The Brazilian Institutional Environment: The Impact on Companies’ Strategies in the Oil and Gas Sector
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THE BRAZILIAN INSTITUTIONAL ENVIRONMENT: THE IMPACT ON COMPANIES’ STRATEGIES IN THE OIL AND GAS SECTOR

ABSTRACT

Institutional theory explains how interactions between organizations and institutions shape economic activity and consequently managerial performance and strategies. The institutional setting of most emerging countries is in transition, whereby a relationship-based transaction mode is gradually yielding to rule-based transactions. This study investigates how the institutional environment in Brazil influences the strategy of oil and gas companies, based upon a case study approach to exploration and production in the oil and gas sector. The results obtained from secondary data and interviews with executives of the main Brazilian oil and gas companies and members of public organizations demonstrate that institutions have a limited influence on the decisions of these companies, since the regulatory dimension plays the biggest role in decision making.

INTRODUCTION

A country’s institutional environment is influenced by its legal and administrative structures, within which individuals, companies, organizations and government interact to generate income and wealth. The level of institutional development will influence firms’ investment decisions and organization of production. The institutional environment encompasses such elements as government attitudes towards markets, the freedom given to firms to act, and the efficiency of government services. Excessive bureaucracy and regulation, corruption, and slow judicial systems are just some of the many examples of governmental inefficiency that significantly increase transaction costs and hold back economic growth (Schwab, 2009).

Brazil has undergone various reforms of its institutional environment since the end of the military regime that ruled the country from 1964 to 1985. In 2007, the discovery of huge additional offshore hydrocarbon deposits in subsalt layers\(^1\) with the potential to turn Brazil into a major oil exporter, prompted the government of President Luiz Inácio Lula da Silva to propose changes in the legal regime applicable to exploration and production (E&P) activities in the subsalt areas. Those changes were approved by Congress in 2008.

According to North (2009), interactions between institutions and organizations shape economic activities. Previously, Peng (2003) had argued that these interactions influence the strategies adopted by firms. He had also observed that while various studies had been undertaken about how firms make strategic choices, most of them involved firms in stable institutional environments, whereas Brazil and other emerging countries were going through substantial institutional transitions, as identified by numerous authors (Dieleman & Sachs, 2008; Meyer et al., 2009; Peng, 2003; Tihanyi & Hegarty, 2007; Tong et al., 2008; Yamakawa et al., 2008).
In this context of institutional transition, the aim of this study is to identify how Brazil’s institutions influence the strategic decisions of companies in the oil and gas sector. To do so we used the single case study method, relying on the techniques of analyzing evidence formulated by Yin (2005) and the content analysis methods proposed by Bardin (2007). The data come from secondary sources and interviews conducted with 16 executives (presidents, directors/officers and senior managers) of public and private organizations related to the oil and gas sector. The results obtained demonstrate that institutions have little influence on the decisions of petroleum firms, and that the regulatory dimension of the institutional setting is what most influences decision making.

INSTITUTIONAL THEORY, A LITERATURE REVIEW

According to Scott (1994), institutional theory has its roots in sociology and economics. Taking an economic perspective, North (1994) contends that institutions act as constraints to structure human interactions, whether they be formal (constitutions, laws, regulations, etc.) or informal constraints (codes of conduct, customs and uses, rules of behavior, etc), as well as in the ways these constraints are enforced. An economy’s evolution will largely be determined by the interaction of organizations and institutions. Corroborating statements from North (2009), Hitt & Dacin (2000) add that there are important institutional differences that affect business strategies.

On the sociological side, Scott (1994) defines a country’s institutional profile as a set of relevant institutions that have been established and continued over time by organizations and individuals. He adds that institutions rest upon three pillars: regulatory, normative and cognitive.

North (2009) points out that each country has different institutional structures; hence the level of its economic development is fundamentally related to the development of these structures, with economic change being a continuous incremental process that is a
consequence of the daily choices of individuals and organizations. Taking the economic view, Djankov et al. (2003) argue that the protection of property rights and efficient enforcement of contracts are essential elements to encourage investment, trade and economic growth.

**Relationship between Institutions and Organizations**

According to North (2009), economic activities are shaped by the interaction between organizations and institutions. Based on the importance of this relationship, Orr & Scott (2008) consider that firms play an active role in responding to pressures from institutions, either alone or through trade associations or other representative entities. For Jackson & Deeg (2008), institutions should not be seen only as constraints, but rather as a resource to resolve the problems of economic coordination.

Jackson & Deeg (2008) further argue that institutions shape the resources, such as types of financing or human capital, which are collectively available to firms. They also influence the internal governance of companies by modifying the power relationships among the various stakeholders and the capacity for market coordination through different functional domains. In response, companies engage in direct political pressure to change institutions and suggest different patterns of change, based on the interaction of companies with diverse political systems.

North (2009) adds that both political and economic entrepreneurs use their talents and tacit knowledge to obtain benefits. When large expenses are required to influence the rules and their enforcement, entrepreneurs generally join forces by creating intermediary organizations (trade associations, lobbying groups, political action committees) in an effort to obtain advantages from lawmaking bodies and government bureaucracies.

