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CRITICAL ISSUES IN BRAZIL'S ENERGY SECTOR

DEREGULATING AND PRIVATIZING BRAZIL'S OIL AND GAS SECTOR

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"We want to leave the ranks of Brazil companies and join the international oil & gas club."[1]
Henri Philippe Reichstul, former Petrobras CEO

"O Petroleo e Nosso!"
("The Oil is Ours!")
Popular slogan of Brazilian economic nationalism

Introduction

Should Brazil continue to deregulate and privatize its state-owned oil and gas sector? In answering this question, social scientists, government officials, non-governmental organizations (NGOs) and energy industry experts alike must start with the humbling realization that although there is much conventional wisdom on privatization in general, the comparative study of the privatization of state oil and gas companies in transition economies is still in the early stages of development. According to a 1998 World Bank survey of 115 developing countries, a mere 24% have privatized their energy industries, and only 40% have allowed private investment in this key economic sector.[2] Of the top 50 oil and gas companies in terms of operational performance, 30 have a substantial degree of state ownership, 24 are majority state-owned, and 18 are wholly state-owned, including half of the top 10.[3] Transition economies seeking to deregulate and privatize their energy industries today are therefore pioneers.

So what advice can be offered to pioneers like Brazil? Considering significant theoretical and empirical constraints, this study uses a hybrid approach, combining general studies of privatization, case studies of oil and gas companies in countries with similarly decentralized political and economic systems, and an historical examination of economic liberalization in Brazil in the 1990s.

This report offers policy prescriptions mediated by consideration of the economic, political and social obstacles faced by people, firm and state.

The general context of political and economic institutional reforms in Brazil is presented in the next section. In section three, the conventional wisdom of economic studies of privatization and best practice models created by NGOs and energy industry experts is presented. A discussion of the potential for compensation, corporatization and regulation in Brazil follows in section four.[4]

Brazil should continue to deregulate and privatize its energy sector. Much has been accomplished since former President Fernando Henrique Cardoso initiated fundamental reforms of the energy sector in 1995. Unlike oil and gas sectors in other transition economies, Brazil's energy industry is well prepared fundamentally for competition in national and international energy markets. The corporatization of its oil and gas monopoly is advanced, and there is a clear institutional road map for the successful privatization of state companies. Further privatization thus offers many potential benefits, including more reliable energy supplies, reduced costs to the Brazilian consumer, and a decreased dependency on energy imports. The success of these reforms, however, depends on the adoption of regulatory policies that protect the interests of the Brazilian consumer as they seek to advance national economic development and security goals. A set of policy recommendations is offered in conclusion.

Petrobras and the Political and Economic Context of Reforms in Brazil

Crises are a package of dangers and opportunities. This mixed blessing perhaps is visible most clearly – although not always immediately so – in crises affecting national economies. At the same time they threaten the livelihoods of millions of people, they also provide the motivation that may forge the broad popular consensus necessary to fashion beneficial reforms in economic and political institutions. Economic necessity can be a powerful corrective lens for national political myopia.

Brazil experienced just such a crisis in 2001, but it remains to be seen whether or not it will take advantage of this experience as an opportunity. Crippling electricity shortages in its industrial heartland, the product of widespread droughts and dependence on hydroelectricity, may again stall the rapid economic development of the 1990s. "All that is lacking is an official declaration that the country is in a state of emergency….But in fact, that is the situation," stated Alcides Tapias, Minister of Development, Industry, and Commerce during the crisis.[5] Observers agree that in the short-term, Brazil's energy crisis has dampened economic growth in the world's 5th most populous country and 10th largest economy. The long-term speed and direction of Brazil's future, however, depend on whether or not enough people believe that this threat is sufficient cause to make fundamental changes in the country's economic system today.

The question of how far to go in reforming the energy sector is a decision facing the new president, Luis Inacio Lula da Silva (Lula), and his government. So far, it appears that Lula is continuing some of the reforms first initiated in 1995 by Cardoso, his predecessor.

To complicate matters, the transition of the energy sector is taking place in the context of wide ranging reforms of the Brazilian society and state. On the political policy side, Brazilians are dismantling authoritarian state organizations, party structures, and popular attitudes accumulated over decades of military rule. Democracy, the growth of civil society, and rule of law are the goals of these political reforms. On the economic side, they are liberalizing the government agencies and state-owned enterprises of a planned industrial economy in order to create domestic capital markets and companies that can compete for capital and consumers in global markets. Deregulation and privatization are the tools of these economic reforms. On the social policy side, Brazilians are constructing a comprehensive social welfare system that guarantees basic levels of health, education and income for all citizens. Rapid economic growth in the last few decades has only slightly reduced the enormous inequalities in development that separate city from countryside and coastal region from interior. Brazilians want a better state, a better economy and a better society, but they primarily want a Brazil that is developed at the local level.

In sum, Brazilians are conducting a grand experiment of unparalleled ambition: democratization, marketization, privatization, and decentralization, all at the same time. This is why they must be particularly careful as they go about reforming their energy sector.[6] Brazil's leaders know that advances in one area of reform can create new coalitions and popular support to push reforms in other areas. The success of Cardoso in stabilizing the currency and eliminating the withering inflation that haunted Brazil in the 1980s and early 1990s earned his administration both the economic and political capital to initiate changes in state industrial ownership, fiscal, and pension systems.

On the other hand, Brazil's leaders also know that failure in one policy area can stall progress on all fronts. Prior to the 2002 presidential elections, corruption scandals not only deprived Cardoso of the key party and regional allies who worked with him to implement past reforms, they eroded broad popular support for reforms in general. Now, it is up to President Lula and other reformist leaders, to build the broad coalitions necessary to continue the constitutional changes necessary to solve Brazil's economic problems.

Foreign observers noted that Cardoso seemed remarkably relaxed in spite of the informal state of emergency declared by his ministers. He called for calm, gradual actions by consumers and investors.[7] Some saw this as an aversion to populism, or perhaps as a sign of intellectual, scholarly detachment from a president who was also an eminent sociologist and political theorist. But it is also likely that the astute Cardoso was humbled by the totality and complexity of the tasks he faced as he tried to lead Brazil through its grand experiment.

For Lula and his government, the institutional changes in the public sector necessary to complete the reform of the energy sector are only part of a much broader set of interconnected political, economic and social reforms. Deregulation, marketization and privatization must be achieved in such a way that they support democratization, political liberalization and decentralization as well. Cardoso has argued on this concertation of reforms tying democratization to privatization:

> It is important for us to know how to use the tools of democracy to guarantee that the public dimension be precisely that: *res publica*, something that is not subject to private appropriation. That is the reason why reform of the state (which has nothing to do with the attempt to reduce it to a minimalist condition) is so important for the progress of our democracy. For years, in Brazil and many other countries, various state sectors were taken over and used by individuals and groups to promote their private ends. With the consolidation of democracy – and reform of the public sector is part of this consolidation – we are 'de-privatizing' the state, strengthening the public realm, and thereby guaranteeing one of the conditions essential for the recovery of what is essential to democracy: its public dimension.[8]

Reformers in Brazil want to strengthen the public, to create a society strong enough to resist the state authoritarianism of the past. For political leaders with such grand ambitions and long-term vision, the electricity shortages of 2001 might seem to be a small obstacle, a mere pothole on the road to an advanced industrial democracy. The 2001 energy crisis was a real threat to Brazil's economy, however, imperiling future political and social reforms.

And so, despite his seemingly relaxed attitude in public, Cardoso was busy behind the scenes in attacking Brazil's energy problems. He instituted a plan of emergency electricity rationing, Energia Brasil, with stiff fines and service curtailments for residential and industrial users who failed to cut consumption by at least 20%.[9] He also increased public investment in gas-fired thermoelectric power generation in order to wean industrial and residential users off of their dependence on the extensive hydroelectric power system. Also, he set a goal to use public funds to attract foreign investment in the construction of some 26 plants, adding 10,000 megawatts in generating capacity by 2003.[10]

Cardoso even traveled to Bolivia, meeting former President Hugo Banzer to guarantee the flow of natural gas through a new U.S. $2 billion, 3,400-kilometer gas pipeline from Bolivia to Sao Paulo.[11] He planned to insure that Brazil has the supplies of natural gas it needs for the new thermoelectric power generators, and to obtain them at a price in dollars that does not threaten ongoing efforts to stabilize the Brazilian currency and fight inflation. For the same reason he called on Brazil's energy producers to increase domestic reserves and production of hydrocarbons.

Given the Brazilian economy's dependence on foreign gas and oil, an energy crisis in the context of high international prices for fuels can easily become another monetary crisis, threatening all reform policies. Even in 1999, a year of very low crude oil prices in which oil could be bought for less than U.S. $10 per barrel in Latin America, Brazil had to use nearly two billion dollars of hard currency to import some 483,000 barrels a day (b/d) of crude to supplement the 1.4 million b/d produced domestically. In addition to processing the crude imports, it had to import some 311,000 b/d of refined petroleum products in order to satisfy consumption of nearly 2.1 million b/d.[12] Efforts by Brazilian leaders to fight inflation, stabilize the currency, and negotiate billions of dollars in loans from the IMF were made much more difficult by having to import billions of dollars of oil and refined products, representing as much as 15% of the current account deficit in 1999.[13] When crude oil prices on international markets rise to around U.S. $25 per barrel, as in 2000, or U.S. $20 in 2001, the pressure on Brazil's economy can be even more intense.[14]

All reform measures require cooperation at every level from the energy giant of Brazil's economy: Petroleo Brasileiro S.A. (Petrobras). Power generation, transmission and distribution are provided by a mix of state and private electricity companies in the various regions of Brazil. But Petrobras is not only the sole owner of all natural gas in Brazil and much of Bolivia's gas fields; it owns and maintains the Bolivia to Brazil gas pipeline and will be the major supplier of natural gas for the planned thermoelectric plants. Petrobras also will be a minority equity owner, investing some U.S. $2.3 billion of U.S. $10 billion in some 21 new gas-fired thermoelectric power generators, planned to add 8,300 MW of power capacity by 2005.[15] Ironically, Brazil's energy conglomerate will use nearly half of these facilities to generate power for its own operations. As with Brazil's other largest industrial consumers, including CVRD, Votarantim, and CSN, Petrobras has decided to protect supplies for its production facilities by producing its own electricity.[16]

For these reasons, Petrobras will be a dominant player in new power generation capacity for the foreseeable future. And as the largest domestic producer and importer of oil, and refiner and distributor of petroleum products – which constitute nearly 40% of Brazil's energy consumption -- Petrobras will continue to be the energy pillar supporting the national economy. Brazil's 2001 electricity shortages were caused by freak weather and an over-reliance on renewable sources of energy – hydroelectricity -- but both short and long-term solutions depend on Petrobras as the major supplier of non-renewable resources.

Fortunately for Lula, Petrobras is a state-owned enterprise. And unfortunately for Lula, Petrobras is a state-owned enterprise. On the one hand, he can count on Petrobras to import the required gas to build the necessary gas pipelines, to make investments to increase domestic production of oil, and to sell these at prices that will not spark inflation, which could undermine monetary policies and stall the growing economy. On the other hand, the cost of maintaining Petrobras as a state monopoly is considerable. Brazil will receive additional power generating capacity, but at an economic price determined by negotiation, not by competitive bidding, and at a political price achieved through wasteful and extensive, region-by-region pork-barrel engineering with legislators over the allocation of these new state investments. Moreover, in the long run, the government will continue to find it difficult to obtain fiscal revenue from an energy sector that has few incentives to give up the soft budget constraints and opaque accounting practices characteristic of the planned economy. As argued by former President Cardoso, these customs essentially "privatized" the energy sector over many decades, sheltering the transfer of its economic benefits to privileged groups in Brazilian society: energy-sector managers, employees, and their patron politicians at the federal and local level. Such is the nature of dependency between state and state-owned oil and gas company in many countries.

