Two important, but largely separate, themes address the overall topic of economic “regulation” with respect to non-renewable natural resources: regulation of the gains from extraction (the level and distribution of government revenues) and regulation of the activities and actors in production. This paper focuses on the latter topic with respect to petroleum in Brazil. Regulating Brazilian petroleum in the second half of the twentieth and beginning of the twenty-first centuries has incorporated the fundamental tensions that accompanied the dual transition of Brazil from the largest developing-country petroleum importer to potentially a major exporter and from a closed economy to one of the most dynamic open emerging economies. The paper’s purpose is to assess the regulatory practices that the Brazilian government put into place as it opened the petroleum sector to participants other than the state-owned firm (Petrobras.) The ideologies and practices of regulatory regime change reflect a contentious history of natural resource management. To anticipate the conclusion, given the possibilities of new petroleum wealth, traditions of state control and rent-seeking strongly challenge the attraction of open markets.

The paper transcends the distinction between history and current policy analysis. Regulating the extraction of petroleum from the recently discovered deposits in the “pre-salt” (ultra-deep-sea) geological layer of the seabed within Brazilian territorial waters of the western Atlantic Ocean is a rapidly evolving and controversial issue of the political landscape. The final characteristics of regulation will shape the possibilities for Brazil to escape the “curse” often attributed to petroleum. Within the overall theme of regulation, this paper addresses control over participation within the sector, organization of regulatory bodies and the form of compensation to the state for permitting oil extraction. The paper begins with brief overviews of the long-term historical context of regulatory actions with respect to non-renewable natural

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1 Research on regulation of economic gains from petroleum production in Brazil is on-going.
resources and of Brazilian oil history. Then, it analyzes the history of petroleum regulation, within distinct political-economy environments. This perspective highlights the attempts to balance petroleum with broader economic policies, mitigate deep-seated concerns of nationalism and develop independent regulatory authority. The conclusion emphasizes the continuing pull of rent-seeking and traditional regulatory practices on structuring the organizing principles for new development.

To be clear, in past decades, the political importance of petroleum production in Brazil has far outstripped its economic role. Until the discovery of offshore deposits in the 1970s, petroleum policy focused on refining, domestic distribution, and international expansion to secure supply. Through most of the twentieth century, the goals of petroleum policy were to minimize the financial drain and economic vulnerability of oil’s prominence in the total basket of imports (see Figure 1) and to realize its externalities with respect to building a large-scale industrial base. The anticipated externalities included ensuring the supply and allocation of petroleum at government-regulated prices and advancing industrialization by creating domestic demand for sophisticated manufactured products for its own operations. Two exogenous factors fundamentally re-shaped Brazilian ambitions within the petroleum sector. The energy crises of the 1970s highlighted the attractions of energy independence at the same time that Brazilians were discovering rich offshore deposits of petroleum. Then, in 2007, Petrobras confirmed its discovery of pre-salt deposits and supported ambitions of Brazil joining the small group of major exporting nations. The first-order impact of these deposits has been small to date. In 2010, petroleum and natural gas contributed less than ten percentage points to commodity exports, without entirely eliminating import requirements. Nevertheless, the newly discovered reserves have raised the possibility for an additional commodity to assume a major role within the domestic economy and to propel Brazil to a prominent position in global oil markets.

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The dramatic change in Brazilian energy prospects has occurred more or less simultaneously with what appears to have been a similarly sweeping change of its political economy regime. After establishing itself as one of the most assertive protectionist economies of the mid-twentieth century, Brazil assumed a leadership role, at the end of the century, among emerging economies in opening its markets to dynamic competitive global practices. Doing so has required an overall revamping of economic governance and regulation. The rapidly developing petroleum sector has provided one of the most challenging venues for applying new regulatory principles – and one of the most important. The shifts in political economy regime, geology, and production capacity have directly shaped the regulatory environment.

International experiences of national petroleum regulation have generally taken one of two perspectives: to treat the commodity as either a national strategic good or as a market good. The transition from the former interpretation to the latter proceeded relatively smoothly in Brazil during the 1990s. Since then, rent-seeking opportunities from the new production potential has challenged the transition. This paper takes the position that the trajectory of the regulatory history of petroleum has impeded Brazilian attempts to transform the sector and its

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4 Whether these two trends were independent of each other is addressed in the larger project of which this paper is one part.
6 See, for example, R. Rosas, "Lobão defende mudança na legislação do setor de petróleo para aumentar repasses ao governo," O Valor Online 2008.
state-owned enterprise into significant players in global markets. In parallel with the chronology of Brazilian petroleum history, these impediments have arisen in discrete situations. First, establishing Petrobras in 1953 as a state-owned enterprise with monopoly powers to import, produce and refine petroleum avoided the need to create a transparent regulatory structure. By the 1980s and 1990s, both investment and operations in the sector opened to private actors without substantive change to regulation until the state partially divested of its equity shares. At the beginning of the twenty-first century, the historically entrenched dominance of Petrobras, the relatively weak effectiveness of the newly formed regulatory body, the Agência Nacional de Petróleo, Gas Natural e Biocombustíveis (ANP or National Petroleum Agency) and slow reforms to capital markets were among the factors that hindered the pace of the sector’s development. More recently, the actions to regulate the recently discovered pre-salt deposits have re-enforced Petrobras’s dominance in the sector through non-market tools.

**Brazilian History of Regulating Non-Renewable Natural Resources**

Regulation of natural resources has a much longer history than petroleum in Brazil. Efforts to extract wealth from the subsoil began with the earliest colonization by Portugal. Regulating access rights was key to converting resources into wealth and distributing their benefits. Establishing the principle of sovereign rights to the subsoil was one of the first documented regulatory actions of Portuguese rule. Gold discoveries in 1695 motivated expansion of colonial regulation, administration and judicial enforcement. As the gold-mining boom diminished, attention turned to more mundane resources. From 1795 through 1808 Portuguese imperial policy tried to create incentives to increase iron-ore mining, in order to manufacture implements to support sugar and precious mineral production. This experience resulted in an early “proto-industrial policy” of state involvement and state equity investment in the mining and manufacturing sectors. The failure of these efforts and lack of interest left minerals undisturbed within the private sector for most of the nineteenth century.

