹Unless indicated, this paper refers to the oil sector including operations in extraction and production as well as oil refining and distribution. Although natural gas is not oil, these two fuels are related by a number of significant links (Mabro 2002). Increasingly, the oil and gas businesses are linked both in upstream and downstream areas.

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(Frieden 2006). In 2006, there were four oil companies among the world's top eight nonfinancial MNCs, ranked by foreign assets (UNCTAD 2008).

The industry is also interesting because of its relatively strong long-term dynamism (Maugeri 2006). Between 1928 and 1973, seven large vertically-integrated and mostly private-owned oil MNCs (or international oil companies [IOCs]) were major market players and price setters.² Beginning in the 1960s, producing countries carried out successive nationalization processes, and by 1973 they controlled most of their oil production. Some of these countries formed the Organization of the Petroleum Exporting Countries (OPEC) to coordinate and unify petroleum policies in order to secure fair and stable prices for petroleum producers; an efficient, economic, and regular supply of petroleum to consuming nations; and a fair return on capital to those investing in the industry.³ The Seven Sisters' share of the world's oil trade fell from about 70 percent in 1970 to around 50 percent by 1980.

State-owned national oil companies (NOCs)⁴ control the majority of worldwide hydrocarbon resource endowments, as well as many of the major oil and gas infrastructure systems (Pirog 2007). As globalization has progressed since the early 1990s, exclusive access to oil reserves has made NOCs from the South the leading players in the oil market.⁵ Some of these enterprises have expanded their operations globally—both upstream to diversify their portfolio and downstream (into petrochemicals, refineries, and distribution) to reach consumers directly. Access to capital, technology, and knowledge are driving forces behind these ventures. Two features are noteworthy here: oil FDI flows are not only North–South but also and increasingly South–North and South–South (Aykut and Goldstein 2007) and, far from maintaining an adversarial relationship, NOCs and IOCs sometimes form partnerships to gain access to reserves and production.

²These were Exxon, Gulf, Texaco, Mobil, Standard Oil Company of California, British Petroleum (BP), and Royal Dutch Shell or the so-called Seven Sisters. France's *Compagnie Française des Pétroles* (later Total) was “virtually the eighth member of the seven sisters” (Jones 2005, 68). The Seven Sisters collaborated closely to tie up oil supplies: the Arabian American Oil Company (Aramco) was jointly owned by Exxon, Chevron, Texaco, and Mobil; the Iranian Consortium involved all of them together with Total.

³The founding members in 1960 were Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela, later joined by Qatar in 1961, Indonesia and Libya in 1962, United Arab Emirates in 1967, Algeria in 1969, Nigeria in 1971, and Ecuador in 1973. Gabon joined in 1975 and left in 1995, Angola joined in 2007, and Indonesia suspended its membership on 31 December 2008.

⁴NOCs date back to the 1920s when *Yacimientos Petrolíferos Fiscales* (YPF) was founded in Argentina. *Petroleos Mexicanos* (Pemex) came a bit later in the 1930s.

⁵At the margin, a few smaller privately owned oil companies from the Organisation for Economic Co-operation and Development (OECD) countries (so-called independents) have emerged as key players in the sector following the focusing of large MNCs in core exploration fields and refinery activities and the availability of plentiful capital opportunities for the mining industry in financial centers such as London and Toronto.

It is hardly surprising that Emerging Asia—defined here as the broad rim that goes from Pakistan to the People’s Republic of China (PRC)—is now host to some of the most dynamic NOCs. Petronas of Malaysia is now the world’s second largest MNC from a developing country (UNCTAD 2008) while the PRC and India have increased significantly their energy consumption as a share of total world energy use. In 1980, the PRC and India together accounted for less than 8 percent of the world’s total energy consumption; in 2005 their share had grown to 18 percent (EIA 2008). Over this period, production has also risen significantly (in fact, the region’s share in the world total has moved from 7.2 percent to 9.1 percent after peaking at 9.7 percent in 1999), but at a pace that has been far from sufficient to maintain notional self-sufficiency. In 1980, Emerging Asia was producing more liquids than it consumed, a situation that was permanently reversed in 1987 and has turned into an ever widening gap in recent years. In 2006, for the first time it was estimated that the region produced less than 50 percent of its needs. The situation in terms of proved crude oil reserves is equally precarious, amounting to 36.4 billion barrels in 2009 (2.4 percent of the world total) versus 37 billion in 1980 (5.8 percent). Owing to this high level of dependence on outside sources of oil, Asian governments are supporting overseas exploration and development of the domestic upstream oil industry.

The first objective of this paper is to analyze the evolution of three leading Asian NOCs (ANOCs)—two from oil-importing countries (the China National Petroleum Corporation [CNPC] and India’s Oil and National Gas Corporation [ONGC]), one from an oil-exporting country (Malaysia’s Petronas)—whose development has generated substantial attention in business and policy circles abroad. Knowing about the relationships between the companies and their respective governments, as well as between the latter and authorities in countries where they invest, is necessary for understanding the environment in which the oil industry in each country has operated and out of which the ANOCs have developed. This information will make it possible to understand the ANOCs’ present activities and help us to predict possible future developments. These companies are analyzed in terms of:

- Worldwide spread in regions and activities;
- Shaping of governance and internal organization;
- Comparative competitiveness; and
- Innovation and technological capability.⁶

In order to provide a comparative framework, the same data is provided for another very successful emerging MNC, Petrobras (the world’s tenth most valuable publicly listed company at end-July 2009). The final section discusses

⁶The inspiration for this treatment is the four-volume history of Royal Dutch Shell (van Zanden et al. 2007). They also examined in detail the inner dynamics of corporate organization (as Pozzi 2009 did in the case of Eni). In this paper, it is not possible to cover this aspect in sufficient detail.

the evolving role of the ANOCs in the international oil industry, also drawing some parallels with the Italian energy company Eni in the 1950s. Eni was the first Western NOC to aggressively challenge the Seven Sisters' dominance, prompting reactions that bear some similarities to those that are accompanying the rise of the ANOCs.

II. HISTORY

Of the four emerging NOCs examined in this paper, Petrobras is the oldest. It was founded in 1953 and formed the linchpin of the state-driven, inward-oriented industrialization drive of the time. Under the terms of Brazil's Law Number 2004, Petrobras was granted sole rights over domestic upstream oil exploration and production. It also came to dominate domestic refining activity, although major foreign oil firms were allowed to retain a role in the downstream distribution sector. In the 1960s, Petrobras further diversified into petrochemicals, partly to kick-start the growth of this dynamic new industry in Brazil and partly to prevent foreign MNCs from dominating it (Treat 1983).

Interestingly, the Brazilian experience (and in particular the economic crisis in Brazil that President Getúlio Vargas blamed on foreign interference) did play a role in the decision of Indian Prime Minister Jawaharlal Nehru to set up the Oil and Natural Gas Directorate under the Ministry of Natural Resources and Scientific Research in 1955 (Madan 2007). Two years later, the Oil and Natural Gas Commission (ONGComm) was born as a statutory entity with financial powers, which for the next quarter of a century would become increasingly active in oil exploration, achieving its first substantial success in 1974 with the offshore discovery at Bombay High. A proper NOC was only established when the ONGComm became ONGC in 1993.

At the time of the first oil shock, however, Brazil was still a net oil importer. In contrast, abundant oil was discovered in Malaysia's Sabah and Sarawak (and Terengganu) in the 1960s, exploited by foreign majors through traditional concessions (Ramli 1985). In the broader context of the launch of Malaysia's New Economic Policy, the government, also influenced by the contemporary Indonesian experience with its national oil and gas company, Pertamina, decided to establish a state monopoly over hydrocarbons in 1974. Not without contestation by the foreign majors, various product sharing agreements (PSAs) were signed and Petronas then entered into oil and gas exploration through a wholly owned subsidiary, Carigali. In addition to being a strong regional player in refined product sales, Petronas has been a leading proponent of large and financially complicated liquefied-natural-gas (LNG) projects. That strategy has made it one of the most important sellers of LNG in Japan; Taipei, China; and Republic of Korea.