According to Dacin et al. (2007) and Scott (1994), institutional theory is also influenced by social justification, whereby organizations seek legitimacy or approval of their acts, principally in relation to the participants that depend directly on them.
Institutional Theory and Resource Dependency Theory

According to North (2009), companies regularly alter the institutional structure to fit their objectives. Firms develop as a function of institutional constraints as well as other restrictions, such as the availability of technologies and earnings for reinvestment. Interactions between these constraints delineate the opportunities to maximize the potential wealth or utility of political and economic entrepreneurs. In light of this, Oliver (1991) argues that institutions guarantee the base for legitimacy, so organizations respond to a variety of institutional pressures by making strategic choices, ranging from outright disobedience or circumvention of the rules to strict compliance.

The resource dependency theory focuses on an array of actively chosen behaviors that organizations can engage in to manipulate external dependencies or exercise influence over the allocation of critical resources. In comparison, institutional theory tends to limit its focus to actions for structural conformity with the environment. Organizations will predictably act according to the institutionalized creeds and practices when these are externally validated by organizations or when social facts qualitatively serve as the obvious or natural way to conduct an organizational activity. Both the institutional theory and resource dependency theory assume that organizational choices are possible within an environment of external constraints, but institutional theory focuses more on conformity than on resistance, more on passive than active responses, and more on conscious acceptance than on political manipulation as a response to external pressures and expectations (Oliver, 1991).

Institutional Theory and the Resource-Based View

Hitt et al. (2004) observe that institutional arrangements can create barriers to entry or opportunities for action. As a result, the choice of strategic actions will depend on differences in institutional arrangements. According to Meyer et al. (2009), both institutional development and the need for investors with local resources affect the entry mode strategy in
different ways in different institutional contexts. In this respect institutional theory and the resource-based view can be integrated.

Institutional theory assumes that individuals are motivated to act according to external social pressures, while the resource-based view assumes that individuals are prompted to make decisions based on economic considerations. According to institutional theory, firms make rational decisions based on rules, and these decisions are shaped by the social context within which the firm is set. In contrast, the resource-based view suggests that firms make economically rational decisions that are shaped by the economic context they face. According to Oliver (1997), institutional theory suggests that external social pressures reduce the variation of firms’ structures and strategies, while the resource-based view proposes that market imperfections increase the variation of resources available to firms and hence their strategies.

**Institutional Transitions and Strategic Choices**

An institutional transition can be defined as a change from one mode of exchange to another, with the purpose of reducing uncertainties. Nevertheless, according to Oliver (1992), despite the long-term benefits, in the short run institutional transitions generate uncertainty and increase transaction costs until the new institutions fully occupy the place of the old ones.

According to Peng (2003), there are two types of transactional structures: those based on relationships and those based on rules. The relationship-based structure is grounded on relational contracts. Initially the cost of establishing this type of contract is high and the benefits are low, since the parties need to build a strong social network over time, a process that consumes considerable resources. When the scale and scope of the transactions increase, the cost of this transaction mode tends to decline and the benefits increase, but after a certain period the cost of this transaction mode starts to increase again and the benefits diminish,
because the greater the variety of products and exchanges, the more complex the agreements between the parties due to the lack or failings of formal institutions.

Johnson et al. (2000) characterize the rule-based transaction mode as relying on a third party to enforce contracts. In this case the initial transaction cost is high to develop and establish formal institutions, but as time passes, institutions increasingly facilitate market transactions, because the parties have more confidence in carrying out transactions and seek gains from more complex ones.

In this respect, Peng (2003) argues that the institutional transition process in emerging countries involves a gradual shift from relationship-based to rule-based transactions. These transitions can involve changes in political regimes and/or shifts in economic policies, sometimes prompted by pressures from international bodies and sometimes by internal social pressures. Once the key changes are in place, the economy moves to a new phase based on rules, although the process is generally lengthy and incremental due to the absence of rules to control all transactions, the lack of institutions to enforce the rules, and resistance by some organizations.

Although formal rules (laws and regulations) can change suddenly due to political or judicial decisions, the informal constraints incorporated in the existing customs and codes of conduct are harder to change (North, 2009).

According to Meyer et al. (2009) and Peng & Heath (1996), weak institutional arrangements increase information asymmetry, aggravating the risks of forming partnerships and requiring greater expenditure on information. Joint ventures provide a way to access resources held by local firms, including networks. These can help counteract the idiosyncrasies of a weak institutional setting. On the other hand, the need for partners can decline, as the institutional structure grows stronger. The acquisition entry mode is sensitive to the efficiency of markets, particularly the financial market, which requires transparency
and enforcement of contracts. Underdeveloped institutional frameworks hinder access to resources via market transactions, hampering entry through greenfield projects, and increasing the cost of acquiring a firm. On the other hand, joint ventures provide ways to access local resources in markets where impersonal transactions are difficult.

Table 1 below summarizes the theories discussed above, based on a review of the literature.

