“O Petróleo É Nosso!” (The Oil Is Ours):
An Investigation of Brazil’s Petrobrás

by

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-M.N.V.Z, 2013
For Voyy and Vovo
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Introduction

Holding more than half of the world’s petroleum reserves, National Oil Companies (NOCs) play a critical role in the global petroleum market. NOCs are characterized by varying degrees of government control, ranging from complete– as in the cases of Venezuela’s PDVSA and Mexico’s Pemex – to partial privatization as with Brazil’s publicly traded Petrobrás and Norway’s Statoil. The asymmetry between the goals of a government and those of an oil company is the predominant justification for a nation’s creation of an NOC. Conversely, International Oil Companies (IOCs) such as BP, Chevron, ExxonMobil and Shell exercise complete managerial and financial autonomy in the international market. In recent years, NOCs have increased their market power relative to IOCs due to their possession of 73% of global oil reserves and 60% of global oil production.1 NOCs are also increasingly investing outside of their national borders, further soliciting the attention of the international community. This paper will investigate the tension between the global competitiveness of Brazil’s Petrobrás and the increasing regulation by the Brazilian federal government as a part of its national development strategy.

Petrobrás is Latin America’s largest company by revenue and the seventh largest energy company in the world, according to PFC Energy.2 With a market value of $180 billion (2012),3 it stands as Brazil’s largest exporter and is a main source of the nation’s

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rapid economic growth. Since Petrobrás’s establishment in 1953, the company has been intricately tied to the nation’s development strategy. During the period known as *Estado Novo* (1938-1945), President Getúlio Vargas oriented the state towards economic nationalism through an interventionist model for development. Beginning as a fully state-owned monopoly, Petrobrás symbolized a nationalist mission to secure a reliable domestic energy supply and to one day achieve self-sufficiency in domestic oil production. The Brazilian government created the company with the understanding that the state controlled its corporate governance and its incentives while Petrobrás retained minimal degrees of technological and operational independence. For the first decades of the company’s existence, the government steadily maintained complete control over Petrobrás, seeing it as a mechanism to fuel economic growth and to expand an infant domestic petroleum industry.

Throughout much of the 20th century, Brazilian developmental nationalists believed that state intervention was the most pragmatic response to the failure of the free market. Brazil’s intervention in market activity was rooted in import substitution industrialization policy (ISI), which meant growing infant-industries and protecting the national economy from foreign competition. ISI was a popular economic strategy among Latin American economies during the middle of the 20th century and was founded under the dependence theory of Raul Prebisch, which was presented at the United Nations’

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5 The theory that a country does not thrive or fail simply because of its own natural endowments. Instead, a country’s progress could be attributed to their position in developing power during the emergence of the international economic market. Industrialized countries, or “center” countries controlled the system and “periphery” countries, or developing countries, were exploited. See: Franko. “Puzzle of Latin American Economic Development,” (56-60).
Economic Commission for Latin America (ECLA) in Chile in 1948. In contrast to ISI theory, neoliberal economic theory claims that free trade and the private ownership of the means of production leads to economies of scale in production and export-led growth; except when market failure is present. However, the energy sector commonly presents the conditions for market failure: there are externalities in consumption and production, the product is a public good, the market can be monopolistic in structure and information costs are high. ISI economic policy is meant to avoid market failure by shifting the economy towards an emphasis on domestic industrial growth under the guidance of the state. ISI leads to state-led growth via three main policy initiatives: currency manipulation to keep exchange rates overvalued, high import tariffs and government policies to promote domestic production (subsidies, tax exemptions and local content requirements). These policy initiatives play a fundamental role in Brazil’s national development strategy.

The interests of the Brazilian government began to diverge from those of Petrobrás as the company increasingly developed operational autonomy throughout the second half of the 20th century. This led to an agency relationship between the government and Petrobrás that contrasted with the government’s complete control when the state-owned monopoly was initially established. As Petrobrás achieved new

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6 In using the term “neoliberalism” I refer to the economic, political and social concept that is based largely on classic liberalism and neoclassical theory and aims to minimize the state’s role in economic events.


8 Ibid.


10 Ibid.
degrees of independence, it became exposed to IOCs through service contracts during the 1970s and 1980s. This led Petrobrás to become progressively more oriented towards maximizing revenues and developing technological competence than towards meeting the nation’s immediate development goals. As a result, Petrobrás advanced its capabilities and eventually became recognized as an internationally competitive NOC.

In the 1990s, the nation’s state-led economic development strategy was replaced with a neoliberal approach that involved deregulating Brazilian industries such as oil and gas and exposing them to international capital and competition. During this period of neoliberal economic reform, the Brazilian federal government decided to partially privatize Petrobrás. The divestiture of company assets benefited both the company and the nation, leading Petrobrás to function as a modern corporation with commercial interests. President Luiz Inácio da Silva (President Lula) took office in 2002 and led a period of national economic expansion based on increasing exports and maximizing Brazil’s economic development out of this free-market oriented framework. Petrobrás’s total production doubled within a six-year span following the 1990s transfer of ownership and Petrobrás’s share of Brazil’s GDP grew significantly—doubling from 5% in 2002 to 10% in 2009\(^1\) and it is predicted to reach a high around 20% by 2020.\(^2\)

However, de Silva’s neoliberal strategy reversed in 2006 upon Petrobrás’s discovery of major oil reserves in the Tupi field in the Santos basin, off the coast of the state of Rio de Janeiro. “Pre-salt” oil was discovered 185 miles off the southern-east


coast of Brazil, four miles below sea level, deep beneath a three-mile layer of salt deposits. These discoveries have doubled Brazil’s proven oil reserves and are forecasted to make Brazil one of the world’s top five oil rich nations by 2020, according to Petrobrás. The major discoveries led to a dramatic shift in the nation’s approach to regulating the exploration and production (E&P) of pre-salt petroleum reserves in the domestic market. In a speech to the Brazilian people on Brazil’s Independence Day, September 7, 2008, President Lula explained the magnitude of the pre-salt discoveries and the importance of state oversight in their development:

“Brazil believes in free market, but also believes in the role of the State as an inducing agent of development. And it will always seek the balance which will guarantee the best for its people…”

Since the discoveries, the Brazilian government reoriented to a more assertive role in the nation’s economic management. The discoveries have dramatic implications for Brazil’s development goals and for the future of Petrobrás. Through the leadership of former President Lula and current President Dilma Rousseff, it has become clear that Brazil is capable of utilizing its agency relationship with Petrobrás as a means to achieve its development goals. However, Petrobrás’s recent decline in performance has demonstrated that these development goals come at a cost to the efficiency of Petrobrás and to the Brazilian petroleum sector at large.

Neodevelopmentalism is a new approach to state intervention that borrows policy...

strategies from ISI and has become characteristic of Brazil’s development strategy. Cedro (2012) describes the new approach as “state induction of growth, long-term and integrated governmental planning and investment, and a discourse of emancipation and epistemic disobedience.” Characteristic of Brazil’s legacy of state-led development strategy, the state’s increased regulatory presence in market activities raises concerns over the effectiveness of further protectionism in an already advanced sector such as petroleum. Although ISI policies were effective in developing an infant petroleum industry, today Brazil’s petroleum industry is highly competitive internationally. Petrobrás is a global leader in deep-water technology and is an international player in the global energy market.

In light of Petrobrás’s disappointing performance in the past two years, current Petrobrás CEO, Maria das Graças Foster, conveys the agency dilemma inherent to Petrobrás, “Petrobrás does not see developing the country as its core business…not every project that would be great for the country will be undertaken, because not all are economically justified.” This attitude towards national development has grown out of Petrobrás’s individual profit-seeking interests that have progressively diverged from the nation’s aim to use Petrobrás as a vehicle for state-led industrialization. Analysis of Petrobrás’s performance along with the evolving degree of governmental regulation of the company suggests that Petrobrás performed more successfully with less

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governmental restriction and oversight over the Brazilian petroleum sector.

In contrast to Foster’s corporate goals for Petrobrás, current Brazilian President Dilma Rousseff, and the federal government view the pre-salt discoveries as a key instrument for the nation’s development strategy. President Rousseff has argued repeatedly that Brazil should use its oil income to combat the nation’s major socioeconomic challenges as well as to develop a supplies and services industry that will add value to the domestic oil sector and boost employment. The government’s new legislation and its “pre-salt strategy” for development aim to accomplish these goals, though it is ultimately the ability for Petrobrás to capitalize on the pre-salt that will determine their outcomes.

This thesis investigates the regulatory tension between the Brazilian state and Petrobrás as an independent economic enterprise. Economic nationalism has persisted since the company’s establishment in 1953, leading the Brazilian government to ensure that the nation’s petroleum wealth is preserved for the Brazilian populace. The government’s recent reversion to protectionism in regulating Petrobrás and the Brazilian petroleum sector has hindered Petrobrás’s short-term growth, while aiming to maximize long-term national prosperity. The tensions currently present in the Brazilian petroleum sector suggest there is a tradeoff between market efficiency and national development. It is evident that the government’s use of Petrobrás as a driver for the nation’s development strategy prevents Petrobrás from operating at its full capacity. Brazil’s ability to capitalize on its new oil wealth will largely determine the nation’s ability to

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17 The Brazilian petroleum sector’s new legislative framework was developed by President Rousseff while she was the Minister of Mines and Energy (MME).
obtain the economic resources needed to transition Brazil into a developed nation. Comparing the experiences of the Norwegian and Venezuelan petroleum sectors help to demonstrate the nature of Brazil’s oil dilemma.

Chapter 1 explores the creation and evolution of Petrobrás as it was subject to numerous political and economic factors leading the company to reorient its strategy and reorganize its structure on multiple occasions. Petrobrás was completely controlled by the state in certain periods and achieved remarkable degrees of autonomy in others. It is ultimately the distinct qualities of this state-NOC relationship that characterize Petrobrás as a leading NOC.

Chapter 2 compares the Brazilian petroleum sector to the cases of Norway and Venezuela in order to best understand the regulatory tension involved in developing a successful NOC. The conclusion presents a summary of remarks and conclusions based upon prior analysis.
Chapter 1: The Historical Evolution of Petrobrás

The history of Petrobrás can be separated into four main periods. The first involves the founding of the company and the development of a downstream\(^{19}\) market prior to the discovery of the major offshore reserves in the Campos basin (1930-1970). During this stage, Petrobrás was created out of the government's desire to secure a stable fuel supply. The company developed a downstream market and underwent restructuring that provided it with increasing operational autonomy and prepared it for major offshore discoveries. The second stage involves the development of the offshore market (1970-1990). Petrobrás began to focus on advancing its technological capabilities while also becoming exposed to IOCs. This led Petrobrás to grow rapidly and take advantage of Brazil's emerging oil wealth. The third stage involves deregulation and privatization (1990-2006), whereby Petrobrás thrived and experienced its greatest period of growth in production. The last stage involves the recent developments surrounding the pre-salt discoveries (2006-2013). Petrobrás’s recent performance illustrates the difficulties of capitalizing on Brazil’s immense oil wealth in the face of increased government regulation. In discussing the history of the company, this chapter will examine the company’s strategy, structure and performance along with the economic and legal framework governing the Brazilian petroleum sector. Throughout the analysis, the relationship between the Brazilian government and Petrobrás demonstrates the evolving conflict of interests between the state and the NOC.

\(^{19}\) Downstream activities refer to the refining, selling and distribution aspects of the petroleum industry. Upstream activities refer to the exploration, production and operation of oil wells that bring crude oil and natural gas to the surface.
1.1: Constructing a State Monopoly: Pre-Offshore Discoveries (1930-1970)

Pre-Petrobrás

Prior to 1930, IOCs dominated Brazil’s refineries and distribution channels, but were unsuccessful in discovering oil reserves. Brazil relied primarily on imported oil, both crude and refined, to fuel transportation and support industrialization. Oil policy consisted of granting concessions to private companies, most of which were foreign. These foreign firms imported crude oil and controlled the downstream market to meet Brazil’s national consumption demand. Facing growing international hostilities prior to World War II, the government became concerned with the country’s dependence on foreign oil imports, as price fluctuations affected both the economy and national security. The potentially tenuous diplomatic relations between Brazil and its importers threatened the security of a steady fuel supply for the infrastructure and progress of the country. Nationalist sentiments mounted surrounding the future of oil policy, which led to exceedingly nationalistic policies governing the Brazilian petroleum sector.

Concurrent with this evolving national attitude, Brazil initiated its first successful oil exploration in the 1930s with its first discoveries of onshore oil fields in Lobato, Bahia in 1939.\(^\text{20}\) Lacking the technical expertise, the Brazilian government employed American surveyors and technicians to assist in onshore exploration through the Service for Promotion of Mineral Production (SFPM). Largely as a result of American involvement, President Vargas created the National Petroleum Council (Conselho Nacional de Petróleo – “CNP”) in 1938 to increase state control of this newly emerging

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domestic petroleum industry. The state’s creation of the CNP marked an initial step towards building a regime to protect the growth of Brazil’s infant petroleum industry through ISI policies.

Immediately following the discovery in Lobato by American drillers, the CNP prohibited all exploration by private companies within a sixty-kilometer radius of the discovery.21 The government’s radical opposition towards foreign involvement was suggestive of their strategy to keep domestic oil as national property and to minimize exposure to the international market. Following the Lobato discovery, the government kept the Brazilian oil exploration and production (E&P) market isolated until the participation of IOCs was needed to compensate for an informational disadvantage in the 1970s.22

The CNP provided the government control of upstream operations and most of downstream operations by becoming a legal monopoly in hydrocarbon exploration and production (E&P). The CNP also assisted the government in determining the allocation of oil and gas concessions, regulating crude oil imports among other activities.23 During this period, the CNP began exploring and refining limited amounts of petroleum, though in 1943 domestic oil production through the CNP was only 131 bpd (barrels per day), which accounted for less than 0.5% of national demand.24 Oil self-sufficiency became an urgent goal for nationalists who continued to witness increases in oil consumption.

National oil consumption sharply increased between 1940 and 1953, with the highest

21 Adilson de Oliveira, “Petrobras,” 520.
22 This approach was arguably one of Brazil’s defining strengths in effectively implementing ISI policy; remaining open to foreign involvement at opportune times. This was also effective in supporting the growth of other infant industries such as telecommunications, aircraft and automotives.
24 Ibid., 15.
demand for gasoline, diesel and fuel oil—achieving average annual growth rates of 34.3%, 46.1% and 18.6% respectively.25

Two years after the Lobato discovery, Law 3236 of 1941 explicitly gave the government ownership of all petroleum and natural gas deposits found in national territory.26 Throughout the 1940s, the CNP continually rejected potentially beneficial requests for partnerships by IOCs on grounds of national interest and security. Succeeding Vargas, military leader President Dutra (1946-1951) encouraged the CNP to develop the nation’s refining capacity by contracting the construction of two major national refineries that would combine to produce 2,700 bpd upon their inauguration in 1954, sufficient to supply only 1.7% of the nation’s consumption demand.27

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Between nationalization and the early 1950s, fifty-two wells were drilled and nine areas for exploration were discovered, though 90% of Brazil’s consumption of refined oil products was still imported. President Dutra attempted to lift restrictions on foreign investment in the oil industry with the hope that competition would improve technological capabilities in the Brazilian petroleum sector, but nationalist sentiments blocked the proposed legislation. Believing that the oil deposits belonged exclusively to the state, public lobbying created the slogan “O petróleo é nosso!” or the “the oil is ours”, which became the motto of the nation’s political campaign for petroleum.

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The Creation of Petrobrás

Replacing President Dutra, President Vargas was elected for a second term (1951-1954) and summarily submitted a bill to Congress calling for a state-owned oil company, emphasizing its important role in national security. Democratic debates over the specifics of the bill lasted for years until, in 1954, Congressional Law 2,004 led to the founding of Petróleo Brasileiro, S.A., or Petrobrás. Altered from the terms of the initial 1951 bill, the 1954 law created a state legalized monopoly in the Brazilian oil industry with the vision of creating a fully integrated (upstream and downstream) company that would eventually make the country self-sufficient in oil. The government granted Petrobrás monopolistic control over exploration and production (E&P) in addition to a large share of refining and transportation activities. Law 2,004 restricted the composition of shareholders, prohibiting foreign ownership and foreign investments in Petrobrás. Petrobrás began its operations by receiving various CNP assets, who continued to control the importing of crude oil and retained its regulatory powers over the oil industry. The formation of Petrobrás remained controversial and proponents of the state monopoly became labeled nacionalistas while those who opposed it were labeled

30 President Vargas’s original bill did not specify a state monopoly.
31 It is important to stress that the creation of Petrobrás emerged from broad, lengthy democratic discussions between political parties and the public. This contrasted immensely from the experiences of other Latin American countries when founding NOCs.
32 The CNP allotted Petrobrás recoverable reserves of 15 million barrels, oilfields capable of producing 2,700 bpd, two refineries and twenty oil tankers. See: Motta, Aragão and Mariano, “Hydrocarbons in Brazil,” 7.
33 Foreign participation in the downstream market was maintained due to IOCs’ developed presence in the market that was responsible for providing Brazil with an adequate fuel supply to meet domestic consumption. Petrobrás would gain these rights in 1963.
entreguistas, or “sellouts.”