In the PRC, the industry is dominated by two state mammoths. CNPC was created in 1988 to handle all petroleum activities in the PRC that were originally the responsibility of the Ministry of Petroleum Industry. The China Petroleum and Chemical Corporation (Sinopec) was formed in 1983 out of the downstream assets of the Ministry of Petroleum Industry and the Ministry of Chemical Industry. In July 1998, both were restructured into vertically integrated groups of the same names. CNPC is the largest in terms of production and profits, but not revenue because Sinopec is dominant in the refining sector.⁷

III. GOVERNANCE AND TECHNOLOGY

Even the smallest NOCs are powerful organizations within their nation-states. As is common for state-owned enterprises (SOEs), NOCs address a number of noncommercial aspirations, such as employment generation and price controls, but at the same time are expected to perform commercially.⁸ A similar conflict emerges in their relationship with the national budget—NOCs often place significant demands on public funds and compete with other urgent development priorities, but they are also a major cash cow.⁹ These pressures make NOCs less efficient in using their reserve bases—according to Victor (2007), IOCs are nearly one-third better than NOCs at converting oil reserves into actual output. Although with major variations, all NOCs are transforming themselves from state-dominated and bureaucratic entities that rely on a monopolistic position in their home country and are only accountable to the government to at least partly private-owned entities with corresponding modifications in their governance mechanisms. In the process, NOCs are also upgrading their technology profile to support the achievement of their commercial goals. However, in other key areas, notably on issues of sovereignty and the role oil sectors can play in developing and sustaining national economies, the NOCs have much in common in their

⁷The other major state-sector firm is the China National Offshore Oil Corporation (CNOOC), which handles offshore exploration and production and accounts for roughly 15 percent of domestic production. Unlike its sisters, it does not have ministry rank and is almost exclusively an upstream company with the exception of a refining and petrochemicals joint venture with Shell. A fourth state-owned oil company, Sinochem, has a limited presence upstream (mostly overseas) but a noteworthy trading, refining, and chemicals portfolio.

⁸While all NOCs remain state-controlled, non-weighted state ownership for the 10 largest OECD oil companies (as listed in the *Fortune* Global 500 in 2009) is 10.15 percent (October 2009) and corresponds to the Norwegian state's controlling stake in StatoilHydro, to the residual stake held by the Italian government in Eni, and to a minority participation held by Mexico's national oil company Pemex in RepsolYPF. Possibly the only large-scale oil privatization in a developing country took place in Argentina and eventually led to the takeover of YPF by Spain's largest oil company Repsol.

⁹For example, Pemex has no financial and economic autonomy; all its operations, including its budget, need congressional approval.

fundamental philosophies and objectives, in a way that distinguishes them from IOCs (Khelil 2008).

Already at the time of its establishment, Petronas was a commercial, profit-oriented entity wholly owned by the Ministry of Finance (von der Mehden 2007). Four of its subsidiaries are listed on the Bursa Malaysia, but there are no immediate plans for an initial public offering. The reputation and autonomy of the senior management vis-à-vis the political power—if not the prime minister, to which it reports¹⁰—was strengthened by the strong leadership of Azizan Zainul Abidin, chairman from 1988 to 2004. In a testimony to the company's high standards, Murphy and Hutchinson (2001, 697) observed that “we know of no other country in which the figures for original oil and gas in place are available from a national oil company.” That Malaysia does not have a Ministry of Petroleum helped in this respect. The accumulation of technological competence at Petronas has been remarkable because the starting conditions were anything but favorable. In the early 1970s, as few as five Malays were enrolled in engineering studies, and more generally they had a very minor presence in the upper echelons of corporate Malaysia.

ONGC shares are listed, although the government of India still retains a comfortable majority (74.1 percent, but well in excess of 80.0 percent if stakes held by other SOEs are also counted). As a state-run company with a good track record in terms of earning profits and productivity, ONGC enjoys *navratna* status.¹¹ The minister of Petroleum and Natural Gas is responsible for ONGC and for the other SOEs in the industry (such as GAIL and Indian Oil). Each year, the government and the *navratna* companies sign a memorandum of understanding stipulating production targets. In this setting, ONGC also enjoys a certain level of autonomy in terms of corporate governance. The current chief executive officer, R. S. Sharma, was selected for the top job by a search committee headed by Public Enterprises Selection Board Chairman N. K. Sinha after interviewing

¹⁰The Petroleum Development Act 1974 and the Articles of Association governing Petronas give the prime minister the absolute power to appoint and remove every single member of the board and management. The prime minister has the right to appoint or remove anyone, from the president and chief executive officer down to the company drivers. In particular, every member of the board is an appointee of the prime minister, and represents him on the board.

¹¹*Navratna* literally means “nine jewels.” In July 1997, the government identified nine public sector enterprises that had comparative advantages and potential to emerge as global giants. They were given enhanced autonomy and delegation of powers to incur capital expenditure, to enter into technology joint ventures and strategic alliances, to effect organizational restructuring, to create and abolish below Board-level posts, to raise capital from domestic and international markets, to establish financial joint ventures and wholly owned subsidiaries, etc. In 2008, in keeping with the promise made in the National Common Minimum Programme that full managerial and commercial autonomy would be devolved to successful profit-making companies operating in a competitive environment, the government revised and enhanced the powers delegated to the board of directors of *navratna* public sector enterprises.

28 candidates.¹² Nonetheless, in March 2009, Goldman Sachs raised concerns about ONGC's corporate governance (and more specifically the treatment of the near \$20 billion that has been used since 2003 to subsidize loss-making oil marketing companies¹³).

The vicissitudes of the PRC's oil majors can be similarly seen in the context of the incremental approach to SOE reform (Lee 2009); "the oil sector is held up as a beacon for other sectors to study in restructuring to face the challenge of globalization and consolidation" (Zhang 2004, 3). The state's grip on CNPC remains firm. Shares are held by the State Council and the company is monitored by the State-owned Assets Supervision and Administration Commission (SASAC). Executive positions are filled by the SASAC with state and party officials, with no input requested from the board, and are seen as steps in the career of a successful civil servant (Morck, Yeung, and Zhao 2007).¹⁴ At the same time, two important subsidiaries are listed overseas.¹⁵ The first is PetroChina (in which CNPC possessed 86.7 percent of shares at the end of 2008¹⁶), which groups most of the assets and liabilities of CNPC relating to its exploration and production, refining and marketing, and chemicals and natural gas businesses. PetroChina is the most profitable company in Asia, partly owing to its near duopoly on the wholesale and retail business of oil products in the PRC, and at end-July 2009 was the world's largest company by market capitalization (*Economist* 2009). The second is CNPC (Hong Kong, China), which operates in PRC, Kazakhstan, Oman, Peru, Thailand, Azerbaijan, and Indonesia. CNPC owns 56.8 percent of the subsidiary's shares.

CNPC, PetroChina, CNOOC, and Sinopec still lag behind the global giants in developing world-class technologies (Nolan and Zhang 2002) and exploration and production research is not well developed (Jin, Bai, and Mansoori 2001). Extracting and treatment equipments are either imported or only assembled in the PRC, without domestic production. Key electronic instruments and software for exploration and production are imported as well. However, the NOCs from the PRC have recently caught up with some of the oil majors in several categories and are sparing no effort to fill the gap completely. In 2000, the major oil firms

¹²Sharma had been the Public Enterprises Selection Board's number one choice in a first round of interviews conducted. However, the Prime Minister's Office vetoed his appointment as it wanted the selection process widened by inviting candidates from the private sector.

¹³The government fixes the price of some fuel products such as kerosene and diesel, so oil importers have recently incurred losses by buying at a high price and then selling low in India. See *Financial Times* (2009).

¹⁴When Li Yizhong, then chairman of the board of CNPC, was appointed to the SASAC in April 2003, he was replaced by Chen Tonghai, a former State Planning Commission official. Current CNPC President Jiang Jiemin was Deputy Governor of Qinghai Province from June 2000 to April 2004.

¹⁵The government carried initial public offerings for CNOOC and Sinopec between 2000 and 2002.