<table>
<thead>
<tr>
<th>Vision</th>
<th>Dimensions</th>
<th>Types of Strategic Responses to Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Formal constraints</td>
<td>Passive</td>
</tr>
<tr>
<td></td>
<td>Informal constraints</td>
<td>Conformity</td>
</tr>
<tr>
<td></td>
<td>Effectiveness of enforcement of the formal and informal constraints</td>
<td>Political acceptance</td>
</tr>
<tr>
<td>Sociological</td>
<td>Regulatory</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>Normative</td>
<td>Resistance</td>
</tr>
<tr>
<td></td>
<td>Cognitive/Cultural</td>
<td>Political manipulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Control</td>
</tr>
</tbody>
</table>

Table 1 – Summary of the theories examined in the literature review

METHODOLOGY

Our research methodology is based on the methods for analyzing evidence formulated by Eisenhardt (1989) and Yin (2005), and the content analysis techniques proposed by Bardin (2007).

According to Yin (2005), case studies allow complex events and situations to be depicted in detail. Eisenhardt (1989) noted that case studies permit understanding of the dynamics of a single event, here the institutional dynamics of the Brazilian upstream oil and gas sector. We rely on the method formulated by Yin (2005) to study a single case because our aim is to describe the behavior and evolution of this sector over a period of time. Additionally, this method can be used to confirm or contest existing theories on the subject in question.

Definition of the Research Question

Our aim here is to assess the influence of institutions on corporate strategy in the oil and gas sector, and the dynamics of the relationship between companies and institutions in a transitional institutional environment.
Selection of the Case

We chose the oil and gas sector in Brazil because it provides particularly fertile ground for examining the relationship between institutions undergoing multiple transitions in an industry experiencing important changes, and which is by nature particularly dependent on the institutional environment, consisting of the legal and regulatory framework set up by the government (and where a state-controlled company is the leading player). More particularly, we focus on the relationship between the companies and the institutions that influenced the sector in the period between 1988 and 2010.

Modeling of Instruments and Protocols for the Field Study

The research script was formulated to analyze the existence and influence of the critical factors indicated by theories on the influence of institutional changes in the Brazilian oil and gas sector. Initially we applied a prototype of the questionnaire to two executives not working in the petroleum industry, to test its clarity.

We used a script with open-ended questions, as suggested by Bardin (2007) and Yin (2005), to prepare and conduct the interviews.

Field Study

We interviewed top executives of companies in the Brazilian oil and gas sector (engaged in both E&P as well as related services like shipbuilding) along with top-echelon people from trade associations and government agencies with direct influence on the sector. The interviews were conducted between December 2009 and April 2010 (before the enactment by the Brazilian Congress of the legislation providing a new framework for exploration and exploitation of the subsalt deposits, but during the period of debate leading up to these changes). We interviewed 16 people: 7 presidents, 6 company officers or institutional directors and 3 senior managers. The list of the companies and institutions from which these people work is shown in Table 2.
Analysis of the Data and Convergence of the Evidence

To analyze the data we used the content analysis technique proposed by Bardin (2007). Also, as recommended by Yin (2005), we used data from multiple sources, mainly the interviews and secondary information available in the literature, to obtain convergence of the evidence gathered.

However, according to Yin (2005), researchers must follow systematic procedures to avoid obtaining mistaken evidence or biased views. In light of this recommendation, we sought to reduce the possible biases by cross-checking the results obtained in the content analysis of the interviews with the largest amount of data possible, to achieve convergence of the evidence.

Brazil and its Institutional Environment: Evolution, Current Situation and Perspectives

The financial crisis and economic stagnation faced by Brazil at the start of the 1980s was fundamental to hastening the end of the military regime that had ruled the country since 1964. Inflation was finally tamed in 1994 by the Real Plan. The structural reforms undertaken
by the Cardoso administration (1995-2002) managed to reduce the cost of capital and increase the utilization of capacity without generating renewed inflation. President Lula (2003-2010) maintained his predecessor’s macroeconomic policies intact and continued to carry out reforms to permit sustainable economic growth (Bacha & Bonelli, 2005).

Since 1988, with the promulgation of the current Constitution, Brazil has gone through a period of important reforms. Despite these, the country is still in institutional transition, as revealed by the number of problems that still exist, such as the recent consolidation of strong property rights, overlapping authority of regulatory agencies, frequent changes in legislation on private investments, fragile political institutions and poorly educated labor force (Mia et al., 2009).

In 2010, Brazil was ranked in 58th place in the Global Competitiveness Index (GCI) prepared by Schwab (2009), and did even worse (93rd place) among the 139 countries studied on the institutional ranking. The items making up this institutional classification are listed in Table 3.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Property rights</td>
<td>72</td>
</tr>
<tr>
<td>2 Intellectual property protection</td>
<td>89</td>
</tr>
<tr>
<td>3 Diversion of public funds</td>
<td>121</td>
</tr>
<tr>
<td>4 Public trust of politicians</td>
<td>127</td>
</tr>
<tr>
<td>5 Irregular payments and bribes</td>
<td>71</td>
</tr>
<tr>
<td>6 Judicial independence</td>
<td>76</td>
</tr>
<tr>
<td>7 Favoritism in decisions of government officials</td>
<td>74</td>
</tr>
<tr>
<td>8 Wastefulness of government spending</td>
<td>136</td>
</tr>
<tr>
<td>9 Burden of government regulation</td>
<td>139</td>
</tr>
<tr>
<td>10 Efficiency of legal framework in settling disputes</td>
<td>83</td>
</tr>
<tr>
<td>11 Efficiency of legal framework in challenging regulations</td>
<td>71</td>
</tr>
<tr>
<td>12 Transparency of government policymaking</td>
<td>87</td>
</tr>
<tr>
<td>13 Business costs of terrorism</td>
<td>15</td>
</tr>
<tr>
<td>14 Business costs of crime and violence</td>
<td>123</td>
</tr>
<tr>
<td>15 Organized crime</td>
<td>125</td>
</tr>
<tr>
<td>16 Reliability of police services</td>
<td>74</td>
</tr>
<tr>
<td>17 Ethical behavior of firms</td>
<td>94</td>
</tr>
<tr>
<td>18 Strength of auditing and reporting standards</td>
<td>64</td>
</tr>
<tr>
<td>19 Efficacy of corporate boards</td>
<td>67</td>
</tr>
<tr>
<td>20 Protection of minority shareholders' interests</td>
<td>64</td>
</tr>
<tr>
<td>21 Strength of investor protection</td>
<td>59</td>
</tr>
<tr>
<td>Institutional Rank</td>
<td>93</td>
</tr>
</tbody>
</table>