The first substantive change to mining law in Brazilian history came with the change of political regime from the Empire to the First Republic. The Constitution of 1891 transferred subsoil mineral rights from the public to the private domain, attaching it to the surface property of the landowner. Legal change occurred at the same time that the interest in minerals shifted from deriving the immediate wealth of precious minerals to the utilitarian metals that provided

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8 A possible exception to this interpretation may have been attempts to manufacture arms & munitions during War of Triple Alliance (1864-1870).
inputs for an industrial economy. However, changing property rights proved insufficient to motivate mining commensurately with local ambitions. Geologists had identified Brazil as the locale of the largest and richest untapped iron ore deposits in the world. This caught the attention of European steel producers, who were increasingly worried about maintaining steady supplies, and of prominent Brazilian entrepreneurs, who were turning their focus to industrialization efforts. Emerging as a mineral producer required further transformation in Brazilian economic governance and generated decades of controversy.

The Mining Code and (second republican) Constitution, both of 1934, re-nationalized the subsoil\(^9\) and laid the groundwork for further state intervention within the production process. These laws codified the prohibition of foreign capital in the minerals sector.\(^10\) The Mining Code also introduced the first legislation to address petroleum, explicitly treating hydrocarbons on a par with solid industrial minerals.\(^11\) In 1942, the Companhia Vale do Rio Doce (Vale) formed as a state-owned enterprise to mine and export iron ore.\(^12\) The politics and economic ideas that motivated the formation of Vale established the precedent for state intervention in petroleum. The major issues common to both iron and petroleum included state ownership of in-ground mineral resources and a state-owned enterprise to dominate the sector. For much of the remainder of the twentieth century, governance of both iron ore and petroleum production was structured by the merged roles that the state assumed in production and regulation.

**HISTORY OF PETROLEUM IN BRAZIL IN A NUTSHELL**

Petroleum policy was in place long before discovering oil. Small deposits in the province of Bahia in 1864 were of interest for their potential to manufacture kerosene, mostly for

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\(^9\) Brasil, "Constituição dos Estados Unidos do Brasil (16 July 1934)," (Rio de Janeiro: Impresa nacional (Also available at: http://pdba.georgetown.edu/Constitutions/Brazil/brazil34.html), 1934); Brasil, "Código de Minas," in Coleção das Leis e Decretos Decreto # 24642 (1934). The subsoil in which it was found belonged in the public domain, but upon extraction, the mineral belonged to the concessionaire.

\(^10\) Foreign ownership of mining enterprises had been the issue of catalyzing controversy in minerals from the 1920s. Triner, Mining and the State, Chapter 4.

\(^11\) Quintas and Quintans, A história do petróleo, 63-64.

\(^12\) The formations of Vale and the Companhia Siderurgia Nacional (CSN or National Steel Company) were related to, and occurred within a year of, each other. With time, Vale expanded into providing ore to the domestic market, infrastructure for heavy industry, manufactured steel and related products. Simultaneously, steel companies also mined iron ore to meet their own demand. By the twenty-first century, Vale was a privately owned company, and it had orchestrated Brazil’s presence as one of the largest ore producers and exporters.
lighting.\textsuperscript{13} Active exploration began in 1892, and industrial ambitions motivated further interest. Petroleum arose as a national issue in the early 1930s. Concerns about national sovereignty of control and ownership defined the political rhetoric and controversy that surrounded oil. Brazil’s history as a commodity-export producing (i.e., natural-resource extracting) colony, its subsequent vulnerability to global demand trends and reliance on imports for manufactured goods provided the backstory that justified “economic nationalism.” Anticipating phrases that came into use in later years, industrial policy and energy independence were tightly integrated goals. The problem with petroleum, however, was that early exploration and geological mapping had not identified commercially viable deposits, even if they often found enough evidence that geological conditions supported the likely presence of petroleum to keep expectations high.\textsuperscript{14} Framing its importance in terms of national defense and economic security,\textsuperscript{15} the Brazilian military and industrial sectors sought a means to finance petroleum exploration. They based their arguments for direct state participation on the externalities of petroleum development. The substance was necessary to fuel the large-scale modern industrial sector that was integral to their concept of Brazil’s future. This perspective came to be accepted wisdom at the highest levels of government. In 1939, President Vargas announced that “It remains for us now to industrialize petroleum and install large steel, which we will do soon. ... Iron, coal and petroleum are the mainstays of any country’s economic emancipation.”\textsuperscript{16} These ideas underpinned the role of the state within the petroleum sector.

The first oil company (the Companhia Petróleos do Brasil) founded in 1932, failed after two years, when the National Department of Mineral Production issued a statement that nothing substantiated the expectation of finding petroleum reserves in the areas under exploration.\textsuperscript{17} As a result, the Technical Council of Economy and Finance signaled the federal

\textsuperscript{13} J.L.d.M. Dias and M.A. Quaglino, \textit{A questão do petróleo no Brasil : uma história da Petrobras} ([Rio de Janeiro, Brazil]: CPDOC/SERINST Petróleo Brasileiro, 1993).
Treasury’s unwillingness to participate in the venture, and private investors could no longer justify their participation. In the absence of commercially viable deposits at the time, state intervention in petroleum meant supporting its continued exploration as well as building the capacity for refining and distribution. After new finds in 1951, production began in 1954, with output reaching 2,500 barrels per day in the Recôncavo of Bahia (onshore, but close to the coast).

In 1953, the Petroleum Law provided for the formation of Petróleo Brasileiro S.A. (Petrobras) with federal capital and the law mandated national control. This solution to the nagging concerns of providing support for industry consolidated strategies of state-driven economic nationalism. The state stepped in to substitute for private-sector capital of foreign or domestic origin. Petrobras based its legitimacy on the state’s claims to property rights and the firm-ownership model of earlier state-owned enterprises (overwhelming ownership and control by the federal government, but organized as a limited liability company with shares tradable on the Brazilian stock exchange.) Petrobras became a central player in an activist growth strategy that relied on import-substituting industrialization. The enterprise had three functions within this strategy. It was responsible for maintaining the supply of petroleum for the

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19 Vaitsm, O petróleo, 183.
20 Brasil, Lei 2004; 3 October 1953. The Law was first introduced for debate in the Congress in 1951, and the final version included such additional provisions as the ability to expropriate land deemed necessary for petroleum exploration.
23 A very small portion of shares remained in the hands of private owners and was tradable on the stock exchange.
Brazilian economy. Second, by virtue of the price differential between imported crude and refined petroleum derivatives, Petrobras provided a source of significant foreign exchange savings for an economy in chronic deficit. Finally, externalities of the petroleum sector spurred further industrial development through both the local demand that Petrobras generated for industrial goods and the physical infrastructure that the firm constructed.

