



Management of pre-salt oil royalties: Wealth or poverty for Brazilian coastal zones as a result?



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ABSTRACT

Brazil is the largest country in South America in terms of both area (8,515,767,049 km²) and population (203,912,619 of inhabitants). Over the last decade, it has also become one of the world's fastest-growing economies; today, it is the world's seventh largest economy and plays a substantial role in the international oil and gas production market. The recent discovery of the huge amount of petroleum in the oceanic pre-salt layer can position Brazil as the world's fourth largest petroleum producer by 2030. As a result, the country is facing the challenge of finding a non-predatory development strategy for the sector, especially one that will protect the coastal environments and local communities. The Brazilian system of royalties, initially thought to counteract negative impacts, has encountered social and governmental disapproval, and has subjected the communities affected by the oil findings to considerable uncertainty and increased disputes over the fairness of the returns from the use of this resource. Both national and international experiences have shown that when mismanaged, royalties from oil production create an economy that is heavily dependent on oil, and often lead to fiscal inefficiency and corruption. These effects happen because government ownership of the oil resources alone does not guarantee social and economic development or higher quality of life for local people; this part of the population is generally the group that is harmed by the activities. The key is in defining the implementation and management frameworks for the efficient utilization of oil resources. The development of the Brazilian oil industry should account for the fact that these activities are predominantly carried out in the coastal zone, a region whose ecological and economic relevance was recognized by the Brazilian Constitution of 1988, which gave it the status of a national heritage site. This study discusses Brazilian practices in royalty management and compares them to international experiences in terms of legal, social and economical aspects. We also provide a historical summary of the use of oil resources in Brazil, advocating for responsible utilization that includes obligatory compensation for social or environmental impacts on coastal and oceanic zones.

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Introduction

In the 1990s, the Brazilian oil and gas sectors experienced a rapid expansion in all of their stages, from geophysics to platforms and pipelines building, as well as with inland structures. Every activity has expanded since the Petroleum Act of 1997. Since that time, Brazil has emerged as one of the leading centers for offshore oil and gas production in deep and ultra-deep waters (Silvestre and Dalcol, 2009). Petroleo Brasileiro S.A. (PETROBRAS-the Brazilian National Oil Company) is the world's largest deep-water oil producer, and it is

reaching depths where experience is scarce or nonexistent (Regalado, 2010).

With the discovery of petroleum in the oceanic presalt layer in 2006, investments in the sector have increased, especially along the southern and southeastern coasts. PETROBRAS recent discoveries in the Santos basin have revealed significant hydrocarbon potential in an 800 km long and 200 km wide area in Brazilian deep-water pre-salt basins, where the Tupi field discovered in 2007 has estimated recoverable reserves of between 5 and 8 bbls and the Carioca field, discovered in 2008, may contain even larger volumes of recoverable oil (Kjarstad and Johnsson, 2009). The presalt oil discoveries are located across three oil basins: Campos, Espírito Santo, and Santos. The latter is the area where the largest discoveries have been made; its exploration activity extends 340 km from the coast. Since 2006, more than 70 exploration wells have been drilled in the presalt layer in the

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Santos and Campos basins, with the exploratory success rate of over 80% – very high compared to the world average.

Production began in 2008, and has reached 100 million barrels. Currently, more than 200,000 barrels are extracted daily in those basins, and the expectation is to reach 1 million barrels per day by 2017. The total investment in the presalt layer, including the proportion made by PETROBRAS and its partners, is estimated to reach US\$ 93 billion (PETROBRAS, 2012). These findings possibly are the beginning of a new economic cycle for the country known as the presalt cycle (Polette and Aloise de Seabra, 2013).

Because these activities largely evolved on the continental shelf, the oil production chain has been established in coastal zones. This supply chain provoked most of the social and economic alterations seen in the producing regions. They include industrial structures, land and port infrastructure equipment, offices, and all the types of enterprises that deal with the demand for services and equipment for the oil sector.

As a consequence of this strong and sudden mobilization of capital, Brazilian coastal zones are now facing new social and environmental impacts that have been added to previously existing difficulties. They include social segregation, the formation of slums between fishing communities and jobless migrants, limited diversification of economic activities, devastating environmental impacts at the local level, a high dependence on oil, “war of places” between neighboring municipalities, alienation of the local population from the benefits of the oil industry, and challenges for the municipal administrations in establishing infrastructure of goods and public services to accommodate the greatly increased number of physical and juridical entities (Neto et al., 2008, Polette and Aloise de Seabra, 2013).

