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oil:

from global
to local

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Editorial Staff

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OIL AS A STRATEGIC RESOURCE: from global to local

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Oil has been the most exploited energy source in the world since the mid-20th century, by boosting the so-called “second industrial revolution” and thus becoming the driving force for the expansion of industries and of the production of machinery and vehicles, and for the technological innovations in the period. Currently, the resource remains central in almost all regions of the world and may maintain that position over the next decades, although the share of alternative energy sources, renewable or not, has been increasing in the global energy matrix.

In this issue of **Panorama Internacional**, we reflect on this theme, which is as ubiquitous as relevant in the globe, with very diverse local impacts. Given the diversity and the comprehensiveness of this topic, we do not intend to exhaust discussions or even to provide definitive answers to intricate questions. On the contrary, such complexity enables the development of multidisciplinary and multilevel investigations on the subject, which is so relevant for public officials, private sector entrepreneurs, researchers, students and other stakeholders.

Although petroleum has aroused interest uninterruptedly for decades, it is relevant to point out some of the motivations to highlight this topic at this time. First, at the national level, the discussion about the regime of oil exploitation often takes too simplistic shapes, for instance, on what the best form to exploit it is, either under state control or by opening up the sector to private competition. This debate, which has been accompanying the very existence of the government-owned Petrobras since the 1950s, resumes when the company is in adverse situations, especially in a financial point of view, as

nowadays. Second, the fall in oil prices, a noticeable trend since mid-2014, has generated quite contradictory impacts in many regions of the world. The effects are not homogeneous for each region, comprising exporters and importers. As for the exporters, some of them, such as Saudi Arabia, managed to enhance their share in the global market. On the other hand, some importers, aiming at reducing costs and obtaining a certain relief in their current accounts, might lose the incentive to invest in alternative and/or local energy sources, thus increasing their external vulnerability in the medium and long term.

Readers will notice an understanding common to all texts that the topic of the debate cannot be simplified to an accounting relation of cost-benefit in a given period. In this case, the discussion should start from the assumption that petroleum, while it remains an important global energy source, should be perceived as a strategic resource to provide energy security for a given nation, to be an instrument of power in the global geopolitics, to acquire means to boost economic development, to mitigate social and interregional inequalities, to enable technological enhancement, among other uses.

The array of the articles in this issue exhibits a certain logic, from the global context towards local problems. Our starting point is an analysis by researcher Ricardo F. Leães about the dynamics of global oil flows and the strategy of some of its key players. The author stresses that, beyond the movements in the

demand side, such as the decrease in the “Chinese appetite,” as emphasized on the conventional wisdom, we should also bear in mind the structure on the supply side. Two movements may be helpful to understand the ongoing changes in this context: (a) the reduction of energy vulnerability of the United States, which has been expanding internal oil production and acquiring it from more reliable sources, especially Canada; (b) the role of Saudi Arabia, which has shown interest in keeping prices below US\$ 50 a barrel, possibly to harm actual and potential competitors, particularly Russia and Iran. The continuity of this situation may broaden the room for maneuver of Saudi Arabia and other Gulf monarchies, but might harm most global exporters, and even induce importers to increase their oil dependence and to decrease their interest in alternative energy sources.

Concerning Latin America, Thomas Fiori develops a comparative examination of oil property regimes in four nations, three of which are more industrialized economies (Argentina, Brazil, Mexico), and the fourth (Venezuela) is a leading global producer of oil. The author seeks to show that the sector, at least among the selected cases, is not limited to a logic of increasing revenues and reducing costs. It is also necessary to understand some aspects of policy and international security, such as sensitivity (which refers to the susceptibility of a given system to external shocks) and vulnerability (which is the responsiveness or

adaptation to external shocks). Thus, the states strive not only to minimize their costs, but also to reduce their external vulnerability, which explains the many possibilities of solving the relationship between state and market, regarding the control of oil property.

In the domestic realm, Cecilia R. Hoff explores the relevance of Petrobras for the Brazilian economy, despite the economic crisis in the country. In addition to the relevance of its size, the company has significantly increased its contribution to the variable gross fixed capital formation after the crisis of 2008. The author also brings up a relevant fact: the company's physical production has increased, despite the financial difficulties and the Brazilian economic crisis. In addition, the state-owned enterprise has sought to dampen price volatility in the international market,

thus ensuring that domestic prices do not oscillate at the same frequency, reducing the impact on inflation. So far, the economic crisis has played a role to resize or even to suspend several relevant projects, and at the same time the company has been impelled to focus on some activities regarded as essential, such as the exploitation of the pre-salt layer oil fields.

Finally, researchers Cesar S. Conceição and Roberto P. da Rocha scrutinize the investment policies of Petrobras and their effects on the shipbuilding sector in Rio Grande, in the southernmost region of the State of Rio Grande do Sul. They put forward the hypothesis that certain government policies in the first decade of the current century, particularly the reactivation of investments in the oil sector, have led to the development of some sectors in that



Photo by Marinelson Almeida/Flickr

region, such as shipbuilding, equipment and components for ships, as well as platforms for offshore oil exploration and production. They present some of the results of such activity in the labor market of the local shipbuilding sector in the early 2010s, but also point to a reversal of this trend since 2015. In this essay, which has an intertextuality with Hoff's, the authors conclude that the increasing difficulties of the cash flow of the company since 2014 have caused a retraction in its activities and investments, endangering the continuity of the remarkable progress of the naval industry in Rio Grande in recent years.

The interviewee of the current issue is Lucas K. de Oliveira, Associate Professor of International Relations at the Federal University for Latin American Integration (UNILA) and researcher at the Center of Studies on Government (Cegov). He has developed research on energy security issues and conflicts in oil producing regions. He points out the existence of a constant clash between the great powers over the control not only of oil production, but also of its distribution and its revenues, and makes some comments on the consequences for Brazil.

Enjoy your reading! **P**

The multifaceted nature of oil dynamics

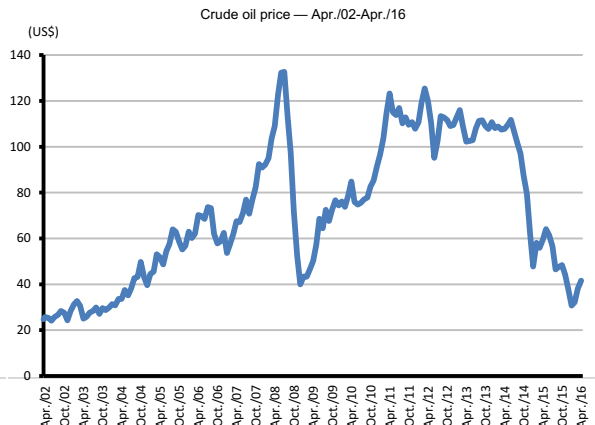
Ricardo F. Leães



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After a ten-year upward cycle, oil prices fell sharply since July 2014, in a move that turned the previous cycle upside down. Even though the commodity's value has recovered a small portion of these losses in the past months, the speed of the fall is still noteworthy, mostly because it was not anticipated by leading analysts and specialized agencies. Soon after that, it was suggested that the price had fallen due to the slowdown of the global economy (especially China), which caused a decrease in oil demand in a context where the oil supply was growing (Figure 1). However, these assumptions, although empirically true, do not take full account of the

Figure 1



SOURCE: UNITED STATES. Energy Information Administration (EIA). **Short-term energy outlook (STEO)**. 2016. Retrieved from <www.eia.gov/forecasts/steo/pdf/steo_full.pdf>, on July 4, 2016.

NOTE: Prices in 2016 US\$.

► The multifaceted nature of oil dynamics

situation, which presents itself more multifaceted, with roots that go beyond the relation between supply and demand.

When one reads about the oil price dynamics, it often happens that only the amount demanded by consumers and the one offered by producers, as well as the level of its global stocks, are considered. In this sense, every time there is an imbalance in one of the factors in question, there would be a change in prices in order to restore market balance. It so happens, nonetheless, that historically the oil price trajectory is not fully consistent with the behavior of its demand, at least in terms of its amplitude. Therefore, we must go beyond textbook explanations in order to try and understand this process, for oil is viewed as a national security asset by most countries, giving it a leading position in the global economy. Thus, in our understanding, the geopolitical dispute over the property and exploration of oil reserves is paramount to any evaluation of the subject¹.