Fortunately for Lula, Petrobras is an incomplete state monopoly. Deregulation and partial privatization have introduced competitors and turned the enormous conglomerate into a company focusing more and more on production efficiency and survival in market environments. Unfortunately, further reforms, particularly the complete privatization of Petrobras, are likely to face considerable public opposition. Solving an economic crisis often requires populist appeals to a shared, distinctly nationalist identity. Can Lula call on people to conserve energy and sacrifice individual comfort for the sake of a developed economy at the same time that they are putting Petrobras, the nation's most visible corporate symbol of economic strength and autonomy, into the hands of individuals, including foreigners?

As the discussion in this section demonstrates, the successful reform of Brazil's energy sector depends on the continued concertation of interconnected political and economic reforms: democratization, liberalization, social welfare development and decentralization. Petrobras is the pillar of Brazil's energy industry and a mainstay of its economy. Transforming it into a modern, multi-national oil and gas company that can compete on both national and international levels will in turn transform the structure of the Brazilian economy, potentially providing additional institutional sources of economic stability. Furthermore, reforming Petrobras cannot only provide direct benefits for the Brazilian consumer, it can also decrease the oil import dependency problem, thereby improving national security. Changing the ownership of the energy giant also has the potential to change the value of other public goods, including political and social reforms.

Deregulation and the successful privatization of Petrobras can contribute to democratization, the growth of civil society, and a change in the nature of Brazilian national identity.

General Models and Best Practices: Successes and Failures in the Deregulation and Privatization of the State-Owned Oil and Gas Company

Governments often find it easy to justify ownership of the industrial enterprise, especially the state oil and gas company. According to Neo-Classical economic theory, there are advantages in the private ownership of the means of the production, except where there is market failure. The energy sector, however, commonly presents the conditions for market failure: there are externalities in consumption or production, the product is a public good, the market is monopolistic in structure, and information costs are high.[17]

Nevertheless, most OECD countries have liberalized their oil and gas industries, and more and more developing countries are doing so as well. Comparative economic studies of privatization reveal that governments have a range of motivations in doing so:

- To raise revenue for the state;
- To promote economic efficiency;
- To reduce government interference in the economy;
- To promote wider share ownership;
- To provide the opportunity to introduce competition;
- To subject SOEs to market discipline;
- To develop national capital markets.[18]

Additionally, as reflected in the arguments of Cardoso, privatization can also provide the opportunity to break up the business and state relations of the authoritarian past, thereby promoting democracy and the growth of civil society.[19]

Finally, the privatization of the energy sector is of particular importance for energy-importing countries. If privatization stimulates domestic exploration and distribution – either through changing incentive structures for oil and gas companies or through increased availability of domestic and foreign sources of capital – it can reduce both the monetary and fiscal crises arising from large, rapid fluctuations in international prices for hydrocarbons, and also the national security crises that accompany disruptions in overseas supplies.

Comparative studies show that governments choose a variety of privatization methods – ranging from restitution, direct sales, and vouchers to informal or sweetheart sales to insiders – according to a host of political, economic, and social factors:

- The history of the asset's ownership;
- The financial and competitive position of the SOE;
- The government's ideological view of markets and regulation;
- The past, present and future regulatory structure in the country;
- The need to compensate important interest groups during privatization;
- The government's ability to credibly commit itself to respect investors' property rights after divestiture;
- The capital market conditions and existing institutional framework for corporate governance in the country;
- The sophistication of potential investors;
- The government's willingness to let foreigners own divested assets.[20]

Although they suffer from such problems as a lack of data, bad data, omitted variables, endogeneity, and selection bias, scores of comparative empirical studies show that there are indeed benefits for the combined privatization of state-owned enterprises (SOEs) and deregulation in transition economies.[21] First, privately owned firms are more efficient and more profitable than otherwise-comparable state-owned firms. Second, divested firms almost always become more efficient, more profitable, financially healthier, and increase their capital investment spending. Third, some evidence suggests that share issues stimulate national capital markets and modernize corporate governance.

Such general studies also show that of the methods used, direct sales and public shares are the most common and most successful. Voucher programs are less common and frequently problematic. Informal privatization – as seen in the case of China and to a limited degree in Hungary and Poland – is the least commonly used method and the least studied.[22]

Although they are based on a small set of successful cases, usually in OECD countries, there are also many "best practices" models for privatization of energy sector companies prepared by NGOs and private consulting firms, including the World Bank, the World Energy Council, PricewaterhouseCoopers, Arthur Andersen, and Aegis Energy Advisors, to name a few. According to these studies, the successful privatization of energy SOEs and deregulation depends on the implementation of four simultaneous processes.[23]

First, there must be gradual corporatization and improvements in the operating and financial performance of the SOE during the pre-privatization stage such that it can compete with domestic and international competitors during deregulation. Key performance indicators include the profitability of the enterprise and its capacity to increase national exploration and production of oil and gas resources. Second, all potential stakeholders in the compensation process of privatization must be identified and included in the political process of liberalization. These include all individuals and organizations with economic ties to the state oil and gas company, including employees, economic partners, governments at all relevant levels – especially local governments in countries with decentralized political and economic systems, such as Brazil – and the general public. If these actors participate meaningfully in the privatization process of compensation they are less likely to attempt to stall liberalization or to engage in future conflicts with the reformed SOE. Third, liberalization must include the advancement of systematic, transparent legal institutions that can credibly resolve potential conflicts during and after privatization. Without such institutions, investors will not participate in the development of energy markets. Finally, reforms must separate the government and business functions of state oil and gas enterprises, creating modern, autonomous state regulatory institutions that can protect the interests of consumers.

Petrobras Privatization and Deregulation: Compensating Stakeholders and Corporatization

As the general studies of privatization and the case studies and best practice models of ownership reforms in the energy sector suggest, successful deregulation and privatization depend on the coordination of political and economic reforms. On the political policy side, stakeholders in the privatization process must be identified and compensated in such a way that they support reforms. Will privatization work politically? On the economic side, the state oil and gas company must undergo corporatization and develop a strategic plan in order to compete within the highly competitive international energy environment. Will privatization work economically? Finally, the state must create a strong independent regulatory authority that clearly separates government functions from corporate institutions and protects the interests of consumers. Can Petrobras and the state be separated successfully, and can Brazil achieve all of these major institutional reforms through the privatization of Petrobras and the deregulation of the energy sector?

Identifying Stakeholders

History matters. Those who want to change the nature of ownership of Petrobras and deregulate Brazil's energy sector face a host of political, economic, and cultural institutional barriers created and maintained by many actors over many decades. In order to understand the potential for change, especially privatization, the various "stakeholders" affected by the transformation of Petrobras must be identified.[24] As with state-owned enterprise (SOE) reform in many countries, these stakeholders in Petrobras have exerted considerable influence on the privatization and deregulation process in Brazil in the past and are likely to continue to do so in the future. Can they be compensated in such a way that earns their support for privatization and at a cost that maintains the economic viability of a new Petrobras?

Categorized by degree of impact of privatization on their income and assets, there are five groups of stakeholders in Petrobras: (1) employees, pensioners, future employees, and owners; (2) domestic economic partners; (3) Brazilian federal and local governments; (4) the Brazilian public; and (5) international employees, owners, partners, governments, and competitors.

Employees and Owners

First, consider Petrobras' influence on the livelihoods of its employees, pensioners, future employees, and owners. Because they are the stakeholders tied most closely to Petrobras' assets and the distribution of its income stream, they have received the most compensation from past privatization efforts. Some are more organized and politically active than others, and thus have more ability to influence future reforms.

As Brazil's sole vertically integrated oil and gas company, Petrobras employs some 50,000 people in the exploration, production, refining, transportation, wholesale distribution, and retail sale of oil and gas products. Although it is still one of Brazil's largest companies, it has cut its staff from a high of 65,000 in 1980.[25] Over the last several years, it has increased its work force over all. And although 77 % of its oil and gas production comes from offshore, the parent company has shed more than half of its nearly 3,000 offshore workers. There are four main subsidiaries with some 6,000 employees: Petrobras Distribuidora (petroleum byproduct distribution), Petrobras Quimica (petrochemicals), Petrobras Transporte (transportation), and Refap SA, a joint venture. A separate international division employs 5,704.[26]

Table One:
Petrobras Staff in Core Company and Subsidiaries, 1998 to 2003

Unit	January 1998	January 1999	January 2000	January 2001	January 2002	November 2003
Parent Company						
Upstream	16,510	17,464	15,591	15,141	14,875	15,761
Refining, Sales & Transport	12,836	14,131	11,812	10,606	10,233	11,158
Gas and Energy (since 2003)	N.A.	N.A.	N.A.	N.A.	N.A.	848
International (since 2003)	N.A.	N.A.	N.A.	N.A.	N.A.	256
Corporate (since 2003)	N.A.	N.A.	N.A.	N.A.	N.A.	6,357
Research	1,302	1,381	1,256	1,190	1,158	1,428
Offshore workers	2,667	3,006	2,021	1,303	1,072	1,991
Others	4,769	4,993	5,138	5,449	5,471	297
Total Parent Company	**38,084**	**40,975**	**35,818**	**33,689**	**32,809**	**38,096**
Subsidiaries						
BR Distribuidora	3,467	3,354	3,475	3,256	3,293	3,525
Gaspetro (until 2002)	88	95	85	83	79	N.A.
Braspetro (until 2002)	185	188	183	173	169	N.A.
Petroquisa	157	160	143	141	134	126
Transpetro	N.A.	N.A.	305	994	1,450	2,213
Refap SA	N.A.	N.A.	N.A.	N.A.	549	650
Total Subsidiaries	**3,897**	**3,781**	**4,191**	**4,647**	**5,674**	**6,514**
International (since 2003)	**N.A.**	**N.A.**	**N.A.**	**N.A.**	**N.A.**	**5,704**
Consolidated	**41,981**	**44,756**	**40,009**	**38,336**	**38,483**	**50,314**

Source: Petrobras (2000b) (2001a)(2004).

As with others in the international energy industry, Petrobras employees enjoy higher incomes and more comprehensive benefits in comparison with those in other industrial sectors.[28] Although the company does not need to provide comprehensive figures on payroll and administrative expenses over time, in 2001, it counted U.S. $450 million in extra payroll and employee postretirement expenses as current liabilities, and some U.S. $3.38 billion in future employee postretirement benefits as long-term liabilities. Together these comprise some 17% of total liabilities.[29]

Unlike the employees of state owned oil and gas companies in many countries, however, its workers are organized into national-level labor unions and associations that wield considerable political influence on government policies affecting Petrobras. These unions also give them some degree of direct control over Petrobras through collective action and bargaining. Employees are represented by the Oil Workers Unified Federation and a union of maritime employees, both of which negotiated new contracts in 2001. Although often effective in defending their interests in formal negotiations, these unions and employees have not been successful in the 1990s in using strikes or in mobilizing support from unions and workers from other sectors to fight privatization. There were two limited, failed strikes in 1994 and 1995, with the breaking up of the latter – assisted by the military and retired technicians – an early highly symbolic and visible victory for the new Cardoso administration in its efforts to liberalize the economy.[30]

Petrobras is the main source of income and benefits for many thousands of retired workers. Nearly 10,000 employees, or 25 % of its workforce, are over the age of 45 and thus eligible for retirement. In 2000, it paid U.S. $370 million in inactive employee benefit costs, up from U.S. $319 million in 1999.[31]

Future employees, including the historically well-organized students of professions associated with the oil and gas industry, are also potential stakeholders in Petrobras. Despite the layoffs and outsourcing in many sections, Petrobras hired many new workers in 2003, and, through subsidiaries, will be hiring many thousands more to work in the thermoelectric power plants it plans to open in the next few years.[32] As with SOE reforms in some countries, privatization could increase employment in Brazil's energy sector. If these new jobs are in newly formed service companies that work by contract for Petrobras and its subsidiaries, however, then further restructuring is likely to be opposed by the unions that represent Petrobras employees. In general, the privatization of Petrobras thus far has split the interests of current and future employees. Many current employees have benefited from public share offerings not available to future employees. On the other hand, new employees of the parent company have access to an experimental profit-sharing program.