The Brazilian coastal zone currently hosts 40% of the country's total population. The progressive occupation of this area has resulted in conflicts between economic development and environmental conservation, a situation that is inherent to developing countries (Castello et al., 2006). The Atlantic Forest, located exclusively in the coastal region, is considered as an “Earth's biodiversity hotspot” where exceptional concentrations of endemic species are undergoing exceptional loss of habitat, since this biome retains only 7.5% of its primary vegetation (Myers et al., 2000).

The economic and ecological relevance of the Brazilian coastal zones were recognized in the Constitution of the Republic in 1988. In its fourth paragraph of Article 225 gave the coastal zone and the Atlantic Forest the status of National Heritage. The main consequence of this law was the extension of the responsibilities to all government levels, in contrast to the earlier arrangement in which responsibility was placed solely on coastal municipalities.

The recent discovery of the huge amount of petroleum in the ocean has resulted in a national challenge of looking for a non-predatory development strategy for the sector, especially one that protects coastal environments and local communities. The Brazilian system of royalties was initially thought to counteract negative impacts in a municipality designated as a “producing locality” or municipalities directly or indirectly impacted by oil activities (Postali and Nishijima, 2013). However, new rules for sharing and royalties investing introduced by the current regulatory framework (12351/10 Act) could submit impacted coastal localities to substantial reduction on budgets related to oil taxes. In this context, our study analyzes international and Brazilian experiences in petroleum resource management in order to demonstrate the risks of excessive freedom to allocate revenues to different levels of government. We also present the Brazilian criteria on royalty distribution, and we discuss the law as a legitimizing aspect that can establish the obligatory use of royalties to mitigate social, economic and environmental impacts in producing regions.

Oil revenue management

International experiences

In general, the problems of countries with an abundance of oil stem from the difficulty to manage production revenues. Too many examples of developing countries in the last few decades have demonstrated the drastic social impacts on residents of areas close to oil wells and the reduction in their quality of life.

Sachs and Warner (1995, 1997) and Gallup et al. (1999) analyzed 97 economic aspects of developing countries from 1971 and 1989 and found a negative correlation between the rate of economic growth per capita and the exports of primary products (especially oil and gas). These studies showed that countries with abundant natural resources have experienced reduced rates of growth, which represent a phenomenon known as “resource curse”.

According to Elbra (2013), the term “resource curse” has gained popular acceptance since the work entitled *Sustaining Development in Mineral Economies: The Resource Curse Thesis* (Auty, 1993). The term is now widely used, both inside and outside of academia. Although the prevalence of the concept is debated, a common definition can be established. Using a combination of key authors, resource curse can be defined as the paradox by which mineral-rich states fail to keep pace economically with their non-mineral-rich peers (Elbra, 2013).

Resource curse may stem from several concurrent or distinct factors, and the cause can only be analyzed case by case. According to Ross (2003), mineral dependence may aggravate poverty through six different mechanisms. Four mechanisms are economic, and two are political. First, commodity prices are more volatile than the prices of manufactured goods; therefore, economies that are dependent on mineral exports are more likely to face economic shocks. Second, mining produces substantial revenues for governments or investors but usually employs few workers, thereby increasing inequality. Third, mineral extraction results in slower growth and thus disproportionately hurts the poor. Fourth, links between mining and the rest of the economy are usually weak. Mining employs few workers, and in the absence of upstream or downstream industries, provides little unskilled or semi-skilled employment. Fifth, mineral dependence may increase the likelihood of civil war, which can both increase poverty rates and differentially hurt the poor. Sixth, mineral dependence appears to make countries less democratic through its reduction of the government's dependence on taxes, a process that retards the emergence of a middle class and gives the government sufficient revenue to bribe or repress potential dissenters (Ross, 2003).

The term “resource curse” refers to a generic approach. When analyzed only in terms of economic effects, an oil-rich country could be facing the phenomenon known as “Dutch disease”. The name originated from the experience that occurred in the 1960s in the Netherlands after the discovery of gas in the North Sea. From the significant foreign exchange inflows that resulted from the gas exports, the exchange rate increased enough to cause the loss of competitiveness of the manufacturing sector.

In summary, Dutch disease is an appreciation of the exchange rate as a result of the massive inflow of foreign exchange for the export of the commodity extracted, a process which makes products from other sectors of the economy uncompetitive compared to foreign products and causes economic atrophy. According to Holden (2013), the economic mechanism is simple: higher domestic demand increases demand for non-traded and traded goods. Traded goods can be bought from other countries, but non-traded goods have to be produced at home. The increased demand for non-traded goods pushes up non-traded prices, leading to a real appreciation of the currency, either via nominal appreciation or higher domestic inflation.