¹⁶Including shares held through fully-owned subsidiary Fairy King Investments Limited.

from the PRC had roughly 20 percent of the combined research and development (R&D) efforts of Total, ExxonMobil, and Shell. By 2006, PetroChina and CNOOC alone invested one third of the three leading IOCs' outlay (Carvalho and Goldstein 2009).

The three ANOCs reviewed in this paper have made great strides in terms of governance and technology. Petrobras has arguably advanced even more than its peers on both accounts. It has operated in a competitive environment since 1997, when the government scrapped its monopoly on oil-related activities, freed oil prices from state control, opened the sector to competition, and launched a privatization process that has seen the public stake fall below 40 percent. The principal government agency charged with monitoring the oil sector is the National Petroleum Agency, which holds responsibility for issuing exploration and production licenses and ensuring compliance with relevant regulations. Although the board is currently chaired by the chief-of-staff of President Luiz Inácio Lula da Silva, most of the company shares are in private hands. Petrobras operates rather independently from government and raises private financing through project finance.

Petrobras's effort in the geoscience and engineering of deep and ultra-deep water lies behind recent advances in petroleum production and exploration in Brazil (Pessoa Filho, Silva Santos, and Mansoori 2006).¹⁷ The Centro de Pesquisas e Desenvolvimento Leopoldo A. Miguez de Mello, established in Rio de Janeiro in 1966, has provided an environment for research, innovation, and development (Mansoori, Mohamed, and Schiozer 2001). Since 1992, one percent of Petrobras's gross receipts have been earmarked for R&D. This genuine effort at developing internal technological competencies has allowed Petrobras to extract the full potential from cooperative R&D to gain access to the new subsea boosting technology (Furtado and Gomes de Freitas 2000). Petrobras has set a number of world records, including the record (at one point) for the deepest exploration well, and has won the Offshore Technology Conference award twice (1992 and 2001) for excellence in deep water operations. Brazil became self-sufficient in oil supply

¹⁷In the late 1980s, the discovery of enormous oil deposits in the Campos Basin, off the coast of Rio de Janeiro State, posed considerable physical challenges. The geology of the basin was not straightforward, and the water depths involved were far greater than those encountered in the other great offshore fields of Gulf of Mexico, North Sea, and, more recently, Gulf of Guinea. Thus, in 1986, Petrobras launched the Programa Tecnológico Empresarial de Desenvolvimento em Exploração de Águas Ultraprofundas (PROCAP, or Deep Water Exploration Systems Program), which initially operated in the Marlin and Albacora fields, at a depth of 1,000 meters. PROCAP-2000 (1993) reached a depth of 1,867 meters in the Roncador field, while PROCAP-3000 aims at reaching 3,000 meters.

in April 2006.¹⁸ The discovery of the Tupi oil field off Brazil's southeastern coast in November 2007, the biggest in the world since a discovery in Kazakhstan in 2000, has the potential to transform Brazil into a global energy powerhouse. To extract the oil from Tupi field, Petrobras's engineers will have to drill up to 4,800 meters below the sea floor through salt and rocks, in water depths of up to 3,000 meters, an undertaking that is at the frontier of the industry's technological ability.

Petrobras's story shows the crucial importance of accumulating technological capabilities to establish a leading international position. As Dantas and Bell (2006, 9) stressed, Petrobras's capabilities "evolved from those of an imitative technology user to those of a leading player at the international innovation frontier." Strategic intent, together with the continuous evolution in the properties of Petrobras's knowledge networks to build greater complementarities with its partners, was the key.

Tables 1 and 2 provide a data-driven synthesis of the narrative of the previous pages. The following generalizations can be made:

- CNPC/PetroChina is much larger than the other ANOCs, although not larger than Petrobras in terms of assets; it remains much smaller than Shell, which is chosen here as a representative IOC;
- CNPC/PetroChina is also the largest ANOC in terms of oil production and reserves, although on both accounts it has recorded a far worse performance than Petrobras since 1999, with growth rates equal to 8.3 percent in oil production and 6.4 percent in oil reserves, versus Petrobras's 65.9 percent and 16.1 percent;
- Petronas is by far the largest ANOC in the natural gas segment, where it holds the world's ninth largest reserves (and the largest outside OPEC); and
- CNPC/PetroChina is making an impressive technological effort that is comparable to that of the United Kingdom (UK)-based IOCs, although the results in terms of United States Patent and Trademark Office (USPTO) patents granted remain less impressive than for Petrobras.

¹⁸Brazil has a diversified energy mix, with oil and natural gas accounting for less than 50 percent of its needs (Sennes and Narciso 2009).

Table 1a. Key Corporate Data: Financial (\$ million)

	Total Assets		Total Revenues		Total Net Income		Capital and Exploratory Expenses	
	1999 ^a	2007	1999 ^a	2007	1999 ^b	2007	1999	2007
PetroChina	49,642	117,822	21,257	112,814	6,672	20,413	1,049	23,878
ONGC	2,544	20,304	4,686	13,764	1,319	3,801	825	...
Petronas	31,996	85,201	15,957	50,984	3,318	14,446	...	5,992
Petrobras	33,733	128,715	23,467	87,735	727	13,138	4,351	20,978
Eni	45,874	148,162	29,959	120,753	2,678	13,724	5,140	14,522
Shell	113,883	269,470	149,706	355,782	8,584	31,331	8,471	25,220

Table 1b. Key Corporate Data: Operational

	Oil Production (millions of barrels)		Natural Gas Production (billions of cubic feet)		Oil Reserves (millions of barrels)		Natural Gas Reserves (billions of cubic feet)	
	1999 ^a	2007	1999 ^a	2007	1999 ^b	2007	1999 ^b	2007
PetroChina	775	839	437	1,627	11,000	11,706	33,000	57,111
ONGC	193	...	665	...	4,838	...	22,884	...
Petronas	255	241	1,440	1,943	3,430	5,360	84,400	82,992
Petrobras	422	700	263	656	8,279	9,613	7,498	12,547
Eni	246	372	810	1,502	3,137	3,925	13,644	11,204
Shell	828	664	2,941	2,250	9,775	3,776	58,541	40,895

... indicates data was unavailable or not applicable.

ONGC = Oil and National Gas Corporation.

^a Except ONGC in 2000.

^b Except ONGC and PetroChina in 2000.

Sources: *Oil and Gas Journal* OJG 100, various issues and companies' annual reports.

Table 2. Key Data on Technological Efforts

	US- based ^a	UK- based ^b	EU- based ^c	CNPC/ PetroChina	ONGC	Petrobras	Petronas
R&D expenditures (\$mn, 2007/2008)	512.0	883.5	428.4	727.7	...	881.0	...
R&D expenditures (2005/2008 average growth, %)	41.7	59.0	(24.0)	66.0	...	124.0	...
R&D expenditures (% of sales, 2007/2008)	0.20	0.25	0.23	0.6	...	1.0	...
USPTO patents (since 1976)	3,512	3,200	181	9	0	172	5

... indicates data was unavailable or not applicable.

CNPC = China National Petroleum Corporation; EU = European Union; ONGC = Oil and National Gas Corporation; R&D = research and development; UK = United Kingdom; US = United States; USPTO = United States Patent and Trademark Office.

^a Refers to Exxon, Chevron, and Conoco.

^b Refers to BP and Shell.

^c Refers to Total, Eni, and RepsolYPF.

Sources: BERR (2009); United States Patent and Trademark Office, available: www.uspto.gov/patents/index.jsp, accessed 27 May 2009.

IV. INTERNATIONAL EXPANSION

Multinationalization (in order to spread technical and political risk) is a typical stage in the development of companies in an oligopolistic industry (Graham 1998). The three main modalities of FDI have historically been joint ventures, PSAs, and equity investment, including privatization (Aykut and Goldstein 2007).¹⁹ In upstream activities, joint ventures remain the main vehicle for foreign investment in oil producing countries.²⁰ PSA arrangements provide partial hedging against legal and tax uncertainty and are increasingly used in order to accelerate

¹⁹After the nationalization process of the early 1970s, most of the countries followed a conservative approach in liberalizing their oil sectors. Most governments still monitor and limit the operations of MNCs. Nevertheless, the technological and fiscal requirements in the sector forced many governments to open up the sector for foreign investment.