Overall, to its employees, managers, and owners, Petrobras represents an enormous amount of property. Total assets summed U.S. $32 billion in 2002, down from U.S. $39 billion in 2000, with approximately a third in upstream exploration and production, a third in refining, and a third in financial instruments, mainly government securities.[33] Partial privatization has also given Petrobras considerable market value for Brazilian and foreign shareholders, totaling U.S. $24 billion in September 2003.[34] Some 45 % of its more than one billion total shares (representing 30% of its common or voting shares) are owned by more than 400,000 Brazilians and an unknown number of foreign individuals and economic partners.[35] The Brazilian state holds most of the shares of Petrobras, but many of its employees and the Brazilian public have benefited from a national privatization program that gave them priority sales and favorable price offerings of public shares.

Table Two:
Ownership of Petrobras by Owner, November, 2003

Principal Shareholders	**Percentage**
Federal Government	32.2
BNDESPAR	7.9
ADRs (common)	14.7
ADRs (preferred)	16.7
FMP-FGTS Petrobras	3.1
Sao Paulo Stock Exchange custody	13.3
Foreigners	7.2
Others	4.9
Total	100.00

Source: Petrobras (2004)

These individuals are likely to favor the further privatization and corporatization of Petrobras but not necessarily the deregulation of the company's monopoly powers. Privatization may increase the value of their shares, but liberalization of the energy sector – including opening up to foreign competition – may diminish its profits. And because they own a stake in the future financial performance of the company through these shares, the employees of Petrobras may have incentives under privatization that differ from those of the leaders of their unions and employee associations. These unions, and the political parties with ties to them, may most prefer to protect levels of employment.

Finally, the "owners" of Petrobras also include creditors and those who might have legal claims on the conglomerate's assets.[37] As with other large energy corporations with operations in many countries and multiple sources of short-term debt, Petrobras' creditors are numerous, diffuse, frequently changing and thus infrequently collectively organized. Petrobras is also engaged in legal proceedings with many individuals, companies, and local governments in Brazil for a host of alleged violations of civil law: contract disputes, unfair business practices, tax evasion and environmental pollution. The vast majority of these are likely to be won by Petrobras or dismissed, and historically, Petrobras has never paid more than U.S. $27 million in any year to resolve such disputes. Nevertheless, in 2001 Petrobras estimated the total sum of these claims to be U.S. $8.7 billion and for this reason has maintained a mandated legal cost contingency fund of some U.S. $100 million.[38]

Privatization and deregulation are likely to have a mixed effect on the number of these claims. On the one hand, corporatization should compel Petrobras to be more responsible for its actions and thus reduce the number of potential legal conflicts. As the majority shareholder, the Brazilian government is currently liable for all claims against Petrobras. With privatization, however, the state is not only giving up its responsibilities for the actions of the company, it is gaining the opportunity to sue Petrobras itself. State and local governments of Brazil have long had the incentive to sue Petrobras because they are not themselves the owners of the conglomerate or liable for its actions. There are several outstanding cases in the area of tax evasion, environmental pollution, and contract violation that involve state governments. As the federal government sells off its shares of Petrobras, it too will gain the incentive to sue the energy giant. This is likely to be most important in the area of industrial pollution, where rising public consciousness and limited fiscal resources may cause the federal and state governments to view Petrobras and the other large industrial conglomerates of Brazil as cash cows for environmental cleanup programs.[39] Taking Petrobras to court can be much less contentious politically than persuading the Brazilian electorate to pay for these cleanups out of government coffers.

Economic Partners in Brazil

Second, consider the importance of Petrobras to its domestic economic partners, including Brazilians whose jobs are tied indirectly to its operations. Petrobras is a major part of Brazil's economy. In 1999, the energy giant's U.S. $23.4 billion in sales of products represented 4% of Brazil's U.S. $557 billion Gross Domestic Product (GDP), rising in 2000 with U.S. $35.5 billion in sales to total more than 6% of the U.S. $556 GDP.[40] Petrobras has commercial relations with many thousands of service and supply companies, contributing indirectly to hundreds of thousands of jobs. On the upstream side, the substantial expansion of its exploration, production, and transmission activities supports the domestic steel industry as pipelines and refineries are built. On the far downstream side, Petrobras' parent company owns a mere 492 service stations, but the network of service stations of its subsidiaries numbers more than 7,000, including more than 5,000 in urban areas.[41]

Petrobras is one of the largest consumers in the Brazilian economy. Even as it becomes more private and more international in operations it makes more and more capital investments in the domestic market. In 2000, Petrobras spent U.S. $3.5 billion on all forms of capital investment, with U.S. $3.3 billion invested in the expansion of domestic exploration and production, supply, and distribution. In 2001, total capital investments rose to U.S. $4.2 billion and domestic investments grew to U.S. $3.9 billion, or some 92%.[42] The conglomerate's strategic plan calls for nearly U.S. $30 billion in capital investments between 2001 and 2005, most of them in Brazil.[43]

As with many other oil and gas companies, it is one of the largest sources of scientific research and advanced technological development in its home country, spending some U.S. $152 million in

2000, up from U.S. $108 million in 1999.[44] It also temporarily employs thousands of Brazilians through more than 280 community development and cultural promotion programs, including orchestras, art exhibitions, circuses, historic building restorations, literacy and sports education projects.[45]

Many of Petrobras' economic partners in Brazil will likely be unaffected by its further privatization. All major integrated oil and gas companies make significant investments in their largest markets, including the development of ties to research and education institutions and the promotion of corporate identity and marketing visibility through philanthropy.

Federal and Local Governments

Consider Petrobras' complex relationship with the state, including its role in government fiscal and monetary policies. On the U.S. $35.49 billion in revenue from products and services generated in 2000, Petrobras paid U.S. $8.24 billion in direct sales taxes, up from U.S. $ 3.92 billion in 1999. This increase in tax revenue came at the expense of the Brazilian consumer, however, with most of it resulting from a 45 % increase in fuel prices mandated by the federal government. Of the U.S. $8 billion in sales taxes collected, U.S. $4 billion went to state governments through the ICMS sales tax, and U.S. $2.28 billion went to a value-added tax fund, PASEP, collected on behalf of the state governments by the federal government, and to COFINS, a federal social security contributions tax fund.[46]

The sales tax is particularly important for cash-strapped local governments, which have had to assume increasingly heavy burdens of education and social welfare funding under Brazil's decentralization program. Although the amount of revenue collected is affected both by international oil and gas market conditions and federal government fuel pricing policies, the sales taxes represent fairly stable, low-cost sources of revenue for local governments because they are collected by federal authorities and redistributed to the lower levels. Decentralization has given state and municipal governments more powers of revenue generation, but many localities have not yet developed sophisticated or efficient tax collection agencies with trained personnel.[47]

Separate from sales taxes, in 2000, Petrobras also paid U.S. $1.75 billion in royalties, land rental fees, and signature bonuses. By law most of these are dedicated to be spent on infrastructure development projects of the main beneficiaries, state and municipal governments where oil and gas fields are located, and as contributions to the budgets of such federal agencies as the Ministry of Science and Technology, the Ministry of the Navy, and the National Petroleum Administration (ANP) of the Ministry of Mines and Energy, Petrobras' regulatory parent.[48] Because more than three-fourths of Brazil's oil and gas production comes from offshore fields in the Southeastern region, these royalties and fees are particularly important to such coastal states as Espirito Santo and Rio de Janeiro. As with the sales taxes, which are also indexed to world oil and gas prices, these sources of revenue are heavily influenced by international market conditions.

Petrobras' operations have also been a means to pay off federal government debt in an era of large fiscal deficits. The gradual, semi-privatization of Petrobras through the sale of public shares has generated more than U.S. $4.7 billion dollars for federal government coffers, representing 11.8 % of all federal sales of enterprises and banks in the PND's U.S. $39.6 billion privatization program.[49] From 1991 through April 2002, Brazilian federal privatizations totaled U.S. $70.5 billion, including U.S. $30.9 billion raised from telecommunications auctions. State governments sold an additional U.S. $34.6 billion in enterprises and banks, including local-owned electricity distribution and power generation companies. Oil, gas, petrochemical and electricity sector sales represent 42% of all revenue generated by state sales. Privatization reached a peak of U.S. $26.3 billion in 1997, and U.S. $35.7 billion in 1998, but has fallen off dramatically in recent years, with sales in the first four months of 2002 totaling just under U.S. $2 billion.[50]

And although the profits of Petrobras are also largely determined by world market conditions and ANP fuel pricing policies, Petrobras is a large annual source of income for the federal state. Petrobras paid U.S. $2.4 billion in federal income tax in 2000 and U.S. $1.2 billion in 2001.[51]

More than just a source of revenue, Petrobras also indirectly plays a role in federal and local fiscal relations. Local governments only directly benefit from the sales taxes and royalties and land fees on its operations, but recent reforms in the national fiscal system and federal economic development investment programs have increased their dependence on Petrobras as a potential source of infrastructure finance. The combination of the implementation of the Law on Fiscal Responsibility (LFR) in January 2001 and the outcome of negotiations between the federal government and each individual state and municipality over repayment of debts owed to federal authorities have compelled these local governments to seek corporate sources of finance for local economic development projects.

Primarily intended to cut employment in the public sector, the LFR forces all levels of government to spend no more than 60% of their budgets on payrolls and forbids the federal government from paying off the debts of local governments. At the same time, negotiations with each state and locality on the repayment of debts owed to the federal government have committed large parts of local budgets to federal coffers.[52] The combination of these fiscal reforms has created painful choices for local governments: cut local state employees or risk defaulting on loans and repayments to the federal government. Unwilling to alienate the powerful, organized state employees and their political organizations, local government leaders have spent more than the quota on payrolls and benefits, and then dedicated most of the remainder to paying off their debts to the federal state. Many local governments are left with few funds to pay other government expenses, including their increasing responsibility for education, health, sanitation, and environmental programs assumed under decentralization.[53]

In such a fiscal context, state and municipal governments are struggling to find funds for the development of the local economic infrastructure, which could in turn deepen and broaden their tax bases. The indirect influence of Petrobras is particularly strong in localities in the Northeast and Central regions, where there are both company towns and few opportunities for the introduction of alternative industries and taxable economic activities. Company towns created by the development of nearby oil and gas fields and the placement of large refineries as "pillar enterprises" inside coastal economic zones by federal development agencies brought thousands of jobs to the impoverished, largely agrarian Northeast in the 1970s and 1980s.[54] In doing so they also tied these local economies to the roller-coaster fortunes of the international energy market. Such is the nature of fiscal relations in company towns in decentralized economic systems.