Oil plenty can reduce the competitiveness of a country's agricultural exports, which makes export diversification more difficult. Several studies suggest that growth in the agricultural sector plays a particularly important role in reducing poverty. Thus, if growth in the minerals sector produces stagnation in the agricultural sector, the poor may be harmed (Ross, 2003). In addition, Humpreys et al. (2007) pointed out that if mineral wealth is seen as just another “recipe”, and therefore used as such, this operation will be limited to the medium term because the resource is not renewable. In this case, the country would face capital consumption, a production flow of wealth that will be exhausted after some decades.

A number of continents have been affected in different historical periods, and the countries affected include Venezuela, Gabon, Iraq, Nigeria, Algeria, Angola, Colombia, Nigeria and Sudan (Ross, 2012).

The early African exporters of oil – Nigeria, Angola, Congo-Brazzaville, Cameroon and Gabon – were not able to convert the wealth of their oil into the reduction of poverty on a significant scale, nor were they able to provide for the future of the country, since there were no investments in the diversification of the economy. Petrodollars have not helped developing countries to reduce poverty. In Nigeria, oil production revenues with a value higher than US\$ 300 billion during the last twenty five years not only failed to reduce the poverty, but actually aggravated the situation – per capita income dropped to US\$ 1/day (Gary and Karl, 2003). In addition to the Dutch disease model, some authors also recognized the “Nigerian disease” model, which hypothesizes that resource revenues are effectively wasted by governments that lack the institutional capacity to use these windfall gains efficiently. As a result, corruption and revenue-seeking explanations often feature prominently in these analyses (Williams, 2011).

In the city of Carmen, where 80% of Mexican oil production is processed, the population size has increased fifteen-fold since 1950s, when the activities started. Extreme poverty, meanwhile, classified 54% of the population, when 14% of the local workforce lives with less than the monthly minimum wage and 28% of inhabitants have no primary education. The oil industry has suppressed agricultural production in communities that relied on crops for living or survival. This suppression has caused a rural exodus (Firmino, 2003).

In Lago Agrio, Ecuador, the exploration for oil had a large impact on the local populations, which were the historical owners of the territory. These people were poor but had been able to sustain their life and growth since ancient times. However, they were pushed out by the streams of outsiders, who were attracted by the “oil development,” and they now live in extreme poverty (Firmino, 2003).

It is important to consider the fact that the oil production revenues normally lead to dependence. These revenues are subject to sudden shocks from price drops. A large influx of foreign funds also suppresses the rise of the local currency, which damages the markets of other local consumer goods. The shortage of resources is another important factor. Finally, high revenues obtained during a short period have not typically been managed efficiently by local governments (Shultz, 2004).

The resource curse does not refer merely to the oil or other minerals as property, but also to countries that are completely dependent on the revenues from this resource. A country is generally considered dependent when the exports of this resource represent the majority share of the country's total exports (generally from 60% to 95% of total exports) or when the exports of this resource represent a large proportion of the total domestic product. This number varies from 4.9% in Cameroon, whose oil reserve is close to depletion, to 86% in Equatorial Guinea, one of the newest exporters (Tsalik and Schiffrin, 2005).

Meanwhile, the United States, Canada, Australia, Chile, and Norway provide examples of the successful management of resource revenues. A good example of how to manage petroleum wealth, Norway established the Pension Fund and decided that all net government revenues from the petroleum sector would be transferred to the Fund. However, the Fund would be integrated into the ordinary government budget, so in case of a deficit in the ordinary budget, there would be an automatic deduction from the Petroleum Fund. The idea was to make it impossible for politicians to pretend that they were saving in the Fund while borrowing to finance ordinary budget spending. In addition, the money from the Fund could only be used on the ordinary government budget. Thus, the money from the Fund could not be used for finance purposes, which are not given priority in the ordinary budget procedure in the parliament (Holden, 2013).

The resource curse, therefore, does not mean that the abundance of natural resources is inevitably bad for the economic growth or development of the nation that owns the resource. The ability to experience a given amount of benefits from this “gold vein” is stipulated by the entire cultural and economic setup, as well as by the intrinsic potency of a region (World Bank, 2003). According to Corrigan (2014), the strength and quality of government and societal institutions are possible explanations for why some countries succumb to the resource curse while others seem to benefit economically from their natural resources. Mehlum et al. (2006) found that excess revenue from natural resources affects growth rates negatively only when institutions are weak. Robinson et al. (2006) looked at the effect of revenue booms in a society, and they observed that, in countries with weak institutions where politicians may turn to clientelism and tend to disregard the future because of their reduced chances of remaining in power, resources will often be extracted too quickly. This haste results in a boom, which, in turn, renders said politicians even more inefficient and distorts the economy even further. When they occur in the presence of robust institutions, however, revenue booms will raise national incomes.