These terms have since been integrated into popular vocabulary to controversially characterize Brazilians’ attitudes towards increased openness to foreign capital and involvement in Brazilian economic affairs. The company began as a symbol of economic nationalism and of the nation’s support of state-led economic growth. However, unlike most NOCs, Petrobrás began with very poor oil reserves and an inadequate infrastructure to supply oil and oil products to consumers.

Petrobrás’s monopoly status guaranteed revenues which allowed the company to grow into a vertically integrated oil company. The monopoly status also allowed Petrobrás to develop economies of scale in production while minimizing market risks. This advantage was particularly important in providing Petrobrás with the capacity to advance its technological framework with the low risk of utilizing the government’s financial incentives to subsidize the company’s investments. Despite these advantages, the government controlled all of the company’s operations and limited the company’s financial and managerial autonomy to considerable degrees. The firm also received a fixed price for output from the CNP and, as a result, became overstaffed and inefficient compared to private sector peers.

The government’s involvement in Petrobrás infiltrated all aspects of the company’s corporate structure. Petrobrás’s internal governance was overseen by the

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35 Adilson de Oliveira, “Petrobras,” 522.
36 The government provided Petrobrás significant financial incentives including: exemption of import duties and royalties, tax relief on sales of equipment intended for Petrobrás’s projects, international parity pricing for oil products and a system to transfer 80% of foreign currency “saved” by its domestic oil production. See: Adilson de Oliveira, “Petrobras,” 523.
government’s Administrative Council, which consisted of the president of Petrobrás, who was directly appointed by the President of Brazil. The president of Petrobrás retained veto powers and liaised between the Administrative Council and the Board of Directors, which consisted of a chairman, directors of each department and the company’s subsidiaries, counselors representing public corporations with ownership of Petrobrás’s shares and counselors representing private shareholders.\(^{38}\) Two departments controlled E&P activities while refining, sea transport and petrochemicals were under the direct supervision of the Board of Directors and their expert advisors. Matters of labor force, suppliers and judicial proceedings were organized into coordination committees also under the supervision of the Board of Directors. Therefore, although the Board of directors managed most of the company’s activities, the national President’s appointment of the president of Petrobrás and the government’s oversight via the Administrative Council remained considerable managerial ties between the government and Petrobrás.

**Early Performance of Petrobrás**

Petrobrás relied heavily on government subsidies for its first twenty years due to its lack of significant oil reserves. During these early years, the company focused on developing a refinery industry and organizing a national infrastructure required to build a downstream market. By the time of the establishment of Petrobrás in 1953, the slow progress of Brazil’s E&P required that 93% of its oil still be imported.\(^{39}\) Petrobrás remained closely tied to the government, as industrial development plans of the late

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\(^{39}\) Motta, Aragão and Mariano. “Hydrocarbons in Latin America,” 5.
1950’s and ‘60s included the petroleum sector as a national priority to advance the nation’s industrialization.

A leader of Brazil’s plans for industrial development, President Kubitschek (1956-1961) implemented a large-scale economic development plan to achieve “Fifty years in five,” which included investing heavily in developing the energy sector.⁴⁰ Political debates grew between the CNP and Petrobrás’s business managers over the company’s willingness to use the government’s resources to meet national goals. National debates led the government to back Petrobrás and provide it with operational autonomy that many NOCs were unable to achieve until much later in their histories. Petrobrás responded promptly and increased production dramatically to 57,000 bpd in 1958, fulfilling 55.9% of Brazil’s consumption needs.⁴¹ Responsible for this growth in production was Petrobrás’s boost in refining capacity following the production of Petrobrás’s first refinery⁴², the REDUC, in 1961.⁴³ This year marked the first time that refining capacity exceeded national consumption.⁴⁴ The success of the NOC led it to become a popular symbol of national liberation from its heritage of colonial imperialism and dependence on foreign imports and capital.

Alongside Petrobrás’s early operations, the government supported developments in the petroleum sector through the creation of the Ministry of Mines and Energy (MME) in 1960, which set out to foster investments in mining and energy, fund research

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⁴¹ Adilson de Oliveira, “Petrobras,” 523.
⁴² Previous refineries were incorporated and overtaken by Petrobrás. This was the first to be built by and operated by Petrobrás.
⁴³ “Our History.”
and develop government policies over the two economic sectors.\(^45\) The creation of the MME demonstrated the government’s awareness that a separation in roles was needed to properly regulate the petroleum sector.

During the 1960’s Petrobrás proved to be a fundamental driver for Brazil’s state-led industrialization. Petrobrás began reorganizing its supply chain by seeking industrial associations to supply capital goods for its projects. The link between Petrobrás’s growth and the development of the Brazilian capital goods industry would continue to strengthen through their evolving interdependence. This was particularly enhanced by the National Economic Development Bank (BNDE) which provided loans for private investors to work alongside Petrobrás in supplying equipment and services needed for the downstream – pipelines, refineries, terminals and tanks, for example. Enhancing Brazil’s capital goods industry was a central objective of the government’s active presence in the petroleum sector, since the government was aware that supply linkages and technological spinoffs would payoff in the long run for other sectors experiencing industrialization.\(^46\) During Kubitschek’s presidency, Brazil’s GDP grew at an average rate of 6% and growth in Brazil’s downstream petroleum activities contributed to an increase in Brazil’s industrial sector GDP, which increased from a 23.5% share of GDP to more than 30%.\(^47\)

The popular support for Petrobrás fostered during Kubitschek’s presidency led to political struggles over leadership that demonstrated the conflict of interests between Brazil and its NOC. As the Brazilian President appointed the president of Petrobrás, the

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\(^{46}\) This kind of supply linkage in the capital goods industry is one argument to support the remarkable success of Norway in its management over its petroleum sector, as we will see in Chapter 2.  
\(^{47}\) “Estatísticas do Século XX.”
leadership of the company fell victim to political power plays, resulting in ineffectual decision-making about the financial future of the company and rapid turnover of company management. The Petrobrás president pressured the government to provide more favorable policies for the company. In response, the government increased Petrobrás’s autonomy over the petroleum sector by nationalizing all remaining private refineries, granting Petrobrás the right to distribute oil products to final consumers\textsuperscript{48} and delegating monopoly powers over imports of crude oil to Petrobrás in 1963.\textsuperscript{49} Concurrently, however, the CNP’s practice of regulating oil prices resulted in stagnation in drilling and decreased output between 1961 and 1965 (see Figure 2 below). Therefore, in contrast with Brazil’s rising oil consumption rate, Petrobrás experienced an average steady decrease in production and an increase in oil imports during the early 1960s.\textsuperscript{50}

\textsuperscript{48} In the past, almost all distribution channels were controlled by IOCs.
\textsuperscript{49} Guan, “Understanding Brazil’s Oil Industry,” 81.
Although Petrobrás was increasing downstream production through its growing refining capacity (see Figure 2), it continued to face difficulties in locating new sizeable oil fields to meet the continuously growing oil demand. The company hired Walter Link, a geologist from Standard Oil, to perform a geological survey of Brazil’s potential for future oil discoveries. The study concluded that Brazil lacked significant onshore reserves, which left nationalists uneasy about the decision to introduce foreign advice. Although Petrobrás continued to be owned and overseen by the federal government, its growing operational autonomy from the government and exposure to IOCs would enable it to improve its organizational structure and its strategy for innovation in coming years.
Restructuring

In 1968, General Ernesto Geisel, who would later become the nation’s president, agreed to accept the appointment as the company’s president under the condition that the Ministry of Mines and Energy not interfere with his management of the company.\textsuperscript{51} His reorientation of the company shifted Petrobrás towards an agency relationship with the Brazilian government that would underscore the inherent strategic conflicts between the two entities. The government urged Petrobrás to develop its upstream capabilities, though Geisel assured the nation that new oil discoveries were on the horizon either on the Brazilian offshore or overseas. He decided to take advantage of falling international oil prices of the late 1960s and lead the company towards a focus on the domestic downstream market.

\textbf{Figure 3: Global Oil Prices (1950-2011)}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{global_oil_prices.png}
\caption{Global Oil Prices (1950-2011)}
\end{figure}

\textsuperscript{51} Adilson de Oliveira, “Petrobrás,” 525.
Directing its resources heavily towards the downstream led Petrobrás to experience tremendous gains in production, increasing its refining capacity from 325,000 bpd in 1964 to over 1 million in 1973.\(^{52}\) Despite growth in production, however, Petrobrás’s operation became characterized by lack of transparency and limited public oversight as it continued to gain more independence as a company. Petrobrás’s growing autonomy and its mounting public scrutiny under Geisel’s leadership led to a restructuring of the company’s operations.

Geisel’s restructuring of the company provided legitimacy for Petrobrás to the general public and created much of the organizational structure that Petrobrás operates under today. Geisel reorganized Petrobrás into a vertical hierarchy with four departments: Exploration and Production, Industrial Activities (Refineries and Petrochemicals), Transportation Activities and Marketing; and three support services: the service for the supply of materials (SERMAT), the engineering service (SEGEN), and the innovation center (CENPES).\(^{53}\) To improve Petrobrás’s operations, Geisel created four subsidiary companies: Braspetro (international operations), Petrobrás Distribuidora (logistic and marketing infrastructure for supplying oil products), Petrofertil (domestic supply of fertilizer) and Petroquisa (domestic supply of petrochemicals).\(^ {54}\) Geisel’s strategy rested heavily on the technological efforts at the Petrobrás research center in Rio de Janeiro, CENPES, which was oriented towards improving downstream efficiency.\(^ {55}\)

The founding of CENPES marked Petrobrás’ first major step towards developing a national effort towards research and development (R&D), which would continue to play

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\(^{52}\) Guan, “Understanding Brazil’s Oil Industry,” 81.

\(^{53}\) “Our History.”

\(^{54}\) Adils on de Oliveira, “Petrobras,” 525.

\(^{55}\) CENPES was and continues to be the largest research center in South America.
an essential role in the company’s international competitiveness. Geisel also implemented strict quality controls in the supply chain to force capital good suppliers to improve their economic competitiveness. During Geisel’s leadership of Petrobrás, the company made its first discovery of offshore oil in Sergipe in 1969, foreshadowing a period of remarkable growth for the company and raising national optimism regarding the vision of oil self-sufficiency.

In 1970, Petrobrás achieved self-sufficiency in transportation and refining as well as increasing its market share in distribution as a result of the company’s new initiative for developing its downstream market. Yet, while Brazil experienced remarkable national growth rates averaging 11% between 1968-1974, the company’s successes during this period were limited by a repressive military regime and the international oil crisis of 1973-1974. The global oil crisis forced a shortage of oil in Brazil and led Petrobrás to increase oil imports by 30%, which accounted for 80% of domestic consumption in 1974. Brazil continued to rely on imported crude oil to be refined by Petrobrás’s expanding refining industry until sizeable offshore discoveries in the Campos Basin enabled Petrobrás to rely less heavily on foreign oil. Brazil saw a notable shift in its oil policy with these discoveries.

Between the establishment of Petrobrás in 1953 and the offshore oil discoveries of the 1970s, Petrobrás achieved a remarkable degree of operational autonomy while still functioning as a state monopoly. Geisel’s restructuring of Petrobrás oriented the company towards innovation and expansion independent of government mandates.

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58 Guan, “Understanding Brazil’s Oil Industry,” 82.
1.2: Developing the Offshore: Growth and Consolidation in Brazil’s Petroleum Sector (1970-1990)

Impact of Offshore Discoveries

As a result of Walter Link’s prior conclusions that Brazil’s onshore oil supply was limited, Petrobrás began to search for more offshore opportunities. The 1969 Sergipe offshore discovery fostered optimism that more oil rested along the coast of Brazil. In 1974, Brazil’s oil reserves dramatically increased when offshore oil discoveries were made in the Garoupa and Pargo fields in the Campos Basin. These fields along with others discovered in the Campos Basin in 1975 have been a main source of Petrobrás’s oil production, contributing to as much as 80% of Brazil’s oil production in 2005.\(^59\) Due to the emergence of an offshore presence in the 1970s, Petrobrás began to rapidly advance its technological capabilities and reorganize its financial structure in order to distance itself from the volatility of Brazil’s macroeconomic environment. General Geisel became the nation’s president in 1974 and supported the growing autonomy of Petrobrás.

Investments in the upstream market surged in order to realize the benefits of the new discoveries. During the 1970s, Petrobrás increased investments on E&P to over half of total investments that had been previously been only one quarter.\(^60\)

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\(^{59}\) Motta, Aragão and Mariano, “Hydrocarbons in Latin America,” 8.

\(^{60}\) Adilson de Oliveira, “Petrobras,” 530.
Introduction of IOCs

Since Petrobrás lacked the technical capabilities to develop offshore reserves, Brazil’s isolation of its oil industry was reassessed. In order to promote the development of the requisite offshore technology, Geisel opened the petroleum sector to service contracts with IOCs. Under service contracts with Petrobrás, IOCs became permitted to assume risks in exploring and developing new oil fields, while being reimbursed through revenues if gas or oil were produced, and earning no return if oil or gas was not found (see Figure 5 below).\footnote{Ibid., 528.}
The government also maintained that Petrobrás would remain the "sole operator"\textsuperscript{62} of any offshore oil discoveries. This helped to support the company’s E&P by integrating foreign expertise, while still favoring Petrobrás by ensuring that it retained its monopolistic position. Geisel led the government to authorize Petrobrás to design the arrangement for contracting with IOCs and choosing the blocks to be licensed. This newly granted autonomy of the 1970s contrasts with the vigilance of governmental regulatory agencies currently experienced by Petrobrás in the company’s contemporary negotiations with IOCs.

\textsuperscript{62} Petrobrás was guaranteed operatorship on all projects, though IOCs still participated in E&P operations.
Geisel quickly licensed 243 blocks to 35 IOCs covering 1.5 million km$^2$ of sedimentary basins throughout the 1970s.\textsuperscript{63} The influx of foreign capital enabled Petrobrás to significantly boost its investments in both upstream and downstream activities. However, the government’s prioritization of Petrobrás over its IOC competitors led these peer firms to feel subordinated and disadvantaged in the market. They often times were unwilling to make the long-term investments needed to adequately advance their technological capacity and resources to compete in an unfair market.\textsuperscript{64} Although the Brazilian petroleum market proved frustrating for IOCs, this competition was enough to incite Petrobrás to increase its range of production by exercising its offshore technological capabilities and therefore capitalizing on its dominant position in the Brazilian offshore market. The period of developing the offshore oil market demonstrated the effectiveness of relaxing government regulation. The government would maintain this “arm’s length relationship”\textsuperscript{65} with Petrobrás and openness to IOCs until the Constitution of 1988 reinstated the company’s isolation from IOCs, and thus, preserved its oil monopoly.

**Expansion in the 1980s**

Advancing in small increments, Petrobrás implemented a *learning by doing* approach, working alongside IOCs to slowly move into deeper waters and developing innovative

\textsuperscript{63} Adilson de Oliveira, “Petrobras,” 529.

\textsuperscript{64} This was and continues to be representative of the case for Exxon Mobil—beginning to invest and then choosing to relinquish the company’s interests in Brazil due to local content requirements, taxes and other disruptive governmental regulations. See: *Wall Street Journal*, “Exxon to Relinquish Block in Brazil’s Santos Basin,” April 27, 2012. Accessed January 21, 2013.

\textsuperscript{65} Defined as a relationship where parties interacting independently negotiate on an equal footing; especially important when dealing with parties with conflicting interests such as states and NOCs.
technologies. Beginning with the Enchova field, Petrobrás developed the Early Production System (SPA), which averaged production of 10,000 bpd, to quickly begin extracting offshore oil in the short term while a more advanced Definitive Production System (SPD) was being developed to further advance drilling capabilities. In 1976, Petrobrás was only able to reach 200 meters in the Enchova field and grew to be able to reach over 2000 meters by the late 1990s. This stepwise approach to deep-water oil production along with the integration of foreign expertise from IOCs led the Campos Basin and research at CENPES to become a global innovative center for offshore oil production. R&D paid off and Petrobrás soon became known as the “undisputed world leader in deep and ultra-deep offshore E&P”. As a result, it was able to begin developing its offshore fields more effectively, increasing production by 231% between 1979 and 1985 from 165,000 bpd to 546,000 bpd. The contribution of the petroleum sector to increased industrial output – up to 38% in 1979 – led to an increase in government funding and prioritization in upstream and downstream activities, supporting the nation’s aspirations toward achieving self-sufficiency.