The exogenous shocks of global oil crises in 1973/74 and 1978/79 reoriented the political economy of petroleum in Brazil. Global petroleum embargoes, with associated price increases, escalated the cost of continued reliance on imports. (See Figure 2.) Continuation of aggressive industrial policy, in light of balance-of-payments and sovereign debt concerns generated by the oil price increases motivated new strategies for oil policy. Domestic exploration regained priority status in national energy policy. Petrobras found new reserves in the early 1970s, primarily in offshore locations (see Map), and the company brought new wells into operation through the decade. State investment in exploration activities tripled between 1973 and 1979. Subsequently, production more than tripled from 1979 to 1987.

![Figure 2 World Petroleum Prices, 1960-2010](http://databank.worldbank.org)


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25 The combined increases of extraction and imports had fueled rapid industrialization in the third quarter of the twentieth century.
With time, Brazilian oil deposits proved richest in offshore locations. Offshore production rose from less than six percent of total production in 1970 to ninety-one percent in 2009. (See Figure 3.) The potential wealth from these reserves supported ambitions for energy self-sufficiency. More recently, the pre-salt deposits, with the prospect of rich additional unexplored reserves have transformed goals of self-sufficiency into expectations for a strong new source of export revenues. At year-end 2009, the proven reserves of Brazilian deposits was the equivalent of 13% of the combined proven reserves within the five largest global producers, and the pre-salt reserves accounted for 85 percent of Brazilian holdings (Table 1.) By the end of 2011, estimates of the volume of these reserves ranged between 50 billion and 123 billion barrels of petroleum-equivalent.\(^28\) Beginning with offshore exploration in the 1990s, and accelerating with extension to the pre-salt depths, research and development within petroleum engineering has been impressive and capital intensive.

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REGULATION OF A STATE-OWNED MONOPOLIST – AN OXYMORON?

Mining and petroleum regulation became increasingly separated. Responding to the perception that the Mining Code created barriers to exploration, regulation (but not legislation) of petroleum was separated from minerals in 1938. Although the Constitution and Mining

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29 The separation of petroleum from minerals for regulatory purposes was codified in Constitution of 1946 (J. Távora, "O Código de Minas e desenvolvimento," Geologia e metallurgia 14 (1956): 164-65. CPDOC: AN c 1928.0202; letter to Goés Monteiro from Monteiro Lobato, 3 May 1940.) An amendment to the Mining Code solidified this separation in 1940 (Leis; Decreto-Lei 1985 of 29 January 1940, and Decreto-Lei 3236 of 7 May 1941 regulated petroleum and natural gas). See also Dias and Quaglino, A
Code reforms of 1937 recognized the concessionaire’s ownership of extracted minerals, proponents of nationalization made the case for the petroleum itself to be the property of the state. This distinction would remove petroleum from private ownership claims. Opposition to foreign ownership was behind the prohibition of private ownership. As a result, the scope for developing the oil sector in a manner consonant with dynamic market conditions capable of attracting sufficient private capital narrowed considerably. By the late 1940s, Juarez Távora, the Minister of Agriculture where regulatory authority for oil and minerals resided, understood both that continued exploration would require large-scale state intervention (he phrased it as “monopoly”) and that a state monopoly was politically infeasible. Constituting Petrobras as a state-owned enterprise in 1953, with a monopoly for prospecting (and anticipatorily, producing) and refining petroleum was a major break with earlier principles, which prohibited state ownership combined with monopoly power.

By the late 1950s, petroleum policy needed to grapple with the tangible problems of supply and distribution. The mandate and rules for operations expanded, and vertical integration of production processes occurred at a rapid pace through the 1960s. In 1963, Petrobras’s national monopoly extended to include transport as well as the import and export of crude petroleum and its refined derivatives. Through the decade, the company went on to create subsidiaries for petrochemicals (mostly fertilizers for agro-industrial application, rubber-based products and plastics), retail distribution and international expansion for commodity trading and overseas exploration. As a result, Petrobras became one of the most complicated conglomerate firms of the developing world. With the exception of retail distribution, the state-owned enterprise had monopoly rights in each of these areas. Regulating the petroleum sector

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32 de Almeida, "Monteiro Lobato," 14. Prior to Vargas’s return to the presidency in 1951, the conditions for state ownership required that the state-owned enterprise not be a monopoly within its sector. T.J. Trebat, *Brazil’s State-Owned Enterprises: A Case Study of the State as Entrepreneur* (Cambridge [Cambridgeshire] ; New York: Cambridge University Press, 1983), 42.

33 Trebat, *Brazil’s State-Owned Enterprises*, 42. Some analysts characterize the arrangement differently, stating that Petrobras did not have a monopoly. Rather, the state had the monopoly on petroleum, and elected to vest the entire operation of the sector in Petrobras. (See for example, L.C.P. Quintans, *Contratos de petróleo: Concessão e partilha: Propostas e leis para o Pré-sal* (Rio de Janeiro: Benício Biz and Instituto Brasileiro de Petróleo, 2011), 77.) The historiography and analytic literature conflate the distinction, and routinely characterize the monopoly’s as Petrobras’s.

required that the state regulate only one entity – itself. By statute, the Ministry of Mining and Energy was responsible for overseeing Petrobras and the National Energy Council formulated energy policy. No pretense of regulatory oversight or independence prevailed in this environment.

Although constituted as a publicly traded limited-liability firm (with share ownership limited to Brazilians) from its origins, Petrobras functioned as an entity that was intended to provide a public good to the Brazilian economy. The public-goods perspective of the firm, its position as the only actor in the sector and state ownership combined to situate much of the “regulation” of the petroleum industry within the confines of intra-governmental agreements. Codified regulatory practices were few. The company did receive specific concessions to delineate (and confine) its exploration and production rights. Discussion between Petrobras and the Ministry, rather than publicly transparent rules, determined the specific practices of prospecting, producing, refining, distributing and pricing. Environmental regulation specific to petroleum did not exist until 2000. Product quality, local-content provisions and occupational safety practices were also not subject to regulation by an administrative body that functioned independently of Petrobras. The company did not ignore these aspects of their operations. Nevertheless, actions resulted from direct negotiation with the Ministry of Mining and Energy, or from their own initiative; they were neither required nor enforced by regulation.

The regulations that most affected Petrobras were those that defined the company’s role in the macro-economy and its position within the industrial policy of import substitution. These included exchange rate controls, product allocation and distribution to critical consumers or deficit regions, pricing and trade preferences. In all of these fields, Petrobras received

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35 I am not arguing that providing petroleum was a public good as understood by economists and political scientists. The argument is that the Brazilian state and the firm perceived petroleum as a public good.  
preferences and exemptions to further the goal of increasing petroleum availability through imports of crude oil, which Petrobras would refine.\textsuperscript{37}

The melding of owner/producer with regulator began to face pressure in the 1970s and 1980s. International supply uncertainty (in volume and prices – the oil “shocks”) as well as financial and fiscal crises that were compounded by closed domestic capital markets characterized these years.\textsuperscript{38} (See Table 2.) In this economic environment, the state was incapable of investing in its premier enterprise. Financial constraints arose simultaneously with the discovery and development of large offshore deposits. The technology and logistics for offshore production (transportation of equipment and personnel to offshore sites, drilling platforms, etc.) were capital intensive. Increased investment in basic exploration constrained other aspects of the firm’s development and maintenance.