The Brazilian experience

In Brazil, the 1990s represented an important landmark in the oil production sector. Constitutional Correction no. 9/95 inaugurated a new set of laws for activities involved in oil production, through the amendment of § 1° of Article 176 of the Federal Constitution, which maintained the monopoly of the Union, also allowed private enterprises to engage in exploration and production.

With the enactment of the 9478/97 Act, also known as the “Petroleum Law”, the oil sector faced significant changes. The elimination of the oil production monopoly previously enjoyed by the PETROBRAS on behalf of the country opened the door for national and international private investors. In addition to these legislative alterations, both the rise in the price of the oil and the increase in the national production of hydrocarbons have resulted in extraordinary growth of revenues from royalties and special contributions.

The U.S. Energy Information Administration (EIA) estimates that in 2013 total primary energy consumption in Brazil has increased by more than one-third in the past decade because of sustained economic growth. The largest share of Brazil's total energy consumption is oil and other liquid fuels, followed by hydroelectricity and natural gas. Preliminary statistics show Brazil was the 10th largest energy producer in the world in 2013. In addition, Brazil has increased its total energy production, particularly oil and ethanol. Oil remained at an average of 41% of total energy production as total energy production increased 36% in the past decade (U.S. EIA, 2014).

Since more than 94% of Brazil's reserves are located offshore, and 80% of all reserves are found offshore near the state of Rio de Janeiro and São Paulo in the Santos and Campos basins (U.S. EIA, 2014), a huge oil and para-oil production chain has been established in the coastal zones near the production fields, and it includes pipelines, oil terminals, and refineries.

Postali (2009) investigated whether royalties transferred under the Law 9478/1997 have impacted on the economic growth of recipient municipalities in Brazil. The results showed that the cities receiving royalties grew less compared to those not receiving them. Thus, higher royalty revenues tended to reduce the economic growth of municipalities entitled to receive them compared to the control group.

Meanwhile, the excess of freedom granted by the legislation to the government administrators in terms of their use of the revenues has led to countless examples of bad revenue administration practices. In 2003, the city of Campos de Goytacazes 703 entertainment events (such as shows and concerts) were organized in the public square with high-rate contracts for performers; generally, it is the responsibility of the local government to develop service contracts with economical rates. The city's investment in the sporting sector has also been an object of a criticism – R\$ 500 thousand per month was spent on salaries for athletes hired to represent the city (Pessanha, 2004).

The freedom granted by the legislation for the use of petroleum revenues has obstructed technological development and diversification of the base of the economy due to a disproportionate focus on the petroleum sector; diversification would lead to a fairer distribution of income and work. These aspects have been set aside for short-term gain actions, without an adequate projection of future social impacts.

After analyzing the social impacts of oil exploration and production activities on the north shore of Rio de Janeiro state, Castro et al. (2003) pointed out that, though Campos de Goytacazes is recognized as “oil capital”, the oil sector has had little or no direct positive impacts. For example, students or graduates were more frequently employed in the neighboring city of Macaé. In addition, although Macaé has presented extraordinary economic growth, the local population did not enjoy the benefits of the oil industry – that best jobs are held by foreign executives, since the locals do not have the proper training or specialization to work in the oil industry.

While analyzing the alienation of the local population from the benefits of oil industry, Pessanha (2004) mentioned that 64.8% of the population of Macaé with monthly incomes more than 10 times higher than the Brazilian federal monthly minimum wage were from other cities. This finding demonstrates that the local residents are deprived of real benefits from oil production in their own communities.

Previous studies concerning jobs available from PETROBRAS found that out of the approximately 7000 PETROBRAS employees in Macaé, only 2410 live in the city. The reason for this disparity is the work schedule. On the platforms, the approximately 3500 employees receive 21 days off after each 14 days of work. As a result of this system, the major part of the workforce has chosen to live in other cities. This situation cannot drive the development of the local economy (Gonçalves, 2008).

According to Serra and Mothé (2007), the government administration of Campos de Goytacazes has reduced city tax collecting as a result of the high revenues from oil activity. The same authors also found that government administrations squandered revenues from royalties on unnecessary actions that have not had a particular social focus or impact.

The five biggest recipients of royalties (Campos de Goytacazes, Macaé, Rio das Ostras, Cabo Frio and Quissamã) are located in Rio de Janeiro state. Givisiez and Oliveira (2008) valued the impacts of

the royalties on education level in the oil-producing areas and concluded that, after ten years of intensive revenues generated by the oil sector and accumulated in local city budgets, no positive effects on the educational sector have been observed. The results demonstrate that, in spite of the budgetary advantages of these local authorities, the logic of the allocation of revenues has not been favoring social justice through democratic access to health services, housing and particularly, education.