Concurrent with Petrobrás’s rapid expansion in the 1980s, Brazil experienced macroeconomic malaise as the nation’s debt became unsustainable and inflation grew quickly. The government remained uneasy about the role of Petrobrás in the nation’s economic affairs as it was developing further autonomy. The Ministry of Finance decided to take control of petroleum product pricing through Legal Decree No. 1785 as

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66 Petrobrás would install twenty-two SPAs by 1985, responsible for producing 500,000 bpd. Gradually, Petrobrás gained the technological capabilities to increase their water depth capacity.
67 Adilson de Oliveira, “Petrobras,” 530.
69 Ibid., 5.
70 Guan, “Understanding Brazil’s Oil Industry,” 81.
an anti-inflationary strategy. Previously, the CNP held fixed prices for output and
reverted to consumption-weighted average prices of petroleum products. Conversely, the
decree allowed for the adoption of reference prices for the crude oil being processed at
Brazilian refineries.\footnote{Adilson de Oliveira, “Petrobras,” 532.} The difference between imported crude oil prices and reference
prices was used to determine domestic prices, which appeared as an “oil account” on
Petrobrás’s balance sheet. The government’s pricing policy consequently led Petrobrás to
face a soaring deficit in the oil account reaching $5 billion by 1992.\footnote{Ibid.} As a result,
Petrobrás’s reduction in cash flow led to a decrease in investments during a time when
technological progress was at the core of the company’s strategy. However, despite this
new budget constraint, Petrobrás was able to achieve its production target of 500,000
bpd for 1985.\footnote{Ibid., 533.}

During this period, Petrobrás began its diversification strategy to expand its
range in energy production to reduce reliance on oil by investing heavily in nuclear plants
and hydropower in addition to starting the world’s largest fuel ethanol program.\footnote{Ibid., 528.}
Further government incentives were given to domestic suppliers of capital goods and
intermediate materials for the energy sector, intending to bolster domestic industry.\footnote{Loans became more easily accessible for companies to work with Petrobrás and tax incentives grew more attractive for domestic suppliers.}
The government also assisted Petrobrás by authorizing an ethanol subsidization program
called Proalcool in order to reduce dependency on oil imports due its growing fears of
oil price instability caused by the 1973-4 oil crisis. Taxes on gasoline were increased,
though diesel’s tax remained noticeably lower due to its supply needs for the nation’s
industrialization. This taxation caused a shift towards a greater dependence on alcohol
fuels. Consequently, the expansion of the ethanol industry supported the market for Petrobrás by providing over half of the fuel consumed by cars in 1985.\textsuperscript{76} Widening the scope of its energy operations enabled Petrobrás to expand its export capacity.\textsuperscript{77}

As Petrobrás diversified its activities in the energy sector and bolstered its technological capabilities, additional major offshore discoveries at Albacora (1984) and Marlim (1985) furthered public support and national enthusiasm surrounding the national oil monopoly.\textsuperscript{78} However, further technological innovation was still needed to develop the reserves. In 1986, CENPES coordinated a government subsidized investment program targeted at offshore technological innovation. The program called, Procap 1000 (Technological Development Program for Deep Water Production Systems), allowed companies both foreign and domestic to invest in Petrobrás to develop oil field technology and prepare to develop future oil fields. The success of Procap in enabling higher rates of production was a sign that Petrobrás’s investments in technological research were effective. The development of these new offshore fields coupled with a sharp drop in international oil prices in 1986 enabled foreign currency spending for oil imports to drop from $11.3 billion to $4.4 billion (see Figure 6 below).\textsuperscript{79} More significantly, Procap 1000 created an investment model for Brazilian oil investment programs, which have extended into the company’s contemporary investment portfolio.

\textsuperscript{76} Guan, “Understanding Brazil’s Oil Industry,” 82.
\textsuperscript{77} Through these efforts, Brazil would develop a comparative advantage as one of the world’s largest producers of ethanol in the 2000s.
\textsuperscript{78} “Our History.”
\textsuperscript{79} Adilson de Oliveira, “Petrobras,” 534.
Throughout the 1970s and 1980s, IOCs that had invested in the Brazilian petroleum sector became frustrated as their investments failed to yield discoveries of new oil. The IOCs blamed their poor investment yields on Petrobrás, accusing them of knowingly auctioning oil blocks with poor oil supplies, while reserving the oil block richer in supply for itself. In fact, Petrobrás offered blocks with hard to find oil to IOCs, though the fact was also true that IOCs needed considerable time to adapt to Brazil’s unique geography. The discrepancy in oil yields and the suspicion of unfair auctioning created hesitancy among IOCs to continue to invest in Brazil’s oil sector, which has continued to persist into contemporary dealings between Petrobrás and IOCs.

In 1985, President Sarney was inaugurated and managed to control political

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80 At this point, Petrobrás was in charge of determining which blocks would be offered in auctions.
81 Adilson de Oliveira, “Petrobras,” 533.
instability, achieving the popularly endorsed Constitution of 1988. The Constitution, under Article 177, prohibited all future concessions to other companies in the petroleum sector on the claim that this was inconsistent with the monopoly rights of Petrobrás.\(^{82}\)

By 1989, Petrobrás produced enough oil to meet half of national oil consumption and had total reserves of over 47 million barrels of crude oil and natural gas liquids.\(^{83}\)

Simultaneously, the collapse of global oil prices in the 1980s proved to be a major assistance to Brazil’s growth in oil production, which nearly tripled as oil prices dropped by 50%.\(^{84}\) The drop in global oil prices alleviated Petrobrás’s fiscal concerns by making imported oil cheaper and enabling the company to further invest in expanding its operations and boosting production. The company also reduced its dependency on foreign capital inputs and purchased over 90% of its inputs from Brazilian manufacturers.\(^{85}\) By this stage, Petrobrás was realizing the government’s central aims to secure a domestic oil supply while continuing to support the nation’s broader industrialization. The 1980s, marked by technological breakthroughs and growth in production, can be seen as the decade of technical advancements, while the 1990s marked a dramatic shift towards innovation of Petrobrás’s corporate strategy. The following period confirmed Petrobrás’s emergence as a preeminent NOC.


\(^{83}\) Guan, “Understanding Brazil’s Oil Industry,” 83.

\(^{84}\) Adilson de Oliveira, “Petrobras,” 534.

\(^{85}\) Guan, “Understanding Brazil’s Oil Industry,” 83.
1.3: **Ending the State Monopoly: Privatization, Growth and Achieving Oil Self-Sufficiency (1990-2006)**

**Call for Economic Reform**

The decades of the 1990s and 2000s ushered in a new era of progress for Petrobrás. In 1992, Petrobrás earned the most praised award in the global oil sector, the Offshore Technology Conference Distinguished Achievement Award, recognizing the company for its notable contribution to the progress of deep-water production technology. Petrobrás stood as a symbol of Brazilian progress as its continued expansion garnered global recognition, which contrasted with the nation’s economic failures. In the early 1990s, Brazil faced its worst period of hyperinflation and subsequently, rapid overhauls in national and economic reform. However, macroeconomic crisis was averted when Fernando Henrique Cardoso, the Minister of Finance, instituted the “Real Plan” in 1994. This economic stabilization plan effectively curbed inflation and GDP grew by 4.4% in 1995. Cardoso’s popular support earned him the presidency in 1996. The Cardoso era marked a momentous shift towards neoliberal reform of the economy through privatization of state-owned enterprises and the lifting of governmental price regulations. Brazil underwent political and economic reform that reversed its legacy of ISI policies. The Brazilian petroleum industry

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87. The Real Plan used a gradual approach to monetary reform through the “deindexation” of the economy through the use of the URV (real unity of value); and the appreciation of the new currency, the “real”, which was pegged to the dollar. The plan led inflation to drop radically from an annualized value of 5,154% in June 1994 to 22% by the end of 1995. See “Real Plan: a silent revolution,” Consulate General of Brazil.
experienced its greatest period of deregulation, which led Petrobrás to its strongest period of growth.

**Deregulation and Partial Privatization**

In 1995, the Brazilian government passed historic constitutional amendments to end Petrobrás’s 42-year monopoly of domestic oil and gas exploration and production.\(^9^9\)\(^9^0\) A “Concessions Law” allowed the private sector to engage in bidding procedures for oil concessions that were previously held exclusively by the state.\(^9^1\) Unlike service contracts, the concession framework allowed IOCs to exercise complete control of the production blocks awarded in auctions (See Figure 5). This new legal and economic framework aimed to modernize Petrobrás as an internationally recognized leader of the oil and gas industry by introducing it to competition while ensuring it retained its dominant position in the domestic market.

As a result of the new legislation, Petrobrás experienced a major divestiture of company assets, becoming a public corporation with company stock shared between the state and investors from Brazil and abroad. Company shares were divided between common shares (carrying voting right) and preferred shares (no voting rights).\(^9^2\) The legislation provided the state with a “golden share” in Petrobrás, meaning that the state was guaranteed at least 51% of the company’s voting shares. Two-thirds of shares of the company were sold to private investors both in Brazil and overseas and the company’s

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\(^9^9\) Guan, “Understanding Brazil’s Oil Industry,” 83.
\(^9^0\) Amendment No. 9 to Article 177 of the Constitution allowed the government to contract with other domestic and foreign oil companies.
\(^9^1\) The structure of oil concessions under the Concessions Law was not developed until the “Petroleum Law” of 1997 led to the formation of the ANP.
shares were floated on the New York Stock Exchange (NYSE) as American Depositary Receipts (ADRs). By 1998, the state held 81.7% of voting shares and 9.2% of preferred shares. Soon after, a larger public offering injected significant amounts of foreign capital into the company and consequently diluted the federal government’s voting shares from 86% to 58% and its total capital ownership from 56% to 41%.

In 1997, the government introduced the national “Petroleum Law,” Law 9, 478, which eliminated subsidies, import and price controls in the oil industry and introduced competition in exploration, production, refining and distribution of petroleum. The Petroleum law also ensured the federal government’s managerial oversight of Petrobrás by stipulating that the government nominate seven of the nine directors on the board (including the company’s CEO), while minority shareholders nominate the other two directors. The law also created the National Petroleum Agency (ANP) under the Ministry of Mines and Energy to replace the CNP and act as the regulatory body for activities that integrate the oil, natural gas and biofuels in Brazil. The agency describes itself as “a federal autarchy that focuses on guaranteeing national fuel supply and protecting consumers’ interest” while also promoting competition within the energy sector. In addition, the law established the National Energy Policy Committee (CNPE) to directly link the President to affairs in the petroleum sector. These changes reserved the federal government’s right to intervene in petroleum activities as deemed necessary and thus, further preserved the government’s oversight over the petroleum sector. Petrobrás

95 Guan, “Understanding Brazil’s Oil Industry,” 83.
97 The CNPE also functions under the Ministry of Mines and Energy.
supported these policies because they knew that the government would preserve its *de facto* monopolistic position since it was mutually beneficial for the government and for the company. The new law further supported Petrobrás’s operational autonomy by allowing it to independently control its purchase of equipment and services.\(^98\) Following the Petroleum Law, it became clear that as the petroleum industry was experiencing unprecedented deregulation, the government established new, formal separations of roles to ensure the best possible management of the nation’s prospering petroleum sector.

This dramatic shift to private investment was largely motivated by a lack of resources needed to develop Brazil’s prosperous petroleum market. Also critical, however, was the hope that inducing competition and increasing fiscal transparency would improve Petrobrás’s economic performance. The company’s restructuring and introduction to competition forced it to reorient its mission to profitability as well as increasing its social and environmental standards as a modern, publicly held company. Forced to adapt to a more competitive market climate, Petrobrás cut its workforce by just under a third and quickly doubled its production.\(^99\) As a result, oil production per upstream employee increased by 59% between 1998 and 2002 (See Figure 7).\(^100\)

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\(^98\) Law 8666 previously forced state-owned enterprises to buy supplies and services at the lowest price regardless of time and quality. This enabled Petrobrás to significantly lower its operational costs.

\(^99\) Fishman, “Petroleum in Brazil,” 7.

\(^100\) Adilson de Oliveira, “Petrobras,” 542.
Concession Framework

According to the new concession framework, exploration of oil and natural gas is open through public auctions organized by the ANP. The CNPE chooses which exploration blocks will be available for bidding and advises the national President on decisions made surrounding the oil sector. The ANP then operates the bidding rounds. The companies involved in the auctions must make offers based on their willingness to pay for each exploration block (called a signature bonus), how much they will invest in a geological survey (called the minimum exploration program) and the amount of local goods and services that will be used (in accordance with local content requirements—explained further in Chapter 1.6). The winning bidder receives a concession that is divided into two stages: exploration and production. If the company discovers oil, commercialization rights accrue to the company, but its must pay production royalties.

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http://www.oxan.com/About/Media/News/PetrobrasTheImpactOfPreSalt.aspx.
and potentially a “Special Participation Tax”, if the discovery is especially profitable.\textsuperscript{102}

Similar concession systems have proven effective among NOC peers, as we will see in chapter 2.

The ANP’s first round of bidding for onshore and offshore oil blocks was held in 1999. The bidding rounds awarded 12 blocks to 11 companies from 6 countries, which included Petrobrás, Shell, BP and Texaco among other IOCs.\textsuperscript{103} Between 1999 and 2008, the ANP ran annual bidding rounds of as much as 500,000km$^2$ to sixty oil companies.\textsuperscript{104} While these companies could have theoretically pursued their ventures privately, they preferred to work with Petrobrás through joint ventures because Brazilian offshore projects were extremely risky and relied heavily on the technical and political advantages offered by Petrobrás. As of January 2011, seventy-four companies worked as oil concessionaries in Brazil including major companies such as Chevron, Texaco, Repsol, YPF, Shell, BP, Statoil and OGX, many of which operate as joint ventures.\textsuperscript{105}

\begin{thebibliography}{00}
\bibitem{102} Ibid.
\bibitem{103} Guan, “Understanding Brazil’s Oil Industry,” 82.
\bibitem{104} Adilson de Oliveira, “Petrobras,” 537.
\end{thebibliography}
Achieving Oil Self-Sufficiency

Petrobrás’s new economic and legal framework allowed the company experience unprecedented growth. Investments increased from $5 billion to $25 between 1997 and 2007, which led oil production to more than double during this decade—production surged from 718 million bpd in 1995 to 2,029 million bpd in 2009. President Lula took office in 2003 and intended to make Brazil an economic world player with Petrobrás at the core of his mission. He aimed to do so by continuing the precedent of market-oriented policies, which supported the stable growth of Petrobrás. Confirming this, the company attributes its growth in net income and operating revenues to the establishment of the competitive market in oil along with the government’s stable monetary policy. 

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In 2003, Petrobrás recorded operating revenues of $42.7 billion and a 183.3% increase in net income. Petrobrás continued to gain expertise in deep-water drilling and became the world leader in the production and development of biofuels. The company’s arrangement with the Brazilian government allowed it to retain a de facto monopolistic position, controlling as much as 95% of Brazilian oil production.

The reform of the Brazilian petroleum sector in the 1990s and 2000s brought about a remarkable increase in Petrobrás’s performance while also forcing Petrobrás to become more fiscally transparent as a partially-privatized company owned by the state and by domestic and foreign investors. In 2006, Brazil finally attained its half-century vision of achieving oil self-sufficiency with Petrobrás producing over 1.9 million bpd and becoming a net exporter. This was achieved not only through increases in production efficiency, but also through the effective integration of its diversification strategy and increases in global oil prices, which forced Petrobrás and IOCs to invest heavily in E&P. The success experienced led to a $40 billion national trade surplus and remarkable national growth – between 2003 and 2007, GDP rose 188% to $1.4 trillion in 2007. Petrobrás’s ongoing growth in output, foreign investment and share value in the 2000s can be attributed to the company’s adherence to market principles motivated by investors’ profit.

108 Ibid.
109 “Our History.”
111 Petrobrás began publishing annual reports in alignment with its transition towards a modern, partially privatized oil company.
112 Petrobrás, “Annual Reports, 2008.”
113 Adilson de Oliveira, “Petrobras,” 544.
114 “World Development Indicators.”
Figure 9: Percentage of Brazil's Oil Consumption Met by Domestic Production (1954-2008)

Percentage of Brazil's Oil Consumption Met by Domestic Production (1954-2008)

Source: Guan, *Understanding Brazil's Oil Industry*, 98
1.4: Pre-Salt Developments: Brazil’s “Second Independence”

Major Discoveries

Prior to major 2007 discoveries, Brazil’s total proven reserves were 20 billion barrels. In 2007, however, Petrobrás made arguably the largest hydrocarbons discovery in the Americas of the past thirty years, known as the “pré-sal” (pre-salt) oil reserves. Conservative estimates for total recoverable pre-salt oil is equivalent to just under the sum of all the reserves in the North Sea, 50 billion barrels. The discoveries were made in the Tupi field (currently known as the Lula field) in the Santos Basin off of the coast of Rio de Janeiro state. This was the first of many offshore pre-salt discoveries, which are located over 185 miles off the coast and 7km below sea level, beneath a 1 to 2 km deep layer of salt deposits and more than 5km below water and rocks. Brazilian President Rousseff, who was Brazil’s Minister of Energy at the time, characterized the nation’s elated reaction to the news: “this is strong...