These planned economy projects also created a powerful system of political patronage as local leaders from the large but less populous Northeast and Central regions of Brazil used their disproportionately high level of representation in the federal legislature to demand and receive substantial federal government investment in roads, highways, railways, ports, and power generation. Under the military regimes, Federal development agencies for the Northeast, Sudene, and for the Amazon regions, Sudam, worked with Petrobras and other large SOEs to finance these development projects. Recent fiscal reforms, budget cuts, and efforts by President Cardoso to eliminate Sudene and Sudam are removing these agencies as direct sources of project finance for local governments, leaving Petrobras and other large SOEs remaining as potentially valuable cash cows.[55]

With large fiscal budget cuts at the federal level, and budgets committed to bureaucratic payrolls and debt repayments at the local level, who will develop the local economic infrastructure under decentralization? The intense competition among Northeastern states in the 1990s to offer tax incentives and apply political pressure to induce Petrobras to build its 12th Brazilian refinery revealed the importance of semi-privatized SOEs in the new fiscal system.[56] Ironically, just as they corporatize and become more market-oriented, the more likely they are to become the target of efforts to use them as cash cows for local development projects. This is particularly true for companies such as Petrobras that have better credit ratings than the Brazilian governments and have access to international capital markets through joint projects with multi-national corporations and the issuing of American Depository Receipts.[57]

Finally, Petrobras also plays an important indirect role in the inflation-fighting monetary policies of the federal government and its international supporters. As the majority owner of Petrobras, the federal state uses the conglomerate to bolster its financial resources, including policies that compel the company to buy and retain government securities. In 2000, Petrobras held U.S. $3.5 billion in treasury bonds financed largely through the sale of former subsidiaries under the national privatization program. The company could only redeem these to pay debt to the federal government, and after negotiation in 2001 was able to exchange these for a new form of government bond that were then dedicated to support pension contributions. Some 90% of the U.S. $2.1 billion that it holds in its contributory defined benefits pension plan, Fundacao Petrobras de Seguridade Social (PETROS), are in government securities.[58]

The dedication of these assets is not without benefit for Petrobras, however. First, despite regulations limiting investments with one partner to 10% of assets, Petros is a significant source of investment resources for its creator. Petros has invested in the development of the Marlim and Albacore offshore oil fields and a thermoelectric power plant in Bahia. It has had plans to jointly build five more thermoelectric plants with Petrobras. Second, Petros is a source of valuable informal ties to other potential investment partners and customers. As the second-largest complementary contribution pension investment fund in Brazil, and with nearly a third of its more than three billion dollars of assets invested in equities, it has been able to place representatives on the boards of directorship of many of Brazil's largest industrial conglomerates. Finally, Petros provides indirect practical knowledge and experience in the workings of the rapidly developing domestic capital market. Petros also has plans to establish an energy-investment oriented private equity fund with the national development bank, BNDES.[59] As with many SOEs in transition economies, Petrobras managers are likely to lack significant experience in operating within capital markets and in attracting investments from funds and banks. Petros is therefore a potentially valuable source of ties and knowledge.

The federal state also uses Petrobras as a tool to improve its creditworthiness in international markets and in loan negotiations with foreign governments and international organizations. According to the three-year economic stabilization stand-by arrangement worked out with the International Monetary Fund (IMF) in December 1998, the Brazilian government needed to register a U.S. $19.3 billion primary fiscal surplus in 2000 (3.6% of GDP).[60] The federal government actually enjoyed a U.S. $20 billion primary fiscal surplus because it was allowed to count a U.S. $5.35 billion contribution from Petrobras and an additional U.S. $3.97 billion from state enterprises owned by state and regional governments.[61] The importance of Petrobras in ongoing international efforts to stabilize Brazil's accounts and implement fiscal discipline will continue as the Lula government handles a new set of U.S. $32.4 billion loans from the IMF.[62] Because Brazilian leaders believe that the IMF favors gradual deregulation during periods of high international prices for fuels, it is also possible in the short-term that these negotiations will favor the status quo in the ownership structure of Petrobras.[63] Recent support for privatization programs during favorable market conditions in Yugoslavia, Indonesia, and Turkey by new IMF First Deputy Manager and Acting Chair, Anne O. Krueger, however, suggest that the IMF may press Brazil to continue its stalled privatization drive.[64]

The Brazilian Public

Petrobras has both economic and symbolic value to the Brazilian public. Its economic value is felt most directly through the maintenance of its monopoly position in the supply and cost of fuels. Whether it is Petrobras' leaders trying to maximize profits in a weak regulatory environment, or government officials attempting to ameliorate financial crises indirectly through price hikes in fuels, it is the Brazilian consumer who pays the cost.[65] With the elimination of the Petroleum Account and the complete liberalization of fuel prices, including fuel imports, in January 2002, Petrobras has gained the nominal, legal independence to charge its own refinery prices. But because Brazil's political leaders are particularly sensitive to criticism of inflation, in recent years Petrobras reportedly has had to give in to informal indirect pressure and cancel planned refinery price hikes.[66]

The popularity of the phrase, *"O Petroleo e Nosso!"* ("The Oil is Ours!") over the past five decades demonstrates the high symbolic value of Petrobras for the Brazilian public. Developed well after Brazil's neighbors had become self-sufficient in oil supplies – and in the case of Venezuela, a major oil exporter – the slogan represents economic development for nationalists of all ideological persuasions. Although Petrobras has yet to achieve for the nation the long-touted goal of oil production self-sufficiency, it nevertheless has a strong history of promoting Brazilian economic independence. Its corporate publications proudly point out that its investments have created valuable secondary industries – the manufacturing of oil drilling technology and equipment, pipelines, and shipping tankers – and thus reduced foreign spending in many areas.[67]

For reformers, Petrobras also symbolizes the corruption and power of the authoritarian state. Petrobras' first leaders were military officers, and, even into the 1980s, the company's corporate publications boasted of their ability to attract retired navy admirals to manage its transportation operations.[68] The conglomerate's revenues and advertising arm were often used by military regimes to suppress political opposition and to propagandize.[69] In recent years, federal presidents have continued the practice of naming refineries after oil industry pioneers and political leaders.[70] Such ceremonies have been very visible opportunities to popularize policies promoting economic nationalism.[71] "Petrobras may be today the country's strongest instrument of independence," stated Petrobras president Helio Beltrao in October 3, 1985, on the commemoration of the 32nd anniversary of Law #2.004, which created the State Oil Monopoly.[72]

As with many oil and gas companies, and especially those involved in retail distribution and sales, Petrobras supports cultural, educational, and sporting events that bolster its image as a visible corporate actor. It sponsors the popular Flamengo professional soccer team from Rio de Janeiro, as well as the Petrobras Pro-Musica Orchestra. Petrobras sponsors community gardens and projects to protect endangered species. These create an image of environmental consciousness that is particularly important for an oil and gas company that has created many highly visible pollution problems in many localities. And through hundreds of thousands of children, particularly those in less developed areas, the company's primary education and literacy projects have much long-term potential influence on the perceptions and attitudes of the Brazilian public.

These activities establish Petrobras as a source of largesse and generosity, but they also indirectly promote nationalism. Through what it refers to as its "cultural marketing agenda" as a "Citizen Company," it reinforces a notion of Brazilian national identity through the popularization of the works of Brazilian artists and musicians throughout the country. Petrobras, at least indirectly, thus seeks to establish itself as a champion of Brazilian nationalism by defining the values and creating or manipulating the symbols associated with culture. [73]

It sets itself up as a raconteur between locality and nation through the popularization of the works of artists, writers, and musicians throughout the country. It is also acts as a medium for dialogue with the advanced industrial societies as it sponsors exhibitions and performances of "classic" European art and music. Finally, and perhaps most powerfully, it establishes itself as a raconteur for dialogue between the Brazilian public and its problematic past. Consider the role that Petrobras plays in restoring such public spaces as government buildings from all eras (designed by well-known Brazilian architects) and in supporting exhibitions on the role of the prominent national historical figures associated with them. Petrobras has sponsored photographic exhibitions on the last Brazilian emperor, Dom Petro II, and has preserved the personal apartments of

President Getulio Vargas in the Catete Palace. The latter is particularly salient because Vargas is the most visible personification of economic nationalism and the politician who created Petrobras. His suicide in those chambers, in 1954, established him as a martyr for economic nationalism in the eyes of many Brazilians. Finally, Petrobras actively participates in public debate on the nature of the authoritarian era. For example, in 1997, it published a biographical sketch of former President Geisel, also a president of Petrobras in the late 1960s, in its corporate magazine.[74]

The popularity of Petrobras as a national economic symbol is reflected in recent protests over attempts to change the public image of the conglomerate. In 2000, popular criticism forced President Cardoso to drop plans to change the name of Petrobras to Petrobrax, a move designed to make the company sound more familiar to foreign investors.[75] The renaming may have run directly counter to Petrobras' efforts to establish a distinctly nationalistic visual corporate image. In 1995, the company began the gradual standardization of corporate logos based on the idea that Petrobras is uniquely Brazilian:

> The image of Petrobras in particular is shaped by an entire history: the struggle to set up the oil industry monopoly in Brazil; the fact that it is a truly Brazilian company, the largest in the country and one of the largest in the world; its unchallenged technological leadership, acknowledged globally. This logo reflects the image of the company, representing its history and performance, as well as the concepts behind the quality of its products and services.[76]

Finally, outgoing CEO and President Henri Philippe Reichstul noted the political symbolism of Petrobras in January 2002:

> Petrobras is a symbol of Brazil. I look at it more as an institution than as a company. All of my life I have learned to regard it with the respect Brazilian's society ongoing achievements deserve. Its significance as a symbol brings to mind political battles in defense of Brazil's mineral wealth, the campaign slogan, "The Oil is Ours", and the struggle for national sovereignty.[77]

What does the Brazilian public feel about privatization? In general, polls and surveys suggest that people throughout Latin America are becoming more critical of privatization in recent years. One poll of Latin America shows a decline in support for privatization, and an increase in dissatisfaction: from 46% in 1998 to 35% in 1999/2000, with dissatisfaction rising from 43% to 57% over the same period. The same poll reveals that Brazilians are even more increasingly disenchanted with privatization, with dissatisfaction rising from 43% in 1998 to 63% in 1999/2000.[78]

Another comparative poll, conducted in Brazil in September 2001, suggests a strong ambivalence toward privatization: 50.5% support government control, 24.5% support privatization of some of the public sector, and 14.5% support the sale of all of the state sector.[79] As can be seen in Table Three, Brazilian views on privatization are somewhat more polarized than in many other countries:

Table Three:

Views on Privatization in Select Countries, October 2001

Countries	All Privatized	Some Privatized	Government Control	Don't Know/ Not Applicable
Argentina	9.7	24.6	59.7	6.0
Australia	4.5	49.4	40.6	5.5
Brazil	14.5	24.5	50.5	10.5
England	6.7	44.7	45.2	3.4
France	13.7	52.6	25.9	7.7
Germany	13.1	63.6	20.4	2.9
India	15.0	26.3	39.5	19.3
Indonesia	5.3	26.0	61.5	7.3
Israel	19.4	47.7	24.1	8.8
Italy	26.6	44.7	19.1	9.7
Japan	21.5	66.0	8.3	4.3
Mexico	5.4	32.6	47.6	14.4
Nigeria	16.5	25.8	50.7	7.0
Portugal	18.5	52.5	17.8	11.3
Russia	4.5	24.5	66.8	4.3
South Africa	10.0	4.3	49.0	6.8
South Korea	33.5	50.3	8.5	7.8
Spain	18.2	38.3	30.1	13.4
Sweden	7.2	66.7	20.7	5.4
Syria	22.0	53.8	19.0	5.3
U.S.	19.1	45.5	26.7	8.7
TOTAL	**14.6**	**42.6**	**34.8**	**8.1**

Source: Based on the question, "In your opinion, should all state owned companies be privatized, should some of them be privatized, or should they all remain under the control of government?"; see (CNT 2002).

The same poll also shows that Brazilians are significantly more concerned about prices and fighting poverty than the people of the other 21 countries in the survey.[80] As with populations everywhere, however, Brazilians are likely to be worried that the complete privatization of Petrobras will increase energy prices and worsen economic inequalities.

In sum, even though the Brazilian public could potentially gain much economically from the privatization and deregulation of the energy sector, many Brazilians will most likely oppose the further privatization of Petrobras, viewing it as the loss of a valuable symbol of economic nationalism.

International Partners

Finally, consider Petrobras' role in the international economic arena. As with many national oil and gas companies, Petrobras dominates its domestic market. The size of that market, however, also gives Petrobras an important position in the international energy industry. According to the Energy Intelligence Group and 1999 figures, it ranks as the 13th largest oil company in the world. Oil reserves of 8 billion barrels place it 16th among global companies, and natural gas reserves of 10.6 billion cubic feet place it 30th. Its crude oil output is around 1.19 million b/d, and Petrobras is the world's 9th largest refiner, operating eleven refineries in Brazil with 1,930 thousand b/d of capacity. Revenues of U.S. $22.5 billion in 1999 placed it 15th in the world, and investment spending of U.S. $4.3 billion ranked it 10th.[81] Petrobras is one of the largest suppliers of gasoline to the United States and an important exporter to Europe.[82] Petrobras has also been a leader in oil drilling technology development, distinguished in its record for innovative systems to drill in deep offshore areas.