It does not seem to be on city managers' agendas to make investments in order to enable the local population to work in the oil market. Important social change could be achieved through massive investment in childhood education, which would reflect a concern for the future uncertainties related to the depletion of this non-renewable resource. This type of policy would be viewed as leaving justice as a legacy for future generations. However, the current policy is quite unjust (Givisiez and Oliveira, 2008).

In our study, Campos de Goytacazes was selected as an example of a city where an impressive sum of royalties was not used to increase the quality of life of the local population. In spite of being the city that received the largest quantity of oil revenues and the only local city in the group that did not experience population migration, it presented one of the worst performances in the state's Municipality Quality Index (IQM), staying in the same position from 1998 to 2005. The population of Campos de Goytacazes grew by only 7% during the entire period, while many other cities in the group experienced population growth of 45% (Seabra et al., 2011).

Gonçalves (2008) pointed out that, in Campos de Goytacazes, revenues from oil production were 65.7% of the city's total budgetary revenue in 2007. In parallel, the local city council introduced a reduction of municipal taxes (known by their Portuguese acronyms as IPTU, ITBI, and ISS, which would no longer be provided by the petroleum industry) in the total municipal revenue from 11% in 2000 to 3.8% in 2004.

Unfortunately, the fragility of this approach won't become clear until much later, when oil exploration ends. The tax bases will end, and this may compromise the fiscal solvency of the local government. The high fluctuations in the oil barrel prices and the possibilities of operational incidents clearly demonstrate the unpredictability of oil production revenues.

According to Pacheco (2007), the Platform P-36 incident, which occurred in 2001, reduced revenue from the royalties given to the local authority of São João da Barra by 69%. Another incident later resulted in the interruption of the Platform P-34 and the consequent reduction in royalties received by Goytacazes, Rio das Ostras, Cabo Frio and Armação de Búzios.

The Campos Basin was also studied by Neto et al. (2008), who pointed out that regional fragmentation was caused by disagreements between the local authorities over investments. This phenomenon has been recognized as a “war of places,” which refers to political and technological trade-offs provided by municipal governments to attract different types of enterprises through the reduction of taxes and municipal bureaucracy.

From 2000 onward, the revenues from royalties have financed this “war of places” in the region. However, using royalties to attract businesses is completely different from the legal nature of the institution of royalties or from the very reason for creating such an “institution.” The reason for creating the “institution of royalties” lies in counteracting the impacts from oil exploration activities and preparing the next generations for a future without oil (via diversification of the economy). It is important to emphasize that the current form of distribution of royalties contributes to the aggravation of social differences between the cities involved in oil production in the state of Rio de Janeiro.

The poverty of the northern region of Rio de Janeiro state has resulted from this distribution model, in which the workers from

cities such as Macaé and Rio das Ostras are predominantly seasonal migrants attracted by high salaries. The habits, dwellings and consumption patterns of the local population have been altered due to high cost of living caused by this labor supply (Honorato, 2008).

The author discusses a part of the population that has effectively become homeless because of the local demographic explosion. The cities involved in the oil-based economy have not created the infrastructure necessary to support the boom in migrants. Examples of improper use of public money and suspicions of corruption were also presented. The study concluded that the revenues from oil royalties were not used to promote regional sustainability sufficiently. The consequence was that economic growth in the Campos Basin has not turned into real development: so far, it appears to be fragmented and politically fragile, and has in fact alienated the local population from the benefits of the economic growth through the use of their local territory for their own interests.

The challenge to Brazilian economy that comes with oil exploration demands reflection. The whole process of exploration and the utilization of oil resources of the pre-salt layer is a new era in the development of the Brazilian national economy. Undoubtedly, both infrastructure and the means of distribution of the benefits among beneficiaries and cities are certainly decisive factors for future environmental, economic, and social development, and the situation has resulted in new demographic and geopolitical dynamics that may lead to uncertainty and paradoxes in future (Polette and Aloise de Seabra, 2013).

Brazilian criteria for the distribution and application of petroleum royalties

In Brazilian law, there are two types of “royalties” to be paid by the oil producers, depending on the analysis of geological and economic risks, production perspectives, technological complexity, and other factors that are taken into account before exploration activities begin. The first type of royalty is limited to 5% of overall oil production, while the second type ranges from 5% to 10% of that production (e.g., due to lower economic and geological risks).