²⁰A joint venture is a legal entity founded commonly by a domestic company and foreign partners. The domestic company usually contributes its mineral rights and the foreign partner contributes cash, equipment, and other properties. All oil production is the property of the joint venture, and a provision is usually made for the payment of dividends to the partners in cash or in kind. Countries have their own protocols for joint ventures in the oil sector with limits for foreign equity, decision making, and operational procedures of the company.

exploration operations and attract foreign investment.²¹ Mega-mergers between major oil MNCs have been another major response used to increase reserves and boost replenishment rates. Following the loss of major oil reserves in the 1970s and significant price fluctuations in the 1980s, the Seven Sisters merged with one another to maintain their leading status vis-à-vis the NOCs.²² Interestingly, so far very few major mergers have been cross-border, suggesting that efficiency-seeking and resource-seeking motives are more important than market-seeking ones. In recent years, many independent oil companies (or “juniors”) are being gobbled up by majors and NOCs.²³ Nonetheless, while ANOCs have purchased a number of such juniors, these remain relatively small operations. In fact, the largest ANOC deal is the twentieth largest deal concluded in the oil sector worldwide since 2006 (Ernst&Young, various years).

Petrobras has the longest history of international expansion, starting with the creation of Braspetro in 1972. At the time, oil imports covered more than 80 percent of domestic demand and the main purpose of the company’s international branch was to guarantee supply security. The first investments were made in Iraq,²⁴ Colombia’s Caribbean Sea, Angola, and Gulf of Mexico. Nowadays, Petrobras holds more than 100 production licenses in Latin America (Argentina and Venezuela), Gulf of Mexico (where it owns more than 300 deepwater blocks), and Africa (Nigeria’s Agbami and Akpo fields, block 5 off Tanzania’s Mafia Island, Libya’s Area 18). The Bolivia pipeline strengthened gas business in the Southern Cone. Argentina has become the second most important market for Petrobras following the Perez Companac acquisition in 2002. Moreover, overseas refining

²¹A PSA is a contractual agreement under which the state awards an investor or a group of investors (contractor) for a certain period of time an exclusive right to search, prospect, and extract mineral resources from a specific acreage. The investor undertakes the obligation to carry out these works for the stated period of time at its own expense and usually bearing all the associated risks. The PSA will usually specify the portion of production that can be retained by the contractor to recover the costs (“cost oil”) while the remaining “profit oil” is split between the state and the contractor according to the formula set out in the PSA. The royalties or limits on cost oil for any given year ensure some government revenue from the beginning of the project life. In addition to profit oil, partners in the agreement can be levied petroleum income tax and other forms of bonuses.

²²In fact, large fluctuations in global FDI flows in the sector are partly affected by the merger waves that generate instant peaks, which in turn respond to the high volatility in oil prices and rates of returns. The first wave of mergers and acquisitions occurred in the early 1980s when the price of oil declined from its second oil crisis peak and included Texaco’s \$10 billion takeover of Getty Oil—then the biggest in history. A second wave of mergers and acquisitions took place between 1998 and 2002.

²³Independents are smaller companies that focus on applying specialized technology and squeezing out greater efficiency from mature fields and/or stake a claim in an exploration permit in marginal and risky areas.

²⁴In August 1972, Braspetro signed a 24-year “risk exploration and production and service contract” with Iraq National Oil Company, including a 7-year exploration and appraisal period. The giant Majnoon oil field was discovered in 1975.

capacity has gone from zero barrels in 2000 to 126.2 thousand barrels of oil per day in 2007 (Petrobras 2008). According to its strategic plans for 2008–2012, Petrobras expects to realize overseas investments of around \$15 billion in both exploration and production, along with the international expansion of ethanol production. Reserves outside Brazil were less than 12 percent in 2002 and rose to 17 percent by 2010 (Carvalho and Goldstein 2009).

Petronas's first successful overseas venture took place in 1991 in Viet Nam. Today, the company has investments in more than 30 countries, including more than 20 developing countries.²⁵ Petronas has been very active in Africa. In South Africa, the Engen purchase gave it control of 18 percent and 27 percent of refining capacity and retail-fuel market, respectively.²⁶ Petronas also nailed down exploration and production deals in Sudan, completing a 1,500-kilometer pipeline in two years and turning the country into a net oil exporter for the first time in 1999. Its success in Sudan prompted ExxonMobil to offer Petronas a 30 percent interest in a pipeline venture in the Republic of Chad. Petronas invested \$1.76 billion to acquire natural gas reserves in Egypt in 2003, bought a \$1.10 billion stake in Russia's Rosneft in 2006, and took control of Star Energy, one of the UK's largest gas storage businesses, in 2007.²⁷ It recently completed the acquisition of Selenia of Italy, Europe's largest independent producer and marketer of branded automotive lubricants. Petronas also partnered with Western energy groups to develop a LNG terminal and facilities in Wales (with BP Energy) and Australia (with Santos). Thanks to this ambitious strategy, in 2007, revenue from international operations increased by 33.1 percent to reach 40.3 percent of Petronas's total and made international operations the biggest contributor to group revenue, for the first time overtaking exports. Engen's operations alone contribute almost 20 percent to the company's total annual revenue. During 2004 to 2008, international production grew from 23 percent to 35 percent of Petronas's total production (well in excess of the goal set in 2003 [*Far Eastern Economic Review* 2003]) and 18 percent of employees are non-Malaysians.

Despite its relatively short history as a quasi-market industry, in 2006, the PRC's stock of overseas investments in mining, quarrying, and petroleum was close to \$19 billion (OECD 2008). Kang (2008) estimated that CNPC/PetroChina, and to a lesser extent CNOOC, Sinopec, and others, had secured total equity in oil equivalent to roughly around 26 percent of the PRC's total crude imports in 2007, 23 percent of the PRC's domestic oil production, 12 percent of the PRC's

²⁵Petronas's international upstream ventures are undertaken by its exploration and production arm, PETRONAS Carigali Sdn Bhd. Some investments are made via private limited subsidiaries and getting to the bottom of the company's foreign ventures is daunting.

²⁶In November 2004, Engen and Sasol combined their LNG operations in a new joint venture, Uhambo.

²⁷In 2002, a takeover attempt for Tullow Oil (the largest independent oil and gas company listed on the London Stock Exchange by turnover) failed because of the opposition of 35 percent of the African investors.

current oil consumption, and 1 percent of global oil production. CNPC began its international operations in 1993, around the time that the PRC became a net oil importer, when it signed a service contract with the government of Peru to manage an oil field (CNPC 2008).²⁸ Its first big leap took place in 1997 when it acquired oil contracts and stakes in oil companies in Sudan,²⁹ Kazakhstan,³⁰ Uzbekistan, and Venezuela, countries where other companies were hesitant investors. Concerns regarding overpayment on Kazakh and Venezuelan deals prompted an extended phase of caution. The descent of the oil price also damaged the enthusiasm for overseas oil investment as it was believed that to import oil was cheaper than to invest in oil fields abroad.

In mid-2005, a large share of CNPC's overseas assets was transferred into a new company called NewCo, with fully-owned China National Oil and Gas Exploration and Development Corporation and PetroChina each holding 50 percent of the shares. Following this deal, most of the overseas assets could be considered jointly held by CNPC and PetroChina, while some assets, such as operations in Sudan, are held entirely by CNPC (Paik et al. 2007). In recent years, purchases have edged relatively closer to IOCs' interests. In Canada, in particular, CNPC led a group of firms from the PRC that bought EnCana oil and pipeline assets in Ecuador in September 2005 for \$1.4 billion, PetroKazakhstan the following month, and a 17-percent stake in MEG Energy (in oil sand) for \$150 million in April 2005.³¹ At a time of mounting concern about energy security, especially in Central Asia (Wishnick 2009), CNPC signed a feasibility study

²⁸The driving force of CNPC's overseas oil and gas exploration and development is its subsidiary, the China Southern Petroleum Exploration and Development Corporation (previously the China National Oil and Gas Exploration and Development Corporation). CNOOC, through its publicly listed subsidiary CNOOC Limited, has followed CNPC's lead in the pursuit of overseas ventures. Sinopec, together with its own publicly listed subsidiary Sinopec Corp., comes in third in its overseas energy investment activities. In addition to these three, state oil trading company Sinochem Corporation and two non-oil state companies, China International Trust and Investment Company (CITIC) and ZhenHua Oil Company, have also begun investing in oil and gas overseas. In June 2009, Sinopec agreed to acquire Addax Petroleum for \$7.2 billion. The transaction was the PRC's largest cross-border energy deal and the country's second largest cross-border deal of any kind.