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<td>Balance of payments, as % exports</td>
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<td>Federal government deficit, as % GDP</td>
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How was Petrobras able to invoke the expansion of exploration and technology that was necessary to explore and drill the offshore discoveries in order to transform Brazil from major importer to self-sufficiency?

Re-thinking the relationship with foreign actors, Petrobras began to structure mechanisms to tap the capital, operational capability and technology of major oil producers. The firm entered into joint ventures (termed “risk-sharing contracts”) with multinational oil-

\textsuperscript{37} [Randall, 1993 #2367][Dias, 1993 #2552]
\textsuperscript{38} For a discussion of the macroeconomic problems created by the oil shocks and the concurrent management of the economy see [Fishlow, 1985 #1485][Baer, 1995 #1105]
producing and -sourcing enterprises. The change reversed the earlier strong prohibitions against foreign presence in Brazil; it was controversial and required careful assessment of contractual relations with outside firms. Petrobras entered into risk-sharing contracts without specific legislative authorization, though the new arrangement had the support of President Ernesto Geisel (who had been president of Petrobras shortly prior to his term as President of Brazil during the military regime).\(^{39}\)

Prior to the first risk-sharing contracts in 1975, concessions to Petrobras determined its rights to explore for and produce petroleum. The firm negotiated contracts with foreign and domestic entities to provide goods and services for fixed fees.\(^{40}\) All of the risks and potential profits remained with Petrobras, and by extension with the Brazilian state. Through joint ventures, Petrobras created partnerships with its providers that divided the risks and potential profits.\(^{41}\) Risk-sharing provided a means to attract the capital and technology required to develop newly discovered offshore deposits. Simultaneously, they maintained industrial policy, the formality of the Petrobras monopoly and the public domain of the petroleum. Petrobras retained its monopoly of supply as well as control of all stages of production.\(^{42}\)

By the end of the 1970s, Petrobras had joint ventures with 20 firms, primarily in order to develop the offshore deposits of the Campos Basin (see map).\(^{43}\) The ability for Petrobras to partner with foreign and domestic companies opened the way for private actors to explore, produce and profit from Brazilian petroleum.\(^{44}\) Industry participants interpreted the introduction of joint ventures as the first step away from the tightly controlled Petrobras

\(^{39}\) Quintas and Quintans, *A história do petróleo*, 73-76. Since the new form of contracting was between Petrobras and other firms, they needed no legislative authorization. Earlier prohibitions in Petrobras contracting practices arose from political and ideological sensitivities, rather than legal necessity.

\(^{40}\) These contracts usually provided for technology transfer and personnel training. Technology transfer and training could take such forms as pairing Brazilians with foreign workers, explicit technology acquisition or initiation of university engineering programs. (CPDOC Fundação de Getúlio Vargas, "Memória do setor petrolífero."); interviews of Artur Levy, 24 July 1987: 92-98; Antonio Seabra Moggi, 5 February 1988: 40-79, 2 March 1988: 129-130, 31 August 1988: 259-261.

\(^{41}\) A third possible arrangement, granting concessions (and all potential risks and profits)\(^{41}\) to foreigners or private sector Brazilians remained unavailable.


\(^{43}\) The UN Convention on the Law of the Seas in 1982, extending sovereign territorial limits to two hundred miles from coastlines, consolidated Brazilian claims to offshore deposits.

monopoly towards global market competition in supply and production. Nevertheless, the risk-sharing relationship, and as a result monitoring and enforcement, remained between Petrobras and the service provider; it did not invoke oversight by a disinterested regulatory body.

**REGULATION IN AN ENVIRONMENT OF OPEN MARKETS**

Disruptions in financial markets resulting from the oil shocks focused at least as much attention on the link between macroeconomic policy and the state’s entrepreneurial role as they did on petroleum policy. By the 1980s, macroeconomic trends seriously hampered both the state’s ability to finance public investment and the creditworthiness of state-owned enterprises. Lack of public-sector capital for investment in the light of fiscal crisis, excessive debt burden, inflation and political uncertainty left Petrobras and other state-owned enterprises under-financed and necessitated reform. Aligning policy to minimize these detrimental circumstances and to benefit from globalizing practices that had transformed many other economies during the decade required loosening the grip of import-substituting industrial policy. Doing so reversed broad economic policies that prevailed through the mid-twentieth century. The pillars of the new strategy were to privatize many state-owned enterprises and to liberalize commerce. In the international sphere, liberalizing commerce meant reducing tariff barriers and emphasizing export earnings, primarily through commodity trade. Domestically, the Constitution of 1988 revamped governance procedures for the re-established civilian government. It remodeled the economic role of the state to include regulating, planning and incentivizing, but not producing. Opening the macro-economy to wider international participation and market forces in the late-twentieth century required the establishment of a new regulatory framework to accommodate new actors. The reformed regulatory regime was in continual tension with entrenched interests and practices.

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46 The judicial system remained available to adjudicate contractual disputes.
The Constitution mandated the privatization of state-owned enterprises. It also continued to treat humanly produced goods differently from non-renewable natural resources. Petroleum, natural gas, other hydrocarbons and nuclear minerals remained property of the state, and Petrobras remained the only protected state monopoly.\textsuperscript{49} The government’s goals in reforming the petroleum sector were similar to those throughout the economy; but the strategy was different. Privatization was never seriously considered as a strategy in the oil sector.\textsuperscript{50}

Fiscal constraints became binding simultaneously with the enhanced prospects offered by offshore development potential. Petrobras and energy policy-makers faced strong incentive to open the firm to large outside investment as they tried to balance rapidly escalating capital needs to extend and deepen offshore capability with the limits of funding and of joint ventures. But they also needed to accommodate the political infeasibility of privatization. The state’s response was to “flexibilize” the monopoly, beginning in 1995 with an amendment to the Constitution. A new Petroleum Law in 1997 operationalized the Constitutional Amendment.\textsuperscript{51} In this framework, the state retained resource ownership while private actors, including foreign companies, could obtain exploration and production rights.\textsuperscript{52} In addition the Petroleum Law opened other activities intrinsic to the sector, such as refining and transportation, to private (including foreign) investors. The law required open access to pipelines, maritime tankers and other transport; producers could not operate proprietary facilities.\textsuperscript{53}