As can be seen in Tables Four, Five and Six, Petrobras also operates abroad, including gas and deep offshore oil exploration and production activities in Angola, Argentina, Bolivia, Columbia, the U.S., the U.K., and Venezuela. Its largest relations are with other countries in the Southern Cone, especially Bolivia and Argentina, where it represents the largest current foreign consumer of natural gas exports. It plays an enormous role in Bolivia's economy and fiscal system. In Argentina, it represents the largest customer, partner, and future competitor of Repsol-YPF, formed from the privatization of Argentina's own state oil and gas company. In 1999, Petrobras invested U.S. $493 million in capital investments abroad and U.S. $236 million in 2000.[83]

Table Four:

Petrobras Petroleum General Production Statistics, 1998-2002

	1998	1999	2000	2001	2002
Oil Products Production in mb/d	1.487	1.549	1.565	1.643	1.810
In Brazil	1.713	1.718	1.738	1.614	1.770
International	0.109	0.119		0.029	0.060
Sales Volume in mb/d	1.822	1.837		1.832	1.921
In Brazil	1.713	1.718	1.738	1.711	1.636
International	0.109	0.119			0.285
Export in mb/d		0.120	0.186	0.304	0.439
Crude Oil	0.000	0.001	0.032	0.101	0.233
Oil Products	0.109	0.119	0.155	0.203	0.206
Import in mb/d	0.876			0.664	0.542
Crude Oil	0.460	0.334	0.290	0.303	0.326
Oil Products	0.416			0.361	0.216
Refining Capacity in mb/d	1.830	1.953	1.991		2.021
Throughput	1.514	1.608	1.626		1.701
Utilization in Percentages	82%	83%	82%		84%

Source: Petrobras website 2002.

Table Five:
Petrobras Crude Oil Production Statistics, 1998-2002

	1998	1999	2000	2001	2002
Crude by Sources in Percentages					
Brazil Campos Basin	0.502	0.583	0.602	0.787	0.781
Brazil Other Offshore	0.034	0.033	0.016	0.033	0.038
Brazil Onshore	0.155	0.153	0.135	0.179	0.181
Middle East	0.091	0.077	0.058		
Africa	0.087	0.083	0.101		
Central/South America	0.072	0.042	0.087		
Australia	0.059	0.029	0.001		
Total Domestic Crude Sources	**0.691**	**0.769**	**0.753**		
Total Foreign Crude Sources	**0.309**	**0.231**	**0.247**		
Crude Production by Source in mb/d					
Brazil Campos Basin	0.729	0.858	0.992	1.053	1.252
Brazil Other Offshore	0.050	0.049	0.049	0.044	0.039
Brazil Onshore	0.226	0.225	0.230	0.239	0.248
International	0.045	0.060	0.053	0.044	0.160
Total Crude Production in mb/d	**1.049**	**1.191**	**1.324**	**1.379**	**1.540**
Crude Oil and NGL in mb/d					
Angola	0.027	0.022	0.020	0.017	0.026
Argentina	0.001	0.002	0.001	0.001	0.007
Bolivia				0.001	0.032
Colombia	0.008	0.002	0.002	0.002	0.027
Ecuador	0.001	0.001			
U.S.	0.001	0.008	0.007	0.003	0.003
U.K.	0.007	0.008	0.007	0.004	
Total Petrobras Foreign Crude Production	**0.046**	**0.060**	**0.053**	**0.043**	**0.096**

Source: Petrobras website 2002.

Table Six:
Petrobras Natural Gas Production, 1998-2001

	1998	1999	2000	2001
Natural Gas in Mmcfpd				
Brazil Campos Basin	424	518	577	601
Brazil Other Offshore	227	224	229	218
Brazil Onshore	356	366	519	572
International	52	90	123	149
Total Natural Gas in Mmcfpd	**1060**	**1199**	**1448**	**1541**
Total Natural Gas in Mboepd	**189**	**214**	**241**	**256**
Natural Gas Production in million acf/day				
Angola				
Argentina	6	20	51	1471
Bolivia		10	2	1015
Colombia			7	258
USA	37	46	41	1259
UK	8	14	22	227
Total Petrobras Foreign NG Production	**51**	**90**	**124**	**4233**

Compensating Stakeholders

In conclusion, there are many stakeholders with diverse interests and varying capacities for participation in the compensation process. Some can be compensated with few reforms, while others will be more difficult to persuade to support privatization.

First, because Brazil has a clear institutional history of the successful privatization of SOEs, many individual stakeholders can be compensated through existing means. Employees, pensioners, future employees, and owners can be paid through additional share offerings at favorable terms. This is likely to involve simply a process of public negotiation.

Second, compensating local governments and the federal government for their diminished fiscal and macroeconomic authority, however, will likely require the creation of new laws and measures establishing hard budget constraints for governments at all levels and the formalization of a truly decentralized and yet long-term fiscal system to support social security. The gradual strengthening of the Law on Fiscal Responsibility and the implementation of the new fuel tax, in 2002, could go a long way toward weaning the Brazilian government off of Petrobras as a macroeconomic tool. Moreover, laws and regulations clearly defining the legal responsibility of Petrobras for violations of environmental laws and the cleanup of industrial pollution can be crafted and implemented in order to establish the future liabilities of both government and firm. Without such definitions and limitations, the governments in Brazil can only continue to view Petrobras as a fiscal policy tool, a source of capital investment in local infrastructure development projects, and an unrestricted fund for the cleanup of environmental pollution.

Finally, existing strategies have already created the potential to compensate the Brazilian public for the loss of its most visible symbol of economic nationalism. Despite repeated claims that Petrobras will not be fully privatized, evolving fiscal pressure may yet force the government's hand. Fortunately, Petrobras leaders seem to have already developed an informal strategy:

- First, continue the corporatization of Petrobras to make it more competitive with multi-nationals, especially exploiting comparative advantages in Mercosur markets, and thereby developing an image of Petrobras as a distinctly Brazilian, and yet multi-national, integrated oil and gas company;

- Second, invest in exploration and production in order to achieve self-sufficiency by 2005 (the new corporate strategic plan calls for U.S. $ 30 billion in capital investments during next five years), thus addressing oil import dependency concerns;

- Finally, continue sponsorship of highly visible and symbolic social and educational activities that demonstrate Petrobras support for Brazilian nationalism.

Because the initial, primary justifications for the establishment of an oil and gas monopoly were related to energy security and economic autonomy, the continued privatization of Petrobras has the potential to satisfy the desires of economic nationalists. If, as expected, Petrobras can successfully meet domestic oil and gas demand as it transforms itself into a firm capable of competing with the major multi-national corporations, it may become a newer, more advanced symbol of Brazilian popular pride.

Corporatization and Financial Performance

If the leaders of Brazil and Petrobras can successfully meet the demands of the various stakeholders then privatization can move forward politically. But reformers must also face economic obstacles: can a privatized Petrobras survive in the intensely competitive international oil and gas marketplace?

First of all, how does Petrobras compare with other privatizing state-owned oil and gas companies? Because of the many problems in comparing the performance of state-owned and privately owned firms over time, economists have focused on a fairly narrow set of financial performance measures:[84]

1. Profitability (net income plus sales);
2. Efficiency (real sales per employee);
3. Investment (capital expenditures plus sales);
4. Output (real sales, adjusted by CPI);
5. Employment (total employees);
6. Leverage (total debt plus total assets);
7. Dividends (cash dividends plus sales).

According to many of these basic measures, Petrobras compares favorably with its peers in the oil and gas industry. As can be seen in Table Seven and Table Eight, in terms of profits as percent of revenues and profits as percent of assets, the conglomerate's performance is on par with many of the smaller integrated companies.

The tables also illustrate, however, two significant obstacles for comparative studies of oil and gas companies. First, general measures of profitability and financial performance do not capture the complexity and range of institutional environments in which these companies operate. The profitability of the super-major, multi-national corporations – BP, Royal Dutch Shell, and ExxonMobile -- is largely determined by worldwide supply and demand and the long-term strategic plans of these enormous competitors. The smaller companies – ChevronTexaco, ConocoPhilips, and TotalFinaElf – are more likely to be affected by variation in regional or national market conditions, and the successes and failures of short-term strategic plans. Size matters. The recent mergers of majors into super-majors reflect the desire of companies, owners, and potential investors to obtain more stability in profits from year to year. All else being equal, profits for larger companies are likely to vary less from year to year than their smaller competitors.

The problem for the study of the potential of privatization of Petrobras is thus one of comparability in size and scope of operations, and in availability of data collected annually. Because a privatized Petrobras will still likely operate primarily in Brazil and the South American oil and gas market, its performance should be measured against the smaller major corporations, which are similarly affected by short-term fluctuations in regional and national markets, including currency exchange rates. Moreover, the comparison should be based on data collected over as many years as possible. As seen in Table Seven and Table Eight, the financial performance of Petrobras and its size cohorts as reflected in these basic measures has varied greatly in recent years. Profits as a percent of revenue for Petrobras were 6% in 1999 and 20% in 2000. Clearly, case studies based on data from a single year will not be very helpful, making the comparative study of oil and gas companies particularly problematic when systematic data are not available over time. The problem is exacerbated by the fact that many of these companies have only recently adopted international accounting standards, largely as a means of achieving access to international capital markets. Fortunately for scholars, the partial privatization of Petrobras in recent years, including the issuing of shares in American capital markets, has forced the company to provide more and more data useful for comparative analysis.

A second problem reflected in these tables is variation in the financial performance created by the actions of the owners of these oil and gas companies. Corporate leaders of the super-major multi-nationals mostly prefer to show stability in financial performance measures in order to attract and retain the investments of stockholders. The leaders of such wholly state-owned oil and gas companies as Petronas, Pemex, and PDVSA, however, simply try to achieve the financial performance measures that most closely match the economic and political agendas of their national governments. As discussed in sections above, oil and gas companies such as Petrobras are valuable macro-economic policy tools, and thus the variation in their financial performance measures from year to year may have much more to do with political decisions than economic decisions. The same is true for private oil and gas companies that are highly regulated through formal and informal bureaucratic procedures, including the Japanese oil and gas companies. Petrobras' financial performance is therefore most likely to be usefully compared with that of other state-owned oil and gas companies that have privatized to varying degrees in recent years: Statoil, ENI, Repsol-YPF, CNPC, Sinopec, and CNOOC.