²⁹CNPC owns a 45-percent stake in the Greater Nile Petroleum Operating Company. CNPC also invested in the country's largest oil refinery in collaboration with the Energy Ministry, and owns many fields in southern Darfur.

³⁰PetroKazakhstan owns 11 oil fields, making it Kazakhstan's second largest foreign petroleum producer, as well as the country's largest refinery and transport and sales network.

³¹Oil sand can be refined into crude oil once it is extracted through a relatively high-cost process, only made economical by the rise in crude oil prices. Sinopec holds a half share in the Northern Lights project, with Total Canada owning the rest. In 2007, PetroChina withdrew from a \$3.8 billion pipeline project with Alberta-based Enbridge, citing unconformity with the business environment in Canada.

with Transneft to build a branch of the East Siberia–Pacific Ocean oil pipeline to the PRC.³²

By end-2006, CNPC had invested in 65 energy projects in 26 countries, expanding its overseas recoverable reserves from 400 million tons in 1997 (Zhang 2004) to 1.1 billion tons in 2007, equivalent to 36.3 percent of the total (CNPC 2008). In May 2008, the PRC and Venezuela signed an agreement to jointly develop the heavy oil business in Orinoco, and in 2009, CNPC announced plans to build a 20 million ton annual capacity refinery in the southern PRC with Venezuela's Petroleos de Venezuela S.A. (PDVSA).³³ In November 2008, CNPC and Zhenhua Oil also signed a contract granting them development rights for the Al-Ahdab oil field in central Iraq for 23 years, marking the first foreign oil company agreement in the country since the end of Saddam Hussein's regime. Jointly with BP, CNPC was also awarded the first contract to foreign investors since 1972.³⁴

ONGC's overseas arm ONGC Videsh Limited (OVL) is participating in 38 exploration and production projects in 18 countries (of which 11 in six countries were acquired in 2007–2008), being operator in 18 projects and joint operator in two.³⁵ It holds substantial interests in Russia (20-percent stake in the Sakhalin 1 field), Sudan (25-percent stake in Greater Nile from Talisman), Ivory Coast, Iran, Angola, and Viet Nam. It also cooperates with National Iranian Oil Company in Iran and with CNPC and Norway's StatoilHydro in foreign countries. In 2007, ONGC and its wholly owned subsidiaries ONGC Nile Ganga and ONGC Amazon Alaknanda sourced 8.8 million tons of oil and oil-equivalent gas (up 10.7 percent) and the strategic objective of sourcing 20.0 million tons of equity oil abroad per year is likely to be fulfilled well before 2020.

ONGC has been less successful than its rivals in clinching big ticket deals. In August 2005, ONGC won two blocks in Nigeria, but the federal government chose to award them to a Korean firm. Three months later, India's petroleum minister accused a United States (US) investment bank of presiding over an auction for PetroKazakhstan where the rules were changed midway through to help bidders from the PRC (*Financial Times* 2005). One year later, the Angolan government

³²The PRC currently receives Russian oil by rail.

³³CNPC has also agreed to build a refinery in the northern port city of Tianjin with Russian Rosneft and another refinery in Osaka with Nippon—the first time a company from the PRC has entered into the Japanese refinery sector.

³⁴In July 2009, it emerged that CNPC was discussing with RepsolYPF a possible acquisition of 75 percent of Argentina's YPF that accounts for two thirds of the Spanish group's oil production. The status of such talks was uncertain in October 2009.

³⁵OVL is currently producing oil and gas from Greater Nile Oil Project and Block 5A in Sudan, Block 6.1 in Viet Nam, Al Furat Project in Syria, Sakhalin-I Project in Russia, and Mansarovar Energy Project in Colombia. Block BC-10 in Brazil is currently under development; Blocks A-1 and A-3 in Myanmar, North Ramadan Block and North East Mediterranean Deepwater Concession (NEMED) in Egypt, and Farsi Offshore Block in Iran have discoveries and appraisal work being carried out. The remaining projects are in the exploration phase.

rejected plans by Shell to sell its half of the Greater Plutonio project to ONGC when the PRC offered a \$2 billion loan at conditions that India could not offer. In its largest buyout abroad, ONGC finally acquired UK-based Imperial Energy, with licenses in Western Siberia, for \$1.9 billion in late 2008.

In comparative terms, as shown in Tables 3 and 4, all emerging oil MNCs are still much more home-based than their international peers. ANOCs are generally more active internationally than Petrobras, although, as noted above, this reflects the Brazilian company's success in finding and producing oil at home. The transnationalization and internationalization indices, which express the relevance of foreign assets, sales, and employment in the corporate total and the breadth of foreign activities, respectively, tell a similar story, although for CNPC the values are lower than for the production and reserves indicators.

Table 3. **Geographical Distribution of Oil Production Activities**

	US-based 2005 ^a	UK-based 2005 ^b	EU-based 2005 ^c	CNPC 2007	ONGC 2007	Petrobras 2008	Petronas 2008
Home country	28.8	11.8	2.5	78.2	87.5	93.8	65.3
Non-home country	71.2	88.2	97.5	21.8	12.5	6.2	34.7
Europe	18.6	8.6	15.2	...	...	0.0	...
North America	6.6	21.5	1.0	...	...	0.1	...
South America	1.7	5.0	34.2	...	...	5.8	...
Middle East and North Africa	2.2	14.0	21.6	...	...	0.0	...
Sub-Saharan Africa	15.1	11.8	21.8	...	...	0.4	...
Former Soviet Union	9.0	20.1	1.7	...	...	0.0	...
Rest of Asia and Oceania	10.9	6.4	1.9	...	...	0.0	...
Rest of the World	7.2	0.8	0.0	...	...	0.0	...

... indicates data was unavailable or not applicable.

CNPC = China National Petroleum Corporation; EU = European Union;

ONGC = Oil and National Gas Corporation; UK = United Kingdom; US = United States.

^aExxon, Chevron, and Conoco.

^bBP and Shell (a Dutch-British company, production in the UK and the Netherlands is included under home country).

^cTotal, Eni, and RepsolYPF.

Source: Aykut and Goldstein (2007); author's calculations based on companies.

Table 4. Key Corporate Data: Internationalization

	Transnation- alization Index		Internation- alization Index	Foreign Listing		Foreign Ownership in 2008	Non-nationals in 2008	
	1999	2006	2006	1999	2008		Directors	Managers
CNPC	...	3	8		√	0	0/14	
ONGC	...	16	...			0	0/13	0/7
Petronas	20	26	5			0	0/7	0/15
Petrobras	7	16	10		√	37.4 ^a	0/9	0/7
Eni	41	53	56		√	42.6	0/9	0/11
Shell	56	70	79	√	√	...	5/14 ^b	5/8 ^b

... indicates data was unavailable or not applicable.

CNPC = China National Petroleum Corporation; ONGC = Oil and National Gas Corporation.

^a Includes American Depositary Receipts (Common Shares and Preferred Shares) and Foreigners.

^b As of 1 July 2009.

Sources: UNCTAD (various years) and Indian School of Business-Vale Columbia Center (2009).

So far, only one dimension of internationalization has been analyzed, which refers to the production activities of firms abroad. The financial and corporate governance dimension of internationalization is equally important, although its study is not as well developed. Following Hassel et al. (2003), this paper uses three variables that might be useful for measuring this dimension, namely, foreign ownership as a percentage of total ownership, the number of listings in foreign stock exchanges, and the presence of foreign board members.