The main factor of oil market transformations in the last years is directly related to the increase in exploration of unconventional resources, which made possible the recovery of the oil and gas industry in the United States (Figure 2) — which had

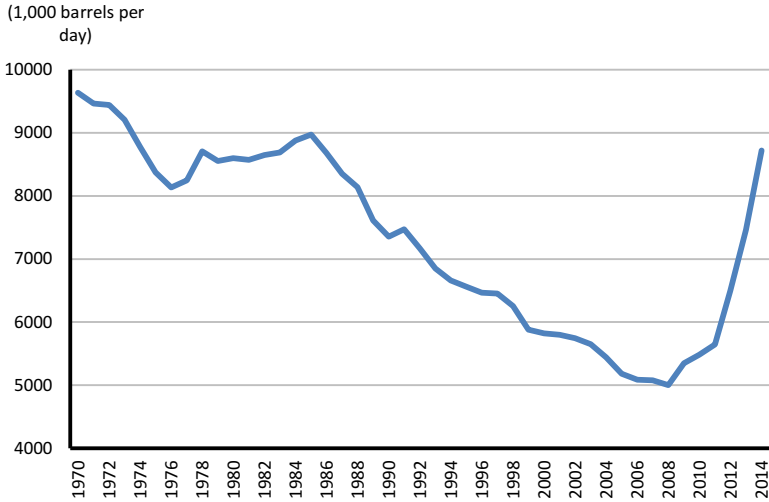


been declining for decades — and the boost of oil exploration in Canada (Figure 3). With the “Shale Revolution” and the growth of oil sands, the United States was able to cut back its oil imports, notably the oil produced by members of the Organization of the Petroleum Exporting Countries (OPEC). That is an extraordinary situation because it reverses a pattern of growing energy dependency in the United States, which had been putting the world's most important economy in a position of relative subjection to the OPEC. So, insofar as China's demand for energy resources increased, there was an escalating fear that there would be an oil shortage in the U.S. eventually, and that feeling naturally pushed prices and speculations upward.

¹With the increasing financialization of natural resources, the economic and geopolitical movements tend to be amplified, which can affect prices in both volatility and trend.

Figure 2

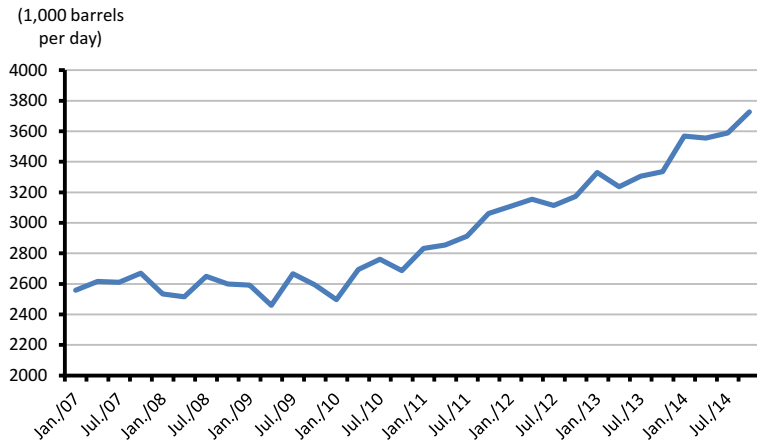
Crude oil production in the United States of America — 1970-2014



SOURCE: UNITED STATES. Energy Information Administration (EIA). **Short-term energy outlook (STEO)**. 2015. Retrieved from <www.eia.gov/forecasts/steo/pdf/steo_full.pdf> on July 4, 2016.

Figure 3

Crude oil production in Canada — Jan./07-Jul./14



SOURCE: United States (2015).

► The multifaceted nature of oil dynamics



The viability of unconventional resources was only a reality after years of high oil prices, given its high break-even², as well as a set of technological innovations (fracking³, 3D geological mapping and horizontal drilling). Throughout this period, however, there were growing fears that the world was approaching the “peak oil”, once the oil consumption of emerging countries kept expanding, in a background where most oil reserves were already declining. In a context of financialization of commodities, such fears made oil prices skyrocket, since this resource seemed close to extinction. Nevertheless, in a clear paradox, it was precisely this background — theoretically inauspicious — that made possible the oil and natural gas production in new regions in North America, contradicting analysts' and policymakers' forecasts⁴.

Among the most important consequences of the rise of unconventional resources, we should highlight, first of all, the resurgence of

the U.S. oil industry, which grew by 74,42% in terms of total volume between 2008 and 2014. Moreover, in that same period, there was a 36.71% reduction in oil imports in the United States. Thirdly, there has been a significant change when it comes to energy imports by the U.S.: in 2008, OPEC countries accounted for 55.35% of that total, while Canada was responsible for 19.99% of that amount. In 2014, however, the two were virtually the same, since OPEC's slice represented 40.82% of that total, versus 39.32% of Canada. Lastly, in these years, the boost of Canadian oil production (roughly 1 million barrels/day) coincided with the increase in Canadian oil purchases by the United States (Figure 4).

In light of the above, it appears that the recent drop in oil prices has succeeded the sharp reduction in U.S. energy dependency. It is much more than an oil surplus in international markets and a decline in consumption; it is a major transformation, as the most

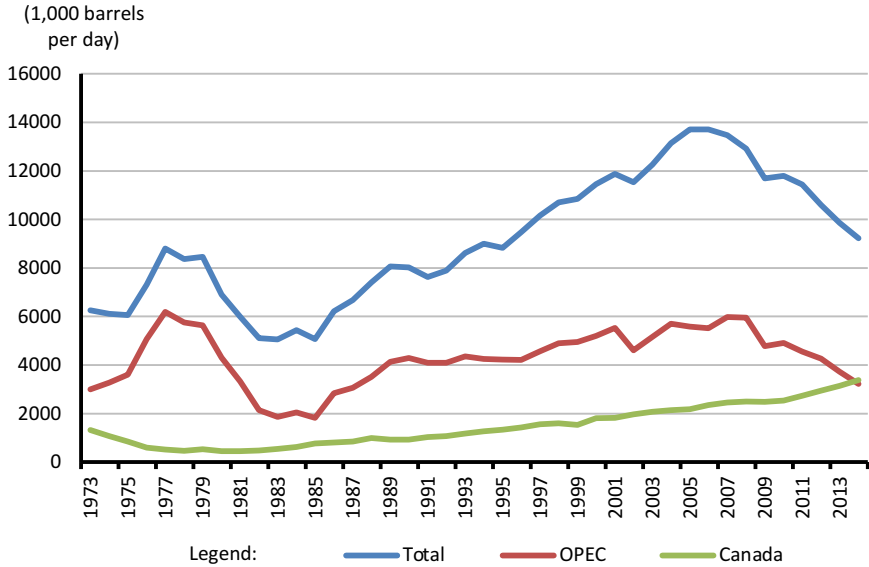
²The break-even is the point at which the income from sale of a product or service equals the invested costs.

³Fracking, a slang term for hydraulic fracturing, is the process of creating fractures in rocks and rock formations by injecting specialized fluids (a mixture of water, sand and chemicals) into cracks to force them to open further.

⁴In *A mudança na tendência do preço das commodities nos anos 2000: aspectos estruturais* (2013), however, Serrano points to an opposite relation: when oil demand started to grow, OPEC did not raise its production to the same level, and the “new production” that came eventually was actually from regions whose production costs were higher, thus establishing a new break-even for this activity.

Figure 4

U.S. oil imports — 1973-2014



SOURCE: United States (2015)

important global power (the main consumer and importer of oil) seems on the verge of easing a problem that, up until now, was worsening. Given the importance of oil, both economically and militarily, it is not difficult to understand why the decreased need of energy imports from OPEC is a relief for the U.S. government and consumers. Certainly, in an already favorable context, the cooling of world demand may also have contributed to the decrease in price, but it does not explain, by itself, the phenomenon as a whole.

For the United States, energy security is not only about the supply of

energy resources at its disposal, but the guarantee that the energy flow to its allies is not interrupted. In that sense, it is clear that the “Shale Revolution” has brought two major consequences that can alter the European energy market. First, the reduction in U.S. imports of natural gas (mainly from countries such as Algeria and Nigeria) makes it possible for European countries to purchase energy from those economies. Due to the fact that the region is highly dependent on Russian energy imports, the emergence of new suppliers may reduce its vulnerabilities by curtailing Russia’s bargaining power. In addition,

due to the recent abundance, the natural gas market is saturated in the United States, so that the U.S. government has authorized energy exports to Europe, which could also diversify its options.