Table 3 – Indicators that make up the institutional competitiveness index

Source: Schwab (2010)

Exploration and Production of Petroleum in the World

Petroleum is an international commodity, one particularly intertwined with geopolitical problems. According to Coutinho & Ferraz (1993), geopolitical developments are a constant source of uncertainties and risks for exploration and production of hydrocarbons. In 2008, the members of the Organization of Petroleum Exporting Countries (OPEC), holding 76% of the world’s petroleum reserves, accounted for about 45% of output. Regional instabilities and frequent market interventions by this organization since the first oil shock in 1973 have encouraged international investment to find oil and gas in developing countries not affiliated with OPEC. Likewise, countries that are net oil importers, especially members of the Organization for Economic Cooperation and Development (OECD), are increasingly
investing in energy efficiency and diversification of energy sources, leading to only a small increase in their oil consumption in this period.

The policies to contain energy consumption obliged OPEC to impose production quotas on each country’s output capacity in an attempt to prop up prices. Despite these efforts, in the early 1990s oil prices fell to extremely low levels, making energy efficiency less important. More recently, the strong economic growth of emerging countries – particularly China and India – has caused a considerable increase in demand and a recovery of prices and output by OPEC countries.

The petroleum industry is strongly concentrated. The technical and economic characteristics of the production and distribution chain require huge capital outlays and financial support. Therefore, size is the main factor for the competitiveness of international oil companies (IOCs) and national oil companies (NOCs).

The companies engaged in the upstream, (exploration and production, E&P) segment evaluate the countries competing for investments. The attractiveness of opportunities is determined by a range of factors, which are analyzed together. An important point is the country risk, involving the threats associated with sharp macroeconomic shifts that are not specifically associated with the oil sector, as well as the risk of political changes. Other important points for consideration are the regulatory risks of the oil sector, the incentives for investment in the country, the tax structure, the geological potential and market potential (Almeida & Araújo, 2007).

Currently output from the North Sea (the areas offshore of Norway, Holland, Germany and the United Kingdom) has been declining and the prospects are not good for significant new finds able to offset this reduction. All the countries in this region have plans to continue stimulating investments, and also have regulatory regimes that are open to new exploration.

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1 As of July 2011, the price of WTI Crude Oil is at US$95.28 and the Brent Crude oil at US$116.95.
The same cannot be said for many countries with huge oil reserves, both OPEC members and non-members. According to the Energy Information Administration (EIA, 2009b), among countries that have serious institutional problems are Venezuela, Mexico, Iraq, Russia, Kazakhstan and Iran.

The EIA (2009a) also affirms that there is currently a structural change in progress in the sector: IOCs are losing space to NOCs from developing countries such as Brazil, China, Saudi Arabia, Russia, and more recently India, all of which have recently stepped up their international activities. These companies’ efforts are part of a general trend to integrate their activities, whether seeking reserves to supply their home countries or to consolidate their downstream activities (transport, refining and distribution).

In the middle of 2011, the price of oil stood at around US$ 98 per barrel (WTI crude oil). This price favors offshore exploration, where investments and production costs are much higher than on land (EIA, 2009b). New regions off the west coast of Africa, in East Asia and Brazil have all attracted substantial investments and boosted production. These investments have a direct impact on the demand for services and capital goods. The chain of suppliers of the E&P industry is sometimes called the para-petroleum industry.

**Oil Exploration and Production in Brazil**

In 1995, the Constitution was amended to end the upstream monopoly enjoyed by Petrobras, allowing the federal government to contract public- or private-sector companies to carry out these activities. Two years later, Law 9,478/97 (known as the Petroleum Law) was enacted, which created the National Petroleum Agency (ANP in Portuguese) to regulate the industry and oversee relations between the federal government and oil companies. The Agency then held a series of bidding rounds for concessions to explore, develop and produce oil and natural gas, mainly from offshore blocks (Brasil, 1997).
According to Bain & Company and TozziniFreire Advogados (2009), in April 2008, 72 companies, of them 36 of Brazilian origin and 36 companies from 19 other countries were engaged in E&P activities.