Insofar as government holds the complete majority of shares in all ANOCs under review, by definition foreign ownership as a percentage of total ownership and foreign stock exchange are equal to zero, whereas Petrobras shows levels in line with Eni and Shell. In the case of directors and managers, on the other hand, the evidence is not clear-cut. Shell clearly has a much more international profile, but otherwise all oil companies in the sample seem to prefer nationals. Examining the foreign experience of top management, one of ONGC's top seven managers was educated in Germany, while the president of Petrobras has a doctorate degree in economics from Boston University. Petronas's senior management is arguably the most international in terms of education, with seven of the top nine managers for which information is available having a foreign degree. Interestingly, while CNPC's senior management has a uniquely domestic educational background, two out of the eight vice presidents have served overseas, both as president of the Greater Nile Petroleum Operating Company (and one also as general manager of AktobeMunaiGas).³⁶

³⁶PetroChina has five independent non-executive directors, including a non-national (Franco Bernabè, who at 60 is also the youngest).

V. MOTIVATIONS AND IMPLICATIONS OF INTERNATIONAL EXPANSION

How can we make sense of these broad phenomena and classify the companies' motivations? The starting point is that NOC executives' ambitions are no different from those of their IOC counterparts (Grayson 1981). Diversification in downstream activities such as petrochemicals, refineries, and distribution and international expansion serve to increase managerial autonomy and secure technical and financial independence. This holds true for all the four companies under examination. In the PRC, SOEs (including state oil companies) often need to justify their existence and staying big is one way; continuing to expand is another: "the larger the company, the more it is able to justify its importance and argue that what is good for it is good for the country" (Wu 2008, 4). Sometimes this means overpaying. CNPC's aggressive buyout strategy initially backfired and it was not endorsed by the State Council until CNPC demonstrated its success in Sudan in 1999 (Paik et al. 2007); ONGC's £12.50 per share offer for Imperial Energy was made in August 2008, when the international oil prices had soared to roughly \$130 a barrel, but by the time the deal was clinched oil stood at less than half that level. For Petrobras, producing and exploring for oil in a variety of different places around the world diversifies risk and lowers international financing costs (Amman 2009). Buying a US refinery would give Petrobras an asset that generates hard currency and lowers its financial risk. Also, generating revenues in US dollars gives Petrobras the cash to pay off its debt abroad and increase its credit rating.

Energy security is a crucial motivation for both CNPC and ONGC and to a lesser extent for Petronas. Contrary to OPEC oil companies, ANOCs are net purchasers of crude oil and operate domestically mainly in downstream sectors. With limited opportunities to increase upstream production domestically and thin or negative margins on downstream activities because of price controls, oil companies from the PRC and India have sought to boost reserve holdings, production, revenue, and clout by expanding overseas. This sometimes contradicts the government's desire to devote additional investment to improve yields in mature, less profitable fields at home in order to prop up declining domestic production.³⁷

Regarding competitive pressures to internationalize, these act most strongly on Petrobras's management. Until 1997, Petrobras had the monopoly on exploration in the Brazilian territory but since the opening of the domestic

³⁷In the PRC, one bright spot to replace dwindling fields lies in Xinjiang province in the remote west of the country. It currently accounts for about 12 percent of domestic production. Xinjiang plans to more than double its production to 55–65 million tons by 2010 and 100 million tons by 2020, although these assumptions may be excessively optimistic in light of the wretched operating conditions and geological complexity of the reserves.

market, nine concession rounds have been conducted and 71 concessionaires (including 35 foreign investors) are currently operating in Brazilian offshore oil fields. Given this reduced scope for deploying its core competencies at home, it is not surprising that Petrobras has ventured further overseas (Amman 2009). In addition, Petrobras does not have much idle refining capacity left; it is now refining 1.7 million barrels of its 2.0 million barrels-per-day capacity.³⁸ More foreign refinery and the planned construction of a lubricants factory in Cuba, through a joint venture with Venezuela's PDVSA and Cubapetroleo, would allow Petrobras to refine oil that the company will, in the near future, have trouble processing in Brazil. Selling the output from such a refinery would also generate additional hard currency in dollars.³⁹

Companies, in turn, choose their investments mode according to three considerations: technical capabilities and (to a lesser extent) the compatibility of the oil in the ground with the refineries back home; the intensity of competition; and an assessment of political risk (Aykut and Goldstein 2007). Technology is certainly a common explanation, although its relevance and expression change in accordance with corporate characteristics. Petrobras has extracted from increasingly deep waters since 1972 and then expanded toward other areas where similar exploration conditions existed. Malaysia has become the first member of the Association of Southeast Asian Nations to develop a world-class deepwater oil field and by establishing a significant part of the development capability in-country has set in place a strong foundation for a regional deepwater hub for the development of other fields. In the case of the PRC, the full utilization of its skilled labor force—CNPC alone has well over 1 million employees—is a further motivation.

The politics of NOC expansion have been a matter of great controversy. Because of the importance of government policies in the host country in shaping the mode of FDI in the oil sector, attention over the past few years has been placed on governance issues. In particular, many observers have pointed out that by investing in strife-torn oil-producing countries where political risk or sentiment have frightened off many bigger players, ANOCs and other NOCs may be providing support to their governments and hampering efforts to bring peace and security (e.g., Taylor 2006). In addition, the PRC's activism has fanned rivalry with other countries. In Iran, for instance, in the face of tough competition from the PRC, authorities scaled down significantly the amount of LNG to be sold to

³⁸PetroChina's refinery capacities also cover almost all of its outputs.

³⁹New refining capacity would reduce highly discounted heavy-oil exports and reduce costly oil-product imports. The former government believed that investing abroad was the cheapest way to boost refining capacity and that this would give Petrobras a greater international presence. The Lula administration argues that building a refinery at home would create jobs and would be custom-tailored to refining heavy oil.

a consortium of companies from India for 25 years.⁴⁰ In 2005, CNOOC's bid for Unocal, a medium-sized US oil company, arguably the PRC's boldest move, led the US Congress to pass a nonbinding resolution opposing the deal on national security grounds. The company was eventually sold to Chevron, reinforcing the PRC's suspicion regarding access to Western investment markets and hence its preference for dealing directly with governments in producing countries.

There is little doubt that majors from the PRC use political clout to get supportive high-level state visits, access to subsidized capital, or development assistance money designated for infrastructure projects. In Nigeria, for instance, the PRC's "official policy is to link soft loans for infrastructure development to acreage access for [PRC] companies (as well as to long-term oil supply agreements)" (Brandtzæg et al. 2008, 2). Elsewhere, much political wrangling with Russia was needed to allow CNPC to close its bid for PetroKazakhstan. Similarly, Petronas took advantage of Prime Minister Mahathir's activist brand of diplomacy—which cast Malaysia as a champion of the third world and an exporter of capital and corporate expertise—to invest in Africa. In post-apartheid South Africa, it also benefited from the Mandela government's interest in Malaysian New Economic Policy as a model for affirmative action. As for Petrobras, in June 1972 Brazil's developing country status made Petrobras the first foreign firm to take Iraqi oil and thus break a blockade against Iraq called by BP after the nationalization of Iraq Petroleum Company; in Angola, it has taken advantage of the fact that Brazil had been the first country to recognize the new government after independence. Analysts in India have argued that the government should move more aggressively to secure oil assets abroad and shore up the political clout of Indian oil companies (see, for example, *Business India* 2005). Nonetheless, sometimes political friendship is not sufficient. When CNPC made a \$397 million bid for Canada-based Verence, which has Libyan assets, the Libyan NOC announced plans to exercise its right of first refusal to buy the assets. When President Evo Morales decided to nationalize Bolivia's gas reserves, Petrobras was not spared.

Bilateral FDI flows in the oil industry have long been closely tied to international politics. Out of many examples, it will suffice here to recount the case of Pearson and Son in Colombia in the 1910s (Bucheli 2008). The British company's lack of awareness that Britain had been overtaken by the US as the hegemonic power in Latin America eventually caused the negotiations over oil contracts to collapse. Pearson never received oil concessions in Colombia; instead, they were granted to American companies, consolidating US power in the region.

What is more disturbing is the possibility that (poor) institutions and (large) natural resources have an interactive effect. Econometric results from

⁴⁰India sought to secure a fixed price contract but was finally obliged to accept a deal that will see the price largely pegged to that of Brent crude oil, subject to a ceiling of \$31 per barrel.