When oil prices began to plunge, it was suggested that the movement represented a Saudi maneuver to harm Iran and Russia, its political and energy rivals, and to derail the production of unconventional resources, mostly in the United States. This perspective gained ground because, as oil prices plummeted, Saudi Arabia not only did not cut its production, but increased it slightly at first, and then stabilized it in subsequent months. Given the importance of the swing producer⁵, it seemed only natural to speculate about Riyadh's real intentions, although no official statement in that direction has been released. Notwithstanding, as much as this explanation is internally consistent, it is necessary to note some aspects that show how complex and multifaceted the subject is in order to understand that Saudi Arabia may not gather the means to control the oil market that way.

When put in perspective, Saudi energy policy has consistently kept a pattern of caution and fear about sudden changes regarding oil. In the 60s and 70s, for example, the country acted carefully as its neighbors demanded an

“When put in perspective, Saudi energy policy has consistently kept a pattern of caution and fear about sudden changes regarding oil”

oil embargo on Israel's supporters. In the 80s, when oil prices were low, OPEC members pushed Saudi Arabia to cut its production, as it did, but had their expectations dashed, once those cuts were offset by increases in regions outside OPEC, keeping prices low and diminishing Saudi's market share. Moreover, at the beginning of this century, when high prices benefited Iran and Russia, there was no effort in Saudi Arabia to increase its production and plunge prices. As a matter of fact, Saudi energy policy has been much more reactive than active, and more cautious than bold.

Saudi Arabia has indeed already declared its interest that oil price be maintained at modest levels, a position that sets it apart from other major oil producers. Nevertheless, even if Riyadh is taking advantage of this beneficial circumstance, it would be an extrapolation to state that there is intentionality behind this process. Saudi Arabia is the only state that has vast

⁵Swing producer is a supplier of a close oligopolistic group of suppliers of any commodity that controls its global deposits and possesses large spare production capacity.

proven yet untapped oil reserves, but the fall in oil prices was not preceded by a Saudi announcement that showed willingness to expand its production significantly. It was not the expansion of production which anticipated the collapse in prices, but quite the opposite: only after the oil prices began to drop, Saudis increased mildly their own production. More than a plot, it is a strategy that seeks to not repeat past mistakes and to transfer costs to its rivals. From the point of view of the Saudis, if production cuts are necessary to stabilize prices, they should occur elsewhere.

In the current situation, unconventional resources seem to have mitigated energy vulnerabilities in the U.S. and Europe, and apparently have debilitated the political sway of major producers, such as Saudi Arabia and Russia. However, it remains unclear how long this is going to last. Due to its high break-even, the unconventional resources industry is going through a hard time, as shown by investment cuts and underproduction. Despite these problems, so far, most shale companies did not go bankrupt, even if the smaller ones are in a dire situation, which shows that their resilience may be greater than expected. Still, the persistence of low prices may reverse last years' expansion. In that scenario, U.S. energy dependency would once again be an issue, and that would reposition the geopolitics of oil in favor of Saudi Arabia. **P**

Petrobras still matters for the Brazilian economy

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Brazil's largest company and one of the world's oil giants, Petrobras has shifted in recent years, from a guarantor of the country's future into an outstanding representative of the set of frustrated expectations that accompanied the end of the economic growth cycle achieved between 2004 and 2010. The discovery of huge oil reserves in the pre-salt layer, in a background of rising oil prices at the international level, has brought the prospect of a thriving future, in which energy autonomy would prevail along with surplus in the balance of payments, industrial and technological development and reducing regional inequalities. Thus, as a company partially owned by the state, Petrobras would assume a leading role in national development. Today, the “pendulum” has swung the other way, and expectations are more modest and sometimes even pessimistic. The euphoria of the 2000s led to the implementation of projects that, in light of the current scenario, have proven to be unrealistic regarding timing, costs and long-term assumptions. This fact, along with plummeting oil prices, the adoption of a controversial pricing policy and the revelation of corruption scandals, has weakened the financial position of Petrobras, and helps to form an underrated perception of its importance for the country. Despite the crisis, Petrobras still matters, in both economic and strategic terms for the development of Brazil.

The investment carried out by Petrobras is an important

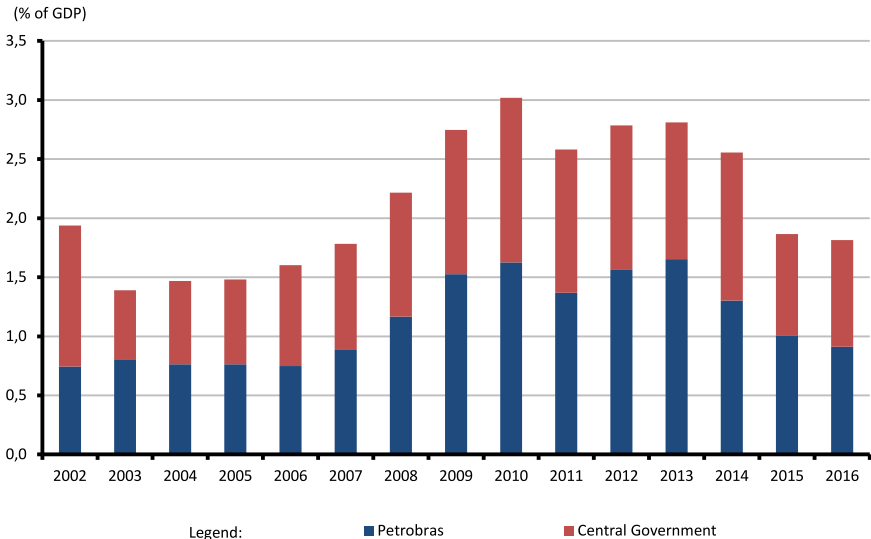
part of national investment. It currently corresponds to more than 50% of the gross fixed capital formation (GFCF) of the Central Government and state companies, which has increased from 2008, not due to the reduction of other investments of the government, but to the growth of both figures as a proportion of the Gross Domestic Product (Figure 1). On average, between 2008 and 2014, investments of Petrobras represented 7.2% of the total Brazilian GFCF, compared to 4.5% between 2002 and 2007 (Figure 2). Excluding residential construction,

which accounts for approximately 20% of the gross fixed capital formation in Brazil, oil-driven investment now represents about 9.0% of the total national investment in the construction of buildings and non-residential structures, machinery and equipment, and intellectual property products.

The growth of investments in oil and gas exploration can be seen in the dynamism of some indicators, including the production of the extractive industry. In Figure 3, whose data were based on December 2002, we notice that in the period until June 2016, the

Figure 1

Share of the gross fixed capital formation of the Central Government and state-owned companies in the Brazilian Gross Domestic Product (GDP) — 2002-16

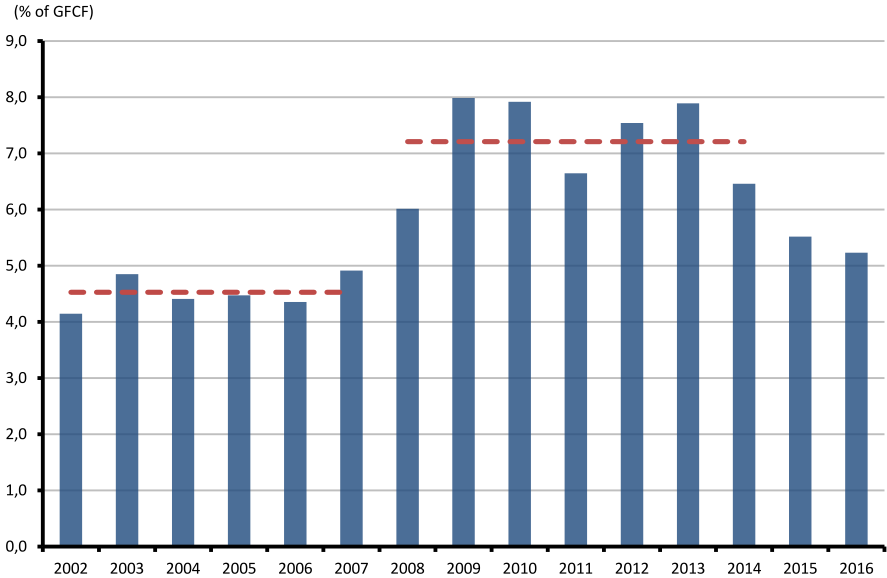


SOURCE: BRASIL. Ministério da Fazenda. Secretaria de Política Econômica. Investimentos e carga tributária. 2016. Retrieved from: <https://www.spe.fazenda.gov.br/conjuntura-economica/politica-fiscal/arquivos/investimento_e_carga_tributaria-2.xlsx/view> on Aug. 8, 2016.

NOTE: 1. Last available data are of July 2016.
2. The decimal point is a comma.