Table Seven: Fortune Global 500 Oil and Gas Companies
Profits as Percent of Revenues, 1990, 1995-2001

	Country	1990	1995	1996	1997	1998	1999	2000	2001
Amoco	U.S.	7	7	9	8	-	-	-	-
ARCO	U.S.	11	8	9	9	3	11	-	-
BP	U.K.	5	3	6	6	-	-	-	5
BP Amoco	U.K./U.S.	-	-	-	-	5	6	8	-
Chevron	U.S.	5	3	7	9	7	6	11	3
Chinese Petroleum	ROC	4	6	3	4	10	-	-	-
CNPC	PRC	-	-	-	-	-	-	14	12
Conoco	U.S.	-	-	-	-	-	4	6	5
Cosmo Oil	Japan	1	1	1	0	-	0	1	-
Elf Aquitane	France	6	2	3	2	2	6	-	-
Eni	Italy	4	7	7	8	8	9	12	-
Exxon	U.S.	5	6	6	7	6	-	-	-
Exxon/Mobil	U.S.	-	-	-	-	-	5	8	8
Idemitsu Kosan	Japan	0	0	0	0	0	1	1	-
Indian Oil	India	-	3	3	3	4	3	3	3
Japan Energy	Japan	-	1	-3	1	1	-3	2	0
Lukoil	Russia	-	-	-	-	-	11	24	17
Mobil	U.S.	3	4	4	5	4	-	-	-
Nippon Oil	Japan	1	1	1	1	1	0	1	1
Pemex	Mexico	8	7	8	4	-5	-7	-5	1
PDVSA	Venezuela	10	12	13	14	3	9	13	-
Petrobras	**Brazil**	**6**	**4**	**4**	**8**	**8**	**6**	**20**	14
Petrofina	Belgium	4	3	4	4	4	-	-	-
Petronas	Malaysia	26	-	25	28	16	21	22	22
Phillips	U.S.	6	3	8	6	2	4	9	7
Repsol	Spain	4	6	6	5	6	-	-	-
Repsol-YPF	Spain/Arg.	-	-	-	-	-	4	5	-
Royal Dutch Shell	U.K./Neth.	6	6	7	6	0	8	9	8
SK	South Korea	-	-	-	0	0	2	0	-
Showa Shell Sekiyu	Japan	1	1	0	1	-	-	1	-
Sinopec	PRC	-	-	-	-	0	1	2	1
Ssangyong	South Korea	1	0	0	-	-	-	-	-
Statoil	Norway	5	6	5	3	0	2	5	7
Sunkyong	South Korea	1	2	1	-	-	-	-	-
Texaco	U.S.	4	2	5	6	2	3	5	-
Total	France	3	2	3	4	4	-	-	-
Total Fina Elf	France	-	-	-	-	-	4	6	-
USX	U.S.	4	1	4	5	3	3	1	-

Source: Fortune Magazine, various years (losses are in parentheses).

Table Eight: Fortune Global 500 Oil and Gas Companies Profits as Percent of Assets, 1990, 1995-2001

Company	Country	1990	1995	1996	1997	1998	1999	2000	2001
Amoco	U.S.	6	6	9	8	-	-	-	-
ARCO	U.S.	8	6	6	7	2	5	-	-
BP	U.K.	5	4	7	7	-	-	-	-
BP Amoco	U.K.	-	-	-	-	4	6	8	6
Chevron	U.S.	6	3	7	9	5	5	13	4
Chinese Petroleum	ROC	3	5	1	2	6	-	-	-
CNPC	PRC	-	-	-	-	-	-	7	6
Conoco	U.S.	-	-	-	-	-	5	10	6
Cosmo Oil	Japan	1	1	1	0	-	0	1	-
Elf Aquitane	France	5	2	3	2	1	5	-	-
Eni	Italy	3	5	5	6	5	7	10	-
Exxon	U.S.	6	7	8	9	7	-	-	-
Exxon/Mobil	U.S.	-	-	-	-	-	5	12	11
Idemitsu Kosan	Japan	0	0	0	0	0	1	1	-
Indian Oil	India	-	7	5	6	8	6	6	5
Japan Energy	Japan	-	1	-3	1	1	-2	3	0
Lukoil	Russia	-	-	-	-	-	15	29	11
Mobil	U.S.	5	6	6	8	4	-	-	-
Nippon Oil	Japan	1	1	0	0	0	0	1	1
Pemex	Mexico	3	5	8	2	-3	-4	-4	-
PDVSA	Venezuela	17	8	10	10	1	6	13	-
Petrobras	**Brazil**	**11**	**2**	**2**	**4**	**4**	**3**	**14**	**9**
Petrofina	Belgium	5	3	4	6	4	-	-	-
Petronas	Malaysia	13	-	11	14	7	10	12	10
Phillips	U.S.	6	4	10	7	2	4	9	5
Repsol	Spain	5	7	6	5	5	-	-	-
Repsol-YPF	Spain/Arg.	-	-	-	-	-	3	5	-
Royal Dutch Shell	U.K./Neth.	6	6	7	7	0	8	10	10
SK	South Korea	-	-	-	1	0	2	1	-
Showa Shell Sekiyu	Japan	1	2	1	1	-	-	1	-
Sinopec	PRC	-	-	-	-	0	1	1	0
Ssanyong	South Korea	1	0	-1	-	-	-	-	-
Statoil	Norway	4	5	5	3	0	2	6	9
Sunkyong	South Korea	1	2	1	-	-	-	-	-
Texaco	U.S.	6	2	7	9	2	4	8	-
Total	France	4	2	4	5	4	-	-	-
Total Fina Elf	France	-	-	-	-	-	2	8	-
USX	U.S.	5	1	6	6	3	3	2	-

Source: Fortune Magazine, various years (losses are in parentheses).

Energy industry analysts, however, commonly employ a much broader range of performance indicators that are influential in the valuation and comparison of oil and gas companies by international investors. For example, Aegis Energy Advisors, using data from 2000, 2002 and 2003, report that Petrobras is already competitive with such "super majors" as BP, ExxonMobil, Royal Dutch Shell, the "integrated majors," ChevronTexaco, ConocoPhillips, Repsol-YPF, and TotalFinaElf, and the other privatizing, integrated oil and gas companies, including Eni, Statoil, Petrocanada, Petrochina, Sinopec, and CNOOC.[85]

Absolute size comparisons show that it is substantially smaller than the super majors, but similar to the integrated majors in many measures. It is close to the same size of the latter in terms of reserves, production, and refining capacity, but smaller than these in such financial measures as total assets, revenue, net income and earnings before interest, taxes, and depreciation (EBITDA). Petrobras, however, has many fewer employees – about 57% on average – than major companies. Operations measures show that Petrobras' reserves are much more liquid oriented and long-lived than the majors or integrated majors, but that its gas reserves are much smaller than these competitors. Petrobras is somewhat less downstream integrated, in terms of refinery integration, than the majors.[86]

Petrobras' operating performance is mixed. In the upstream sector, it is behind the other majors, with earnings adversely affected because production is predominantly heavy oil and oil from deep offshore fields. Royalties and the "take" by Brazil are also comparatively high. In the downstream sector, it performs much better than the majors, despite increased competition in recent years. Petrobras also performs well in terms of costs and profitability per employee. Finally, Petrobras is competing with the integrated majors financially. Its use of capital and equity, measured as a percentage of earnings, show that the conglomerate has lower book equity, enjoys comparatively low income tax rates, and reinvests much more of its earnings in production expansion and refining upgrades than the majors. Importantly, its "leverage," as reflected in long-term debt, is comparable to its peers.[87]

Finally, the goals of Petrobras' ongoing corporate restructuring seem to mirror those of its multi-national cohorts. It is entering international capital markets to compete for resources, rationalizing its internal information systems and management training procedures according to international standards, and fostering an identity among its employees that tries to distinguish them from the average worker in the Brazilian public sector enterprise.[88] "We've entered the race for capital," Ronnie Vaz Moreira, Petrobras' CFO, has said, "We want to send a message to the market that we don't want our debt tied to Brazil risk; we want to be compared to our oil and gas peers." [89]

As demonstrated by comparative studies of corporatization, this market-oriented management philosophy is particularly important for privatizing companies in economies making the transition from plan to market.[90] Unlike the socialist work units of the central planned economies of China and the former Soviet Union, Petrobras will not need to dismantle the many types of informal institutional means by which one political party continues to dominate the appointment, management, and training of economically prominent enterprises.

For comparison, consider the many obstacles faced by the corporate leaders and employees of China's privatizing oil and gas companies: Petrochina (a subsidiary of China National Petroleum Corporation, or CNPC), Sinopec, and China National Offshore Oil Corporation (CNOOC). Since reforms began in 1978, the Chinese Communist Party (CCP) has gradually and informally given up government ownership in agriculture, services, and small-scale manufacturing. In financial and some industrial sectors, however, the CCP has tried to "command the heights" and centralize both ownership and regulatory authority, including the strategically important and potentially fiscally lucrative energy sector. China is now a major oil importer with new energy security needs, and its oil and gas companies are the largest providers of fiscal revenue for central government coffers. These centralization efforts have not only maintained the nomenklatura system by which the CCP Central Committee and the Politburo appoint key leaders of the central-owned oil and gas companies and their component departments, but they have extended it to include the subsidiaries of these companies that are listed on foreign stock exchanges. Corporate managers and employees thus have little incentive to respond to or prepare for integration into the highly competitive international energy marketplace. They are much more likely to be concerned about their standing within the invisible political hierarchy maintained informally by the CCP.[91]

Nor is Petrobras likely to encounter some of the most difficult corporatization problems posed by the decentralization of the political and economic institutions of central planning. Key among these are incomplete vertical integration, a lack of cohesiveness and standardization of norms and rules across component departments, and incomplete and idiosyncratic intra-company communication and information services. China's early central leaders were not able to unite successfully the many regional governments and former colonial administrations of its prosperous coastal localities. As a result, China's economy has always been more decentralized than its Socialist cohorts, and can most accurately be described as a regional planned economy and not a central planned economy. In such an institutional context, the oil and gas companies gradually grew out of both local and central government development plans, with an upstream concentration in the industrial Northeast and a downstream concentration in the economically vibrant coastal cities of the Southeast.

The restructuring of the oil and gas sector into three companies in 1998 created three integrated corporations, but left them with near-exclusive production and distribution rights in various parts of the country and offshore. CNPC operates in the North, Northeast, and Northwest, Sinopec in the Central, East, and Southeast, and CNOOC offshore. Although not economically feasible – and under WTO accession rules not economically sustainable after 2005 -- such an institutional arrangement was a compromise intended to maintain the domination of the various component oilfields and refinery administrations, and CCP direct administrative control over them. Decentralization has merely re-strengthened the authority of component departments and of their economic partners, the local governments.

This path of institutional change has created enormous institutional obstacles for the successful vertical integration of China's oil and gas companies, making it difficult to restructure according to product lines, to standardize training, employment and management practices across subsidiaries, and even to develop the large pipeline projects that must unite the plans of far-flung oilfields, refineries, and local governments. CNPC, Sinopec, and the central government hope to develop oil and gas pipelines to bring oil from Kazakhstan, Russia, and Xinjiang to Northeast China, and gas from Xinjiang's Tarim Basin, several thousand kilometers eastward to Shanghai in East China. But as these companies have not yet even successfully unified their component oilfields and refinery administrations, much less addressed how to unite, for the first time, the development plans and regulatory authority of dozens of provincial and municipal governments, and the investments of many multi-national corporations, the successful construction of all of these pipelines is not likely to be seen in the near future.

Harmful decentralization is exacerbated by the semi-privatization of these companies through the listing of ADSs on foreign stock exchanges. The central government and the headquarters of these companies plan to "peel off" the "non-core" departments of these companies, laying off millions of employees and putting them into the hands of social security systems maintained by local governments. They hope that "leaner" and more efficient components can then be turned over to the administration of the newly formed, privatized subsidiaries. Local governments, often the original investors in these component oilfields and refineries, do not receive assets from these privatizations, but they must bear the cost of the downsizing. Not surprisingly, China's decentralization has resulted in increased competition and conflict between local government and central government, and between corporate headquarters and local departments and subsidiaries. As a result, Petrochina, Sinopec and CNOOC face considerable institutional obstacles to successful corporatization and preparation for competition with the multi-national integrated oil and gas majors.[92]

In contrast, the privatization of Petrobras is likely to be much like that of Petrocanada or Repsol-YPF.[93] Although Brazil's energy conglomerate, as with the Chinese corporations, must contend with problems created by the incomplete decentralization of fiscal authority and environmental policy, especially pollution control and cleanups, its corporatization appears largely unaffected by decentralization policies. Petrobras, as with Petrocanada and Repsol-YPF, has the ability to restructure successfully to adapt to international market conditions. First of all, unlike the Chinese corporations, it need not "shed" the bulk of its employees through the elimination of corporate social welfare units, including education and medical services. Brazilian local governments are already providing these, and they are negotiating with union authorities for the fiscal resources to support their development. Second, Petrobras employees are already represented by national unions and labor organizations, making collective bargaining for compensation under privatization both politically feasible and credible. The same is true for Petrocanada and Repsol-YPF.