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116 Fishman, “Petroleum in Brazil,” 11.
117 “Filling up the Future.”
evidence that God is Brazilian.” Currently the eleventh largest oil producer in the world, these pre-salt discoveries are projected to double Brazil’s current reserves and make it one of the top five richest oil nations in the world by 2020.

Even as the world leader in ultra-deep sea technology, Petrobrás did not have the technological expertise to begin tapping the Tupi fields until May of 2009. Similar to the technological breakthroughs required to extract oil in the offshore Marimba fields under the Procap initiative in the late-1980s, the pre-salt discoveries sparked new initiatives for technological advancement to adapt to the unique geological conditions at Tupi, Guará, Iara and other major pre-salt fields. Petrobrás developed the Pre-Salt Skills Development Program (Prodesal) and the Pre-Salt Technology Program (Prosal) to work together with CENPES in order to develop the technology and resources required to capitalize on the pre-salt oil reserves. These initiatives have promoted the research of solutions to the dangerous risks involved in extraction from pre-salt oil reserves; including the sequestration of highly pressured gas, the rapid heating and cooling of petroleum during its extraction, overcoming corrosive conditions and designing the proper oil rigs for far offshore drilling. Despite these technical obstacles, former President of Petrobrás Sergio Gabrielli explained the low-risk nature of locating commercial pre-salt oil during exploration: “In the pre-salt area, our exploration has a

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119 “Filling up the Future.”
120 Ibid.
122 Fishman, “Petroleum in Brazil,” 11.
success rate of 87%, compared with a world average of 20% to 25% for the industry.”¹²⁴

Moreover, Petrobrás explained that pre-salt oil has low acidity and low sulfur contents, which are hallmarks of high-quality oil with a higher market value.¹²⁵ In 2010, Petrobrás announced it would steadily increase its oil and gas production in the next decade by 9.4% annually, achieving 3.9 million bpd by 2014 and 5.4 million bpd by 2020, doubling its 2010 rate and potentially making Brazil one of the world’s leading petroleum producers.¹²⁶,¹²⁷

Figure 11: Petrobrás Production Targets

Source: Fishman, Petroleum in Brazil, 13

¹²⁴ “Filling up the Future.”
¹²⁵ “Operations in the Pre-Salt.”
¹²⁷ Petrobrás’s current pre-salt production target is 1 million bpd by 2017.
Recapitalization

In order to increase available resources to develop the pre-salt discoveries and increase global leadership of the petroleum industry, Petrobrás underwent a $70 billion recapitalization in 2010, setting the world record for the largest public offering on the NYSE and becoming the world’s fourth largest company.128 Currently, the firm has used resources from the capitalization to implement the largest private investment program in world history to develop the pre-salt discoveries, known as Plan-Sal totaling a much as $250 billion by the end of 2014.129 Development of the pre-salt region is promising both for investors in Petrobrás and for the impact that government oil income will have on Brazil’s development goals.

Between Petrobrás’s initial divestiture of government stock in the late 1990s and 2009, the Brazilian government significantly reduced its ownership stake in Petrobrás from 61% of company stock to 40%.130 However, as a result of the 2010 capitalization, the government (the federal government, Brazil’s National Bank of Social and Economic Development (BNDES), and the Brazilian sovereign fund131) acquired two-thirds of the new value of Petrobrás’ stock, including a combined 77% of common shares with voting rights.132 Effectively, the government increased its ownership from 40% with 48% of

128 “Now Comes the Hard Bit.”
130 As previously mentioned, the government maintained a majority of voting shares as stipulated by the law.
131 The Brazilian Sovereign Fund is a $20 billion fund created by President Lula in 2008 intended to purchase Petrobrás stock and to manage the profits of offshore oil production. See: Marcos Sequiera, “Life after the R$120 bn capital increase”
132 Fishman, “Petroleum in Brazil,” 17.
common shares to 48% with 64% of common shares. The rest of company shares are distributed between ADRs (20.6%), foreigners (7%) and other entities (12%), which include a privatization fund and São Paulo exchange custody. This increase in direct government stake in Petrobrás is reflective of the government’s strategy to utilize the pre-salt as a vehicle for national development through a new regulatory framework to govern the exploration and production (E&P) of the pre-salt reserves.

Figure 12: Petrobrás Capital Ownership, 1992-2011

Source: Petrobrás, Capital Ownership

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134 “Capital Ownership.”
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1.5: **New Legislative Framework**

President Lula:

“[A]s from the first moment, I urged the commission of ministers that prepared the pre-salt regulatory framework to work with three basic directives in mind. First: the oil and gas belong to the people and to the state, that is, to the Brazilian people as a whole. And the exploration model to be adopted, in a low exploratory risk and great quantity of oil framework, must ensure that the greatest part of the income generated remains in the hands of the Brazilian people. The second directive is that Brazil does not want to and will not become a mere exporter of crude oil. On the contrary, we will add value to oil within the Country, exporting derivatives such as petrol, diesel, and petrochemical products, which have much higher values. We will create Brazilian jobs and build a powerful supplier industry of the necessary equipment and services for the exploration of the pre-salt. The third directive: we will not be dazzled by this discovery and move around, as the nouveaux riches, burning money with nonsense. The pre-salt is a passport to the future. Its main destination must be the education of the newer generations, culture, environment, fight against poverty, and a commitment to the scientific and technological knowledge, through innovation. We will invest our resources in our most precious and promising values: our children, our grandchildren, and our future. Examining the bills that we are now sending to Congress after so much work and study, I have gladly seen that they are in perfect tune with these directives.”  

The discovery of pre-salt reserves in the 2000s again called for overhaul reform of the existing regulatory framework, and thus, a reversion to state-led economic development under ISI policies. President Lula and the Brazilian government immediately saw the pre-salt reserves as an opportunity to use new oil income to confront Brazil’s socioeconomic challenges, create Brazilian jobs and add value to the domestic petroleum industry. The ANP swiftly removed forty-one blocks adjacent to the pre-salt reserves from the Round 9 concession auction for 2007. The legislation that followed would mark a return to active government regulation of the sector, albeit preserving the privatized form of Petrobrás. Four major bills in 2009 signaled a radical shift in the operational regulatory structure of the Brazilian petroleum industry and are

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the main tenants of the government’s “pre-salt strategy” for national economic development. These bills remain controversial to Petrobrás, investors and the Brazilian populace.

**Bill 5938:** changed the ANP’s former concession regime to a production sharing contract (PSC)\(^\text{137}\) system for un-contracted pre-salt territory.\(^\text{138}\) It involves royalty rates (5-10%), a signature bonus and a special participation tax (10-40%) for very productive wells. Petrobrás is kept as a sole operator with a minimum 30% equity participation in all pre-salt projects.

**Bill 5939:** created a new, fully state-owned company (Petro-Sal), which is neither an oil operator nor an oil investor, but instead a developer, marketer and manager of oil resources (upstream).

**Bill 5940:** approved the capitalization of Petrobrás with the approval for the 5 billion BOE rights transfer with a value of $42.5 billion in exchange for stock. It also includes an “onerous relinquishment” clause under which the government can relinquish its rights to non-licensed blocks in exchange for ownership shares in Petrobrás.\(^\text{139}\)

**Bill 5941:** created a Social Fund from pre-salt profits, administered by Petro-Sal with at least 50% of funds allocated towards education\(^\text{140}\)

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\(^\text{137}\) The PCS is an agreement executed with the State whereby the NOC contributes primarily with the territory to be explored and the IOC conducts exploration and production activities at its sole expense and risk. When marketable reservoirs are found, the IOC receives part of the hydrocarbons produced as compensation according to the contract. In contrast, a Concession regime leads IOCs to bid for exclusivity to produce hydrocarbons on their expense and risk in a certain area. See Figure 5.

\(^\text{138}\) Only un-contracted pre-salt blocks are subject to the new PSC framework; all other auctions remain subject to the Concessions Law of 1995.

\(^\text{139}\) This is a strategy for the government to regulate its capital ownership of Petrobrás.

\(^\text{140}\) Fishman, “Petroleum in Brazil,” 14.
Production Sharing Contracts (PSCs)

In order to maximize Petrobrás’s capitalization of the pre-salt reserves, the federal government judged that the concession regime was not adequate for the E&P of the pre-salt areas and demanded reform. In contrast to the concession regime, the PSC framework allows contracted companies to “book” reserves won through an auctioning process by the ANP. Contracts are determined based on “profit oil”, calculated by subtracting “cost oil” (total production minus E&P costs, investments and royalties) from total oil produced. The winning bidder is determined mainly by the share of profit oil chosen to be shared with the state. Petrobrás is considered the “sole operator” with a minimum of 30% participation in oil projects. The new arrangement drastically enhances Petrobrás’s position compared to the previous concessionary regime, under which participating companies compete for complete operational privileges of oil blocks. The reform has raised significant concerns from competing IOCs and from investors in Petrobrás, who remain skeptical of Petrobrás’s favored position in the market.

Petro-Sal

Petro-Sal is a state company comprised of energy sector bureaucrats in charge of overseeing and controlling oil assets by representing the government’s interests in negotiating contracts with competing firms. Though it is identified as a commercial company, it is completely owned by the Brazilian government and is linked to the Ministry of Mines and Energy (MME). It will be a partner in all PSCs beginning in 2013 but will not commit any financial liabilities. It is managed by an administrative council and an executive board which are both appointed by the President of Brazil. The

creation of Petro-Sal is a reversion to strict governmental regulation that Brazil has not experienced since the CNP controlled service contracts in the 1970s and 1980s. Its tie to the federal government also makes it comparable to the Administrative Council originally created under Petrobrás’s charter when it became a state monopoly in the 1950s.

The proposed creation of Petro-Sal is designed to increase the government’s ability to monitor costs of production for oil companies. However, the company’s participation in each projects’ operational management committee draws skepticism over the extent of government involvement in daily activities. Also, the CNPE maintains a veto power to contract blocks directly to Petrobrás if the agency deems the block’s profitability in “national strategic interest”\(^\text{142}\). IOCs risk investing millions of dollars in exploration to become a mere minority subsidiary of Petrobrás if a discovery is deemed “highly productive”\(^\text{143}\). These reforms raise concern from critics that the government, instead of the market, will be determining which companies attain contracts, possibly leading to delays in development of the pre-salt area\(^\text{144}\). Furthermore, involvement of Petro-Sal is Petrobrás’s operations risks Petrobrás ceding its ability to assess and manage risk in the marketplace independent from the government.

**Oil Distribution and the Social Fund**

With Brazil’s rapid economic expansion and persistent social malaise, royalties from the pre-salt projects are seen as an effective way to mend the nation’s social crises. The government’s new social fund of pre-salt royalties is a new mechanism for the

\(^{142}\) Ibid.  
\(^{143}\) Ibid.  
\(^{144}\) Guan, “Understanding Brazil’s Oil Industry,” 87.
government to manage its oil wealth for social projects such as education, infrastructure, environment, the fight against poverty, culture and scientific and technological innovation.\textsuperscript{145} Since the pre-salt oil bills of 2009, national debate has surrounded the distribution of oil royalties between oil producing states and the rest of the nation. With the 2014 World Cup and the 2016 Olympic Games to be held in the oil producing state of Rio de Janeiro, a national divide has developed between oil producing states and states who argue that the oil is national wealth that should not be kept exclusive to certain states based on their geographies.

Nonetheless, in March 2013, Brazil’s Congress voted to overturn President Rousseff’s veto of an oil royalties bill that would have reserved a higher percentage of oil royalties for oil producing states. Protest in Rio de Janeiro is continuing as the state claims the estimated loss of R$ 3.1 billion will “imperil” plans for the 2016 Olympic Games. In March 2013, a professor at the Federal University of Rio de Janeiro, Roberto Schaefer explained “What happened last night will simply initiate a huge battle in the Supreme Court, and in the end I have no doubt, this decision by the Congress today will be correctly overturned.”\textsuperscript{146} The debate will continue as the case is taken to the Supreme Court. Nonetheless, political delays caused by the government’s uncertainty will likely add to the hesitancy faced by IOCs to bid on new Brazilian oil concessions and production contracts in the ANP’s 11\textsuperscript{th} bidding round in 2013.


Renewed Regulation

In an effort to curb inflation, the federal government has widened its regulatory regime by reverting to its practice of capping gasoline prices to keep prices low at gas pumps. However, since Petrobrás must meet production quotas to meet the demands of Brazil’s energy rising energy consumption, this has forced Petrobrás to import oil at international prices and sell it at a loss. As explained in the following section, local content requirements (LCRs) further inhibit Petrobrás’s productive activities by imposing a strain on competition.

As a result of the government’s new regulatory framework, it is evident that the government’s current agency relationship with Petrobrás is reflective of the nation’s development plans. Petrobrás has lost notable operational autonomy in order for the government to ensure that its development goals are achieved. Investors remain hesitant that politicization of the sector through the ANP, the CNPE and Petro-Sal may prevent Petrobrás from maximizing the potential of the pre-salt reserves.

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148 Under LCRs, a company must authorize a minimum percentage of goods and equipment through domestic suppliers.
**Figure 13: Brazil/Petrobrás Policy Changes Over Time**

<table>
<thead>
<tr>
<th>Policy Areas</th>
<th>Prior to 1997</th>
<th>1997-2010</th>
<th>2010-Present</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exploration/Exploitation</strong></td>
<td>Service (risk) contracts</td>
<td>Concessions grants</td>
<td>Production Sharing Contracts (PSCs)</td>
</tr>
<tr>
<td><strong>Rent Distribution</strong></td>
<td>Ownership and marketing of hydrocarbons produced</td>
<td>Royalty taxation</td>
<td>&quot;Profit oil&quot; managed by Petro-Sal and distribute through National Social Fund -Royalty tax between federal and state governments</td>
</tr>
<tr>
<td><strong>Ownership Structure</strong></td>
<td>Petrobras held as legal state monopoly with almost complete government ownership</td>
<td>State as majority shareholder in Petrobras following state's divestiture of company assets</td>
<td>Maintain majority shareholder position - Creation of Petro-Sal</td>
</tr>
<tr>
<td><strong>State Regulation (creation of regulatory agencies)</strong></td>
<td>CNP and Ministry of Mines and Energy (MME)</td>
<td>Creation of ANP and CNPE</td>
<td>Maintain ANP as Independent Regulator</td>
</tr>
</tbody>
</table>

Source: Massi and Singh, *The Politics of Natural Resources*, 47
1.6: Promoting Local Content

The oil and gas industry involves a vast value chain of input factors in the upstream and downstream. Many oil-producing nations encourage domestic industry in place of relying on foreign suppliers through local content requirements (LCRs). Implementation of local content policy is seen as a means to raise domestic income levels through a boost in domestic employment and domestic industrial growth. Providing the mechanisms for partnership contracts and concession agreements with IOCs, the ANP includes clauses regarding the protection of national suppliers through LCRs. The ANP summarizes its implementation of LCRs as a “contractual commitment of purchasing local goods and services in a competitive basis.” LCRs force both domestic and foreign companies in the Brazilian petroleum sector to purchase a percentage of goods and services including everything from oil platforms to polyester ropes used on oil tankers from domestic suppliers. Between 2000 and 2012, LCRs have ranged from 25% to as high as 80% in both exploration and development.

Penalties are given to companies who violate these requirements. In mid-2011, the ANP issued fines for the first time on Petrobrás for disregarding local content commitments assumed during the 5th and 6th bidding rounds.\(^{149}\) Since the fine was relatively moderate, national industry representatives voiced their concerns that concessionaries and partners might ignore LCRs in the future, therefore prompting harsher punishments. The government’s LCRs have caused tremendous delays in accessing adequate resources and new partnerships with IOCs, who are hesitant to work in Brazil due to their awareness of the government’s increasing politicization of the

\(^{149}\) Swiss Business Hub, “The Brazilian Oil and Gas Sector,” 10.
sector. Nonetheless, the government’s recent penalties on Petrobrás’s violation of LCRs are suggestive of a push towards a more egalitarian competitive framework.