Figure 2

Share of Petrobras in the total Brazilian gross fixed capital formation (GFCF) — 2002-16



SOURCE: BRASIL. Ministério da Fazenda. Secretaria de Política Econômica. Investimentos e carga tributária. 2016. Retrieved from: <https://www.spe.fazenda.gov.br/conjuntura-economica/politica-fiscal/arquivos/investimento_e_carga_tributaria-2.xlsx/view> on Aug. 8 2016.

NOTE: 1. Last available data are of July 2016.
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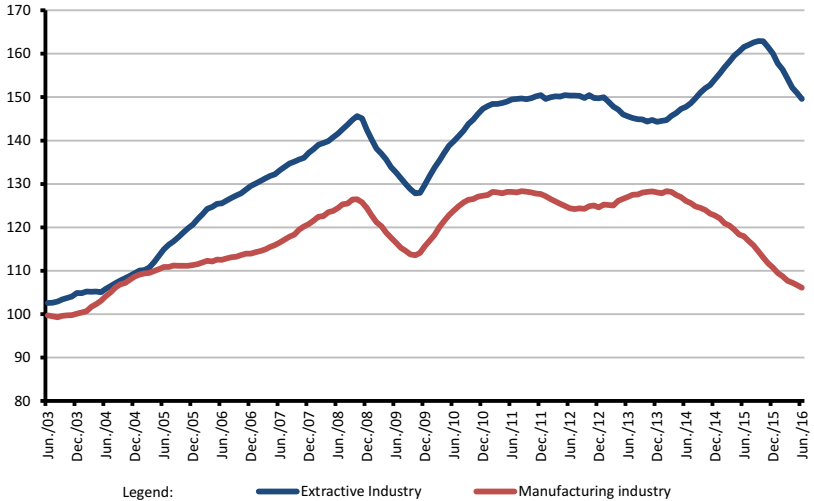
physical production of the extractive industry accumulated a growth of about 50.0%, while the manufacturing industry expanded less than 10.0%. It is true that part of this growth can be attributed to the increase in iron ore extraction, which was also favored by rising prices seen until mid-2012. This assertion does not lessen, however, the relevance of the oil and gas extraction activity for the performance of the sector, which accounts for the largest share of the extractive industry (65.0% against 30.0% of iron ore).

From the mid-90s, the domestic

output of oil and gas has started an accelerating growth trend (Figure 4). Currently, oil production is at 2.5 million barrels per day, representing an increase of 98.0% since the early 2000s, while natural gas is at 600 thousand barrels per day, an increment of 165% in the same period. At the same time, the share of oil processed in domestic refineries increased from 80.0% in 2010 to 88.0% in 2016. Since the early 2000s, the volume of oil processed in domestic refineries has significantly increased about 20.0%, though not proportional to the increase in production. Finally, the

Figure 3

Industrial physical production in Brazil — June/03-June/16

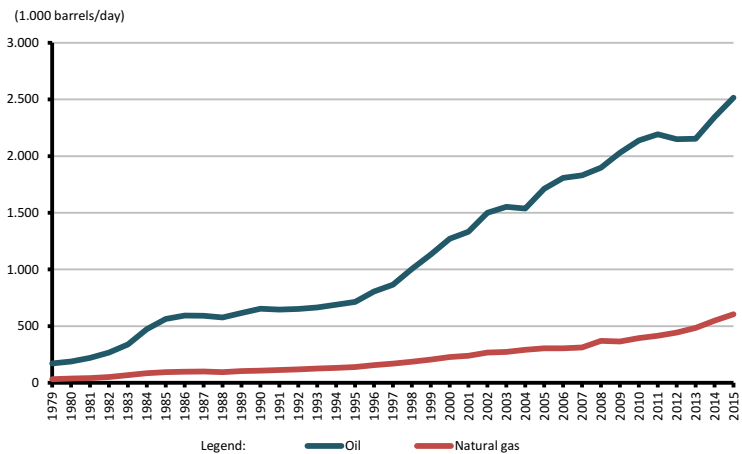


SOURCE: INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). Pesquisa Industrial Mensal Produção Física — Brasil. 2016. Retrieved from: <www.ibge.gov.br/home/estatistica/indicadores/industria/pimprf/br/defaulttab.shtml> on Aug. 8, 2016.

NOTE: Fixed base index (Dec./02 = 100), in moving averages of 12 months.

Figure 4

Output of oil products (crude oil and liquefied natural gas) and natural gas in Brazil — 1979-2015



SOURCE: BANCO CENTRAL DO BRASIL. Sistema Gerenciador de Séries Temporais (SGS) — v 2.1: módulo público. 2016. Retrieved from: <<http://www.bcb.gov.br/pt-br/#/n/seriestemporais>> on Aug. 8, 2016.

NOTE: Annual average.

expansion of oil and gas yield has favored the Brazilian external accounts, though not exclusively, since both the recession and the reduction of prices in the international market have also contributed to the expansion of trade surplus. Reflecting the interaction of these three facts, trade deficit of fuel was reduced from US\$14.6 billion in 2014 to US\$5.4 billion in 2015 and to US\$0.9 billion in the first four months of 2016..

Although still resting on a solid production base, Petrobras is currently facing evident difficulties, especially regarding its financial health. New and relatively modest prospects for the evolution of global demand have led to a rescheduling of the plan of production expansion and to the adoption of more realistic premises for the future behavior of variables such as the exchange rate and prices. In the Business Plan of June 2015, released still during the presidency of Ademir Bendine, it was estimated that oil production should reach 2.8 million barrels per day by 2020, a significant reduction from the forecast in the previous plan of 4.2 million barrels per day. This is not, however, an exclusivity of Petrobras. There has been a broad trend of moderation in the pace of production growth. In the new plan, the forecast for world production growth was 1 million barrels per day by year 2020, while in the previous plan it was 1.6 million barrels per day for the same period.

The combination of a scenario

“Although still resting on a solid production base, Petrobras is currently facing evident difficulties, especially regarding its financial health”

involving the assumption of more moderate prospects for production and prices with the excesses of the recent past and, above all, the high amount of investment necessary to explore the pre-salt has increased the leverage of the company and its financing costs. This fragility has induced the development of a plan of asset selling and the review of investments in order to reduce debt and focus efforts and resources on the exploration of the pre-salt. With regard to divestments, in the January 2016 revision of the Business Plan, Petrobras expected to dispose of assets amounting to US\$15.1 billion between 2015 and 2016 (reaching only US\$0.7 billion in 2015) and US\$42.6 billion between 2017 and 2018. Such a measure would help to reduce the company's net debt, which exceeds US\$100.0 billion. It was estimated that investments would amount to US\$98.4 billion between 2015 and 2019 (a cut of US\$32 billion compared to the previous plan),



focusing on production and exploration activities. Applying the current exchange rate of about R\$3.3/US\$, this amount would be equivalent to an annual average investment of R\$80.0 billion, slightly higher than the average of 2011-15 (R\$72.0 billion).

Thus, the share of Petrobras in the domestic investment may continue to decline, while the proportion of exploration and production activities in terms of its composition may increase, to the detriment of others, such as the refining capacity, which had been growing in recent years. With the new presidency of the company, further adjustments are expected. However, the expectation is to maintain the general stance of leverage reduction, investment focus on the pre-salt and moderation in projections. Despite the reduction of oil prices in the international market, which seems to be structural, there are indications that the current level is still sufficient to enable the exploration of the pre-salt. In the event of a new round

of falling prices, this strategy would also be at stake.

The new scenario for oil prices, besides the induction of a strategic review in investments, also calls into question the pricing policy that has been traditionally conducted by Petrobras. The policy consists of preventing the immediate transfer of external oscillations to the domestic market, with the intention to reduce volatility and indexation of national prices. In this strategy, the transfers occur only when the changes in the level of international oil prices prove to be lasting. This definition includes, in any case, some degree of subjectivity. In 2012-14, due to the persistence of a high level of prices in the international market, the containment of transfers appears to have been extended for too long (Figure 5). Furthermore, in 2015-16, the policy that keeps fuel prices high in the domestic market, even in light of lower prices in the international market, seems to complement the strategy of financial

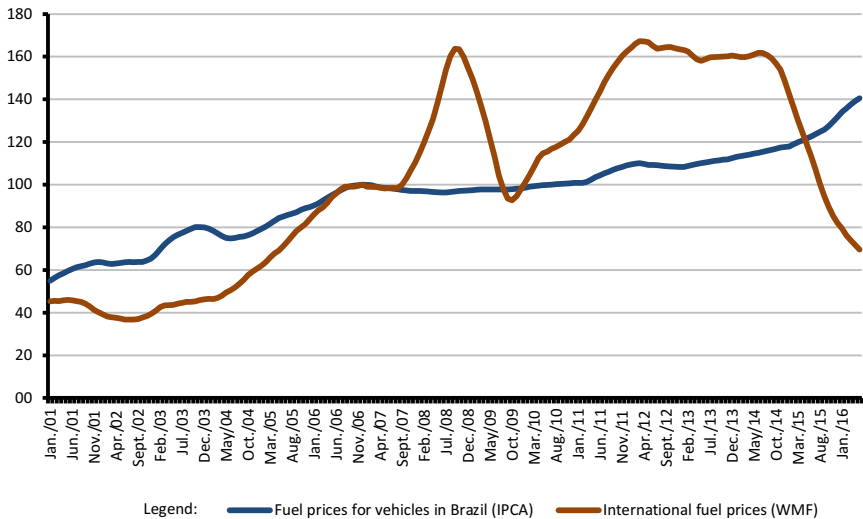
relief — even if not explicitly — by compensating losses from the previous pricing policy, which are almost zeroed, and expanding funds in the short term.