Until 1995 the stock of foreign fixed capital invested in E&P in the country was only 0.17% of the total amount, basically due to the participation of foreign firms supplying goods and services to the upstream activities of Petrobras in the country (Alveal & Canelas, 2007). This situation changed drastically starting in 1997 due to the effective opening of the sector. In 2009, the stock of foreign fixed capital invested in E&P in the country reached 7.5% of the total amount. Despite this increased foreign presence, Petrobras is still responsible for 95% of the country’s oil production.

In November 2007, the National Energy Policy Council announced the preliminary estimates of the Tupi reserves, located in the Santos offshore basin. These amounted to 8 billion barrels of recoverable oil equivalent (BOE). According to information from Portal Exame (2008), there were estimates by the Brazilian government that national recoverable reserves amounted to as much as 80 billion BOE.

Recently the Brazilian Congress approved three bills proposed by the executive branch to establish a new legal-regulatory framework for E&P activities regarding the subsalt hydrocarbon deposits. The main points of these three new laws are summarized below.

- Establishment of production sharing agreements for subsalt areas. The concession regime will continue to be valid for areas already covered by concession agreements, both for subsalt and other deposits.
- Petrobras will be the operator of all the new blocks put up for bid in the subsalt areas. The federal government can contract Petrobras directly for exploration and production of subsalt areas or hold tenders to select private companies or consortiums, in which case Petrobras will have a minimum participation of 30% of each block.
• Creation of a new state-owned company called Pré-Sal S.A., which will represent the federal government and be responsible for authorizing the tenders for blocks in subsalt areas. The company will not have operational activities or make investments, but it will have the right to appoint the members of the operational committees of the consortia and the power of veto over all operational decisions.

According to a study by Bain & Company and TozziniFreire Advogados (2009), the two main legal arrangements followed by oil producing countries are concession agreements and production sharing agreements. Besides these two regimes there are also joint venture and service provision agreements, used to a lesser extent. Some countries use more than one of these arrangements. Generally this happens when there are areas within a country with distinct characteristics, or when a country decides to use different regimes to grant permission in different areas for political or economic reasons.

According to Bain & Company and TozziniFreire Advogados (2009), the concession regime is customarily used in the developed countries of the OECD, or in developing countries that have a relatively stable institutional environment, such as Brazil, Argentina and Colombia. Conversely, production sharing agreements are more commonly used to attract investments in countries with less stable institutional settings, because they provide more contractual stability and legal security by permitting the adoption of specific taxation systems for E&P activities.

Petrobras (2010a) argues that the production sharing system is also commonly used in countries with large reserves and low exploratory risk. Nearly 80% of global oil and gas reserves are subject to this type of contractual arrangement or to mixed systems that combine characteristics of more than one model. Table 4 lists the countries having the main global hydrocarbon reserves and the legal-contractual regime adopted by them, along with their ranking regarding institutional development and respect for property rights.
<table>
<thead>
<tr>
<th>Country</th>
<th>Reserves (billion BOE)</th>
<th>Production (million BOE/day)</th>
<th>Regime Adopted</th>
<th>Property Rights Index</th>
<th>Institutional Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saudi Arabia</td>
<td>264</td>
<td>10.846</td>
<td>Services</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>Iran, Islamic Republic</td>
<td>138</td>
<td>4.325</td>
<td>Services</td>
<td>70</td>
<td>82</td>
</tr>
<tr>
<td>Iraq</td>
<td>115</td>
<td>2.423</td>
<td>Services</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kuwait</td>
<td>102</td>
<td>2.784</td>
<td>Services</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Venezuela</td>
<td>99</td>
<td>2.566</td>
<td>Joint Venture</td>
<td>139</td>
<td>139</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>98</td>
<td>2.980</td>
<td>Concession</td>
<td>43</td>
<td>20</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>79</td>
<td>9.886</td>
<td>Concession</td>
<td>128</td>
<td>118</td>
</tr>
<tr>
<td>Libya</td>
<td>44</td>
<td>1.846</td>
<td>Production Sharing (PSC)</td>
<td>111</td>
<td>111</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>40</td>
<td>1.554</td>
<td>PSC</td>
<td>112</td>
<td>91</td>
</tr>
<tr>
<td>Nigeria</td>
<td>36</td>
<td>2.170</td>
<td>PSC</td>
<td>118</td>
<td>121</td>
</tr>
<tr>
<td>United States</td>
<td>31</td>
<td>6.736</td>
<td>Concession</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Canada</td>
<td>29</td>
<td>3.238</td>
<td>Concession</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Qatar</td>
<td>27</td>
<td>1.378</td>
<td>Concession</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>China</td>
<td>16</td>
<td>3.795</td>
<td>PSC</td>
<td>38</td>
<td>49</td>
</tr>
<tr>
<td>Angola</td>
<td>14</td>
<td>1.875</td>
<td>Production Sharing</td>
<td>130</td>
<td>119</td>
</tr>
<tr>
<td>Brazil</td>
<td>13</td>
<td>1.899</td>
<td>Concession/PSC</td>
<td>72</td>
<td>93</td>
</tr>
<tr>
<td>Algeria</td>
<td>12</td>
<td>1.993</td>
<td>PSC</td>
<td>106</td>
<td>98</td>
</tr>
<tr>
<td>Mexico</td>
<td>12</td>
<td>3.157</td>
<td>Services</td>
<td>88</td>
<td>106</td>
</tr>
<tr>
<td>Norway</td>
<td>8</td>
<td>2.544</td>
<td>Concession</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>7</td>
<td>914</td>
<td>PSC</td>
<td>90</td>
<td>71</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,181</strong></td>
<td><strong>68.909</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>World Total</strong></td>
<td><strong>1,258</strong></td>
<td><strong>81.820</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 – List of countries with the petroleum reserves, their respective outputs, institutional ranking and contractual characteristics