\textsuperscript{50} Although Petrobras remained a state-owned enterprise, the firm did privatize some of its subsidiaries that were not central to its supply and production functions, such as fertilizers and retail distribution.\textsuperscript{51} Constitutional Amendment 09(9 November 1995) and the Petroleum Law enabled the constitutional amendment (Lei 9478; 6 August 1997.) The proposed reform to petroleum was one part of a more comprehensive attempt to adjust the Constitution, in order to open the economy. A. de Souza and C. Pereira, "A flexibilização do monopólio do petróleo no contexto das reformas dos anos 1990," in \textit{Petróleo: Reforma e contrarreforma do setor petrolífero brasileiro}, ed. Fabio Giambiagi and Luiz Paulo Vellozo Lucas (Rio de Janeiro: Elseveir, 2013), 50.

\textsuperscript{52} To date, only one Brazilian company (OBX, primarily owned by Eike Batista) has engaged in oil exploration, although a number of Brazilian firms participate in many aspects of petroleum-servicing.\textsuperscript{53} P.V. Pires, \textit{A evolução do monopólio estatal do petróleo} (Rio de Janeiro: Editora Lumen Juris, 2000), 129; E.M.B. Gama Coutinho, "O que mudou na indústria do petróleo?," in \textit{Informe Infra-estrutura; Área de projetos de infra-estrutura}, ed. BNDES (Rio de Janeiro: BNDES, 1998), 3-4; R.P. Pinheiro, "Abastecimento
Developing an effective regulatory framework to replace the previously close interconnection between state and state-owned firm was an immediate challenge in petroleum. Doing so was necessary to attract private investors. The Petroleum Law of 1997 provided for the National Council on Energy Policy (Conselho Nacional de Política Energética, CNPE) to set energy policy and the National Petroleum Agency (ANP) to administer policy and laws, as a regulatory agency within the Ministry of Mining and Energy. Among the policies within the CNPE’s portfolio were allocating production and distribution of energy resources, guaranteeing supply to remote areas and trade policy with respect to energy. Building the regulatory structure and establishing the ANP became an exercise in demonstrating transparency in public governance.

The major stated purposes of the ANP were to promote competition and investment, ensure consumer rights and guarantee supplies. Other goals, such as environmental protection, maintenance of the national geological database for petroleum, creating incentives for technological innovation and coordinating with other regulatory bodies also fell to the agency. Its specific activities also included demarcating and managing the annual competitive auction of


55 Petroleum was one of several sectors undergoing similar processes. The other sectors building regulatory frameworks included electricity, telecommunications, public sanitation, health, water, land transportation and water transportation. (G. Oliveira and Fujiwara, "Brazil’s Regulatory Framework: Predictability of Uncertainty?", in Texto para Discussão # 147 (São Paulo: Fundação Getúlio Vargas; Escola de Economia de São Paulo, 2006).)

concessionary blocks for exploration and production,\(^\text{57}\) collecting and distributing royalties, expediting licenses, overseeing the sector’s transportation infrastructure,\(^\text{58}\) and securing supply of oil through the National System of Stockpiles for Combustible Fuels. From 1999 to 2007, the ANP held annual open auctions for oil companies to bid for concessions.\(^\text{59}\) As a further indication of the ANP’s broad scope of regulatory influence, local content provisions have come into effect as a result of the agency’s criteria for evaluating auction bids, rather than by legislative action.\(^\text{60}\) The ANP’s specific responsibilities vested it with significant statutory control over the sector.\(^\text{61}\) In all, the framework left room for substantial discretion, but it seemingly created an environment that separated regulatory procedures from commercial activity.

Opening the sector to private participants was politically contentious and necessitated a wide range of regulatory changes; but it did not challenge Petrobras. Dominance by one firm and the lack of a technologically competent pool of possible regulators without histories with Petrobras have limited the ANP’s independent effectiveness. By 2006, Petrobras still retained 95% of the domestic market in petroleum-derivative products. Refining capacity constraints continued to plague the industry. Petrobras operated twelve of the fourteen refineries within Brazil. The high fixed and operating costs of heavy petroleum refining (that found in Brazil) continued to deter private investment.\(^\text{62}\) ANP actions were concentrated in retail outlet (gas station) inspection and controlling market entry in the exploration segment of the industry.\(^\text{63}\) Even in exploration, the ANPs actual powers were limited. For example, in 2008, federal court action halted the eighth round of bidding for offshore sites in a conflict over the concentration

\(^{57}\) The criteria for granting a concession when competitive bids had been entered were not transparent.

\(^{58}\) The Petroleum Law required open access to pipelines, maritime tankers and other transport; producers could not operate proprietary facilities and investment in transport facilities was open to private actors. Transport of natural gas is included in these provisions. Pires, *A evolução do monopólio estatal do petróleo*, 129.

\(^{59}\) ANP, [http://www.anp.gov.br/?id=516](http://www.anp.gov.br/?id=516). The first auction in 1998 (Rodada Zero) allowed Petrobras to establish which of its pre-existing concessions it would keep. In 2007, forty-one blocks were withdrawn immediately prior to the auction because of the announcement of the pre-salt deposits within their designated area. The auction process was halted by judicial action in 2008.

\(^{60}\) Local content provisions have also proven slippery; precise definitions do not exist and the conditions for waiving the provisions are rather nebulous. Quintans, *Direito do petróleo: conteúdo local*, 10-26.


of contracts awarded to a single bidder. Limits to the concentration of winning bids were seen as a way of constraining Petrobras’s domination in the industry.  

Implementing a regulatory framework to support the participation of new actors was a requirement for inducing the entry of new capital and technology into the petroleum industry. Instituting Petrobras’s ability to raise capital in private equity markets was a second means to the same goal. Doing so supported the firm’s growth without requiring public-sector resources. However, the crucial caveat that the state would retain a majority share of Petrobras (minimally, 50% plus one share) remained in place. Issuing equity on the São Paulo stock exchange raised the equivalent of US$807 million in 2001. Even more radically, Petrobras raised US$5.1 billion by selling equity shares on the New York Stock Exchange in 2002. Opening the enterprise to private capital allowed it to grow extremely rapidly while maintaining the state’s control.