Petrobras' twofold character, at the same time a public and a state-owned company, imposes the challenge of balance and reconciliation of market and state strategies. The reconsideration of the operating model of the pre-salt exploration system, which discharges the company from the commitment to operate in all fields of these reserves

and, at the same time, preserves its preference for those considered strategic, can meet these requirements, provided that, and this is important, the prerogative is actually exercised. Inflated by the favorable situation, the profit of some projects seems, in fact, to have been overestimated. In this context, having to lead the development of all fields could end up burdening the company and reducing the growth rate of investment. A similar occurrence can be observed in the national content

Figure 5

Fuel price index — Jan./01-Jun./16



SOURCE: INTERNATIONAL MONETARY FUND. [Data]. 2016. Retrieved from <<http://www.imf.org/external/np/res/commod/index.aspx>> on Aug. 8, 2016.
 BANCO CENTRAL DO BRASIL. Sistema Gerenciador de Séries Temporais (SGS) – v. 2.1: módulo público. 2016. Retrieved from <<http://www.bcb.gov.br/pt-br/#1/n/seriestemporais>> on Aug. 8, 2016.
 INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). Sistema Nacional de Índices de Preços ao Consumidor. 2016. Retrieved from <http://www.ibge.gov.br/home/estatistica/indicadores/precos/inpc_ipca/defaultinpc.shtml> on Aug. 8, 2016.
 NOTE: Fixed base index (2006 = 100), in moving averages of 12 months.

policy. Even in the case of an instrument that is widely used by oil producing countries to stimulate industrialization and technological catching up, the national content policy raises the possibility of loss of competitiveness in a scenario of narrower profit margins.

However, if adherence to ambitious projects implies, in the current situation, non-negligible risks, the complete relinquishment of the use of oil as a strategic resource also does not pose as a solution. As a state company, Petrobras still plays the role of stimulating projects that, in a background adjusted for lower prices, meet the interests of the country. This task transcends continued leadership in the exploration of the most robust resources. It also involves the allocation of knowledge and capital accumulated by the company to fulfill broader interests, including the fostering of renewable energy production, the generation of innovation and the narrowing of regional inequalities. **P**



The global clashes over oil and their impacts on Brazil

By Bruno Jubran



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In an interview to **Panorama**, Lucas Kerr de Oliveira evaluates the centrality of China in world oil demand and underlines the key variables to understand the sector. He gives his opinion on the economic action strategies of Petrobras and states that the losses of the most acute Brazilian energy crisis in 2001 are still at stake.

Oliveira shares his views on the policies of the Brazilian interim government regarding the energy sector and discusses the factors that have exacerbated the economic crisis in the country since 2015, after the fall in oil prices. For our interviewee, rather than an energy resource, oil is a means to boost development and provide security for a nation.

Panorama: For the conventional view, the sharp drop in oil prices is a question of demand, namely, the decrease of the Chinese “appetite” for this raw material. How do you see this matter?

The reduction in expectations of the Chinese growth can be considered a central variable to explain the current dynamics of global energy, including the current cycle of low oil prices, although it is just one of the many variables involved in this process. First, it is worth mentioning that China has increased its share in world energy consumption over the past three decades, standing as the largest global consumer of energy since 2009, when it surpassed the total consumption in the United States. In 2013, China surpassed the consumption of all Europe and the former Soviet Union combined, including Russia. Currently the Chinese energy consumption corresponds to 23% of the total consumption of world primary energy and should reach 25% by 2035. In other words, for the next 20 years China will match the same fraction of world energy consumption that the U.S. recorded between 1980 and 2000. From 1990 to 2011, China quadrupled its total primary energy consumption and also quadrupled oil consumption, reaching almost the same growth rate in coal consumption. From 2013 to 2014, we already noticed a reduction in the growth pace, thus averaging just over 5% a year between 2005 and 2015. In 2015, with Gross Domestic Product (GDP)

growth at 7%, the growth in energy demand in China was only 1.5%, while the increase in oil consumption was 6.3%, representing half of the total global demand growth in 2015, which was 1.9 million barrels. It was expected that China could not keep this pace of expansion forever, especially due to the global economic crisis, which reduced the growth of the major partners of China, such as the U.S., Japan, the BRICS group (Brazil, Russia, India, China and South Africa), the Association of Southeast Asian Nations (Asean) and the European Union. Currently, China accounts for 13% of the world's oil consumption, about 12 million barrels of oil per day (mb/d), equivalent to just over 60% of the 18 million consumed by the U.S. For all that, China is today a central actor for any scenario projections concerning the growth of global energy consumption.

Moreover, the current international context and the deepening of the political and economic crisis in the European Union largely reinforce the expectations that global energy demand will not expand significantly in the short term, especially as the crisis begins to affect most directly the emerging countries, including the BRICS. In addition, the growing expectations of expansion of oil drilling in new offshore areas (such as the Pre-Salt layer) and the prospects of an increasing share of alternative energy sources to oil, including renewable but also other fossil fuels, such as gas and shale oil, will

further extend the prospects for enhanced energy supply in the short term.

Therefore, it is worth mentioning that variables such as demand and supply or inter-enterprise competition are not the only ones that matter to understand the oil industry. Oil is a variable that is directly related to international inter-state competition. This is because the control over the major oil reserves, as well as over the infrastructure of flow, refining and distribution of oil and oil products, consists of an important source not only of income, but also of power and influence for the world's great powers. Largely, conserving the structures that control the global oil market is directly tied to the political and military influence that the United States still exerts, ranging from the leverage on important countries and oil-exporting regions, to the influence in the decision-making process involving investments in oil prospecting, including the control over the reinvestment of petrodollars, as the prices and sale continue to be held in dollars. And it is precisely the set of key strategic capabilities of the U.S. — the ability to support its allies, to project military force and to settle conflicts — that enables it to control much of the oil sector and the global monetary system. In other words, the political-military power ultimately continues as the main pillar of what still remains of the U.S. hegemony.

Panorama: The regulatory framework of Petrobras combines different strategies of economic activity: it is a publicly traded company, but it is also owned by the Brazilian state (50% + 1). What are the main advantages and disadvantages of such arrangement for the industry?

Petrobras was founded in 1953 already as a partially publicly traded company¹, but 90% of its shares were under state control. The idea of keeping the state as the major shareholder has always been connected to the search for more national sovereignty and autonomy in the exploitation of natural strategic resources such as oil, especially given the need to cope with the pressures and the interests of the largest European and American oil corporations. From the 1950s to the 1980s, such formula was crucial for the effort of Petrobras along the strategy of national energy security, which was shaped to provide logistic support for the major Brazilian strategy, which was based on industrialization and national development. In that process, Petrobras played a crucial role to enable the internalization of the decision-making processes of energy and oil sectors, enhancing the capacity of planning and national control over the exploitation of our own oil wealth. Throughout this process, there has been a slow reduction in the percentage of the state ownership of the company's shares, but the state

¹ The Portuguese designation for this kind of corporation is Sociedade Anônima (S.A.).

continued to be the majority shareholder. Petrobras was fulfilling its historic mission, significantly reducing energy insecurity in the country, diminishing the country's dependence on imported oil and making Brazil virtually self-sufficient in refining products.

However, in the 1990s, as part of an extreme change in domestic politics, the country abandoned the grand strategy, which until then focused on a more autonomous international integration through national development. In such a context, Petrobras was dismantled, and without any strategic vision, state-owned refineries were separately sold, rather than transformed into a single large unit specialized in petrochemicals. As a result, Petrobras suffered serious restrictions to expand investments and was eventually partially privatized, with shares being sold at a very bad time and

well below the actual market value. The result was the reduction of the national state control over Petrobras' shares to only 32%, compared to a foreign ownership that reached more than 30%.