LCRs present a tradeoff between efficiency and promotion of local industry in Brazil. They have made it difficult for the Brazilian oil market to attract foreign competition, though they have fostered substantial growth in Brazil’s domestic industrial capacity. The Mobilization Program for the National Oil and Natural Gas Industry (PROMINP) is an ordinance designed to support domestic industrial growth through project management and financing arrangements targeting LCRs. The program created an estimated 640,000 jobs in the oil and gas sector and increased local participation from $35 billion to $190 billion between 2003 and 2009.150

Nonetheless, it is clear that LCRs are delaying development of the pre-salt reserves by creating obstacles for Petrobrás and other firms to procure supply chains aligned with the ANP’s LCR mandates. Petrobrás’s procurement of contracts for advanced oil drilling rigs, platforms and tankers that are designed to meet the demands of the challenging pre-salt projects have failed to meet the company’s time expectations. An energy consulting firm, Wood Mackenzie Brazil, explained that in order to meet its expectations, Petrobrás is in need of 100 new oil platforms called FPSO (floating production storage and offloading) over the next decade.151 Yet, the firm explains that Brazilian shipyards have never constructed a FPSO in the past and only four of Brazil’s forty shipyards are even believed to be capable of building the advanced FPSOs demanded by Petrobrás and its competitors.

Despite this fact, however, recent negotiations between Petrobrás and a Brazilian drilling rig constructor, Sete Brasil, has led to a contract for 28 advanced drilling rigs to be built on five separate shipyards by the end of 2015. High local content requirements favored Sete Brasil as the chosen contractor and has led the firm to work alongside other Brazilian suppliers to meet the federal government’s development plans. This illustrates the government’s ability to achieve its objective of fostering local industry growth through local content policy.

Dr. Richard Newell, former head of the U.S. Energy Administration from 2009-2011 (EIA) and Professor of Energy at Duke University, studies Brazil and Petrobrás’s management of the pre-salt reserves. He illustrates the tradeoff between promoting local content versus achieving market efficiency:

“It is an issue of balance. From a stance of national self-interest, there is a desire to develop indigenous capability, employment, and industry by demanding all the stipulations that Brazil has conjured with the advent of pre-salt development. On the other hand, international investment and technology has tended to be a key ingredient to successful oil and gas development, not just in Brazil but everywhere. So, if by orienting your rules toward domestic capability, you forego this international investment and may be left with bigger share of nothing. It’s still not clear if Brazil has struck the right balance…My guess is that if the current structure continues, it will slow down development.”

In March, 2013, Petrobrás announced it would delay further contracts for new oil rigs until the near future, confirming the delay of pre-salt projects. Still, IOCs and more international shipbuilders are coming to Brazil to participate in joint ventures with Brazilian firms to construct more shipyards in order to develop the pre-salt region. LCRs

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154 Palmigiani, “Petrobras rig decision.”
are set for 65% for the ANP’s 11\textsuperscript{th} bidding round which is currently in its intermediate phase and is scheduled to finish in August 2013. Local content policy and its effects are further explained in Chapter 2, where we see different approaches to implementing local content policy in Norway and Venezuela.

Figure 14: ANP’s Local Content Requirements (Commitments) in First 10 Bidding Rounds (1999-2009)

![Local Content Commitments (average)](image)

Source: Swiss Business Hub, Brazil Oil and Gas Report, 10
1.7: Current Status and Looking Forward

Petrobrás’s recognition as a global leader in offshore drilling and diverse energy offerings is undeniably a result of the capabilities it developed as a protected company under the government’s control. Although the federal government’s regulation favored Petrobrás’s growth throughout the course of its history, its active role in the modern era remains questionable to the efficacy of Petrobrás and its competitors. The government’s renewed vigilance in the petroleum sector has signaled a reversion to the protectionist policies characterized by the federal government during Petrobrás’s weakest periods of performance. A recent decline in Petrobrás’s performance between 2010-2012 suggests that while protectionism may have been favorable for Petrobrás’s maturation, it may now be outdated and anachronistic with the company’s presently competitive status. While protectionism may theoretically be beneficial for promoting domestic manufactures, the deadweight loss generated is hindering to the success of Petrobrás and to the efficiency of the Brazilian petroleum market. One consultant characterizes this tension by explaining “realistic goals and good management get you nowhere when your majority shareholder (the government) won’t let you do what you need to do.” Reflecting this, Petrobrás’s share value has decreased by as much as 66% since its recapitalization in 2010 (see Figure 15 below). Production of crude oil decreased over 2012 and the company reported its first quarterly loss in thirteen years. Skepticism has risen surrounding the company’s potential to capitalize on the pre-salt opportunities

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155 “The Perils of Petrobras.”
156 Ibid.
since the government has begun revert to its active regulatory role in the Brazilian petroleum sector.

Figure 15: Share Value (NYSE) Fluctuation of Petrobrás (PBR), Statoil (STO), Chevron (CVX) and the Dow Jones Index (Dow)

Although government regulation has inhibited Petrobrás’s performance, since discovering the pre-salt oil reserves, Petrobrás has demonstrated its international competitiveness and recognition as a preeminent NOC that functions with the commercial orientation of an IOC. In the global market, Petrobrás holds a dominant position in global deep-water production with 22% market share. With forty-five

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157 Minimum water depth for deep-water production is 1,000 feet.
offshore production facilities, Petrobrás holds the highest number of any oil company in the world. Petrobrás has increasingly invested abroad and developed a competitive overseas market. Committed to its expansion of research and development (R&D), Petrobrás plans to spend $800-900 million/year in R&D as part of its 2014 investment plan and has recently invested $700 million in the expansion of CENPES.

National leadership of President Dilma Rousseff has led to the appointment of the new CEO of Petrobrás, Maria das Graças Silva Foster, who is a member of Rousseff’s Workers Party and is the first female CEO of Petrobrás. She began her tenure in the Spring of 2012 by announcing her management adjustment to include four

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159 Ibid.
160 Leahy, “Brazil: Platform for Growth”
pillars: asset sales abroad, individual performance targets for each platform and manager, better systems maintenance and rigid cost control. She also urged the return of ethanol as a substitute to support the growth of the petroleum industry by eliminating imports. These reforms are intended to improve Petrobrás’s poor performance—fourth quarter 2011 performance was only half of its performance one-year prior. In 2012, Credit Suisse downgraded Petrobrás’s investment rating to “neutral” claiming that its performance signaled low production growth and an unchanged downstream pricing policy that makes it a less attractive investment. Petrobrás explains that its 52% reduction in net income (measured in U.S. dollars) was attributable to the depreciation of the Brazilian Real, higher operating expenses and an increased share of imported oil products in sales.

In 2012, Brazil imported 33% more daily fuel than in 2011. With the nation’s emerging middle class and rapidly growing economy, Brazil’s reliance on imports is increasing and is projected to be one of the highest in the world by 2020. The government hopes that its protection of the petroleum sector will decrease the nation’s dependence on imports for the manufacturing sector as supply linkages to the petroleum sector continue to increase employment and further national industrialization. However, for the time being, the current regulatory framework is inhibiting Petrobrás’s production and, in turn, leading to more imports. In order to end oil imports and expand

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162 “Filling Up the Future.”
163 Fishman, “Petroleum in Brazil,” 1.
164 “Annual Reports, 2012.”
165 In 2010, Brazil’s net imports as a percentage of total demand were 5% and are expected to raise to 40% by 2020. See “Petrobrás At A Glance.”
production, new refineries and shipyards are under construction and newly designed oilrigs are contracted for construction. Nonetheless, it is evident that Petrobrás lacks the resources and operational autonomy to maximize its potential. In June 2012, Foster cut 2020 production targets by 11%, claiming, “these goals are more realistic.”

In 2012, Petrobrás finally began production of pre-salt oil at a rate of 71,000 bpd—delayed from 2007 projections for 100,000bpd by 2009—and achieved pre-salt oil production rates of 300,000 bpd in February of 2013. Despite increases in production, the government’s agency relationship with Petrobrás has conflicted with Petrobrás’s operational autonomy. Illustrating this, in March 2013, the ANP mandated Petrobrás to increase investments in the Campos Basin, forcing Petrobrás to reorient its operations, further suggesting that the interests of the government and of Petrobrás continue to be at odds.

In order to be successful, Petrobrás must continue to utilize its technological advantages and invest in R&D in order to further develop the pre-salt reserves. It must continue to use natural gas, hydropower, ethanol and other fuel substitutes in order to meet Brazil’s rapidly growing demand for energy and avoid turning to oil imports. The company must also improve its training to ensure that its human capital can meet the demands of its advanced projects; since there will be a high demand for high value add workers as the Brazilian petroleum market continues to grow rapidly.

Even more important than Petrobrás’s strategy will be the government’s

166 “The perils of Petrobrás.”
implementation of its new regulatory framework. The government’s current protectionist strategy is theoretically grounded in ISI, aiming to keep currency values low by keeping exports competitive, supporting domestic manufacturing, as well as maintaining growth at sustainable levels. However, for this to be effective, the government must keep in mind the dangers of over involvement learned from the monopoly period. An approach that overly favors Petrobrás could lead to inefficiency, foreign dependency and disincentives for innovation among manufacturers. Recent developments have demonstrated how this is threatening to Petrobrás’s competitive potential.

The oil boom in Brazil was fueled by the competitive framework initiated during the 1990s—according to BNDES, in 2009, Petrobrás operated alongside 71 national and foreign enterprises in Brazil and abroad. Petrobrás has more than doubled its daily production and its proven reserves since it was allowed to compete with other firms in 1997. Following this period of unprecedented growth, Petrobrás and the federal government stand at a point of enormous potential for further expansion while continuing to experience asymmetry in interests.

It is critical that policy makers remain steadfast in battling Brazil’s macroeconomic challenges while simultaneously identifying opportunities for growth by facilitating competition in the petroleum sector. To do so, the government needs to improve ease of business throughout the nation, especially in the procurement process of the petroleum market. Also, the government will have the opportunity to promote significant sectoral spillovers in technology, manufacturing and human capital through its openness to competition and involvement of foreign firms. PROMINP has become the

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170 Bridgman, Gomes and Teixeira, “Threatening to Increase Productivity,” 1378.
171 According to The World Bank, Brazil is ranked 130/185 in terms Ease of Doing Business Index.
government’s main vehicle for the advancement of the domestic petroleum sector by integrating local industry through a focus on: qualification, industrial policy and industry performance.\textsuperscript{172} Focusing on these initiatives will ensure that Brazil narrows the gaps in domestic capabilities.

The evolution of Petrobrás throughout Brazil’s history of macroeconomic instability, its confrontation with global concerns of corruption and President Rousseff’s Worker’s Party progressive social aims make the future of Petrobrás particular sensitive to Brazil’s development goals. In addition to the “pre-salt development strategy,” Brazil’s policy makers must play an active role in eliminating corruption and avoiding Dutch Disease\textsuperscript{173} in order to evade economic failure and keep investors’ attracted to the Brazilian petroleum sector. Revision to current legislation may follow as Petrobrás’s performance has declined under the current regulatory framework and specifics of the framework have yet to be implemented. Nonetheless, Petrobrás has succeeded in becoming a preeminent NOC that functions with many of the features of an IOC. Its technological expertise, diversity in energy sources, fiscal transparency and environmental standards have allowed it to distinguish itself in the international energy market. The agency relationship between the government and Petrobrás will continue to determine the company’s ability to maximize its potential in the pre-salt. In the next chapter, we see how Petrobrás compares to Norway’s Statoil and Venezuela’s PDVSA and how these comparisons illuminate the nature of government oversight in the Brazilian petroleum sector.

\textsuperscript{172} Oxford Analytica, \textit{The Impact of Pre-Salt}, 35.

\textsuperscript{173} The relationship between declining performance of a nation’s manufacturing sector upon exploitation of natural resources drawn from the decline in manufacturing performance in the Netherlands following major gas field discoveries in 1959.
Chapter 2: Framing Petrobrás in the Context of its Peer NOCs Statoil (Norway) and PDVSA (Venezuela)

This chapter examines Petrobrás and the Brazilian petroleum sector in comparison with Norway’s Statoil and Venezuela’s PDVSA. Through comparative analysis, we see the dramatic effects of varying degrees of governmental regulation on NOCs’ ability to grow and to achieve their goals, which Baena et al., (2011) summarizes as consisting mainly of maximizing production through corporate autonomy, innovation capacity and international expansion. While many other NOC cases prove useful in analyzing Petrobrás, Statoil and PDVSA were specifically chosen in order to illustrate different sets of regulatory criteria and the effects of these criteria on NOC performance. This analysis also assesses Brazil’s recent regulatory reforms following pre-salt discoveries, though many aspects of the new framework will not be implemented until late in 2013. In particular, these cases demonstrate the success of an arm’s length state-NOC relationship between Norway and Statoil and the failure of an overly regulatory regime between Chávez’s government and PDVSA. The section begins with discussions of the Norwegian and Venezuelan cases and follows with a comparative analysis between the two cases. These examples illuminate Petrobrás’s strengths and weaknesses and suggest that the autonomy afforded to Petrobrás by deregulation and privatization have been critical to the company’s success.

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Although theoretical comparison is useful to understand policy learning among NOCs, a study by Thurber et al. (2011) demonstrates that no single model of regulation is most effective when applied to a nation’s unique political and economic constraints. The socio-institutional framework in Norway developed differently from the colonial legacy of Latin American countries such as Brazil and Venezuela. This had immense implications for political regimes in creating monopolistic NOCs along with the evolution of the regulatory regimes that followed. Direct transfers of regulatory models should not be assumed to be effective solutions for petroleum sectors. Nonetheless, this comparative method helps to explain how and why each nation reacted uniquely to their natural endowments and their political legacies in developing a competitive NOC.
2.1: The Kingdom of Norway and Statoil

Source: U.S. Energy Information Administration
Background

Founded in 1972, Den Norske Stats Oljeselskap AS, or “Statoil”, is the NOC of Norway. It is the world’s thirteenth largest oil company and is the largest company by revenue and profit in the Nordic region.\(^\text{175}\) The structure, strategy and performance of Statoil make it the NOC that is most comparable to an IOC. It has arguably the greatest international presence of any NOC with activities in thirty-six countries and over 30% of its working interest production abroad.\(^\text{176}\) The regulatory structure of Norway’s petroleum sector is uniquely characterized by an arm’s length state-NOC relationship that affords Statoil with an unmatched degree of managerial autonomy amongst NOCs. The company is internationally recognized for its corporate governance in addition to its devotion to innovation and consequently, its technical expertise in offshore E&P.

Deemed the “Norwegian Model,” Norway’s ability to separate commercial, policymaking and regulatory interests is praised for its effective design. Statoil controls commercial interests, the Ministry of Petroleum and Energy controls policymaking and the Norwegian Petroleum Directorate (NPD) collects fees from oil operators, advises the Ministry on technical matters and sets regulations on the management of hydrocarbon resources.\(^\text{177}\) The effectiveness of the “Norwegian model” has made it the international benchmark for best-practice bureaucratic design for a hydrocarbons sector.

\(^{175}\) Scott Goodson, “Petrobras, Forbes Global 2000 List”
Petrobrás and Statoil share many similarities. Statoil officials cite Petrobrás as the company with the most similar corporate culture as Statoil. The two nations also founded their NOCs with the primary objective of meeting national oil consumption demand. Petrobrás and Statoil are also two of the few partially private NOCs—the Norwegian government owns a 67% stake in Statoil. Ultimately, the evolution of Brazil’s regulatory reform of its petroleum sector has been largely based on the “Norwegian Model”.

**Strong Foundations: Creating An Effective Regulatory Framework**

Statoil developed out of an advantageous Norwegian legacy as a maritime nation with a strong engineering and naval oriented economy, dominated by shipbuilding. As Norway advanced its petroleum industry, the nation benefited from having supply linkages and an accessible workforce with experience in maritime activities such as merchant ships, fisheries and shipbuilding. Norway’s maritime economy also fostered a bureaucracy that was experienced in regulating natural resource industries such as hydropower, fishing and mining. The strength of its bureaucratic institutions, matched with its rich endowments of oil reserves led to a legacy of unmatched success in development and management of oil resources.

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Norway began providing a competitive licensing framework for oil development in the Norwegian Continental Shelf (NCS)\(^\text{180}\) in the 1960s. Young Norwegian civil servants were given resources to educate themselves in order to best design an effective licensing policy, using the British and the Dutch as role models.\(^\text{181}\) A Royal Decree in 1965 laid the framework for licensing auction rounds that have continued into the present. The government’s first step in establishing a state-owned oil company came in 1970, when the government increased its stake in industrial and energy powerhouse, Norsk Hydro, to 51%. It was assumed that Norsk Hydro would become the nation’s NOC, but the government decided to create its own NOC according to national goals two years later. The government also created another Norwegian player in oil and gas, Saga Petroleum, through the merging of remaining Norwegian private petroleum companies. The government’s interest in Norsk Hydro and Saga Petroleum signaled a move toward inducing competition in the domestic petroleum sector that proved integral to Statoil’s success.

In 1971, the government established “The Ten Commandments” to provide the theoretical framework for developing a national petroleum industry led by an NOC. Like in Brazil, the nation’s central aim was to maximize wealth for the Norwegian population, while avoiding adverse effects on Norwegian society. The government insisted “the development of a petroleum industry occur with due consideration for existing industry and the natural environment.”\(^\text{182}\) The Parliamentary Report also demanded supervisory

\(^\text{180}\) The Norwegian Continental Shelf is the continental shelf over which Norway exercises sovereign rights as defined by the United Nations Convention on the Law of the Sea.