Source: Schwab (2010), BP (2009), Bain & Company and TozziniFreire Advogados (2009)

The increased investments and corresponding discoveries starting in 1997 have caused a boom in the Brazilian oil and gas industry, mainly in offshore operations, since 93% of the nation’s hydrocarbon reserves are located on the continental shelf. With the huge new reserves discovered in the subsalt layers this trend will increase. In the 2011-2014 period, Petrobras plans to invest US $155 billion in Brazil (Petrobras, 2010b).
ANALYSIS OF THE RESULTS

As explained in the methodology section, we obtained convergence of the evidence by tabulating the responses to the questionnaire, seeking to categorize the themes associated with the central research question. In the citations that follow, we identify the sources by the following categories: (P) president; (D) director/officer; and (SM) senior manager.

The first item on the questionnaire refers to the factor that causes companies to invest in the E&P sector (either as operating or supply companies). The unanimous response was that the main factor anywhere in the world is the significant profit potential and opportunity for growth.

With respect to the role of Brazilian institutions in the decision to invest in the sector, all the respondents representing companies (except state-controlled ones, in this case Petrobras and its subsidiary Transpetro), observed that these institutions do not interfere directly in this decision.

In contrast, all the respondents drawn from the E&P industry and two of those from government organizations (together 6/16 of the sample) stated that the ending of the upstream monopoly in 1997 and the creation of the National Petroleum Agency and clear rules were the main factors for the increased investment in the sector. For the para-petroleum segment, 11 of the 16 respondents mentioned programs by government institutions and tax reductions/exemptions as important to investment decisions.

Concerning Brazilian institutions (item 2), all the respondents stated they were improving, mainly with respect to maintenance of democracy, transparency and development of clear rules, as can be observed in the following statement.

“The process of building institutions is not one that can be accelerated so easily; it’s a process that takes a certain amount of time. Thus, I
believe the following: Brazil has good institutions, a solid legal framework, legal security and a legal tradition, an institutional system that is very well defined. In comparison with other developing countries I would say its institutions are clearly good. What we’re seeing now is a transition of institutional systems where the function of public regulation through relatively new regulatory agencies has created a certain insufficiency or even instances of a vacuum in this respect.” (P7).

With respect to how Brazilian institutions interfere in companies’ performance, the respondents cited various areas where this happens and that need improvement, in the following order: (1) reduction of corruption (8/16); (2) reduction of bureaucracy (7/16); (3) reform of tax and labor laws, in each case mentioned by 6/16 of the respondents; (4) improved judicial system (5/16); and (5) development of the financial system (4/16).

In relation to explicit support mechanisms from institutions to companies in the upstream petroleum sector, such as subsidies (item 4), 7/16 of the respondents said they were against this, 6/16 were in favor, and 3/16 had no defined opinion. The statement below demonstrates this division of opinion.

“They can be used, but they have to be very well identified and use a range of targets, identified according to some strategic factors and with great transparency. Without complete transparency, any system of this nature is not beneficial.” (P3).

According to 14/16 of the respondents, the legal-regulatory framework of the Brazilian E&P sector (item 5) does not overly concern foreign investors. The following comment is representative:
“The main thing of any change is the legal security of existing contracts. Any government is sovereign to decide what is best for the country and its people. Hence, the Brazilian government has every right to change the rules of the game. But any change in the contractual basis of rights assured previously would be a risk.” (D6).

On the question of the level of difficulty of companies to adapt to Brazilian customs and culture, (item 6), 15/16 of the interviewees said they did not see any problem, as can be seen from the following statement.

“The oil industry is globalized. It doesn’t have any difficulty in dealing with these questions and becoming involved with different peoples and cultural realities. It adapts easily and this happens in Brazil like anywhere else in the world.” (P3).

Regarding the risk to property rights and the protection of investors’ rights (item 7), all the respondents stated that these risks were minimal.

“Any time you have a rupture in institutional rules and adoption of a new model, you always create a lag in institutional learning that temporarily generates some degree of discomfort, but I don’t see this as a factor. What’s fundamental in the system is respect for legal rules, basic institutional security, which the country has to spare, political maturity, which the country has, and objective conditions for the attractiveness and profitability expected from capital outlays, which is a very important driver.” (P7).

For 11/16 of the respondents, Brazilian institutions were impersonal (item 8), but two of these respondents expressed the feeling that while this might be true in the upstream
petroleum sector, for the common citizen they were informal (personal), as can be seen from the following comment:

“It depends on the institution. In the E&P sector, they are formal, [...] but at the level of everyday citizens, [...] the capacity to identify plan Bs or escape routes from certain problems you are facing is normally associated with economic or financial power to enable you to have someone studying the subject for you to see the alternatives. This winds up existing and causes unequal treatment for equal problems.” (SM2).