In this sense, the relinquishment of the energy sector to foreign interests was not restricted to Petrobras, but reached the entire national energy sector, with the sale of strategic infrastructure of generation and distribution of energy to foreign groups. Among the results of the renouncement of these strategic industries to foreign and domestic groups that had no commitment to national development and seek only short-term profit, was the loss of the long-term planning capacity, which is a very important feature in this industry. The ability of taking sovereign decisions on energy matters was handed over to allegedly more "efficient" forces of the market. The most visible outcome of this process was that Brazil suffered the biggest energy crisis in its history, which led to compulsory rationing of energy in 2001, known as "blackout". The damages of that process are until today a topic of discussion, but considering the impacts then inflicted on industrial output, GDP shrinkage and rising unemployment, we can say that the losses were virtually incalculable.

Since 2003, we have seen a slow recovery of energy planning, which is key for the reconstruction of a national development strategy. The resumption of investments in the energy sector, through the resumption of both the

“The relinquishment of the energy sector to foreign interests was not restricted to Petrobras, but reached the entire national energy sector, with the sale of strategic infrastructure of generation and distribution of energy to foreign groups”

construction of small and large hydroelectric power plants and Petrobras' investments, was decisive in boosting the economic growth cycle along the following decade. The growth of Petrobras' investments enabled it to become one of the international giants in the oil industry (peaking as the 4th largest company in the world in 2010), with investments in dozens of countries, besides the recovery of investments in Brazil, making the discovery of huge oil reserves in the pre-salt layer possible.

To have an idea of how important this process has been, it is interesting to note that restoring the capacity to plan and to make decisions in the energy sector has ensured, for example, a high level of oil self-sufficiency. It has also re-enabled Petrobras to use its purchasing power to revive the domestic shipbuilding industry, which has been achieved in less than a decade after the resumption of a minimally planned development strategy. Still considering the energy question, the adoption of local content policies in other sectors, such as wind power, has also been very positive, boosting the machinery and equipment business, such as the wind turbines sector.

Finally, it is interesting to point out that after 2010 the capitalization of Petrobras allowed again the expansion of the state's share in the ownership of the company (to 46.9%). It ensured the preservation of the investments required to explore the pre-salt layer, which currently accounts for more than

“Since 2003, we have seen a slow recovery of energy planning, which is key for the reconstruction of a national development strategy”

1 million barrels of oil extracted per day. In the same environment, the “New Petroleum Law” has enabled to overcome the limits of the concession system by creating a hybrid system in Brazil, which holds auctions through the concessions system in high-risk areas, but also applies the production sharing system, which it is much more advantageous for Brazil in low-risk areas such as in the pre-salt. The sharing system, by ensuring a 30% share and control of blocks for Petrobras, in fact, means the ability to control the exploitation of national oil wealth, and also the prospects of consolidating the local content policy in the long run.

Panorama: Given the maintenance of oil prices at a low level and the financial difficulties faced by Petrobras, is it possible that this business model will be revised in the near future to ensure greater participation of private

or foreign companies?

Hardly prices will remain so low for too long. It is more likely that current prices will gradually recover over the next two or three years, as it occurred in the last cycles of significant price drops. However, the timing of that recovery will depend on many factors, namely the pace of resumption of global economic growth, especially in emerging countries such as the BRICS and, also, the increase in the volume of oil consumption in China and the U.S. Another influencing issue is the prospect of change in the export policy of the members of the Organization of the Petroleum Exporting Countries (OPEC) and the escalation or the stabilization of the conflict regarding the proxy war between Saudi Arabia and Iran in the Syrian civil war and the western Iraq, involving the Islamic State.

Thus, the cycles of drop in oil prices in 2009-10 and 2014-16 had a significant and direct impact on the investment capacity of Petrobras, which has been even worsened in a context of cuts in government spending and severe political instability. In this context, the weakening of more nationalist policies in energy affairs favors local and foreign antinational sentiments, which advocate the revision of the sharing model and the restoration of the concession system for exploiting the pre-salt. These pressures are already present and integrated into the discussions on the law changes approved by the Senate earlier this year, removing the guarantee of national



control in the exploitation of pre-salt blocks, which Petrobras was expected to perform.

Although the current government is interim, thus temporary, there is a clear inclination to proceed with permanent changes, regardless of the negative impacts that may exist. Unfortunately, it seems that an old terminology that summarizes the major lines in dispute on the national political scene in two great antagonistic political and ideological forces still applies: the “nationalists” and the “entreguistas”². The interim government seems strongly inclined to adopt submissive policies in strategic

² *Entreguista*, a term widely used in the Brazilian political debate, is pejoratively applied to advocates of the free market regime in strategic sectors. The term comes from the notion of handing over (in Portuguese *entregar*) a state-owned company to the foreign capital.



Photo by Regys Macedo/Arquivo pessoal

sectors including oil exploration. Among the symptoms of that stance, we highlight the predisposition of the current government to hand over the most profitable assets of Petrobras in an accelerated process of privatization that can cause incalculable long-term damage for the capacity of energy planning of the government, that is, these effects are clearly contrary to the national interest.

Panorama: Some regions of Brazil, which until recently were economically less developed, have witnessed a significant and relatively rapid progress with the activation of Petrobras' investments throughout the 2000s. In the case of Rio Grande, a city in the southern State of Rio Grande do Sul, the company's purchases strongly boosted the local shipbuilding sector, which,

between 2010 and 2014, hired nearly 7,000 employees. Given the revision of the investment policy of Petrobras, what are the possible impacts for this region, in your view?

Petrobras' decision to prioritize the acquisitions of ships and oil platforms in the country through a policy of "local content" was primarily responsible for the revival of the Brazilian shipbuilding industry. There is talk of revival because during the neoliberal decade of the 1990s our shipbuilding industry, which was among the five largest in the world in the 1980s, was literally "wiped off the map." In 2000, what was left of the Brazilian shipbuilding industry employed only about 2,000 workers. In 2003, the administration of President Lula decided to change this situation with the local content policy for purchases of ships and oil platforms for Petrobras, launching

the Mobilization Program of Oil and Natural Gas Industry (Prominp). Although the program struggled to raise the percentage of national high-tech content, it was enough to enable the Brazilian shipbuilding industry to rise from the ashes, regaining its position among global leaders, employing over 80,000 workers in 2013-14. Until then, Petrobras kept its accelerated investments and Brazil seemed to avoid significant consequences of the global economic crisis. It is no coincidence that in 2013 President Dilma reached her highest approval ratings, which surpassed those of President Lula.

However, the economic crisis began to affect Brazil more directly from 2015 on. The fall in oil prices, which reached US\$ 30 a barrel, has deeply affected the investment expectations of the oil industry all over the world. But Petrobras

has been hit harder, and has started to reduce its investments, thus affecting the shipbuilding industry.

Among the factors that have worsened the economic crisis, we draw attention to the corruption scandals involving several politicians of the government coalition and big national companies, including Petrobras and the largest contractors in the country. The judicial operation named as “Operation Car Wash” has provoked the paralysis of the main Brazilian contractors, as well as the interruption of many of the ongoing public works, resulting in a serious crisis over the construction sector of the country, eventually intensifying the economic and social crisis. In that context, we witnessed a strong re-articulation of the opposition with the participation of sectors hitherto allied with the government and the establishment of a serious political crisis. Among the main results, we observe the deepening economic crisis and the political-institutional breakdown that led to the replacement of the elected government with an interim administration.

In this process, Petrobras was constrained to reconsider its investment plans, especially taking into account the unstable political environment and the economic crisis. The interim government has further performed the policy of spending cuts in Petrobras' investments, foreseeing more significant reductions in future investments. This year alone, the construction of 11 new oil tankers was



Photo by Régis Macêdo/Arquivo pessoal

“Petrobras' decision to prioritize the acquisitions of ships and oil platforms in the country through a policy of 'local content' was primarily responsible for the revival of the Brazilian shipbuilding industry”

cancelled, many shipyards went bankrupt all over the country and the production of some oil platforms has been transferred to foreign shipyards. In Rio Grande, platforms that were already commissioned had their contracts cancelled and more than half of the jobs in the local shipbuilding industry have already disappeared. However, the resumption of Petrobras' investments in the purchase of ships and platforms will depend on both the pace of the recovery in oil prices (which may take about two years to stabilize) and on the outcome of the current political crisis in the country. If the result is favorable to the company and the local content policy, the recovery of investments in ships and platforms should take place in the coming years, that is, it tends to be slower and more gradual than the ideal for the shipbuilding industry.