\(^\text{181}\) The British and the Dutch were role models for Norway because in the early years of Norway’s petroleum sector, both nations made aggressive efforts to establish an offshore presence in their respective territories through licensed bidding.

\(^\text{182}\) Thurber and Istad, “Norway’s Evolving Champion,” 642.
control over the operations occurring on the NCS in order to advance Norway’s
technological and managerial capacities surrounding the petroleum sector. Unlike most
oil rich nations, including Brazil and Venezuela, Norway focused on avoiding disorder
rather than achieving immediate economic gains. Aware of the major risks involved in
exploiting its oil wealth, particularly Dutch Disease\(^{183}\), Norway aimed to maximize
organizational and technological efficiency in order to ensure long-term growth as
opposed to seeking short-term gains. André Risholm, an employee of NorSkan Offshore
and expert in naval architecture from Norway explains, “One of Norway’s critical
success strategies was to slow down development to ensure that wrong decisions were
not made based on lack of government competence.”\(^{184}\) The government’s choice to
implement a slower development plan allowed the national economy to adapt to the
emergence of a major national petroleum market. This was ensured by the defined
separation of roles within the petroleum sector and a learning-by-doing approach to
licensing development blocks. The initial regulatory structure began with low taxes,
direct state ownership and local content requirements in all projects.\(^{185}\)

The government established the Norwegian Petroleum Directorate (NPD) to
offer technical and regulatory expertise to the Ministry of Industry. The oil
responsibilities of the Ministry of Industry later fell under the jurisdiction of the Ministry
of Petroleum and Energy, which is currently in charge of implementing hydrocarbon
policy through the Congress, known as Storting. Upon its formal creation in 1972,
Statoil was 100% state owned and began mainly as a holding company rather than as an

\(^{183}\) The relationship between declining performance of a nation’s manufacturing sector
upon exploitation of natural resources drawn from the decline in manufacturing
performance in the Netherlands following major gas field discoveries in 1959.

\(^{184}\) André Risholm. Interview by author. Email interview. Middletown, CT, February 6,
2013.

\(^{185}\) Ibid.
actual developer of hydrocarbons. It did not risk any capital in exploration and then immediately became a dominant equity partner following a discovery. The company was given 50% interest in all new exploration blocks with the option of expanding to 80% upon successful discovery.\textsuperscript{186} Ministry staff viewed the creation of an NOC as a means to distinguish government commercial and regulatory functions rather than as a means for complete control over the sector. The company’s majority interest in Norsk Hydro was also consistent with the government’s commercial interests in the energy sector and supported competition between the two major energy companies in the domestic market.

By this point, the government used considerable interventionist strategies unlike the approaches used by other NOCs. In order to foster innovation in the NCS, the government strategically preserved competition by not creating an NOC monopoly. Rather, the NOC was forced to fairly bid in auctions against other Norwegian players, Norsk Hydro and Saga Petroleum, along with IOCs. This contrasted significantly with other NOCs, such as Petrobrás and PDVSA, which were founded upon their monopolistic control of their respective domestic markets. Local content requirements became a key instrument for the government to ensure that Norway extract benefit from its competitive framework. As a result of these “Norwegian Cost Factors”, between 1975 and 1978, Norway’s share of services increased from 28% to 62%.\textsuperscript{187} At the onset, LCRs were kept low to foster competition, then raised and eventually lowered and eliminated as Statoil grew to become internationally competitive.

In 1985, political controversies led to an increase in Statoil’s autonomy from the government at a large cost to the company’s balance sheet. A government fund called

\textsuperscript{186} Thurber and Istad, “Norway’s Evolving Champion,” 607.
\textsuperscript{187} Ibid., 640.
the State’s Direct Financial Interest (SDFI) was created to transfer half of Statoil’s interests in the hydrocarbons sector to the state. Although Statoil still managed these interests, the shift devastated Statoil’s cash flow.

Figure 17: Equity Share of NCS Production, 1971-2008

Source: Thurber and Istad, Norway’s Evolving Champion, 607

Negative reactions to the creation of SDFI raised political strife between Statoil and the Norwegian government, leading to other regulatory changes in licensing rules and ending Statoil’s guaranteed interest in future concessions. These changes ultimately benefited Statoil by providing the company with new degrees of corporate autonomy. Removing Statoil’s guaranteed interest also made the NCS a more organically competitive market to compete in. Beginning in the late-1980s, Statoil took off on a period of significant growth in production under CEO Harold Norvik, who directed Statoil towards a new focus on international expansion and partnerships with IOCs.188

188 An alliance with BP throughout the 1990s enabled Norway’s upstream operations to expand globally, including in Angola and Azerbaijan, and its downstream operations throughout parts of Europe.
Statoil grew its functional capabilities alongside Norsk Hydro and other IOCs in the NCS in time for its takeover of the operations in the Statfjord field from ExxonMobil in 1987, making Statoil the largest operator on the NCS. As the company expanded, Statoil invested heavily in technological advancement and favored innovation over immediate commercial gains. Long-term investment in R&D led to a number of triumphs, including subsea production systems in the 1980s and 1990s, which are now the basic model for production systems in offshore projects such as those in Brazil. Like the challenges faced by Petrobrás in its offshore expansion, these technical obstacles forced Statoil to develop new techniques of production that now make up its broad expertise in offshore projects. Although these innovative projects incurred significant costs, they fostered the long-term economic benefits of developing a value-added domestic industry in oil services.

Further Autonomy and Expansion

As Statoil expanded, separation of roles became more defined. During the 2000s, Statoil underwent substantial restructuring that led to further autonomy in its operations. Statoil’s independence from governmental oversight was reinforced by partial privatization and listing on stock exchanges which provided frequent benchmarking for the company and aided in corporate discipline, enhancing management control and developing a corporate identity distinct from the Norwegian government.

189 Thurber and Istad, “Norway’s Evolving Champion,” 608.
190 Ibid., 602.
191 Ibid., 622.
In 2001, Statoil filed initial public offerings on the Oslo and New York stock exchanges. In the company’s partial privatization, the state sold an 18.3% share, which increased to 30% in subsequent years. The state also created “Petoro” to govern the state’s SDFI assets in order to provide legitimacy and accountability following the partial privatization. Petoro acted as an agent of the state’s SDFI assets in oil and gas and supported Statoil’s desire to separate functions in order to provide legitimacy following partial privatization.

Another momentous occasion for Statoil was its merger with Norsk Hydro in 2007. This was meant to create a unified Norwegian NOC that could become further competitive internationally through an expansion of the company’s domestic and international portfolio. Since the oil reserves of the NCS are known to be quickly exhausting, Statoil’s production has decreased in recent years and a greater push has been made towards internationalization. The merger supported this, although 84% of Statoil’s net operating income comes from its domestic upstream market and only 7% comes from abroad. The merger supported the international initiative but drew harsh skepticism from critics who question the decision since it eliminated Statoil’s main competitor from its domestic market and demonstrated a special interest tie between the state and Statoil.
Although Statoil is formally autonomous in its operations, the government still plays an influential role as majority shareholder. Political meddling between Statoil and the Norwegian government is still possible and has occurred in the past. For example, in 2008, the Minster of Petroleum and Energy pressured Statoil to allocate power for a politically influential area. Still, this demonstrates the conflict of interests present in all state-NOC relationships. It is important to contrast this low degree of politicization of the oil sector to the Brazilian and Venezuelan cases where political interference often comes at the cost of the NOC’s production and effective development of oil resources.
2.2: The Bolivarian Republic of Venezuela and PDVSA

Source: Energy Information Administration
Background

Petróleos de Venezuela, S.A., known as PDVSA, is the Venezuelan state-owned oil and natural gas company and is currently the world’s second largest oil producer and fifth largest oil exporter.\(^{192}\) According to PDVSA, Venezuela has the largest oil reserves in the western hemisphere with 77.5 billion barrels of conventional oil reserves.\(^{193}\) If calculations include Venezuela’s extra heavy crude oil in the Orinoco Belt region, Venezuela claims to hold the largest hydrocarbon reserves in the world with 296 billion barrels.\(^{194}\) PDVSA is also a member of the Organization of the Petroleum Exporting Countries (OPEC). The NOC accounts for more than three-quarters of Venezuela’s exports and contributes to more than half of the government’s fiscal budget.\(^{195}\) The history of Venezuela’s petroleum sector is one of remarkable success until President Hugo Chávez executed a reorientation of the company’s role in national affairs, leading to overhauled regulation and an immediate decline in the company’s performance. In examining the history and evolution of PDVSA, it is essential to analyze the company’s progression from high efficiency performance under competitive market principles throughout the 20\(^{th}\) century to decreased performance under the burden of increased government involvement under the Chávez administration. This transition in company performance due to politicization of the nation’s petroleum sector is an example of the dangers potentially associated with the Brazilian government’s increased presence in regulating Petrobrás’s activities.


\(^{194}\) Ibid.

\(^{195}\) Baena, “Drivers of internationalization,” 393.
Pre-Chávez (1976-1999)

The Venezuelan petroleum market began with active competition between American and British IOCs in the 1910s and 1920s through a concession regime controlled by military general, Juan Vicente Gómez. By 1920, Venezuela’s petroleum market had grown rapidly, becoming the world’s leading oil exporter and second-largest oil producer.\textsuperscript{196} IOCs benefited from low royalty and income tax rates during these early decades. Then, in the 1940s, the Venezuelan government decided it deserved a greater share of the profit being generated by IOCs and began requiring a 50-50-profit split between IOCs and the state, leading to several forty-year concession agreements between Venezuela and IOCs.

Nationalization of the Venezuelan petroleum sector began in the 1960s, when the government chose not to renew the forty-year concessions promised twenty years prior. Local employment requirements were also implemented for private oil companies, which would lead most of Venezuela’s petroleum sector employees to be Venezuelan by the time of nationalization. A historical law in 1970 mandated that oil sector concessions revert to the state upon expiration, that the government oversee IOC operational changes and that IOCs be prohibited from moving their assets.\textsuperscript{197} Finally in 1975, a bill formally nationalized the Venezuelan petroleum sector and established PDVSA with 100% state ownership and with accessible state capital on January 1, 1976. The government paid $1.02 billion in its expropriation of IOC assets.


\textsuperscript{197}Ibid., 424.
The founding of PDVSA and its initial structure varied significantly from that of Petrobrás. While PDVSA was nationalized after one of the world’s strongest petroleum markets had been developed alongside foreign competitors, Petrobrás began with little access to domestic upstream opportunities and was kept as a monopoly for much of its early history. This legacy of private sector activity largely benefited PDVSA by enabling the company to adapt similar managerial and strategic techniques implemented by private sector peers active in Venezuela. The Nationalization Law allowed PDVSA “to use the most efficient means to commercialize hydrocarbons.” Article 5 of the law gave congress the power to review PDVSA’s actions that affected national interest and Article 6 designated PDVSA’s operator subsidiaries under the commercial (rather than administrative like PEMEX) legal code and designated 10% of net operating earning for company reinvestment. Article 8 exempted PDVSA employees from public employee restrictions. These specifications created a commercial oriented NOC whose tie to the government was kept to shareholder meetings with government representatives.

Most IOC employees immediately joined PDVSA or one of its newly founded thirteen state-run operating subsidiaries. Maraven and Lagoven, previously Shell de Venezuela (Shell) and Creole (Exxon) respectively, excelled in marketing, exploration and development due to their private sector heritage and their expertise in the Venezuelan market. PDVSA supported its private sector legacy by further encouraging competition among its subsidiaries by supporting their specialization in refining and production (Maraven) and exploration (Lagoven). In contrast, it took Brazil roughly two

198 Ibid., 451.
199 This reinvestment requirement and other pro-performance initiatives were removed during the Chávez era.
200 PDVSA converted twenty-two private sector concessionaries into these subsidiaries.
decades before a similar corporate structure was adopted upon the discovery of its offshore reserves.

Like most other Latin American nations including Brazil, Venezuela embraced import substitution industrialization (ISI) policies as a means to build domestic manufacturing capacity. However, unlike Brazil, Venezuela saw oil wealth as a source of rent revenue rather than as a means for national growth. In line with this theory, Venezuelan politicians granted PDVSA autonomy throughout most of the 20th century with few exceptions. By limiting political interference, the government was aware that oil revenues could be maximized and used for other ISI policies intended to diversify Venezuela’s economy, which was largely dependent on oil exports.

Another unique strength of PDVSA’s strategy was its capitalization on international opportunities early on in its history. Aggressive emphasis on internationalization in the 1980s promised long-term success for PDVSA, though it also sparked conflict surrounding the functioning state-NOC relationship. The first instance of government predation occurred in the wake of internationalization in 1982, when the Herrera administration took PDVSA reinvestment monies to relieve Central Bank needs during a period of national economic depression known across Latin America as “The Lost Decade.” Frustrated that the company’s autonomy was threatened, PDVSA saw internationalization as a means to secure more assets abroad. In response to a decline in global oil prices, PDVSA initiated joint ventures for refineries in overseas markets across Europe and the United States. Pressed to further insulate company assets, PDVSA expanded its acquisition of foreign refineries between 1986 and 1990 and pursued a

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201 Hults, “Petróleos de Venezuela,” 452.
202 A period of significant decline in economic performance and rise in inflation throughout many Latin American economies during the 1980s. Brazil faced negative growth rates during the 1980s following its decades of considerable economic expansion.
historical purchase of American IOC, CITGO. In 1986, PDVSA acquired a 50% stake in CITGO, which provided a central distribution channel for fuel products to American consumers. In 1990, PDVSA acquired the remaining 50% stake in CITGO. It became the first NOC to run a major US oil business and became an important player in the US energy industry. PDVSA strategically isolated its international expansion from domestic political interference by investing dividends from foreign ventures back into foreign expansion.

Unlike PDVSA, Petrobrás took longer to expand its international operations. Although by the late-1980s Petrobrás had developed considerable managerial and financial autonomy from the Brazilian government, the company gained little access to international markets through its internationally oriented subsidiary, Braspetro. Brazil was primarily concerned with meeting national consumption demands and government control kept Petrobrás from pursuing alternative goals. Nonetheless, both company’s’ vested interests in R&D remains a noteworthy similarity. CENPES was Petrobrás’s information and technology factory for offshore technology that enabled Petrobrás to extract in deep-water off shore oil reserves where other companies could not. CENPES was ultimately responsible for developing the technology for the E&P success of the pre-salt reserves.

Similarly, in Venezuela, the Instituto de Tecnología Venezolana para el Petróleo (INTEVEP) proved invaluable to PDVSA’s advancement as a leading NOC. ITEVEP was responsible for developing a solution to producing oil from Venezuela’s largest oil reserve, the Orinoco Belt. The reserves in the Orinoco Belt contain extra-heavy crude oil that requires special extraction techniques. ITEVEP developed a fuel substitute called
“Orimulsion” from the extra-heavy oil to boost PDVSA’s revenue from the region. This breakthrough could arguably make Venezuela the richest oil nation in the world.

In the 1990s, the government and PDVSA were aware that domestic upstream operations needed to be revamped and due to low global oil prices, PDVSA had limited capital for reinvestment. The company decided to open itself to foreign investor participation to increase capital availability for upstream projects. It also saw contracting with private firms as a means to isolate company assets from state involvement. “La Apertura Petrolera,” (oil sector opening) and later referred to as “La Apertura”, became known as the series of contracting efforts between PDVSA and private companies throughout the 1990s. Three rounds of negotiations in 1991, 1992 and 1997 led to association agreements (AAs) which were meant to increase production in the Orinoco Belt203, operational service agreements (OSAs) to develop the country’s older fields and risk and profit-sharing agreements (RSPAs) for investment in high risk exploration projects. The AAs set low royalty rates (1%) and income tax rates (34%) – BP, ConocoPhillips, Chevron, ExxonMobil, Statoil and Total joined as partners with PDVSA through AAs. PDVSA entered into thirty-two OSAs with twenty-two companies including the IOCs mentioned above in addition to Petrobrás. RPSAs attracted less offers, perhaps due to their high tax requirements of a 16.67% royalty rate and a 66.7% income tax rate. PDVSA also retained an option to purchase up to a 35% stake in projects that led to commercial quantities of oil, with the outside company retaining operational control.204

203 Reserves in the Orinoco Belt had barely been tapped and were Venezuela’s most difficult reserves to extract.
204 Hults, “Petróleos de Venezuela,” 429.
La Apertura accomplished its goal of providing PDVSA with foreign funds needed for upstream development, leading to a 610% increase in foreign investment in the Venezuelan oil sector between 1995 and 1999. La Apertura also accomplished PDVSA’s second goal of further isolating company assets from government regulation by signing contracts with private companies that required extensive procedural protections. Although drastically different in detail, La Apertura had many similarities with Petrobrás’s privatization and deregulation experience during the 1990s. Both led to considerable growth in company performance and in foreign investment in each domestic petroleum sector. Petrobrás, however, faced stricter regulation by the ANP and presented IOCs with different requirements—using lower tax requirements but including LCRs, which were absent in Venezuela. While LCRs are an explicit requirement of doing business in the Brazilian petroleum sector, they are only an informal consideration for commercial negotiations in Venezuela.