The strategic goals of capital expansion had important implications for both petroleum and capital markets. For Petrobras, the new capital financed the company’s ever-increasing offshore production and technology development through larger partnerships as well as its own development investments. Increased capital was a major factor that contributed to positioning Petrobras as a major global petroleum company in all aspects of production and technology development. Although not the topic of this paper, the governance practices and procedures for financial capital within Brazil were, arguably, more affected by the Petrobras stock issuance than the first-order effects on the firm. Raising capital from Brazilian investors on the São Paulo exchange aided the promotion of pension fund, mutual fund, and individual investment. International markets (the New York Stock Exchange) bound Petrobras to international corporate governance standards with respect to financial transparency and such operational areas as safety, human resource and environmental protections.

**Regulating the Pre-Salt**

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65 The equity issued and traded in New York is in the form of ADRs (American Depositary Receipts) and require that the firm meet US Security and Exchange Commission financial disclosure standards. The firm subjected itself to foreign financial regulation – an interesting subject for further study.

66 Organizing investment vehicles available to small investors (such as pension and mutual funds) was an important, and under-studied, aspect of “financial opening” during the 1990s.

67 In order to issue ADRs on the NYSE, foreign firms must comply with US Security and Exchanges financial disclosure requirements and meet US GAAP (Generally Accepted Accounting Practices) standards. (Interview with H.P. Reichstul, 11 June 2012) emphasized the operational reforms.
The confirmation of massive pre-salt deposits in 2007 has motivated another regulatory overhaul in order to govern that sector in the future. The cornerstone of the reform has been to treat deposits in the pre-salt layers differently from onshore or other offshore (but not pre-salt) oil. Most importantly, control over exploration of the pre-salt deposits has returned to federal public authorities. The revamped approach applies both to production and to the rents captured by the state. The inability to reach a final resolution on the allocation of royalties between producing states and municipalities and non-producing regions leaves the reform an open item on the national legislative agenda.

However, three new principles of regulation that apply to the exploration and extraction of the pre-salt reserves seem to be settled. These changes are (1) re-codification of Petrobras’s privileged position through an exclusive right (cessão oneroso) to five billion barrels of oil and guaranteed thirty percent participation in all pre-salt projects, (2) the switch from concessionary to profit-sharing agreements as the format for granting access, and (3) the formation of a new entity to directly represent the state’s interests in petroleum contracting negotiations. Taken together, these actions entail significant steps away from the principles of open, market-based competition and transparent regulation, and the changes reinforce a privileged advantage for Petrobras in the pre-salt segment of Brazilian petroleum.

In the most straightforward of the reforms, the state redefined a very privileged position for Petrobras. The company purchased the exclusive rights (cessão oneroso) in the pre-salt deposits, to five billion barrels of petroleum-equivalent. Although it accounted for less than six percent of the then-identified pre-salt reserves, the size of the concession was notable. At the time, the value of the unextracted oil that the contract covered was estimated at US$42.5 billion. The valuation determined the “signing bonus” that Petrobras paid to the state. Its

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69 Interestingly, as a result of the popular demonstrations that have created turmoil during summer 2013, President Rousseff has pledged to allocate a larger share of the state’s oil revenues to public health and education. It remains unclear whether the administration can pass the legislation to deliver on that promise.
70 Lei 12276, 30 June 2010; Brasil, ”Coleção das Leis e Decretos “ Imprensa Nacional (hereafter, cited as Leis).
71 While advocates for state intervention in petroleum believed the state’s compensation was too low, financial analysts opined that Petrobras had over-compensated the state for the transaction.
terms were controversial.\textsuperscript{72} In addition to the signing bonus, Petrobras agreed to pay royalties at the level of ten percent of production, twice the base rate of other petroleum royalties, on the assumption that the higher rate applied to especially rich wells would apply.\textsuperscript{73} The exclusive concession also provided for local content of good and services for 37 percent of the development phase of the project and 55-65 percent during production. An exchange of Treasury notes (Letras Financeiras de Tesoro Nacional) financed the state’s acquisition of new equity (to maintain its majority ownership) and Petrobras’s payment to the Treasury for the concession, and minimized the size of the transfers between the two entities. The exclusive concession differs from other pre-salt development by virtue of its exemption from profit-sharing with the state and by virtue of its exclusivity. The profit-sharing law\textsuperscript{74} guarantees (or requires) a thirty percent share and lead management of all pre-salt projects to Petrobras. If competitive bidding does occur during ANP auctions, the firm will bid against itself in alternative projects.

The guaranteed participation in all pre-salt development and the concession motivated another major expansion of the firm’s capitalization. The company’s market valuation the day before announcing the new discoveries was approximately US$194 billion. Accompanying the exclusive concession, Petrobras announced plans for capital expenditures of US$224 billion\textsuperscript{75} for the period from 2010-2014 in order to develop capital-intensive technology and capacity to access the pre-salt deposits. To meet these requirements, the firm issued equity (in the form of ADRs, representing equity shares) for a value of US$69.6 billion on the New York Stock Exchange in September 2010. The novelty of the capital expansion, in addition to its size,\textsuperscript{76} has been to motivate further enhancement of Petrobras’s governance practices\textsuperscript{77} and profit motives to satisfy investors, even while maintaining the state’s status as the majority shareholder.

\textsuperscript{72} The value of the “signing bonus” was determined on the basis a 40-year contract and an estimated value for the undrilled oil of US$8.51 per barrel of oil-equivalent. Studies conducted by Petrobras valued the petroleum (before extraction from the pre-salt layers) at US$5-6 per BOE; the federal governments’ separate valuation concluded with US$10/BOE. The National Petroleum and Energy Council arbitrated a final average price of US$8.51/BOE.

\textsuperscript{73} The 1997 Petroleum Law maintained royalties at five percent of production, but it contained a provision subjecting especially rich sites to additional an “special participation” payments on a sliding scale, to a maximum of ten percent. L. Farias, Royalties do petróleo: as regras do jogo: para discutir sabendo ([Rio de Janeiro, Brazil]: Agir), 26.

\textsuperscript{74} Lei 12351, 22 December 2010; Brasil, "Leis,"

\textsuperscript{75} Petrobras, "Annual Report," 2010

\textsuperscript{76} This was the largest equity issue in global stock exchange history.