Oil property regimes: some brief Latin American case studies



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At the heart of the discussion on the natural resource property regimes, a question seems recurrent: is the public or private control over natural resource an ideological choice? Perhaps the answer is yes, but not as a mere economic decision on the most desirable way of organizing social production, but as a logical result of quite obvious political interests, especially in producing regions such as Latin America.

The role that energy resources play in the functioning of national economies confers a strategic meaning to their management in such a way that it integrates the economic issue into their own national security and the reproduction of power relations at multiple levels. Currently, oil supply is about one-third of the world primary energy mix, and in countries like Mexico and Venezuela this proportion exceeds 50%. Moreover, the 12 world's largest producers alone had offered more than 72% of the world's total in 2014, among which are Mexico, Venezuela and Brazil. Therefore, to understand the contractual

production arrangements, one needs to grasp the political and economic peculiarities of each country on at least two levels: their relationship with the international system and their domestic political game.

Internationally, the political dimension of the economic exploitation of oil became clear to the actors of the international system at least since the Arab embargo of 1973, causing the first major oil crisis. In the terms coined by Keohane and Nye¹, the “complex interdependence” among national economies involves “vulnerabilities” and “sensitivities” in relation to the international political and economic system. In the case of oil, sensitivity refers to its intensive use in the primary mix, while vulnerability is linked to the ability to withstand sudden cuts in supply. For no other reason, in the 1970s, the main consumer countries inaugurated the practice of keeping strategic reserves. Thus, the control of oil production is a source of power in the purest sense of the definition laid down by Robert Dahl: it gives its holders the ability to compel others to act differently than they would act otherwise.

On the domestic front, the level of state ownership of oil revenues, whether through the exclusive exploration or the different forms of taxation, should be considered as any other public policy. The greater the potential for income

“Internationally, the political dimension of the economic exploitation of oil became clear to the actors of the international system at least since the Arab embargo of 1973, causing the first major oil crisis”

generation, the higher is the incentive for its “search” by private or public agents, either for personal gain for the clientelistic channeling. This behavior results from at least four elements: its own endowment resources; the immobility of sector assets, which easily subjugates them to taxation or nationalization; the heterogeneity level of social cleavages, which is associated with the “cost of repression” by excluding these demands from the final policy choices; and the level of political “decisiveness” conferred by constitutional arrangements on the mechanisms of legal reform.

The three largest economies in Latin America, Brazil, Mexico and Argentina — besides Venezuela, which holds the

1 KEOHANE, R.; NYE, J. Interdependence in world politics. In: KEOHANE, R.; NYE, J. **Power and interdependence: world politics in transition.** Boston: Little Brown and Company, 1972. P.03-22.

largest proven reserves in the world —, are the cases highlighted here. In common, at the domestic level, the four countries have presidential democratic regimes, marked by strong centralized decision-making, as well as significant social pressures for redistribution. But the similarities stop there.

At the international level, these countries present very distinct conditions. Mexico and Venezuela, as net exporters, have low vulnerability, although the abundance of oil significantly increases the intensity of its use in the primary energy mix. In both, the international dynamics is presented

as a heavy pro-tax vector and/or industry nationalization, since the direct control of resources allows for its use for both secondary political ends in the diplomatic level and the administration of domestic prices, cushioning sensitivity to exogenous shocks in the international commodities market. Some of the key indicators are presented in the table.

Following a worldwide trend to reduce the supply of oil in the primary energy mix, which in 2001 was 36.5% and in 2013 was already 31.1%, these countries' net trade suffered a major setback over the years, except for the

Indicators of trade and oil supply in Latin American countries and in the world — 2001, 2007 and 2013

DESCRIPTION	NET TRADE (1)			NET TRADE/TPES (2) (%)		
	2001	2007	2013	2001	2007	2013
Argentina	20,68	8,6	-1,64	35,3	11,6	-2,0
Brazil	-22,98	-3,65	-16,27	-12,0	-1,6	-5,5
Mexico	78,68	72,82	47,12	53,0	41,5	24,6
Venezuela	147,92	134,38	122,02	278,8	231,6	177,5
World	-	-	-	-	-	-

DESCRIPTION	OIL SUPPLY/TPES (%)			OIL SUPPLY/GDP (3)		
	2001	2007	2013	2001	2007	2013
Argentina	35,5	36,3	36,0	0,057	0,054	0,044
Brazil	47,0	39,3	41,5	0,052	0,043	0,047
Mexico	62,7	56,5	51,7	0,077	0,069	0,062
Venezuela	50,3	51,1	57,3	0,082	0,070	0,083
World	36,5	33,8	31,1	0,067	0,057	0,049

SOURCE: ORGANISATION FOR ECONOMIC CO -OPERATION AND DEVELOPMENT (OECD). EA World Energy Statistics and Balances. Retrieved from <stats.oecd.org/BrandedView.aspx?oecd_bv_id=enestats -data-en&doi=data-00510-en> on Jun. 20, 2016.

NOTE: The decimal point is a comma.

(1) Million tonnes of oil equivalent (Mtoe). (2) Total Primary Energy Supply (TPES). (3) Toe/US\$ 1,000 ppp.



Photo by Pablo/Flickr

Brazilian case. Mexico and Venezuela, which do not import, saw their exports fall 40% and 17.5% respectively. Argentina, which in early 2000 was a net exporter of oil, practically zeroed its trade balance, keeping the balance by redirecting its production, which has remained stable for domestic consumption. However, Brazil, whose commodity trade balance was negative in the early 2000s, reached self-sufficiency and saw its exports grow rapidly from 2003 onwards.

Domestically, differences are also relevant. Brazil and Argentina have diversified industrial matrices and thus more heterogeneous domestic business lobbies, although the security of the domestic supply is a common interest to all sectors. Still, they have a lower relative resource endowment, although the expansion of Brazil's potential with the pre-salt oil field has high incentives for the strategic orientation of the property policy in the country. Until then, the lower political and economic opportunity costs were favorable to the adoption of more market-oriented

property regimes in both countries during the neoliberal consensus of the 1990s, a process reversed from the 2000s on.

In 1991, the **Plan Argentina** released the new discoveries of reserves from being shared with the state-owned Yacimientos Petrolíferos Fiscales (YPF). In the process of privatization since 1992, the sale of the company's assets was completed in 1999 with 98.23% acquired by Spain's Repsol. Since 2002, when the country was experiencing a reasonable surplus with oil exports, the government established a 20% tax on exports of crude oil and 5% on derivatives, followed by a series of resolutions to accommodate domestic price stability and supply. Until 2007, the tax was expanded, and after that there came to be a declared policy of appropriation of the extraordinary profits for the financing of state policies². With the gradual shift towards domestic consumption, even the low prospect of income generated in the sector did not interrupt the process of progressive intervention, and in 2012

² CAMPODÓNICO, H. Gestión de la industria petrolera en períodos de altos precios del petróleo en países seleccionados de América Latina. CEPAL: Santiago. 2009.

the Argentine government decided to expropriate 51% of YPF, a process which ended in 2014 with the compensation agreement to Repsol. The oscillation of the Argentine policy shows the result of a perspective of uncertain or relatively small gains, but focused on ensuring domestic supply.

The same liberalization process of the 1990s reached Brazil when the country's potential as a player in the sector was still debatable. By 1995, Petrobras had a monopoly of all activities related to the national territory, when a constitutional amendment allowed the entry of private capital into the sector. The deregulation of the oil market was defined in 1997 with the so-called Petroleum Law, which also created the National Petroleum Agency (ANP), responsible for public auctions of exploration wells. If, on the one hand, it can be said that the country has maintained a market-oriented policy in the period, it is also true that it was a moderate orientation, because Petrobras continued being mostly a public company, besides the fact that the formal monopoly industry belongs to ANP. With the discovery of reserves in super-deep areas, there was a new perspective for the country in relation to the global supply and to the potential income generation. The country could become the planet's sixth largest holder of reserves, so it is not surprising that a new system has been built for the specific operation of such wells. The so-called system of "production sharing"

“By 1995, Petrobras had a monopoly of all activities related to the national territory, when a constitutional amendment allowed the entry of private capital into the sector”

presented a change of direction: instead of the operator company that controls the well to own the resources, paying royalties to the Brazilian government, the government became the legal owner of the resource even after being extracted.