Despite the success of La Apertura in opening Venezuela’s oil sector to international participation, PDVSA’s friendly stance towards IOCs sparked a national debate over the country’s direction. Although PDVSA’s success was impressive, Venezuela’s per-capita GDP was still at 1960 levels and economic inequality and poverty reached historic highs. With a national legacy of ISI policy, the government’s neo-liberal, pro-foreign investment model with PDVSA, became the opposition’s primary means to account for the country’s poor performance. Heading this opposition, Hugo Chávez ran

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his 1998 campaign on a platform that denounced the country’s economic model and PDVSA’s expansion.

The Chávez Era: A Complete Flip (1999-Present)

Commencing with Chávez’s inauguration and concluding with his death in early 2013, the Chávez era marked a period of radical restructuring of the Venezuelan petroleum sector and a drastic shift in the government’s role in PDVSA’s affairs. PDVSA slowly shifted from an internationally praised NOC to a de facto agency of President Chávez himself. The effects of these changes on PDVSA have proven devastating to the company’s performance and to the future of the Venezuelan petroleum market.

Chávez won the 1999 election with 56% of the vote and quickly passed a new constitution by national referendum. Although it did not significantly change the pre-existing legal framework for the energy sector, it did formally prohibit the privatization of PDVSA.206 In 2001, he decreed a series of hydrocarbon laws that changed future private investment to take the form of joint ventures with a majority PDVSA stake. The law required 30% royalty rates and 50% income tax rates. Although the new law increased PDVSA’s dominance of the Venezuelan market in addition to reducing the company’s tax burden, the company’s management opposed the law and feared tax consequences on company revenue if oil prices were to fall. In 2002-2003, a strike at PDVSA’s headquarters lasted for nine weeks with the intent to force the nation to recall

206 Although PDVSA is prohibited from privatization, PDVSA subsidiaries may still be privatized.
a referendum on Chávez’s presidency. Chávez sent the army to occupy the oil facilities. In response, company output dropped 78% in two months.\textsuperscript{207} Chávez’s restructuring of the company also led to a drop of 30-40% in employment, leading to a depletion of technical and managerial skill base. Chávez began to completely control PDVSA and use it as a mechanism to fund and manage social programs. In 2004, he appointed a personal friend, Rafael Ramírez, as PDVSA’s president and legalized his ability to make presidential appointments at will. Ramírez is still president of the company. Since Ramírez has become president, investments in non-core obligation rose from $14 million to over $14 billion in recent years.\textsuperscript{208} Ramírez submits decisions to himself, as energy minister, for shareholder approval and thus acts directly under Chávez’s rule.

Between 2006 and 2007, Chávez again radically reformed the petroleum sector by declaring OSAs illegal and mandating renegotiation of terms with higher taxes and a majority stake for PDVSA in each arrangement. He then forced AAs and RPSAs to become “empresas mixtas” (mixed companies) whereby PDVSA was awarded majority control of all projects. Many companies accepted this new framework and by May 1, 2007, PDVSA had majority control of all Venezuelan projects. Chávez’s reorientation of state-NOC relations has led to a scarring in PDVSA’s performance and the loss of its global reputation as a once celebrated NOC. PDVSA’s strategy has shifted broadly from autonomy seeking to subservient under government demands since politicization has destroyed incentives in Venezuelan petroleum sector.

Most recently, Chávez decreased international efforts through major divestments of foreign assets in major distribution markets. His aim was to focus on domestic upstream by seeking partnerships with IOCs in order to develop the Orinoco Belt,

\textsuperscript{207} Hults, “Petróleos de Venezuela,” 433.
\textsuperscript{208} PDVSA, “Reports.”
which holds Venezuela’s largest and most valuable reserves. Development blocks have been granted to limited “Chávez-friendly” companies, including Repsol YPF (Russia), Chinese NOCs and Chevron, which were awarded blocks in early 2010. Production has lagged significantly and the global oil price drop in 2008 in addition to revenue lost from the divestments have dramatically limited PDVSA’s investment budget. By conservative estimates, PDVSA’s production declined by 10-15% between 2002 and 2007 (30% if joint ventures are included and has yet to reach pre-strike levels (2002-2003). Nonetheless, Venezuela’s rich oil deposits and the core functions developed by PDVSA prior to the Chávez administration continue to make Venezuela a leading player in the global petroleum market. Following President Chávez’s death in early 2013, the international petroleum community anxiously awaits which direction Venezuela will choose to take PDVSA.

209 Hults, “Petróleos de Venezuela,” 460.
2.3: Comparative Analysis

Through examination of Norway and Venezuela’s petroleum sectors, it is clear that Brazil’s experience with state regulation falls between the two polar examples of regulation. While Norway’s regulatory framework enables a functioning separation of roles and a competitive market for oil companies, Venezuela’s experience demonstrates the dangers of over politicization and government control of a nation’s petroleum sector. Government regulation greatly benefited all three NOCs throughout their early histories and led to considerable growth in production and progress in technological innovation. As each NOC expanded, however, the structure and role of government interference changed significantly and new frameworks were developed. Since its move towards privatization in the 1990s, Brazil’s framework has become more associated with the Norwegian Model and Pre-Chávez Venezuela through its separation of roles and promotion of foreign competition. It can be argued that the transition from state monopoly to IOC orientation experienced by Petrobrás has been a major source of the company’s impressive performance. Nonetheless, the recent pre-salt legislation continue to draw concerns that increased governmental activity will lead to politicization of the petroleum sector like that of PDVSA, consequently limiting competition and decreasing performance and innovation in the sector.
Figure 19: Production Between Brazil, Norway and Venezuela, 1965-2011

Production (thousand barrels per day)

Source: BP
### Regulatory Frameworks

#### Figure 20: Separation of Roles

<table>
<thead>
<tr>
<th>Current Separation of Roles</th>
<th>Brazil/Petrobrás</th>
<th>Norway/Statoil</th>
<th>Venezuela/PDVSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrobrás (NOC)</td>
<td></td>
<td>Statoil (NOC)</td>
<td>PDVSA (NOC)</td>
</tr>
<tr>
<td>ANP (regulatory and procurement auctions), works alongside Ministry of Mines and Energy</td>
<td></td>
<td>Ministry of Petroleum and Energy regulation (reports to Storting, the Legislature)</td>
<td>President Hugo Chávez oversaw Energy Ministry and PDVSA through complete political control.</td>
</tr>
<tr>
<td>Energy Policy Council (CNPE), reports to national President and can claim reserves property of the state if highly productive</td>
<td></td>
<td>NPD (subsidiary agency under the Ministry)</td>
<td>The Energy Ministry: maintains control over tax obligations.</td>
</tr>
<tr>
<td>210 Petro-Sal (state-owned company that manages PSA contracts commercializes government profit from oil)</td>
<td></td>
<td>Petoro (state-owned company that manages Norway’s portfolio of E&amp;P licenses)</td>
<td></td>
</tr>
</tbody>
</table>

In comparing each case’s regulatory frameworks, it is apparent that Norway’s petroleum sector is the best organized and most favorable to its NOC. By forcing Statoil to compete with other Norwegian firms and IOCs alongside an experienced bureaucracy, Norway has allowed its NOC to constructively develop petroleum resources in accordance with the government’s regulatory agencies, the Ministry of Petroleum and Energy and the NPD. This limited political interference best contrasts with Venezuela, where a dictatorial political regime maintains complete control over

210 “*” denotes that this has yet to be implemented but is a part of planned regulatory framework.
PDVSA’s functions. In Brazil, much like in Norway, the regulatory framework separates policymaking (Congress and the MME), regulation over procurement (ANP), and commercial interests (Petrobrás).

However, although Brazil’s regulatory framework is very similar to Norway’s, politicization of the petroleum sector occurs more frequently. The federal government demonstrated this by immediately reforming Brazil’s regulatory framework following the pre-salt discoveries. More recently, ANP mandates to redirect Petrobrás’s operations according to the federal government’s agenda further demonstrate the politicization of Petrobrás. Also, although the PSC system is not nearly as severe as the “mixed companies” in Venezuela, it is a move towards the current Venezuelan model by making Petrobrás a sole operator on all future pre-salt projects. LCRs also favor Brazilian firms, making competition less organic than Norway’s current framework. Furthermore, the creation of Petro-Sal adds an additional regulatory arm for the government to exert political pressure on Petrobrás.
**Figure 21: Evaluation of Separation of Roles**

<table>
<thead>
<tr>
<th>Defined Separation of Roles</th>
<th>Good Practice</th>
<th>Room for Improvement</th>
<th>Poor Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway</td>
<td>Efficient bureaucracy with clear separation of functions allows Statoil to fulfill its roles in controlling the nation's commercial interests.</td>
<td>Separation of roles keeps regulatory (ANP) and commercial (Petrobrás) roles distinct. The bureaucratic process within Congress and the ministries have been criticized for corruption and politicization of Petrobrás's commercial aims remains a threat to the company’s performance.</td>
<td>Separation of roles is blurred by lack of political legitimacy. The federal government controls PDVSA’s commercial aims as well as regulation over the Venezuelan petroleum sector.</td>
</tr>
</tbody>
</table>
Partial privatization of Petrobrás and Statoil led to a notable shift in regulation from the government as a result of international disclosure standards set by the United States Securities and Exchange Commission and other international agencies. These companies could use the performance of their shares in the stock market as a benchmark for company performance. The disclosure requirements also functioned to minimize government predation by eliminating all governmental regulatory practices that were considered illegal following partial privatization. Annual reports also became an effective way to demonstrate fiscal transparency and accountability for investors. While PDVSA’s management is controlled by the government, Petrobrás and Statoil face a balance in management from both the government and from private shareholders. Government predation is characteristic of the Venezuelan model while partial privatization eliminated
all opportunities for predatory behavior by the governments of both Brazil and Norway. This transition made Petrobrás and Statoil more like IOCs and consequently led the two companies to experience considerable growth following privatization. Comparing the ownership structure of Petrobrás and Statoil, the Brazilian government maintains a considerably lower ownership stake in Petrobrás of 48% than the Norwegian government’s 70% stake in Statoil. The difference is that Petrobrás maintains 60% of voting shares, ensuring that the government maintains a majority interest in major managerial decisions.
# Regulatory Mechanisms

**Figure 23: Summary of Regulatory Mechanisms**

<table>
<thead>
<tr>
<th></th>
<th>Brazil/Petrobrás</th>
<th>Norway/Statoil</th>
<th>Venezuela/ PDVSA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Taxes</strong></td>
<td>Signature bonus to the government, 5-10% royalty and up to 10-40% special</td>
<td>Roughly 28% income tax rate (for all companies) and a 50% federal tax rate on oil and gas companies reaching 78%</td>
<td>30% royalty rate and 50% income tax, in addition: 3.33% extraction tax and 0.1% export tax</td>
</tr>
<tr>
<td></td>
<td>participation tax for highly productive wells</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Local Content Requirements</strong></td>
<td>ANP rounds began with as little as 10% and have reached as high as 80% in recent bidding rounds</td>
<td>Began at 28% reached a high of 62% and then lowered and eventually eliminated</td>
<td>Unofficially important, though never a part of legislation – local employment always essential through historic preferential employment laws</td>
</tr>
<tr>
<td></td>
<td>Penalties are set for companies who do not meet LCRs</td>
<td></td>
<td>Preference given to local content more than 20% in procurement</td>
</tr>
<tr>
<td><strong>Procurement Process</strong></td>
<td>Sole operator (30%) in all pre-salt, PSCs used with consideration of LCRs and “profit oil”.</td>
<td>Oil Activities Law ensures the exclusive right of an oil company to explore and produce hydrocarbons on its own expense and risk through a Production License, which occurs through a bidding process.</td>
<td>Joint ventures known as <em>empresas mixtas</em> (mixed companies) require PDVSA to have a majority stake in all projects.</td>
</tr>
<tr>
<td></td>
<td>Concession regime from 1990s is still intact for non-pre-salt projects.</td>
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<td></td>
</tr>
</tbody>
</table>
The two main policy instruments for government regulation of petroleum sectors are taxes and LCRs. The two instruments have different policy objectives and comparison of each case’s implementation of regulatory policy helps to understand each nation’s objectives in regulating their petroleum sectors. Taxes are essentially designed to extract revenue for the government from operations in the petroleum market. In contrast, LCRs are intended to promote the growth of infant industries by ensuring that domestic goods and services are major contributors to operations in the sector. LCRs are a prototypical ISI policy in their aim to favor domestic industry. Unlike taxes, LCRs do not allow companies to minimize costs in a most efficient way. When foreign companies are subject to LCRs in a new market they have to restructure their supply chains and means of production according to the country’s set LCR percentage. Taxes, on the other hand, enable companies to maintain their own operational strategies in order to view taxes as an identifiable cost that can be subtracted from the company’s income statement.

Norway effectively used taxes and LCRs to strategically build an internationally competitive petroleum industry and extract significant oil royalties for the state. After using LCRs to develop a strong domestic petroleum industry, Norway reduced LCRs and eventually abolished them once Statoil had become a dominant player in the NCS. Norway has, however, kept taxes extremely high. All companies working in Norway face a 28% income tax rate and oil and gas companies must pay an additional 50% tax, yielding a total of 78%. Brazil, on the other hand, has continued to maintain substantially high taxes (though less than in Norway) and continued to progressively

increase LCRs in bidding rounds. Although keeping high LCRs is characteristic of Brazil’s legacy of ISI policies, high LCRs have become a hindrance to gaining valuable foreign cooperation in order to develop the pre-salt reserves in a timely manner. Averaging around 60%, LCRs have reached highs of 80% and include penalties for violating companies.

LCRs were critical to developing Petrobrás into an internationally competitive energy conglomerate, but the Brazilian petroleum sector is no longer an example of an infant industry. André Risholm, who deals with Norwegian offshore projects in Brazil, explains the dangers of keeping LCRs high:

“Brazil must reduce LCRs in order to allow the needed foreign resources (both supplies and expertise) to contribute to the development of the pre-salt projects. Brazil should consider raising them again after the pre-salt projects function in accordance with the nation’s expectations, but the government must decrease them as soon as possible.”

Local employment preferences add to this delay when foreign expertise is needed to develop its new oil discoveries.

Comparing Norway’s LCR regime to Brazil’s, Statoil explained that the ANP forces LCRs through a formal, rigid index, while there was no direct index to control local content when it was used in Norway. Nonetheless, Statoil promisingly concluded that uncertainties in local content regulation will be clarified by 2016 and the capabilities gap of Brazil’s local industry is expected to close by 2020.

Unlike Norway and Brazil, Venezuela relied on tax gains and ignored official implementation of LCRs as a strategy for growth. Since Venezuela’s petroleum sector

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212 André Risholm. Interview by author. Email interview. Middletown, CT, February 6, 2013.
214 Ibid.
legacy developed quickly early on, LCRs were not needed to support the growth of the nation’s petroleum industry. Relying on tax gains proved effective during La Apertura, which was very similar to the PSC arrangement currently implemented by Brazil in determining procurement contracts for the pre-salt reserves. The difference was in the structure of government compensation in production contracts. Venezuela’s 67% income tax rate was higher compared to the requirements of Brazil’s PSC regime, where companies file a signature bonus to the government, a 5-10% royalty tax to the government and a special participation tax for very productive wells (10-40%). Brazil is able to afford to keep taxes relatively lower since it see the benefits of LCRs to domestic industry as an alternative way to extract national benefit from negotiation with foreign companies.
**Figure 24: Evaluation of Oversight Mechanisms**

<table>
<thead>
<tr>
<th>Assessment of Oversight mechanisms</th>
<th>Good Practice</th>
<th>Room for Improvement</th>
<th>Poor Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Norway</strong></td>
<td></td>
<td></td>
<td><strong>Venezuela</strong></td>
</tr>
<tr>
<td>The government allows Statoil to operate with maximum autonomy and creates incentives for higher production and technical innovation by supporting competition and international expansion.</td>
<td></td>
<td>The government minimally sets requirements for Petrobrás and allows competition and international standards (annual reports) to provide transparency. Politicization is still a significant threat to company performance.</td>
<td>PDVSA is poorly run due to politicization of the company, though the company is able to provide a significant portion of the nation’s fiscal budget. The company no longer acts autonomously as it did prior to President Chávez.</td>
</tr>
</tbody>
</table>
Internationalization

Internationalization is a major initiative of each NOC under consideration, though NOC regulation has allowed each to capitalize on international opportunities to different degrees. Since Petrobrás and Statoil were designed to meet national oil consumption demand, internationalization began as a secondary goal motivated by profit. As they gained autonomy, however, both were able to develop considerable international presence. Although Petrobrás established international presence as early as the 1970s under its subsidiary, Braspetro, government management of the company’s financial assets prevented Petrobrás from developing its international activities until it gained further autonomy in the 1990s. Since then, however, Petrobrás has developed more than 100 production licenses in 27 counties. International refining capacity has nearly doubled between 2002 and 2010 and 2013 strategic plans aim to realize $15.9 billion in overseas upstream and downstream activities. This degree of internationalization by an NOC is rare and is similar to the strong degree of internationalization boasted by Statoil.