In relation to the regulatory framework (item 9), all the respondents said that it was getting better.

With respect to the legal framework (item 10), all the respondents stated that it had improved, but one comment deserves highlight:

“One of the things that is perhaps behind this whole process is the cultural question, it’s the problem of the penalty, if you transgress [...] you’ll be creating one system after another to control, and wind up not controlling anything because the system is not applied. This is a big difference between the Anglo-Saxon and the Latin, we have sympathy for everyone and when someone breaks the rules, we don’t have a system that manages to work [...]. (P3).

On the matter of the legitimacy of firms’ actions in the eyes of stakeholders (item 11), 12/16 of the interviewees observed that this was very important, as reflected in the following statement:

“The cost is far outweighed by the benefit, which is to have people integrated and partners in your project [...] this transparency, the form
of open relationships that we have with our stakeholders helps us have visibility to find the solutions we need.” (P5).

Some other aspects deserve mentioning. One is that 11/16 of the respondents spontaneously stated that trade associations, lobbying groups, political action committees and the like have an important role in obtaining advantages from policy changes. Another is that 10/16 of the respondents mentioned partnerships between domestic and foreign firms as a way to obtain access to advanced technology. Finally, 9/16 of the respondents called attention to the fact that the upstream oil industry is subject to much less institutional influence than is the para-petroleum industry.

THE RESULTS

The result of the survey and the secondary data indicate that Brazilian institutions have been in transition since the promulgation of the 1988 Constitution, and that the upstream oil sector has been greatly influenced by these institutional changes, especially the end of the federal monopoly exercised by Petrobras in 1997.

This influence is shown by the increased foreign direct investment in the country, particularly in the petroleum sector, such as IOCs’ participation in the bidding rounds for exploratory blocks held by the ANP. The Brazilian institutional transition is further evidenced by the unanimous response of those interviewed about the improved legal and regulatory framework, though with reservations expressed that some aspects of the institutional environment still need improvement.

Another negative feature is the informality of Brazilian institutions, noted by 6/16 of the respondents, a fact also evidenced by the country’s ranking on the GCI. According to the concepts of Peng (2003), this shows that Brazilian institutions are changing gradually from relationship-based transactions to rule-based transactions.
The results also show that foreign companies holding technology often look for local partners to invest jointly in Brazil, which is welcomed by their Brazilian counterparts because they often lack the technology as well as the resources to make investments alone. This is in line with the proposition of Peng & Heath (1996). Conversely, on the other hand, Mia et al. (2009) noted that foreign oil and gas companies mainly entered the Brazilian market through mergers and acquisitions in the period from 2003 to 2008, a finding aligned with the arguments of Meyer et al. (2009) that a high level of institutional development can reduce the need to establish joint ventures, facilitating entry through acquisitions or greenfield projects.

On the subject of respect for property rights, the interviewees generally said they saw no great risks. Despite the legal and regulatory changes in the upstream segment, existing contracts have been respected, something that is well established in Brazil. These results are in line with the propositions of Djankov et al. (2003) and North (1994) to the effect that property rights and enforcement of contracts are essential for the development of a country’s industry and to attract investment. Brazilian companies are also positively influenced by the country’s culture, which easily adapts to firms’ needs, according to 15/16 of the respondents, legitimizing business activities according to the concepts of Scott (1994) and Dacin et al. (2007).

Another finding is that 11/16 of the respondents spontaneously mentioned that trade associations and the like have a fundamental role in negotiations between firms and institutions, and that they are used to increase the bargaining power of firms. According to the considerations of North (1994, 2009) and Oliver (1991), many measures to reduce the tax burden and provide other benefits to the E&P chain have been supported by these associations. This corroborates the arguments of Jackson & Deeg (2008) that institutions should not simply be seen as restrictions, but also as potential resources to resolve problems of economic coordination.
Governments generally try to control the oil and gas industry more than most other sectors, due to its relevance to the economy and society at large, as noted by Dacin et al. (2007) and Scott (1994). Therefore, firms seek to legitimize their actions in the eyes of their stakeholders. This was noted by 12/16 of the respondents. Most of the time this legitimacy is not spontaneous, but is achieved by complying with rules and standards.

The results of the survey and secondary data revealed another important characteristic of the upstream chain of the oil industry: E&P companies and para-petroleum firms are influenced by institutions differently. The Brazilian para-petroleum industry has obtained various government benefits to foster its development. This suggests that Brazilian institutions are having a major influence on firms’ strategic decisions, in line with the propositions of North (2009) and Hitt & Dacin (2000) on the influence of institutions on companies’ strategic decisions.

However, the E&P segment has not been that affected by unstable institutional environments. It should be remembered that geopolitical factors are very important to the development of new hydrocarbon reserves for the oil majors, in addition to the need for huge investments to find new reserves. Therefore, the leading companies in this sector – the IOCs and NOCs – regularly invest in regions with weak institutions, and do not consider this a prohibitive entry barrier. This runs counter to the arguments of Hitt et al. (2004). Both NOCs and IOCs are seeking new reserves, either to supply their home countries or to increase their market share. Managers of these firms make an analysis of the overall risk versus the opportunity in all target countries and the institutional factor is only one among many aspects analyzed. As one of the respondents mentioned, this is a globalized industry *par excellence*, where the objective is to seek oil wherever it may exist. This runs counter to the arguments of Hitt & Dacin (2000) and North (2009), according to whom the institutional differences of countries have a big influence on firms’ strategies, and of Peng (2003), who contends that
informal constraints play an important role in the economic exchanges in emerging countries during institutional transitions.