Kolstad and Wiig (2009) suggest that the worse the institutional environment of a host country, the more FDI from the PRC is attracted by the country's natural resources. In the case of Petronas, its investments in the Ogaden basin in Ethiopia have raised the attention of the Ogaden National Liberation Front and of human rights activists. These activists are also concerned with the activities of the ANOCs in Myanmar.

VI. MAXIMIZING THE DEVELOPMENT IMPACT OF FDI IN THE OIL SECTOR: ARE NOCS DIFFERENT FROM IOCS?

Oil companies can contribute to national development in producing countries in a variety of ways that largely mirror those that characterize all FDI flows. Natural resources exploitation necessitates huge finance, technology, and expertise resources to which MNCs have relatively easy access, whereas few developing countries, and especially least developed countries, can raise the necessary amount of capital or possess crucial skills and technology. Oil FDI can also generate employment opportunities, create backward (and, more rarely, forward) linkages locally, and contribute to infrastructure development.

However, the experience of resource-rich developing countries indicates that this type of wealth can be a mixed blessing (Gelb and Associates 1988, Sachs and Warner 1995).⁴¹ The extraction of nonrenewable resources may have social or environmental costs. Social costs can include the destruction of the traditional (and more sustainable) economic foundations of local communities, involuntary displacement, and property takings; environmental costs can include water pollution, water scarcity, noise, dust, and land disturbance.⁴² An oil boom may also

⁴¹To give but one example, though FDI accounted for a quarter of manufacturing production in Indonesia in the late 1990s, its contribution was moderate in total capital formation, generating net export revenues, creating manufacturing employment, developing supplier and support industries, transferring technology, and generating tax revenues (Dhanani and Hasnain 2002). FDI had a negative impact on the balance of payments, and contributed to the persistent deficit in manufacturing goods due to its larger propensity to import production inputs from abroad.

⁴²According to Frynas (2005, 594), "during exploration for oil, potential environmental damage includes, among other things, clearance of land, which can lead to a long-lasting or permanent loss of vegetation, and drilling activities, which can lead to the release into the ecosystem of drilling fluids. Oil production activities can have an adverse impact on the environment through damage from leaking pipelines or atmospheric emissions from the flaring of gas, a by-product of oil production. During transportation, tankers release oil into the sea in the course of pumping out bilge-water or unloading the cargo. The pollution from refineries can include the release of waste water containing oil residuals, solid waste disposal, and atmospheric emissions."

widen income inequalities, imperil good governance, and aggravate corruption.⁴³ Also, extractive industries may exacerbate macroeconomic mismanagement: the presence of mining may inflate wages and keep the exchange rate strong, thus preventing other sectors, such as agriculture, from being internationally competitive and contributing to export-driven growth. As UNCTAD (2007, 15) noted, “although many of these concerns are associated with the sector rather than with the ownership of investments per se, in circumstances where the bulk of the investment is carried out by MNCs the foreign ownership of assets and activities cannot but be an issue.” In the context of this paper, the key question is whether or not ANOCs have a different impact than other oil companies.

The answer can only be tentative in nature. *Prima facie*, it is reasonable to argue that insofar as NOCs, and ANOCs in particular, are ready to sign contracts that are more generous to the host country, they can have a more positive impact. As seen above, a reason for the competitive ability of NOCs to steal a march on traditional competitors is that they have a lower hurdle rate and are also able to offer development cooperation assistance on generous and unconditional terms. If in the 1950s the appearance of Eni marked a fundamental shift of power from the oil majors to producer governments (see Section VII), so in the early part of the 2000s booming energy demand by emerging economies has allowed producer governments to obtain better conditions from oil companies (Angelier 2008). An offsetting factor is that a large international oil company usually brings expertise to develop oil fields, something that ANOCs, no matter how cash-rich, possess in limited quantities.

As noted above, some of the concerns raised regarding oil firms from the PRC, in particular in Africa but possibly also in Myanmar and other weak-governance countries in Asia, are not unjustified. At the same time, there are recent examples—such as the Nigerian government’s decision to replace the Shell Petroleum Development Company as operator of oil concessions in Ogoniland, the toxic-dumping case against Chevron in Ecuador, or the run of Western majors to Equatorial Guinea, one of the world’s most corrupt countries—that suggest that governance issues are not limited to ANOCs. Chad is a good example of a badly governed country where ANOCs work shoulder to shoulder with IOCs. More generally, both types of firms are active in oil-producing countries that show

⁴³An additional complication of oil projects is that the benefits and risks are not evenly distributed. Local communities benefit from the employment and infrastructure improvements that such projects bring (which are temporary, but can last for extended periods), but they also bear the brunt of any accompanying environmental damage, health risks, property takings and damage, and changes to traditional life and culture. The distribution of revenues, on the other hand, is determined by the legal and regulatory framework of the country. Typically, most revenues are split between the investor and the central government.

some of the world's worst governance performance as measured by the World Bank's *Worldwide Governance Indicators* (Table 5).⁴⁴

Table 5. Company Presence in Worst-Performing “Voice and Accountability” Oil-Producing Countries

Country	Rank	CNPC	ONGC	Petronas	Petrobras	Eni	Shell	Total
Myanmar	1	√	√	√				3
Turkmenistan	2	√	√	√		√		4
Libya	3		√			√	√	3
Cuba	3=	√	√	√	√			4
Uzbekistan	5			√				1
Equatorial Guinea	6			√				1
Syria	7		√				√	2
Sudan	7=	√	√	√				3
Viet Nam	9		√	√			√	3
Saudi Arabia	9=					√	√	2
Iran	11	√	√	√		√	√	5
Congo, Dem. Rep.	12							0
Chad	12=	√		√		√		3
Iraq	14	√	√					2
Tajikistan	15							0
Cote d'Ivoire	15=						√	1
Egypt	17		√	√		√	√	4
Tunisia	18					√	√	2
Ethiopia	18=			√				1
Azerbaijan	20					√		1
Congo	20=					√		1
Angola	21				√	√		2
Brunei Darussalam	22						√	1
Yemen	22=							0
Kazakhstan	24	√				√	√	3
Pakistan	25			√			√	2
Oman	25=					√	√	2
Algeria	27	√				√	√	3
Russia	27=	√	√			√	√	4
Total		10	11	12	2	14	14	

CNPC = China National Petroleum Corporation; ONGC = Oil and National Gas Corporation.

Source: World Bank, *Worldwide Governance Indicators* database, downloaded 15 July 2009; author's calculations based on companies.

⁴⁴Exxon's investment project in Chad exemplifies the challenge faced by energy companies attempting to behave more responsibly in failed states. In 1998, the government of Chad, the World Bank, and several nongovernmental organizations reached an unprecedented agreement that was hailed as a model for responsible energy development. In December 2005, taking advantage of increased oil prices, the government of Chad took a portion of the funds held in trust for development and allocated them to military spending. The World Bank subsequently renegotiated the agreement, increasing the percentage of revenues under control of the Chad government. But even the funds allocated to community development appear to be having little social impact, in part due to pervasive corruption at the local level.

Over the past few years, various initiatives have been taken to enhance the role that MNCs play in the long-term planning of a host country's natural resources, to ensure better alignment between private agents' actions and the national economic development agenda and good-quality governance, and to enact and implement correct regulations and codes. Virtually every company has developed guidelines for staff on how to behave when confronted with dilemmas such as conflicts of interest, gifts, theft, insider trading, payoffs, and bribery. The ultimate aim is to embed international markets and firms in a framework of global rules and norms by establishing standards for responsible business conduct as well as mechanisms for promoting compliance. Oil companies have also developed their own codes of conduct, management standards, certification schemes, reporting guidelines, eco-labels, or more general behavioral norms operating at the global level. Regulations are targeted toward MNCs but in many cases also influence smaller enterprises along the supply chain. At the policy level, the Extractive Industries Transparency Initiative (EITI) supports improved governance in resource-rich countries through the verification and full publication of company payments and government revenues from oil, gas, and mining.⁴⁵

Table 6 shows that there are obvious differences between companies in the response to the call for greater transparency, with the ANOCs performing rather poorly and Petrobras being at par with, when not above, some IOCs. In line with the results of a study of ExxonMobil, Shell, BP, and (then) TotalFinaElf (Skjærseth et al. 2004), these differences can be explained by a combination of company-specific features and different home-base countries: in the case of Petrobras, the foreign exchange listing exposes it to enhanced stakeholder scrutiny and more generally the growing corporate social responsibility (CSR) culture in Brazil (Araya 2006). Considerable skepticism surrounds CSR, particularly at the rhetorical level, that companies see CSR a tool to achieve compliance with mandatory social and environmental legislation, in particular with regard to climate change and bribery, rather than to make efforts that go beyond formal legal compliance (Boasson, Wettestad, and Bohn 2009).