In China, the CCP's policy of opposing the creation of autonomous worker organizations, particularly at the national level, has effectively prevented the establishment of credible commitments between government owners, managers, and employees to settle compensation claims during privatization. Downsized workers, in particular, have an incentive in such a context to continuously engage in popular protests to obtain compensation from the corporations. Finally, Petrobras has had for many years a central hiring and promotion system that trains and circulates managers across subsidiaries. Chinese managers are largely promoted within regional administrations and often have little contact with or experience in working in other subsidiaries and departments.

Overall, according to the majority of measures used by comparative economists and energy industry analysts, Petrobras is already competitive with multi-national oil and gas companies in international markets. Further privatization can increase its attractiveness to domestic and foreign investors alike, allowing it the ability to attract the capital necessary to expand domestic production and distribution and enter into new overseas markets.

Policy Recommendations for Petrobras and the Brazilian Government

Although there are many methodological obstacles inherent in analyzing the successes and failures of the privatization programs of oil and gas companies and governments across countries and over time, the comparative study of privatization in this sector yields some policy recommendations for the complete privatization of Petrobras and the deregulation of Brazil's oil and gas industry. In sum, Petrobras should be further privatized because the necessary compensation of stakeholders is likely to be politically feasible, because the corporatization of Petrobras thus far has produced an integrated company capable of competing economically with its peers in the turbulent international energy marketplace, and, implicitly, because the costs of privatization have already largely been borne by company, government, and the Brazilian public.

The energy crisis of 2001 may have been ameliorated by rain and rationing, but Brazilians, like Californians, are likely to face new crises in the future. They need to reform the energy industry and the state ownership and regulatory authority in order to guarantee the sustained, low-cost provision of fuels. As discussed in the above sections, the privatization of Petrobras, as with Petrocanada and Repsol-YPF, can actually put into practice the goals of Brazil's reformers, promoting democratization and the transition from authoritarian rule, reducing social inequalities and poverty, and supporting the successful decentralization of government fiscal authority and public services. Although Petrobras may often be compared with Petrochina, Sinopec and CNOOC in terms of performance and as future competitors for energy supplies, the gradual and informal privatization of China's oil and gas enterprises has only exacerbated conflict between central state and local government, government and industry, management, and employees. Petrobras does not face such problems in its further privatization.

The obstacles to the development of Petrobras into a major competitor in international oil and gas markets mainly lie with the failure to successfully decentralize fiscal authority, including the responsibility for environmental cleanup, and the under-development of Brazil's new energy regulatory authority and its ability to constrain the monopolistic behavior of this semi-privatized, giant energy conglomerate. Although there have been modest achievements with the creation of a regulatory agency (ANP) that can enforce newly enacted laws and regulations opening up the energy sector, major obstacles remain that discourage both domestic and foreign investment:

- Despite the liberalization of fuel prices, including imports, the federal government continues to use its ownership authority to set energy prices as a macro-economic policy tool, with resulting swings in prices for the Brazilian consumer according to government goals;

- Despite the establishment of an independent regulatory authority, potential investors seem to be discouraged by the monopoly of information on production and transmission of fuels held by Petrobras and the lack of alternative, credible sources of data and analysis;

- Despite instructions by the ANP to do so, Petrobras apparently has thus far ignored regulations that require it to open up third-party access by non-affiliated marketers and shippers (especially in the case of trans-Bolivian gas pipeline access), with the situation only exacerbated by current plans to develop new pipeline networks in Northern Brazil and new transnational pipelines with Bolivia and Argentina;

- Despite government statements that it intends to internationalize the energy sector, competition in the gas market is hindered by a lack of international cooperation in the Southern Cone to create a truly regional gas market that delinks gas from oil prices and links power and gas prices.[94]

In conclusion, Brazil can afford to privatize Petrobras and liberalize the energy sector in order to guarantee the low-cost provision of non-renewable fuels in future energy crises. But to successfully implement these reforms, it needs to create a decentralized fiscal system that does not require a state oil and gas company as a macro-economic policy tool, and it needs to strengthen the independent regulatory authority of the state in order to protect the interests of the Brazilian consumer. Fortunately for Brazilians, the institutional obstacles to such reforms are lower than in other transition economies.

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1 Gulf News Online, "Petrobras Pushing into Ranks of the Global Oil and Gas Majors," in Alexander's Oil and Gas Connections, Vol. 6, No. 1, January 11, 2001.

2 Robert Bacon (1999), "A Scorecard for Energy Reform in Developing Countries," in Public Policy for the Private Sector, Note no. 175, April 1999 available at [http://www.worldbank.org/html/fpd/notes/175/175bacon.pdf].

3 According to rankings based on operational criteria developed by Petroleum Intelligence Weekly, Petrobras ranked 12th in 2001; see Gale Group, "PIW Posts Top 50," Business and Industry, Vol. 7, No. 2, March 2002.

4 This study attempts to offer policy prescriptions based on a consideration of political, economic and social factors found o be significant in the

comparative study of privatization; for a study of the political factors, including federal elections in the fall of 2002, that are shaping energy sector privatization in Brazil, see a complementary study by Peter Kingstone (Kingstone 2003).

5 "Energy Crisis in Brazil Brings Dim Lights and Altered Lives," New York Times, June 6, 2001, pp. A1-A14.

6 For a discussion of the numerous political and economic obstacles encountered when planned economies and post-authoritarian political systems in Eastern Europe, Central Europe, Southern Europe and Latin America have attempted political and economic liberalization at the same time, see Adam Przeworski, et al, (1995), Sustainable Democracy; Cambridge, England: Cambridge University Press.

7 Geoff Dyer (2001), "Cardoso under Pressure as Energy Shortage Bites: A Torrent of Criticism has Fallen on Brazil's President Since He Announced Emergency Power Rationing," Financial Times, June 13, London Edition 2.

8 Cardoso (2001), pp.12-13.

9 For information on the federal government's emergency rationing program see the website of Energia Brasil [http://www.energiabrasil.gov.br/].

10 There does not seem to be consensus within the federal government on the scope of investments in thermoelectric plants. The president's emergency power program calls for the construction of 48 plants: 26 thermoelectric power plants in Brazil, one in Bolivia, and 21 hydroelectric plants, with the latter generating an additional 7,000 megawatts in power. See "Cardoso Reveals Details of Emergency Power Supply Plan," Sao Paulo O Estado de Sao Paulo, (in Portuguese), June 29, 2001, in FBIS-LAT-2001-0629. The National Bank for Economic and social Development, BNDES, however, has identified 49 thermoelectric plant projects for priority funding and development in the next two years. See "Brazil to Invest R$15 Billion in Energy Through 2003," Sao Paulo O Estado de Sao Paulo, (in Portuguese), June 10, 2001, in FBIS-LAT-2001-0612.

11 Peter Gall (2001), "Brazil Goes to La Paz Today Seeking More Bolivian Gas," Oil Daily, June 26, 2001.

12 See 1999 data supplied by the United States Energy Information Administration in "World Apparent Consumption of Refined Petroleum Products, 1999," "Selected Crude Oil Prices, 1991-2001," and "World Petroleum Supply and Disposition, 1999," from the "International Energy Annual" report on their website, at [http://www.eia.doe.gov/iea/].

13 According to Brazilian central bank statistics the country had a current-account deficit of US $24.374 billion in 1999; cited in Economist Intelligence Unit, (2001), "Brazil Country Report 2000/2001".

14 See US EIA in fn. 12.

15 "Inauguration Speech of New President and CEO, Mr. Francisco Gros," January 3, 2002; available at website of Petrobras [http://www2.petrobras.com.br/publicacao/imagens/471_Discurso_posse_presidente_Francisco_Gros.PDF].

16 Raymond Colitt, (2000), "A Decade of Low Capital Investment Means There is Likely to be a Substantial Shortfall of Electrical Power Over the Next Five Years," Financial Times, December 20.

17 For a useful discussion of public goods, market failure and efficiency see Weimer, Vining and Vining (1998).

18 For a thorough and illuminating survey of theoretical and empirical studies of privatization see Megginson and Netter (2001).

19 For a discussion of privatization, democratization and civil society see Przeworski, et al, (1995).

20 See Megginson and Netter (2001).

21 Ibid.

22 For a discussion of these studies see Ibid; for a discussion of informal privatization experiments in the former central planned economies and in China see Lewis (1996), and for a discussion of the informal privatization of the state oil and gas companies see Lewis (1999).

23 See Petroleum Economist (1997), World Energy Council (1998), PricewaterhouseCoopers (2000), World Bank & IESM (2001), and Aegis (2001a).

24 For the importance of identifying stakeholders in a neo-institutional economics theoretical analysis of efficiency and privatization, see North (1996); for a study of the politics of economic reform, including privatization, in Brazil see Kingstone (1999) (2002).

25 Fortune (1981).

26 Petrobras (2000b), (2001a), (2002)(2004).

28 For a discussion of Petrobras employee compensation in historical perspective, see Randall (1993).

29 Petrobras (2002b).

30 See Petrobras (2000c) and Goertzel (1999) for the earlier strikes; for an example of a more recent, limited strike that successfully increased the employee stake in profit-sharing for 2001, see Agence France-Presse, "Petrobras workers go on 24-hour strike for better profit-share

benefits," May 3, 2002.

31 Petrobras (2001a).

32 Petrobras (2001b)(2004).

33 Petrobras (2001a) (2002a) (2003)and data provided by the National Privatization Program on the website of the Brazilian National Bank for Economic and Social Development at [http://www.bndes.gov.br/]. Note that as with other companies for which most of its assets are in natural resources, the value of Petrobras is greatly affected by changes in prices in international commodities markets. This is a considerable technical problem for policy-makers as they construct valuation procedures for privatization programs, and therefore also a problem as they seek stakeholder and public support for privatization.

34 Petrobras 2004.

35 Although a state-owned enterprise, Petrobras had more than 130,000 "silent partner" stockholders from the 1950s to the 1980s, adding 320,000 -- to total 450,000 -- through one sale in 1985. For the history of ownership of Petrobras see Randall (1993), and for a description of the 1985 sale see "Increased Private Stock Holders are Stimulated," and "Petrobras has 320,000 New Stockholders," Petrobras News, No. 94, July/August 1986, pg. 3.

37 Note that debtors of Petrobras can also be included in this category if the privatization process prevents Petrobras from collecting such debts. Although there are no public reports that it applies to the case of Petrobras, collaboration between SOE managers and debtors to "write off" debts is a common form of asset stripping in transition economies with weak law enforcement and judicial systems.

38 Petrobras (2002b), pg. 125.

39 After a large spill at the company's Repar refinery, the Federal Public Ministry and Parana State have reportedly announced plans to sue Petrobras for US $1.1 billion. See Business News Americas, "Ministry, Parana, to Sue Petrobras US 1.1 Billion for Spill," March 17, 2001.

40 Economist Intelligence Unit (2001) and EIU, "Brazil Country Profile Fact Sheet 2002..

41 Petrobras (2001b).

42 Petrobras (2002a).

43 Petrobras (2001b) and "Petrobras Announces Restructuring Plan," October 23, 2000 press release available on Petrobras website.

44 Petrobras (2001a).

45 Petrobras (2000a) (2001b).

46 For data on sales taxes and contributions to the temporary federal and state social security funds for 1999 and 2000 see Ibid; in 2001 some of these taxes increased in rates, but Petrobras' contributions decreased to US $8.6 billion, largely as a result of the depreciation of the currency, see Petrobras (2002a).

47 See Pablos (1997) and Reiter and Graber (1997) for a discussion of decentralization and its impact on fiscal reforms and social welfare policies.