The first type was defined in the Petroleum Act, which preserved in Article 48 of the criteria adopted by the Act No. 7.990/89 (and Decree no. 01/91, which regulated them). Act No. 7.990/89 established the payment of “royalties” in an amendment to Article 27 of the older Act no. 2004/53, but included the prohibition of the use of the royalties towards payments of debts and salaries of the permanent staff (Art. 8).

The second type is determined by the current Petroleum Law No. 9.478/97, section II of Article 49 (regulated by the Decree no. 2705/98). However, the 9478/97 Act, and more specifically, Article 83, clearly revoked previous 2004/53 Act, which determined the first type of royalties in Brazil (limited to 5%): Art. 83 says: “Revoke contradictory provisions, including 2004 Act of October 3, 1953.” Nevertheless, the prohibition of the use of the first type of the royalties for payments of debts and needs of permanent staff remains in force.

Thus, there is a discrepancy in the definition of the first type of the royalties in Brazil: they were defined by 2004/53 Act, which has been revoked since 1997, but it this act cannot be considered non-constitutional, since, in reality, it is still a part of the national legislation system (Ferreria, 2008).

In the beginning of the national oil industry, freedom in the use of royalties was not as widely granted as it is today. 2004/53 Act (Art. 27, Paragraph 4) determined that revenue from the royalties could be applied only to the electrical energy sector and highway paving. This list was later extended by Law no. 7453/85, according to Article 27, Paragraph 3.

Law no. 7.525/86 started to demand application of this revenue “exclusively” to the purposes listed in the previous laws (2004/53). The excessive freedom in the application of royalties that exists today was established by current 9478/97 Act.

The rules of the binding application of the royalties adopted by Brazil depend on the consignee of the revenue. When the consignee is part of the Direct Administration of the federal government, the law defines the acceptable applications of the revenues. However, when the consignee of the royalties is a state or municipal authority, there is no legally required application of revenues, which results in the excessive freedom seen in these places and the excess of misuse of revenues, in addition to the ever-present bane that is corruption.

Thus, the range of possible applications of royalties by government administrators has been excessively widened by the current law (9478/97), whereas it is unclear to which sectors the revenues from oil royalties should be applied when the consignee of the revenue is a state or municipal authority. The legislation adopted the same criteria for the distribution of the special contributions, and binds only the revenues intended for the Ministry of Mining and Energy and the Ministry of the Environment, Water Resources and the Legal Amazon. In spite of the small number of binding options established by the Law, the legislation is intended to diminish them even further while simultaneously expanding freedom.

The new Brazilian Petroleum Law (12351/10) inaugurated a whole legal system for the sector and was driven by the discovery of presalt layer. However, the article that regulated the distribution and management of oil revenues was vetoed. Subsequently, new legislation came into force to regulate the matter. Within this new set of petroleum laws, the 12.276/10 Act authorizes the federal government to provide PETROBRAS with the right to participate in research and production of oil and natural gas activities in areas that were not conceded from the pre-salt layer. As a result, Brazil will experience significant increases in government ownership of stakes in the company, the benefit of which is obvious: huge capitalization.

The creation of the Brazilian Enterprise for Management of Oil and Natural Gas, PreSal Petróleo SA (PPSA) was established by 12304/10 Act, which also created the country's Social Fund. The Fund will be a source of funding for social and regional development in the form of poverty alleviation and growth, particularly in the areas of education, culture, sports, public health, science and technology, environment, and programs to mitigate adaptation to climate change (Article 47 of the law), and also to avoid macroeconomic distortions and promote intergenerational equity (Arts. 48, 50 and 51).

The percentage for the Fund (Art. 49) is the subject of intense dispute both among the states themselves and between them and the federal government. Law no. 12.734/12 establishes new rules for the distribution of revenues, and the following law, no. 12.858/13, establishes new milestones for the quantity to be allocated to healthcare and education.

However, in March 2013, the governor of the state of Rio de Janeiro presented the Direct Action of Unconstitutionality (DAU 4917), alleging a breach of the federal pact itself, and established interim application. Minister Carmen Lucia of the Supreme Court suspended on a preliminary basis the main provisions of the new law regarding the distribution of royalties in order to meet the request of the governor of Rio de Janeiro (DAU 4917).

The same view expressed by the current report is once again confirmed by the Supreme Court through this understand of the compensatory nature of royalties. In this regard, the Minister stated, “the royalties set out in the legislation constitute financial compensation given to states and involved in production and in conflict because of oil exploration in their territory. Due to their compensatory nature, royalties will be distributed as revenue from the producing entities for the purposes of future availability” (STF, 2013a).