⁴⁵Nongovernmental organizations on the EITI board such as Global Witness, however, have accused energy companies of delaying the implementation of validation steps to protect business interests. Concerns that abiding by EITI rules would anger host country governments appear realistic—when BP announced that it would disclose to the public its royalty payments to the government of Angola, that government threatened to terminate BP's exploration rights.

Table 6. Company Corporate Social Responsibility Rankings

	Covalence Ethical Ranking Q1 2009 (ranking among oil and gas companies)	2009 Global Reputation Pulse (ranking among oil and gas companies)	EITI Principles and Criteria	2008 Report on Revenue Transparency of Oil and Gas Companies ^a
CNPC	...	...	Not endorsed	Low
ONGC	...	...	Not endorsed	Low
Petronas	...	...	Not endorsed	Low
Petrobras	3	1	Endorsed	High
Eni	20	6	Endorsed	Middle
Shell	25	...	Endorsed	High

... indicates data was unavailable or not applicable.

CNPC = China National Petroleum Corporation; EITI = Extractive Industries Transparency Initiative;

ONGC = Oil and National Gas Corporation.

^a Refers to revenue transparency of operations outside the home country.

Sources: Covalence, Covalence Ethical Rating Q1 2009, available: www.covalence.ch/index.php/2009/04/15/covalence-ethical-ranking-q1-2009, accessed 1 July 2009; Extractive Industries Transparency Initiative, available: eitransparency.org, accessed 1 July 2009; Reputation Institute (2009); Transparency International (2008).

VII. CONCLUSION: ARE THE ANOCS THE ENI OF THE TWENTY-FIRST CENTURY?

This paper has documented the individual strategic trajectories of three major ANOCs, explored their motivations, and provided some elements for a comparison with Petrobras. Table 7 helps to distill the findings and further demonstrate the comparisons and contrasts. The recent accelerated growth of CNPC, ONGC, and Petronas is impressive, especially because the strong support that these companies receive from their governments in the quest for secure energy sources has been accompanied by considerable efforts to modernize internal governance, enhance management qualifications, and improve the science and technology base. Although the ambitions of the ANOCs are similar (such as a desire for self-determination and advancement into international markets), their performance is largely determined by specific economic and political factors pertaining to each country, the degree of dependence on oil and the presence of domestic oil reserves, the institutional design of cooperation between government and private industries, the early history of the upstream industry, and the target area of overseas development. Asian NOCs have managed to acquire a sufficient level of autonomy to defend their own interests and to resist attempts by the state to skim off more profits. But their performance remains less satisfactory than for IOCs and Petrobras, partly because their governance structure is not as transparent and multifarious goals collide.

Table 7. Main Findings

	Size	Growth	Autonomy	Technology	International-ization	Trans-parency
CNPC	Large	Medium	Medium	Low	Very low	Low
ONGC	Small	Very high	Medium	Low	Low	Low
Petronas	Medium	Medium	Medium	Medium	Medium	Low
Petrobras	Large	High	High	High	Low	High

CNPC = China National Petroleum Corporation; ONGC = Oil and National Gas Corporation.

The contemporary rise of Petrobras suggests that the Asian experience is best seen against the background of the transformation in global business and the rise of emerging economies (Goldstein 2007, Guillén and García-Canal 2009). A new type of multinational enterprise is emerging in which FDI is driven not only by the exploitation of traditional firm-specific competencies (although, at least in the case of Petrobras, these remain relevant) but also by the exploration of new patterns of organizational innovation and ways of accessing markets. The latter include valuable capabilities developed in the home country, as well as project execution (as with Petronas in Chad) and political and networking skills (notoriously important for companies from the PRC).

In these concluding paragraphs, it will be argued that the rise of Agip-Eni in the 1950s and 1960s, when the Italian petroleum SOE challenged the dominance of the Seven Sisters in Iran and other major producing countries, provides another relevant parallel. Eni had the mission of guaranteeing the energy self-sufficiency of the country through its control of all stages in the production of oil. While the politics of post-Second World War Italy were different, the overall situation had changed little from 1938, when “the problem of devising safeguards against [the risk of any interruption of oil supply was] particularly difficult of solution in Italy’s case” (*Economist* 1938, 77). Attempts were made in the late 1940s to develop Italy’s meager oil and gas reserves, but something more daring was needed to break the dominance of the Anglo-Saxon majors, which were making brisk profits by supplying the refineries of Agip (Azienda Generale Italiana Petroli, Eni’s predecessor). The company was shielded from political interference by its founder and president Enrico Mattei, who strongly centralized strategy and management while simultaneously being able to recruit professional managers to implement innovative business strategies.

The partnership with the Egyptian government to exploit the El Belayim field was “not a direct affront to the 50-50 principle, but [could] be interpreted as one” (*Economist* 1957, 235). The 1957 Iranian agreement was revolutionary and established Eni as the *enfant terrible* of international oil, thus opening many doors in North Africa. Mattei agreed with the Shah of Iran to create a jointly owned exploration and production company headed by an Iranian chairman and to share the proceeds between Agip and the Iranian National Oil Company.

Mattei continued to upset the status quo with deals to purchase crude oil from the Soviet Union. By the end of the 1950s, Italy had become the Soviet Union's biggest oil customer after the PRC. Again, the deal was innovative and daring: Soviet oil was bartered for exports of synthetic rubber and other Italian products—in effect, Eni acquired oil at less than half of the prevailing world price.

IOCs did not take this challenge lightly—the Standard Company and “prominent American journals, including those of the Luce Group” exercised significant pressure “to drive a wedge into Signor Mattei’s empire” (*Economist* 1955, 255) while Shell tried to discredit him in the eyes of the Arabs (van Zanden et al. 2007). Critics also claimed that Eni’s technical resources were inadequate for the task of exploration, and described the struggle of “Italy’s Industrial Cromwell” with the IOCs as “picturesque,” although they also acknowledged that he and his young executives were “creating something exciting and new in a lately backward country and the niceties of politics and the law d[id] not interest them much” (*Economist* 1960, 576).

The resemblances with today’s NOCs are striking. Growing energy needs combined with limited domestic energy resources dictate the search for appropriate solutions capable of securing long-term supplies through investment in exploration and production. In the PRC, in particular, government policy to reduce the probability and the cost of a supply disruption has emphasized strategic means (such as creating stockpiles or drawing up emergency response plans⁴⁶) rather than market mechanisms. The increasingly acute dependency on oil imports and an ingrained ideology of self-reliance are driving companies on a global search to secure future energy supplies. At the intersection of these features, the balance of power between producing countries and IOCs is rapidly changing, opening the way to contract renegotiations and hence to the entry of new players.

To conclude, what does the future hold for ANOCs? Despite the current economic slowdown, they still have access to unprecedented levels of hard currency liquidity and an interest in investing abroad, either to reach a higher degree of vertical integration or to diversify the geographical scope of their proved reserves. In addition, their governments have encouraged big industrial companies to take advantage of lower valuations after commodity prices slumped and to secure long-term supplies. Insofar as ANOCs are not reliant on debt to finance acquisitions, they are likely to maintain a competitive edge in these uncertain times. But as companies from emerging economies become more ambitious, they may also start competing directly with Western companies. For example, bids for resources by the PRC are often met with opposition from lawmakers in some countries. All these developments call on governments, companies, and other stakeholders to continue the dialogue on the complex issues raised by international investment, extractive industries, and global development.

⁴⁶The first four strategic oil reserve bases became operational in 2008; in 2009 the National Development and Reform Commission announced plans to construct another eight.

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