\textsuperscript{77} Petrobras has adopted accounting procedures in both the Brazilian and US equity exchanges that adhere to higher levels of transparency. (Petrobras, "Annual Report," 2010)
In the second substantive change to regulatory principles, profit-sharing (also known as production-sharing) contracts will define the relationship between producers and the state, rather than fixed concessions.78 This shift is a major break with the history of non-renewable resource management in Brazil. Since the earliest Portuguese settlement, access to resources had been allocated through concessions.79 The Petroleum Law of 1997, opening the sector to foreign participants, maintained this practice. Legislation in 2010 changed this provision.80 Historic and global practices typically invoked one of four different regimes to structure the allocation of rights for non-renewable natural resources, as described in the schematic of Table 3. Each regime allocates the risks and profits according to different principles. Some analysts judged the concession system as a success.81 The motivation for changing allocation practices derived from the extent and certainty of reserves, and the state’s expectation of being able to command a higher share of the profits from producers. Profit-sharing contracts determine the state’s compensation based on the level of “profit oil.” “Profit oil” is the portion of production that Petrobras and its partners share with the state, after excluding “cost oil”82 to allow sector participants to recover costs of discovery, development and production. Neither cost-oil nor profit-oil is subject to an upper limit. Further, the state will receive payment (its share of profit) in petroleum.83 As a particular feature of Brazil’s profit-sharing law, the state’s proportion of profit is not defined; it is one variable in each competitive auction bid.84 Instituting a discriminatory contractual format indicates the extent to which the Brazilian government believes it to be in a seller’s market with respect to its new reserves.

78 Lei 12351, 22 December 2010; Brasil, "Leis,." This law also standardized pre-salt royalties at ten percent for a producers and provided for a number of payments and taxes required of petroleum producers, such as signing bonuses, payments into a Social Fund.
79 Legal doctrines sometimes debated the exact nature of the state’s claim to concession granting authority, but the practices involved remained constant, with the exception of the 43-year period when subsoil rights were conjoined to the rights of land ownership (1891-1934.) (Triner, Mining and the State, Chapter 2.)
80 All existing concessions have been grandfathered; production sharing will apply to future operations.
81 Vellozo Lucas asserts that “there was a consensus in the technical sphere that reform was not necessary.” Vellozo Lucas, “A derrota de um modelo de sucesso,” 139. See also A. Pires and R. Schechtman, “Os resultados da reforma: uma estratégia vencedora,” in Petróleo: Reforma e contrarreforma do setor petrolífero brasileiro, ed. Fabio Giambiagi and Luiz Paulo Vellozo Lucas (Rio de Janeiro: Elseveir, 2013). These authors judge success by the number of companies newly operating (either directly or as service providers) in the sector and by the expansion of exploration and state revenues.
82 Cost oil is that portion of oil extracted that covers the cost of production (including development of the site.) Recovery and development costs vary considerably across sites; it is not feasible to set a standard.
83 Ribeiro Lima, Pré-Sal: O novo marco legal e a capitalização de Petrobras, 30.
The terms of the profit-sharing provisions have been criticized on at least five grounds.\(^{85}\) Most obviously, the management role and participation share guaranteed to Petrobras question the Brazilian state’s commitment to open markets in the sector. Another weak characteristic of profit-sharing has been that the bases for calculating the profit to be shared are complicated and obscure, and no limit on the share of gross output that may constitute cost oil minimizes the incentive for productivity, just as it creates incentive to overstate costs. Further, the state’s share of profits are incremental to the signing bonus and royalty payments, and royalties on pre-salt deposits will be at the rate of ten percent, rather than the base rate of five percent required of onshore and offshore oil (from above the salt layer, with additional payments for especially productive wells.) Other petroleum-producing states using profit-sharing arrangements (notably the United States and Canada) accept these payments as compensation for depleting the supply of a non-renewable natural resource, replacing royalties.\(^{86}\) As this legislation stands, pre-salt petroleum will be produced under three different regulatory regimes: the grandfathered concessions granted prior to the changes of the second half of 2010, Petrobras’s exclusive concession and the profit-sharing agreements. Finally, the legislative process combines into one law the principles by which producers gain access to and compensate the state for its non-renewable resource with the criteria for distributing royalties. Because of the political

Table 3 Schematic of Risks & Compensations in Different Regimes

<table>
<thead>
<tr>
<th></th>
<th>Company</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concession</td>
<td>All of the risk, well compensated (no limit on maximum return)</td>
<td>Compensation is function of production &amp; price (royalties)</td>
</tr>
<tr>
<td>Profit- (production-) sharing</td>
<td>All of the risk; part of the production</td>
<td>No risk; part of the production (usually with no maximum)</td>
</tr>
<tr>
<td>Outsourcing (service contracts)</td>
<td>No risk &amp; fixed remuneration</td>
<td>All the risk; all of the production</td>
</tr>
<tr>
<td>Joint venture</td>
<td>Divide risk &amp; production</td>
<td>Divide risk &amp; production</td>
</tr>
</tbody>
</table>

Source Ribeiro Lima 12-16


\(^{86}\) Quintans, Contratos de petróleo: Concessão e partilha: Propostas e leis para o Pré-sal, 98. Blades, "Production, Politics, and Pre-salt: Transitioning to a PSC Regime in Brazil," 38-41. refers to production-sharing regimes with royalties provisions as “hybrid production-sharing agreements” and states that royalties constitute a portion of the cost-oil in profit-sharing agreements.
controversy that continues to surround the distribution of royalties, no authority exists to grant development and production rights to the pre-salt deposits. To date, the delay has extended for five years.\footnote{In April 2013, the ANP auctioned rights to blocks outside of the pre-salt region. This was the first auction since 2008 (ANP http://www.anp.gov.br/?id=2650.) \footnote{Lei 12304, 2 August 2010; Brasil, "Leis," PPSA was officially constituted on 2 August 2013. (http://br.noticias.yahoo.com/rage-aposta-mistura-corridas-carros-jogos-tiro-144511954.html, accessed 2 August 2013.)} 

The final major reform affecting the production of petroleum is the institution of the Petróleo S.A. (PPSA) as a separate limited-liability corporation, wholly state-owned and managed by the ANP to manage all of the profit-sharing contracts. The major goals of PPSA are to represent the state’s interests in the pre-salt operations, to conciliate differences among contracts of the various consortia and to mitigate information asymmetries between the state and oil companies.\footnote{Ministério das Minas e Energia, "Novo Marco Regulatório"Pré-sal e áreas estratégicas," (Rio de Janeiro2009), 24.} PPSSA will assume the commercial and price risks of the petroleum received as the state’s share of profit, putting it in the position of a commodity trading company. The new company will appoint one half of the operating oversight committee for each pre-salt consortium, including the president of each committee, who will have a veto power on the committee’s decisions.\footnote{Quintans, Contratos de petróleo: Concessão e partilha: Propostas e leis para o Pré-sal, 99.} No mechanisms are in place to avoid potential conflicts of interest between PPSA, ANP and Petrobras. These conflicts have arisen since the law became effective in 2010. Concerns have circulated about using control of the petroleum sector and Petrobras to manage the macro-economy (interest rates, prices and consumer demand).\footnote{Blades, "Production, Politics, and Pre-salt: Transitioning to a PSC Regime in Brazil," 49. See also L.C.P. Quintans and R.G. Rosa, "As inconsistências da lei da partilha," O Estado de São Paulo 2010; K. Lima, "Sistema de partilha pode ser inviabilizado," O Estado de São Paulo 2010.} Further, a corporate body to manage the contracts within the purview of the ANP once again creates a situation in which the regulator will regulate itself and gives the state a direct mechanism for controlling the operations of petroleum producers. At least as seriously, no provisions suggest that resolving conflicts can be achieved in a manner that assures a third party of regulatory independence.