48 Petrobras (2001a).

49 For information on the US $4 billion in sale of public shares in Petrobras through December 2000, see the National Privatization Program on the website of the Brazilian National Bank for Economic and Social Development at [http://www.bndes.gov.br/]; accessed April 24, 2002. In July 2001 the BNDES sold an additional US $700 million in preferred shares, while retaining its common shares. See Reuters, "Brazil's BNDES sells $702 mln of Petrobras stock," July 18, 2001.

50 Ibid.

51 Petrobras (2001a), (2002a).

52 On negotiations between the federal government and mayors of municipalities see Sao Paulo O Estado de Sao Paulo, "Planning Minister Defends Fiscal Responsibility Law," (in Portuguese), February 27, 2001, in FBIS-LAT-2001-0227. On negotiations between the federal government and state governments see Sao Paulo O Estado de Sao Paulo, "Malan Calls for 'Fiscal Responsibility," (in Portuguese), August 22, 2000, in FBIS-LAT-2000-0822.

53 For a discussion of the institutional features of the LRF and recent developments in fiscal decentralization in Brazil see Mora and Varsano (2001), and for a discussion of the LRF's impact on economic growth see Sao Paulo O Estado de Sao Paulo, "Brazil's Raul Velloso: Fiscal Responsibility Law Has 'Undesirable' Side," (in Portuguese), January 7, 2001, in FBIS-LAT-2001-0123.

54 Not all jobs created by such development projects are beneficial to local economies in the long run. As noted in case studies of these refinery projects, the rapid urbanization of these undeveloped areas has created long-term social welfare problems. Attracted by construction jobs,

many unskilled people from the agrarian interior moved to these localities. After the facilities were built and the skilled workers from Petrobras facilities in developed urban areas moved in to operate them, these people then became unemployed. The result has been the growth of favelas, slum neighborhoods of squatters who have limited access to social welfare benefits, and undeveloped municipal governments that have few means to alleviate such poverty. For case studies see Cuttino (1997).

55 For a discussion of Cardoso's efforts to eliminate the agencies and to deconstruct the regional political coalitions supporting Sudene and Sudam, see James Ferrer, Jr., "Brazilian Economic Developments, " Brazil File, (newsletter of the Institute of Brazilian Business and Public Management Issues, George Washington University), May 2001, pp. 5-9; available online at [http://www.gwu.edu/~ibi/Brazil_File/May2001.pdf].

56 For a study of the politics involved in locating the refinery see Cuttino (1997). Petrobras eventually decided against building a 12th refinery. Because the conglomerate controls some 98 percent of refining in Brazil, it expects that it will be forced to sell domestic refineries as deregulation progresses. Corporate planning calls for refining expansion overseas, including South America and the United States. See Petrobras (2000c).

57 This issue was reflected in the debate among foreign market analysts in summer 2001, in which some argued that as a SOE Petrobras' international credit rating – one determined by Moody's Investors Service to be higher than that of the Brazilian federal government – should be the same as the sovereign one. See Securities Data Publishing, "Petrobras Rating Evokes Debate," May 14, 2001.

58 Petrobras (2002a) and (2000c).

59 See Financial Times, "Petros UPS Project Financing Portfolio – Brazil," Business News Americas, January 29, 2002; also Latin American Financial Publications, "Heavyweight Investors Tone Up: Brazil's Major Institutional Investors have Evolved into Key Players in the Capital Markets," Latin Finance, March 2002, pg. 18.

60 The primary fiscal surplus does not include loan repayments. For details of the three-year Stand-By-Arrangement worked out between the IMF and the Brazilian federal government, and the terms of its seventh and final review agreement, see the "Brazil Memorandum of Economic Policies" at [http://www.imf.org/external/np/loi/2001/bra/01/index.htm].

61 Sao Paulo O Estado de Sao Paulo, "Brazil: Primary Surplus, Deficit Figures for 2000 Reported," (in Portuguese), January 31, 2001, in FBIS-LAT-2001-0131.

62 See Financial Times, "Investors Await Details of Dollars 15 bn IMF Offer to Brazil," August 7, 2001.

63 For Finance Minister Pedro Malan's interpretation of remarks on fuel price deregulation made by former IMF First Deputy Managing Director Stanley Fischer, see Sao Paulo O Estado de Sao Paulo, "Finance Minister Says Fuel Prices not to be Adjusted," (in Portuguese), October 13, 2000, in FBIS-LAT-2000-1013.

64 See Belgrade Tanjug, "IMF Approves $63 Million Loan to FRY, Praises Country's Impressive Progress," January 12, 2002, in FBIS-EEU-2002-0112; and also The Jakarta Post, "IMF Approval of Indonesia Program Review Clears Way for Loan Disbursement," September 11, 2001, in FBIS-EAS-2001-0911; and also Ankara Anatolia, "IMF Director: Turkey Made Considerable Progress in Economic Reform," April 16, 2002, in FBIS-WEU-2002-0416.

65 As is common in many privatizing transition economies, high-quality data and systematic analysis comparing domestic and international prices for energy commodities are hard to come by. In such systems neither the emerging government regulatory agencies nor the state-owned energy authorities have strong incentives to share such information with the public.

66 See Financial Times, "Government: Petrobras Will Decide Fuel Price Hikes," Business News Americas, February 19, 2002.

67 See "Tankers are Purchased in Brazil to Stimulate National Shipbuilders," Petrobras News, No. 60, December 1981, pg. 6, and "In 1981, Only One Order Abroad," Petrobras News, No. 60, December 1981, pp. 6-7, and "Petrobras Places Its First Orders in Brazil for Drilling Rigs," Petrobras News, No. 61, January 1981, pg. 17; and discussion of new Rio Grande do Sul State refinery as way to save foreign spending in "Petrochemical Complex Emerging in Brazil's Far South," Petrobras News, No. 65, May 1982, pp. 7-12

68 See Ibid and also descriptions of naval service in promotion of two former admirals to manage Petrobras' tanker fleet, in "Management Changes in Transportation Department," Petrobras News, No. 55, July 1981, pp. 16-17.

69 For discussions of oil and nationalism in Brazil see Carvalho (1976), Smith (1976) , and Trebat (1983), for Venezuela see Coronil (1997), and for Argentina see Solberg (1979); for a thorough discussion of Petrobras' role in the Brazilian economy in general see Randall (1993).

70 See naming of a refinery after one of Brazil's earliest oil deposit explorers and a pioneer of the naval industry, in "Petrobras Refinery Named Henrique Lage," Petrobras News, No. 54, June 1981, pg. 17.

71 See "Brazil's President Figueiredo Inaugurates Fertilizer Complex," Petrobras News, No. 52, April 1981, pg. 12; and also Sarney's dedication of expansion facilities for the Manaus refinery in, "Increasing Amazon Output Leads to Boost in Refinery Capacity," Petrobras News, No. 126, September/October 1989, pg. 3.

72 "Oil Monopoly, Instrument of Dependence," Petrobras News, No. 89, September/October 1985, pg. 3.

73 The comparative study of how corporations, governments and entrepreneurs use sponsorship of cultural and artistic events to create identification with both economic goals and nationalistic agendas has only recently been studied by anthropologists and sociologists. See Luke (1992) for an exploratory study of corporate and governmental sponsorship of art exhibitions in the United States. The study of how governments and corporations in the energy sector promote consumption of hydrocarbons through the popularization of political beliefs is similarly undeveloped. For a rare exception, see Daunton (2001) on the manipulation of popular notions of monopoly, fairness and the consumption of gas by national and local governments, political parties and gas companies in Victorian Britain.

74 See, for example, the listing of projects in 1985 reported in, "Petrobras is also Concerned With Cultural Projects," Petrobras News, No. 90, November/December 1985, pg. 2 ; and for a description of the cultural marketing agenda in the late 1990s see, " Citizen Company, "Petrobras Magazine, July/August/September 1997, pg. 23; for historical landmarks see "Gustavo Capanema Palace: Architectural Landmark," Petrobras Magazine, Vol. 3, No. 9, April/May/June, 1995 and "The Catete Palace: A Living Museum," Petrobras Magazine, July/August/September 1995; and for historical figures see, "Under the Last Emperor's Gaze," Petrobras Magazine, July/August/September 1997, pg. 24, and "Ernesto Geisel: the Oil Strategist," Petrobras Magazine, April/May/June 1997, and "Getulio Speaks!" Petrobras Magazine, July/August/September 1995.

75 See Global News Wire, "Landless Peasants Protest Petrobras Name Change in Cyberspace," December 28, 2000.

76 See "New Logo for Petrobras," Petrobras Magazine, Vol. 3, No. 9, April/May/June 1995.

77 See "Departure Speech of CEO and President, Mr. Philippe Reichstul," January 3, 2002, available at Petrobras website [http://www2.petrobras.com.br/publicacao/imagens/470_Discurso_despedida_presidente_Reischstul.PDF].

78 For a copy of the summary of the survey, sponsored by the Inter-American Development Bank, the European Union and other NGOS, and its component results and methodologies, see "Press Report: Latinobarometro Survey 1999/2000," available on the website of the Corporacion Latinobarometro in Chile, at [http://www.latinobarometro.org/English/PressRe00nr.htm].

79 See (CNT 2002), "International Political and Economic Themes and Views on Brazil," a poll conducted in 22 countries, from August 15 to October 10,2001, by the Confederation of National Transportation and Sensus in Brazil, and available in English and Portuguese on the website of the CNT, [http://www.cnt.org.br/download/pesquisas/Relatorio_Mundial_Ingles.pdf].

80 When asked," If you had to choose, which one of the things in the following list would you say is most important? And which would be the next most important?," 25.4 percent chose fighting prices, 16.8 maintaining order, 26.5 people decisions and 20.4 freedom of speech, with the average for fighting prices for the 22 countries being 17.2 percent; and when asked "In this list, what do you think is the most important problem in this Country is today?" 46.8 percent chose poverty, 24.5 percent crime/corruption, 17.5 percent social, 1.8 percent war/terrorism, and 9.3 percent food with the average for poverty for the 22 countries being 29.8 percent; see Ibid.

81 Energy Intelligence Group (2001), Ranking the World's Top Oil Companies 2001, available from EIG website at [http://www.energyintel.com/].

82 DOE Website on Brazil and US gasoline imports at [http://www.eia.doe.gov]

83 Petrobras (2001a).

84 See Dewenter, Kathryn L., and Paul H. Malatesta, (2001), "State-Owned and Privately Owned Firms: A Empirical Analysis of Profitability, Leverage, and Labor Intensity," American Economic Review, Vol. 91, No. 1, pp. 320-334.

85 Aegis Energy Advisors (2002) (2001b) (2003).

86 Ibid.

87 Ibid.

88 "Petrobras Announces Restructuring Plan," October 23, 2000 press release available on Petrobras website.

89 Gulf News Online, "Petrobras Pushing into Ranks of the Global Oil and Gas Majors," in Alexander's Oil and Gas Connections, Vol. 6, No. 1,

January 11, 2001.

90 For a study of corporatization best practices for the public sector see World Bank (1995); for a discussion of corporatization in oil and gas companies see Petroleum Economist (1997) and Allen (1997) in particular. For a discussion of corporatization best practices in utility companies see PricewaterhouseCoopers (2001); for a discussion of specific recommendations for the corporatization of the Chinese oil and gas sector see World Bank and IESM (2001).

91 For a study of the privatization of CNPC, Sinopec and CNOOC, and in particular the maintenance of the nomenklatura system of CCP control over state enterprises see Lewis (1999); for a study of the "corporate culture" of CNPC and how it is adversely affected by the maintenance of political appointments over managerial positions and training see Bo (2001).

92 For a more thorough description and discussion of decentralization and privatization of Chinese oil and gas companies see Lewis (1999).

93 For a discussion of Petrocanada's privatization see Mito (2001) and for a discussion of Repsol-YPF's see Sturzenegger and Gadano (1997).

94 For a discussion of this argument see Ellsworth and Gibbs (2002).