Article 20, Paragraph 1 of the Constitution recognizes the exploration of oil and natural gas in Brazil, including Brazilian land, the continental shelf, sea territories, or exclusive economic zones. This is not a juxtaposition of areas, but a geographical and geo-economic projection of the surface of Brazilian territory at any depth of soil or subsoil, and these definitions are in relation to contiguity with it, or, in the words of Article 20, “bind the projection lines by their territorial limits to the line of the continental shelf, where the wells are located” (Art. 20 discusses producing wells, states and municipalities, and the contiguous maritime area).

States and cities are defined as producers because of the existence of confrontations in their geo-economic areas. In these areas, three or more industrial processing facilities must be located, including facilities for the storage and disposal of oil and natural gas, and those that support the production and disposal of the products (such as ports, airports, manufacturing and maintenance workshops, warehouses, offices, and pipelines).

The contributions and financial compensation referred to in Paragraph 1 of Article 20 of the Constitution occur for those who have experienced social and economic consequences of the production and exploration of oil and gas (Decree no. 1, Cit., Art. 20, § 2). They are awarded to cities and states that are involved in this process.

The Minister of the Federal Supreme Court emphasized the legal nature of compensatory royalties and went on to allude to a “systematic constitutional proportionality between exploration and compensation” (STF, 2013b). The Minister also added, “the imposition of maximum limits for the amounts of royalties received violates the provisions of § 1 of Art. 20 of the Constitution. The compensation given to producers and cities that are affected must be consistent with the impact of the production and exploration of oil and natural gas [.]” In determining the revenue ceiling, devices such constitutional systematic proportionality misrepresent the relationship between exploration and compensation. Furthermore, by adopting this as a criterion for defining the limits of the year 2011, the project requires no solution for the problems between producers and isonomic cities (STF, 2013b).

Today, the Brazilian justice system feels social resistance, which started in 2006 with the discovery of the presalt layer. Since then, inspired by the financial representation of the royalties, the subject has entered the national political agenda, and has created a variety of opinions among politicians and citizens alike. Parliamentarians across the country have launched their campaigns in defense of the alleged right of their respective states to the revenue. They have outlined ideas that are reminiscent of the Nationalist Campaign of 1946, when leftist political and social activists launched a campaign that took to the streets claiming “The Oil is Ours” (Seabra et al., 2011).

Social resistance has postponed changes to the criteria for the distribution of oil revenues by four years. However, it is not known how long this can last; the only injunctive request used was a Direct Action of Unconstitutionality, but there are three pending requests in the Supreme Court, resulting in a total of four DAUs.

However, the fact that such a powerful sector, which is also known for its ability to foster corruption (especially in developing countries) is forced to wait like any other business or individual to have the rules, denotes Brazilian institutional maturity. Though it is against all political and journalistic opinions, we understand that the legal pillar of security is being strengthened, since the legal system is meeting its institutional function by enforcing the democratic rule of law and is doing so through a public legal process. It is worth noting that the industry is not unprotected, since all parts of the early Petroleum Law (No. 9478/97) that refer to the distribution of oil royalties and other revenues are still valid.

Obligatory involvement based on the legal nature of Brazilian royalties

Since the analysis of the national and international experiences in the management of the revenues from oil production suggests that there is a link between geographic zones and certain demands, such as the mitigation of social and environmental impacts, the analysis of the legal nature of the royalties is determinative, in this sense.

To understand the structure of a legal institution, it is important to know its legal nature. The reason for its existence in legal planning defines its constituents and its power.

The Brazilian Federal Constitution establishes two kinds of government compensations (Art. 20, Paragraph 1). The first is based on the “involvement in the results of the exploration”. This kind is not yet regulated. The second one is the “financial compensation for this exploration” regulated by Law No. 9.478/97 and Decree no. 2.705/98 (Leite, 2009).

The aforementioned contributions can come in four types: a signature bonus (Art. 46), royalties (Articles 47, 48 and 49), special contributions (Art. 50), or payment for the occupation or retention of a given area.

Hence, royalties represent a kind of financial compensation paid monthly by the concessionaires, whose contracts are in the stage of either exploration (when a cost-benefit analysis relevant to the proposed activity is in process) or production (after economic viability of a proposed well is proven), according to Decree no. 2.705/98.

The compensatory nature of the royalties was recognized by the Federal Supreme Court of Brazil after a writ of certiorari known as RE No. 228.800-5/2001. The supreme court's decision also identified the financial means and responsibilities of the explorer, stating that the royalties represent financial compensation towards recovery of environmental, social and economic losses.