Statoil’s technological competence and formal autonomy form the government allowed the company to develop an international growth strategy that is modeled on IOCs. Statoil is actively involved in developing oil sands in Canada, shale gas in the US, heavy oil in Venezuela, ultra-deep offshore in Brazil and many other deep-water projects. These projects play to the company’s technical advantages in addition to its ability to manage corporate-political relationships.

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In contrast, PDVSA began its internationalization strategy early on and developed refining and distribution channels around the world as early as the 1980s. However, since Chávez, PDVSA has divested significant international assets. The company sold multiple refineries in Europe, sold its 50% stake in German refining venture Veba Oel in 2010 and is seeking to sell its remaining refineries in the U.S. This reversal in internationalization is detrimental to PDVSA, not only because it sacrifices major distribution channels but also because it eliminates major technology and industry specific knowledge advantages that justified the initial push towards internationalization. Through the 2000s, Chávez has used internationalization as a political instrument in foreign diplomacy. He established an agreement with Cuba to supply 53,000 bpd of fuel in exchange for education health and other social services.

Figure 25: Portion of 2008 Working Interest Production from Home Country

Source: Victor, Hults and Thurber, *Oil and Governance*, 918
### Figure 26: Evaluation of Internationalization

<table>
<thead>
<tr>
<th>Internationalization</th>
<th>Good Practice</th>
<th>Poor Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Pre-Chávez Venezuela)</td>
<td>Venezuela</td>
</tr>
<tr>
<td></td>
<td>Early international expansion in the 1970s and 1980s followed by acquisition of Citgo and major international efforts in the 1990s</td>
<td>Several cutbacks in international operations through divestment of foreign refineries in North America and Europe. Owns Citgo and has a strong network of refining and distribution channels in Europe and South America.</td>
</tr>
<tr>
<td></td>
<td>Norway</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alliance with BP in 1990s and major international efforts since, especially in Latin America (Brazil and Venezuela)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brazil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recent international expansion – operations in 27 countries and Recent expansion into the Gulf of Mexico</td>
<td></td>
</tr>
</tbody>
</table>
Performance

The performance of each NOC depended largely on the role of government regulation. In 1993, 1995 and 1999 *Petroleum Economist* ranked PDVSA the best-managed NOC.\textsuperscript{216} Prior to the Chávez strikes, PDVSA was highly technologically capable, vertically integrated and internationally active, allowing it to develop one of the largest petroleum exporting industries in the world. In many ways, this success was compromised by the reorientation of state-NOC regulation imposed by President Chávez. PDVSA’s production has declined significantly over the last decade and investment budget has decreased from $24 billion to $14 billion in 2009.\textsuperscript{217} Conversely, the independence of Petrobrás and Statoil has allowed the companies to boost their investment budgets and excel in developing both domestic and international opportunities throughout their modern histories. Although Petrobrás’s output has declined and its share value decreased in the past year, its production per day has increased 153\% since privatization.\textsuperscript{218} Petrobrás’s $237 billion investment plan, Plan-Sal, is the largest of its kind and is sure to lead to dramatic growth in production in the pre-salt reserves. Production has begun in three new units in 2013 and more significant amounts of pre-salt have been discovered in Petrobrás-licensed exploration areas. The matter most threatening to Petrobrás’s performance will be the government’s degree of regulation in keeping LCRs high and taxes unattractive for the needed foreign cooperation. The graph above represents production over time for each nation under consideration. Note that while Norway’s production appears to have decreased

\textsuperscript{216} Victor, Hults and Thurber, *Oil and Governance*, 937.
\textsuperscript{217} Baena, “Drivers of internationalization,” 398.
\textsuperscript{218} BP, “Statistical Review of World Energy 2012.”
throughout the 2000s, Statoil has maintained high performance by substituting production on the NCS with its international operations.\textsuperscript{219}

**Figure 27: Bottom-line Evaluations**

<table>
<thead>
<tr>
<th>Competitive Advantages</th>
<th>Brazil/Petrobrás</th>
<th>Norway/Statoil</th>
<th>Venezuela/PDVSA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Petrobrás dominates domestic upstream and downstream activities. International expansion has led to promising long-term growth in addition to the development of pre-salt reserves. Also has very competitive bio-fuel industry through Petrobrás</strong></td>
<td>Strong legacy of economic activity and bureaucratic experience in maritime activities. Substantial reserves in the NCS and very strong international presence.</td>
<td>One of the largest oil reserves in the world. Private sector legacy of PDVSA was unique for a Latin American NOC and was beneficial to pre-Chávez PDVSA but was compromised by politicization.</td>
<td></td>
</tr>
</tbody>
</table>

| Evaluation of Performance | Delays in implementation of new legal framework and in developing the pre-salt reserves have raised concerns around Petrobrás’s performance, leading to decline in production and in company share value. Nonetheless, production is expected to increase substantially by 2014 and production on multiple pre-salt wells has begun. | Decrease in domestic production due to slower depletion of NCS and higher focus on international upstream. Recent discoveries and growth of international projects offer promising forecasts for long-term future growth. | Considerable decline in production and lack of needed investment budget signal poor performance. Loss of international assets worsens the company’s cash flow. Hope lies in cooperation with foreign NOCs and IOCs to develop the Orinoco Belt. |

\textsuperscript{219} Statoil reduced its depletion rate (rate at which oil is produced) due to an awareness that oil production had peaked in the NCS.
Conclusion

This thesis examines the evolution of the Brazilian petroleum sector in relation to the Brazilian government’s management of its NOC, Petrobrás. Analysis illustrates the potential strengths and weaknesses of active government involvement in the nation’s domestic petroleum sector. In particular, we see that policy makers face a tradeoff between promoting the growth of domestic industry and ensuring the maximization of market efficiency in domestic petroleum sectors.

Throughout its history, Petrobrás has remained the center of national controversy. Economic nationalism during the Estado Novo gave birth to a Brazilian petroleum sector that was completely controlled and regulated by ISI policies via the CNP. Beginning as a state-owned monopoly, Petrobrás led the growth of an infant petroleum industry under the government’s protectionist policies. President Vargas (1951-1954) isolated Petrobrás from foreign cooperation and capital in order to preserve the nation’s oil wealth with the ultimate goal of achieving oil self-sufficiency. The company became a symbol of state-led growth and of the nation’s ability to achieve economic progress independent from foreign capital. By strategically choosing when to isolate the sector and when to introduce it to foreign competition, the Brazilian government regulated Petrobrás’s exposure to international firms and ensured its dominance over the domestic petroleum market. This allowed access to foreign capital and technical expertise strictly when the government deemed it necessary. The domestic petroleum sector grew and Petrobrás developed more advanced production capabilities by significantly increasing its refining capacity. By the late 1960s, however, it was
apparent that the future of Brazil’s fuel supply lay off the shore. A reorientation towards upstream activities in the 1970s enabled Petrobrás to begin developing an expertise in exploring and producing offshore oil.

In the 1990s, neoliberal reform of the Brazilian petroleum sector led to a more defined separation of roles between the government and Petrobrás, allowing Petrobrás to gain autonomy in its operations and expand substantially. Ending Petrobrás’s official monopoly and deregulating the Brazilian petroleum sector distinguished Petrobrás as an NOC by transitioning it towards a commercially oriented company motivated by profit. Much like Statoil in Norway, the Brazilian government identified the benefits of allowing Petrobrás to compete while still preserving the nation’s political interests in oil by maintaining leadership of the company’s corporate governance and favoring Petrobrás in concession auctions. Partial privatization proved instrumental in establishing a modern, autonomous Petrobrás by enabling disclosure requirements to discipline the company’s financial operations and end pressures of government predation. As a result, foreign investment boomed and a soaring number of IOCS came to Brazil as joint ventures and concessionaries to work with Petrobrás and contribute to the expansion of Brazil’s promising offshore oil market.

Discovery of the pre-salt reserves in the mid-2000s led to a newfound sense of oil wealth in Brazil that was followed by restructuring of the legal and economic framework governing the nation’s petroleum sector. This restructuring characterized Brazil’s preference of state-led growth over neoliberal, free market strategies. The record-breaking IPO in 2010 allowed Petrobrás to finance its immense investment program to develop the pre-salt reserves, while also increasing the government’s stake in the company. Legal revisions preserve competition, though they also increase the state’s
oversight and involvement in pre-salt projects. The new PSC arrangement favors Petrobrás in development projects and ensures high LCRs. This separation of roles is a progressive move for Brazil, though it risks further intertwining political and commercial interests.

In comparing Brazil with Norway and Venezuela, we are able to better identify the strengths and weaknesses of the Brazilian petroleum sector. We see that historical legacy and natural endowment played integral roles in the development of each case’s petroleum sector. Norway’s heritage of maritime economic activities and early experience with bureaucratic regulation of natural resources enabled a mature, patient approach to oil development. The Norwegian Model of separating the nation’s policymaking, regulatory and commercial roles minimized conflicts between the government and Statoil. As time passed, a transition to higher taxes and a retreat of LCRs until elimination allowed oil companies to adjust their cost structures and supply chains to most efficiently produce in the NCS.

In Venezuela, the nation’s prodigious oil wealth led IOCs to construct a Venezuelan oil market as early as the 1910s and 1920s. As a result, PDVSA was created as an NOC with a largely private sector orientation. Favoring competition and joint ventures with IOCs, PDVSA expanded its operations throughout the 20th century. However, President Chávez’s reform and politicization of the sector led to devastating performance for PDVSA. The “empresas mixtas” have led most IOCs to end their Venezuelan ventures and divestitures of major foreign projects minimize hopeful prospects for PDVSA. President Chávez’s death in March of 2013 raises questions of the nation’s willingness to redirect PDVSA towards a promising future, especially considering Venezuela’s position as one of the top three oil rich nations in the world.
Comparisons between Brazil, Norway and Venezuela help to identify the benefits and dangers of Brazil’s regulation of Petrobrás.

Since Petrobrás and the Brazilian petroleum sector experienced considerable legislative revisions between 2009-2012, the company’s troublesome performance has raised skepticism surrounding the government’s current regulatory framework. In 2002, Petrobrás experienced a 2% decline in production, the first notable production decline in years.  

Imports of gasoline have been needed to fulfill the nation’s growing energy demands, which have led Petrobrás to incur added costs. Reflecting this and other operational delays, Petrobrás’s (NYSE: PBR) stock value has decreased by 66% between its peak in 2010 of $47.10 and its current stock price of $16.42 in April 2013. Despite this, oil production in the deep pre-salt waters has finally reached significant levels of production, yielding a new high of 300,000 bpd as of February 2013.

Notwithstanding the decline in Petrobrás’s performance, Brazil’s use of LCRs to develop local industry has proved an effective way to close Brazil’s gap in industrial capacity. Petrobrás recently reported to Upstream Online stating that the company would delay plans to contract additional drilling rigs for its E&P of the Campos and Santos basins, the two major pre-salt regions, because it had finalized arrangements with Brazilian contractors. Petrobrás Executive Manager of Services, Cristina Pinho, explained, “We have no intention to go into the market to contract more rigs. We already have 40 drilling rigs with capacity to drill in the pre-salt water depths of more than 2000m.” The decision to focus on the growth of domestic industry is being

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220 Simon Romero, “Petrobras.”
222 Palmigiani “Petrobras rig decision.”
223 Ibid.
largely aided by PROMINP, which has outlined the nation’s gaps between the demand and supply of critical resources.\textsuperscript{224} The program’s operations demonstrate Brazil’s ability to identify the limitations of its industrial capacity and improve them for long-term growth. Still, an over emphasis on domestic industrial growth leads to contracts between Petrobrás and Brazilian companies that exhibit less advanced capabilities and higher costs than international competitors. Moreover, the ANP’s overriding control over these decisions cause Petrobrás to lose operational independence over its own supply chain and can be seen as another source of Brazil’s delay in developing pre-salt oil. It is evident that the tradeoff between Brazil’s development goals and Petrobrás’s performance has presented itself more clearly than ever before.

Underscoring the urgency of the dilemma faced by Petrobrás, a prominent Brazilian energy consultant, Adriano Pires, explains:

“Petrobrás was once thought indestructible, but that is no longer the case. Petrobrás is now a tool of short-term economic policy, used to protect domestic industry from competition and fight inflation. This disastrous process will intensify if it is not reversed.”\textsuperscript{225}

LCRs may slowly be narrowing Brazil’s capabilities gap, but it is surely raising harsh criticism from those who easily identify Petrobrás’s decline in performance. Describing the accumulation of problems at Petrobrás, Exame, Brazil’s top business magazine, bluntly accused the Brazilian government of “destroying Brazil’s largest company.”\textsuperscript{226}

Analysis of the current status of Brazil’s oil sector suggests that, of the various policy options to choose from, LCRs appear to be the instrument that is most worth

\textsuperscript{224} Design, construction & assembly and materials & equipment are considered “critical resources” and are targeted by the program’s investment portfolio and the government’s use of LCRs to bolster industry capacity. See: “Prominp, Apresentações.”

\textsuperscript{225} Simon Romero, “Petrobras.”

\textsuperscript{226} Romero, “Petrobrás, Once Symbol of Brazil’s Oil Hopes.”
considering. As seen in Norway, effective use of LCRs can bolster the growth of a domestic petroleum market while also preserving a competitive market environment. Norway’s strategy to reduce LCRs after developing Statoil into an international player of the petroleum market fostered competition and development of the NCS. If Brazil were to lower LCRs, this would lower costs for Petrobrás to contract firms to build the oilrigs necessary for pre-salt projects. LCRs could also become more specifically targeted to areas within the domestic petroleum sector that require further development. By now, Petrobrás has led Brazil’s infant petroleum industry of the 1950s into an international destination for oil companies. More attention should be given to the effects of high LCRs (as high as 80%) in promoting domestic industry during an era when the petroleum industry is very advanced. By reducing LCRs, maximizing market efficiency would enable Petrobrás to produce more oil and thus provide the government with more funds that could be used for reinvestment or for its development programs. Although the government’s long-term goals are sound and aligned with the nation’s development strategy, the government is creating deadweight loss in a critical sector of the nation’s economy during a time when energy supply and the economic performance of Petrobrás are intricately tied to the nation’s progress.²²⁷

On the other hand, if Brazil continues to keep LCRs high, Brazil’s domestic capabilities will surely fill the informational gap and eventually enable Petrobrás and other Brazilian companies to capitalize on the pre-salt reserves. This will, however, undoubtedly come at the costs of efficiency and time. Petrobrás’s decline in production and Brazil’s increase in imports are evidence to this. As Brazil’s population continues to

²²⁷ Petrobrás is consistently the first or second most actively traded stock on the Brazilian stock exchange, BM&F Bovespa.
boom and oil demand continues to skyrocket, the government must consider the wide-
reaching ramifications of protectionist policies.

Another debate surrounding oil companies involved in the Brazilian petroleum sector is the politicization and bureaucratization of the sector. According to the World Bank, Brazil’s Rule of Law ranking is 55.5 percentile, which is between Venezuela’s 1.5 percentile and Norway’s 98.1 percentile. More frustrating to investors is the World Bank’s Ease of Doing Business ranking which places Brazil at 130 out of 185 economies under consideration.228 If Brazil is able to improve its openness to international markets, this may lead to more efficient development of the pre-salt reserves. This can occur by improving enforcement on contracts, easing the ability to start new businesses and ease of resolving company insolvency.229

The endless debates of the Brazilian government’s decisions to regulate and distribute its oil wealth are characteristic of the magnitude of the pre-salt discoveries. Once a nation consistently threatened by its lack of energy security throughout its history, Brazil is now emerging as leader of the global energy market. Since transitioning to operating more as an IOC than as an NOC, Petrobrás has forced the government to ensure that the company maintains the state’s interests in mind, which has become less and less realistic. Although the Brazilian government will remain a majority shareholder of Petrobrás, the competitiveness of Petrobrás currently lies in its economic performance, no longer in its state ties. Time will tell the extent to which Brazil is able to

229 According to The World Bank, these are the categories that Brazil performed worst in within the Ease of Doing Business index.
turn the pre-salt discoveries into what former President Lula deemed Brazil’s “second independence.”

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