FINAL CONSIDERATIONS

The huge investments that will be required to explore and exploit the subsalt oil and gas deposits as well as the recent changes in the legal-regulatory framework for this sector in Brazil provide a unique situation for researchers and managers to observe how institutions affect the strategic decisions of companies in this sector.

Our study aimed to examine the influence of Brazilian institutions, which are in transition, on the strategic decisions of firms engaged in the country’s upstream oil and gas industry, based on the sociological institutionalism of Scott (1994) and economic institutionalism of North (1994, 2009) as well as the proposition regarding institutional transitions of Peng (2003). It should be noted that the results are limited due to the case study method used.

Our results indicate that Brazilian institutions have been in a transition phase since the promulgation of the current Constitution in 1988, and are evolving from a relationship-based to a rule-based environment, corroborating the studies of Peng (2003). In this respect, the main institutional factor that has permitted a substantial increase in foreign direct investment in the upstream segment in Brazil is the end of the monopoly exercised by Petrobras in 1997, associated with the creation of a regulatory agency and clear rules, steps associated with the regulatory dimension. At the same time, respondents indicated various institutional factors, such as excessive bureaucracy and corruption, that have impaired the performance of the para-petroleum industry in particular.

The survey results reveal that these companies in Brazil react actively to institutional changes and use intermediary organizations (trade associates, lobbying groups, etc.) to defend their interests, as proposed by North (1994, 2009) and Oliver (1991). Furthermore, these firms
seek legitimacy or approval of their actions, either spontaneously or by complying with the rules established by institutions, as noted by Dacin et al. (2007) and Scott (1994). Therefore, managers need to understand how trade associations function and clearly and objectively identify the common problems facing the sector and what these associations should focus on.

Despite the changes under way in the legal-regulatory framework, and the changes made in 1997, the results confirm the proposals of Djankov et al. (2003) and North (1994) about the need to uphold property rights and legal security. Despite the recent changes, investors’ have maintained their overall confidence in Brazilian institutions.

The para-petroleum industry especially needs an institutional environment that fosters its development, through the resources available in a country. Access to research centers and educational institutions, sources of financing and specialized labor are all key resources supplied by institutions that directly affect these firms’ investment strategies. In this case, managers should pay close attention to the dimensions of institutional theory in both the sociological and economic currents of thought.

The upstream petroleum industry acts globally and is subject to numerous geopolitical factors. Indeed, most of the world’s oil and gas reserves are located in countries with low institutional development. Due to the constant need to replace reserves and the huge investments this entails, IOCs and NOCs examine their projects from a global perspective and explore all the risk factors and opportunities of any particular project for each country. This institutional aspect appears to be less relevant, as related by the respondents and noted in the literature. In this sense, the premises of Hitt & Dacin (2000) and North (2009), according to whom the institutional differences between countries influence firms’ strategies, do not apply to the oil industry. Moreover, informal constraints do not play an important role for the economic exchanges in this sector during institutional transitions, contrary to the proposition of Peng (2003).
Therefore, managers should be aware that the regulatory dimension is much more important than the normative and cognitive/cultural dimensions in assessing an investment strategy in the E&P segment, thus reducing the relevance of institutions in these decisions. In this case, the need to replace reserves by IOCs, associated with their large investment capacity, permits them to run institutional risks in various countries and choose the best way for contracts to be enforced.

Although Brazilian institutions are going through a transition phase, production companies feel relatively comfortable within this environment, perceiving little risk to property rights. Conversely, for the para-petroleum industry there are various institutional factors that need to be improved to make the business climate more attractive. For all companies, what really matters is transparency and the certainty that the rules, once established, will not be changed in the middle of the game, meaning that existing contracts will be respected and new policies will only apply to future contracts.

**NOTES**

1. In Portuguese the expression is _pré-sal_, or “pre-salt”, because the geological formations were laid down previous to salt layers. The expression pre-salt is thus also often used to refer to these deposits.

2. The EIA (2009a) defines IOCs as international companies belonging to private investors, whose main objective is to maximize shareholder value. They seek to develop and produce oil and gas rapidly and sell their output in competitive markets.

3. There are two types of NOCs. The first type refers to companies that act with a degree of strategic and operational autonomy, including Petrobras (Brazil) and Statoil (Norway). They seek a balance between profits and the development objectives of their controlling governments. Despite this possible support for national objectives, they are mainly profit-making enterprises. The second category includes companies that operate as a direct extension of the government, such as Saudi Aramco (Saudi Arabia), Pemex (Mexico) and PDVSA (Venezuela). They mainly work to support government programs. These companies do not always have the incentives, means or intention to develop their
proven reserves at the same pace as the first type of companies. Due to the diversity of situations and national objectives set by the respective governments, these national oil companies have a wide range of objectives that are not necessarily market oriented.
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