Jurists have challenged the constitutionality of these reforms.\footnote{This paragraph is based on Ferreira 2013. Strong challenges to the constitutionality of the distribution of royalties are delaying the whole package of reforms; this is the subject of a separate paper.} The Constitution of 1988 prohibits discriminatory favors to state-owned or mixed enterprises that are not extended to all
firms participating in the discriminated activity. Both the Constitution and its amendment for petroleum explicitly anticipate an open market. The state makes the case that exemptions for national strategic interests covers the special conditions accorded to Petrobras.\footnote{Blades, "Production, Politics, and Pre-salt: Transitioning to a PSC Regime in Brazil," 42.} Similarly, Petrobras’s share in development and production consortia circumvents requirements for competitive public bidding for all government contracts, giving the firm the ability to veto any project for any reason. Further, stripping the regulatory agency of its powers by their transfer to PPSA both is constitutionally questionable and opens the way to conflicts of interests.

As a final consideration, the reforms may not be comprehensive. Local-content provisions remain an important aspect of oil production that the reforms do not address. The extent of local content in the Brazilian petroleum industry has always been contentious. As a state-owned enterprise with monopoly rights, Petrobras highlighted its efforts to enhance the domestic content of its operations.\footnote{Every year in its Annual Report, Petrobras cites the extent of its local content and calculates its contribution to the Federal Treasury. Petrobras, "Annual Report."} Local content had been one of the key mechanisms for realizing the externalities that early economic nationalists actively promoted: increasing the demand for industrial goods and services, developing human capital and building technological capability. Drilling equipment, platforms, shipping freighters, pipelines and servicing provisions are the major capital-intensive items subject to local content regulation. This attempt to use the petroleum sector to foment externalities continues in practice. In a competitive open market, commitment to maintain local content became problematic. As the auctioning practices developed, one variable in evaluating bids for offshore concessions was the bidding company’s or consortium’s commitment to local content. The ANP determines local content provisions on its own authority, rather than acting on legislative requirements.\footnote{Blades, "Production, Politics, and Pre-salt: Transitioning to a PSC Regime in Brazil," 50-51. While the CNPE and the production-sharing law define the term “local content” with respect to pre-salt operations, the ANP has the authority to determine the level of the requirement.} Producers, including Petrobras, complain that this form of protection to other domestic industrial sectors slows their operations and increases their costs.\footnote{J.A.d. Castro Neves, Eurasia Group-Washington DC; Interview of 9 November 2012.} Even so, Petrobras may have established a high threshold in the commitments of its exclusive contract.
CONCLUSION

A high level of risk is a characteristic of oil production. Analysts typically identify three types of risk in the sector: discovery, production and regulatory. Discovery risk was extremely high in the middle of the twentieth century for the Brazilian industry. After the confirmation of extensive offshore deposits, more recently extended to the pre-salt layers, discovery risk plummeted. As the technology to drill ever-deeper wells and to penetrate the salt layer has advanced, the production risks have increased. Serious accidents have hindered operations of the Brazilian coast, and the infamy of the 2010 Deepwater Horizon accident in the Gulf of Mexico suggests the potential damage and costs associated with these risks. In the middle of the twentieth century, advocates of open markets may have characterized the nature of petroleum regulation in Brazil as sub-optimal for maximizing growth and innovation; but risks and applicability of regulation were narrow and stable. At the beginning of the twenty-first century, regulation has arisen as a major risk.

The nature of the recent regulatory risks reveals the profound nature of Brazilian sensitivities in regulating non-renewable natural resources. Carving out the pre-salt deposits as a target of discriminatory petroleum regulation re-introduces previous targeted practices of protection and rent extraction, and gives reason for skepticism about the robustness of the institutions shaping the newly opened Brazilian economy. These practices include fixing royalties for all pre-salt production at the level of especially rich wells, the rules favoring Petrobras, shifting contractual regimes to allocate greater rents to the state and renewed attention to local content provisions. Maintaining the formal end of Petrobras’s monopoly in the traditional segments of the industry is of diminished importance since the extent of the pre-salt deposits has become evident. The new procedures enshrine Petrobras’s position in Brazilian petroleum production, while preserving the ability to capture the benefits of foreign capital and technology partnerships. Further, instituting a separate entity (PPSA) to ensure the state’s interests in petroleum contracts emphasizes the re-emergence of strong political interests that continue to emphasize the state’s role in non-renewable natural resources as an issue of national

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97 {Postali, 2002 #2759}
98 The first serious accident in Brazilian off-shore production occurred in March 2001. The tangible costs of this accident were eleven lives, on sunken drilling platform and a massive oil spill. (Petrobras, "Annual Report.") Other, lesser, accidents have occurred since then. The most recent was a Chevron Oil site in July 2012, with 155 thousand gallons of oil released into the ocean.
99 Rumors of another increase of royalties to fifteen percent (Blades, "Production, Politics, and Pre-salt: Transitioning to a PSC Regime in Brazil," 47.) have not gained traction, to date.
sovereignty, as well as responding to those who simply lay claim to the resource wealth for the state. In sum, the sovereign claim to resource wealth and control has remained in place. These positions wager that the returns to private-sector participants, after all costs, will suffice to keep them in Brazil.

While the implementation of new procedures and the development of new sites has been delayed, the new regulatory structure for production has not been tested for its constitutionality. However one assesses the policy emphases on national sovereignty, regulatory delays are a major explanation for the recent shortfalls in the sector’s performance. Development and production contracts are in place for only about five percent of the potential pre-salt deposits in Brazilian territorial waters. Resolving the regulatory issues is crucial as the sector assumes a larger position in the Brazilian economy and in future Brazilian prominence in global markets. The persistence of the regulatory issues in the political arena reveals the continuing strength of long-entrenched institutions and the difficulty of reforming governance principles for non-renewable natural resources. In a final irony, it demonstrates the economy’s continuing reliance on primary commodity exports for growth.

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