The loss itself has been explained as “a result of exploration activity brought about by the exploration of the mineral resources protected by law” (STF, 2001). In this sense, this compensation is not for the use of the petroleum but for the loss, which may result from the use of the resource. The Federal Constitution of 1988 established the existence of a good that is neither public nor private (Fiorillo, 2006). Environmental goods are regarded as “third quality goods,” and their ownership is not defined.

Thus, when Article 20 of the Federal Constitution defines the “goods that are the state's property,” then this can be interpreted differently. Unclear ownership of public goods grants the state the power to manage the common heritage and not only that which exists under its ownership.

This change was carried out on account of Article 225 of the Federal Constitution, stating that everyone has a right to an ecologically balanced environment, which is commonly used and indispensable to defend public health and quality of life. It gives the public and civil society the responsibility of protecting and preserving these resources for the benefit of present and future generations. Thus, the country is responsible for the administration and management of petroleum reserves and revenues from them, but it cannot assume ownership.

In the same sense, Barroso (2010) affirms that the key concept in the legal analysis of royalties is compensation for the use of the national land or for the damages resulting from the activity. Leite's (2009) analysis of the legal nature of government compensations also shows that the compensations are instruments meant not for the use of the environmental resource, but to compensate environmental, social and economic impacts that occur in the producing region.

According to Grau Neto (2007), the Supreme Court's statement is already sufficient to establish the mandatory application of the

royalties solely for compensating environmental, social and economic impacts. Thus, the current freedom in the management of oil funds is not supported by the Brazilian legal system.

Such an understanding does not break the constitutional principle of equality, which requires equal treatment for equal and unequal treatment to unequal, to the extent of their inequality. This concept is not new when one considers ideas of labor and social security, in which the “hypo sufficient” or members of the ruling class, are generally awarded this principle. However, when the subject is a profitable activity, then such a principle ceases to be relevant if this activity allocates a portion of land. The Constitution itself determines “that the government must give special attention to the occupation and use of their natural resources in order to ensure the preservation of the environment.” In a certain way, we could consider the coastal zone to be a “hypo sufficient region,” either for its mosaic of ecosystems that house enormous biodiversity, or for its divergent or conflicting economic interests associated with unplanned urban expansion. The fact is that such hypo sufficiency is as real as it is in social security tax cases. When referring to the coastal zone, we are facing particularly sensitive and fragile environmental areas, such as estuaries and mangroves. The existence of sensitivity (here called “hypo sufficiency” in terms of reflection and parallelism) calls for state action with protectionist measures that do not generate any sense of injustice.

Conclusions

The royalty management experience in Brazil thus far (Campos Basin – Rio de Janeiro) has shown that the economic input in the local municipalities has not always resulted in social development. In contrast, oil and gas revenues have created social disturbances in the producing regions, mainly due to the excess of freedom provided by the lack of obligatory involvement in the administration of revenues at the municipal level, which is in disagreement with the legal nature of the Royalty. This governmental mode of action can be understood as a symptom of Nigerian disease.

It could be also concluded that the new Brazilian petroleum legislation (Law no. 12.734/12, which establishes new rules for the distribution of revenues from royalties, and Law no. 12.858/13, which establishes new milestones in the allocation of royalties to healthcare and education), which although sanctioned by the President of the Republic are suspended until the final analysis of unconstitutionality, did not meet the criteria of a compensatory nature for the legal idea of royalties as an institution. Once met, these criteria will achieve a standard of good governance in terms of Article 225 of the Brazilian Constitution, which defines the coastal zone as a National Heritage – one stands out as a portion of the Brazilian territory that deserves special attention from the government when it comes to its occupation and use of natural resources in order to ensure the preservation of the environment.

The Brazilian coast has presented many other development vectors during the expansion process, including tourism, ports, deployment of renewable energy devices, and aquaculture, in addition to industrial and logistics facilities involved in oil production. These activities could be strengthened and the base of the society could be diversified through efficient management of oil revenues. International economies have experienced remarkable industrial transformations based on domestic production relations and connections with their resource sectors. These relationships evolved from supplies of simply processed products to more advanced products, and contributed to the development of a broader base. Over time, these countries successfully diversified into other activities (Teka, 2012). These positive international experiences in revenue management show the potential for

diversification and industrial development resulting from the use of this resource.

However, governance quality, regulation quality, institutional quality and control of corruption must be significantly improved in Brazil in order for the country to benefit economically and socially from its oil revenues, responsibly managing the resource. In light of this new and powerful economic cycle driven by presalt findings, the question is whether the Brazilian oil and gas industry, which is establishing itself in coastal zones whose social and environmental characteristics have been disregarded, and whose royalties have been used without regard to law, will make local communities richer or poorer.

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