In Mexico, also endowed with a heterogeneous production matrix, the more centralized institutional arrangement with the long duration of the Partido Revolucionario Institucional (PRI) in power (1929-2000) combined with the high-potential income of the sector, resulting in stable publicly owned strategic policies for decades. The state-owned Petróleos Mexicanos (Pemex) was the owner of the monopoly of all the hydrocarbons industry stages in the country since the Constitution of 1917. From that moment on, all state-owned investment decisions had to go through

Congress, with the initiative of the executive. However, this high operative centralization has also become one of the favorite explanations for the lack of investment and the fall in production, eventually leading to the increased support in the private capital and to the sale of securities in the international market. Since 1995, it began to allow private operation in the distribution and then production of natural gas, a movement that preceded the opening of the country to private exploitation of oil reserves in 2013. The pro-market movement seems contradictory in a country with such production potential, but it gets its support from the significant drop in export revenues and in the Mexican role as an international player as well as from the encapsulation of its foreign policy interests and its economic pseudo-annexation in the North American context.


Finally, Venezuela has the most centralized arrangement from the political decision-making point of view, a less heterogeneous society from the

productive and socio-economic standpoint, and a strong demand for redistribution of its huge oil revenues. The result is a property policy strongly controlled by the state, with a strategic bias. Monopolized by the state company *Petróleos de Venezuela S.A. (PDVSA)* since its nationalization in 1975, oil production in the country had its opening to private capital in 1991, with public-private partnerships in marginal fields, such as the Orinoco Belt, endowed with low-quality heavy oil. In 1995, the Venezuelan Congress approved risk explorations and new areas, but with production still under the sharing regimes. Thus, until 2001 PDVSA was only 35% state-owned, a process reversed again in 2002, when governmental ownership throughout the upstream phase was extended to a minimum of 51%. On the other hand, the downstream stage received a double regulation, allowing the refining by private equity in any proportion, but the commercialization would be a public service. Final prices are thus determined



Photo by Mirrele Cortelaira/Flickr

by the government according to its goals, while the Constitution establishes that the State, for reasons of national convenience, including economic and political sovereignty, preserves full ownership of the shares of PDVSA.

The fact is that one cannot speak of an appropriate and universal ownership model of energy resources. Understanding the political and economic dynamics at multiple levels is a necessary condition to understand that public intervention is much more than mere ideological orientation, corresponding to disputes and concrete interests which are peculiar to each nation-state. 

The shipbuilding and offshore industry and the Rio Grande cluster: assessment and prospects

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The shipbuilding and offshore industry is a complex comprising a set of linkage activities over an extended period of time for planning (engineering and contracting) and for the assembly of a final product of high added value. Historically, for military or civilian objectives, the shipbuilding industry has a relatively low internationalization level, where, hierarchically, a great diversity of national structures, different ways of organizing the competition and all sizes of companies coexist.

Although it can be considered mature in terms of technology, the marine and offshore industry has been the subject of continuous evolution in production processes in recent decades. Most of these changes are associated with the pursuit of productivity gains related to the evolution of cutting structures and to the pre-treatment of plates, to the building blocks, to the cargo transport, to the increasing automation of several of these steps and to the expansion of the infrastructure of shipyards, bigger and further rationalized (sheds, dams, logistics for the movement and for the internal control of the shipyard, automation, etc.). Compliance with the delivery time and the quality of the final product constitute significant competitive advantages for leading shipyards and reinforce the importance of innovations in the production process¹.

1 RODRIGUES, F. H.; RUAS, J. A. G. *Sistema produtivo 07: perspectivas do investimento em mecânica*. Campinas: UNICAMP, 2009. Projeto perspectivas do investimento no Brasil. Bloco: produção. Sistema produtivo: mecânica. Documento setorial: naval. Retrieved from <http://www.ie.ufrj.br/projetopib/arquivos/07_ds_mecanica_navai.pdf> on Jul. 8, 2016.

The competitive investment in the naval and offshore sector — the construction of shipyards, the development of engineering and construction companies and local suppliers — requires large amounts of capital with long-term maturity and a relatively stable demand for a long term. In addition to the amortization of the investment and to the necessary capital accumulation for a typical cyclical industry, associated to trade and to global production, this continuity is important for the cumulative technological learning, both in terms of internal processes to the shipyards and in relation to the management of the production chain.

Among the major world producers, the overcoming of barriers to entry in the sector was carried out with broad and diversified stimuli and planning policy, and state productive action, and also through the use, in an initial period, of competitive advantages in the costs of raw materials such as steel and labor (cheap and skilled). These policies allowed the entry of these countries in the sector and the development of national players, stimulating the generation of high added value in a sector with ample productive and technological linkages. In addition to the macroeconomic benefits and technological development in the various stages of the production chain, we should also note the ability of the shipping industry to introduce competition in infrastructural sectors such as transport and energy. These

sectors, while creating horizontal incentives, benefiting various segments through the possibility of greater organization in the transport infrastructure, also enable specific competitive advantages that leverage other accumulation strategies, such as the offshore oil producing countries' industry.

The historical context of the shipbuilding industry can be presented through the leadership alternations over the decades, with the United States and Europe being overtaken by Japan in the twentieth century, South Korea surpassing Japan between 1980 and 1990, and China getting closer to the Korean leadership in the 2000s. Overall, the use of cheap labor matches historically with directing policies for national orders (oil, ship owners and marine), with public financing and the promotion of local businesses in all leading countries. These same features can be found in other cases, such as the shipbuilding industry of Singapore, Norway — leaders of the offshore segment — as well as in the cases of the emerging countries Vietnam and India.

In the first decade of the 2000s, which was extremely vigorous for the shipbuilding industry worldwide, the two main vectors that can be highlighted as central to the expansion of investment were the positive scenario for vessels demand and the strengthening of national policies for the development of the shipbuilding industry in a larger set of countries, especially facilitated by the growing

market itself and the geographic redirection of demand. In this context, the growth of trade, the value of freight, the oil prices and the participation of developing countries in the activity, especially China, have boosted demand for vessels worldwide².

In Brazil, this evolution of the oil industry enabled great advances in the volume of investment and in the modernization of the national offshore production equipment industry. Recent changes in the shipping industry as well as its limitations are directly associated with the volume and profile of Petrobras' investments and their evolution over the past few years, especially when compared to the previous decades. Institutional changes and the industrial policy of the Brazilian oil and gas industry also fulfilled a decisive role in this evolution. Thus, the 2000s in Brazil were characterized by the vigorous process of the rise of investment in exploration and production (E&P), by intensifying a strategy of driving the demand towards the domestic suppliers and by the progressive structuring of policies and institutions focused on growth and competitiveness of the offshore domestic production. Since the beginning of this period, the signaling of an increase in the amount of orders to the country was accompanied by the completion of contracts with domestic shipyards. This process, in the case of the

“In Brazil, this evolution of the oil industry enabled great advances in the volume of investment and in the modernization of the national offshore production equipment industry”

offshore industry, also presented the expansion of local content in the bidding rounds of the National Petroleum Agency (ANP) as an important transformative element of the productive structure.

Such a scenario was responsible for a movement towards the recovery of the production capacity of the Brazilian offshore industry, which took place in parallel to the resumption of orders for tankers (and, to a lesser extent, cargo ships and container ships), stimulated by Petrobras' Modernization and Expansion of the Fleet Program (Promef). This increase in demand was at the center of the transformation of the productive structure, which has undergone a recovery of idle structures and subsequently began a stage of expansion and consolidation, with the

² For more details, see AGÊNCIA BRASILEIRA DE DESENVOLVIMENTO INDUSTRIAL (ABDI). *Relatório de acompanhamento setorial: equipamentos de produção de petróleo offshore (Epo): estrutura do setor e perspectivas para o Brasil*. Campinas, 2012. Retrieved from <http://www.abdi.com.br/Estudo/000%20-%20neit_EPO_01.pdf> on Jul. 8, 2016.



Photo by Regys Macêdo/Arquivo pessoal

emergence of new players and shipyards. During this second stage, starting at the end of the first decade of the 2000s, not only were there significant improvements in terms of modernization and capacity building of local players, but new challenges have also emerged. Among them, the very rapid growth of the sector and the need to accommodate the implementation of major projects to tight deadlines. In addition to the recovery process of the shipbuilding industry, the emergence of new shipyards, designed and built based on Petrobras orders, has been an important innovation that emerged from this recovery. The Rio Grande shipyard is an important example of the offshore industry. Its success prompted further industrial densification in its

surroundings, at an early stage, besides the consolidated Brazilian naval and offshore industrial deconcentration. The naval and offshore cluster of Rio Grande and its surrounding area are composed of Rio Grande shipyards — ERG 1 and 2, Honório Bicalho and Estaleiros do Brasil —, and its supply chain is one of the main actors in the recovery of the shipbuilding industry in the country.

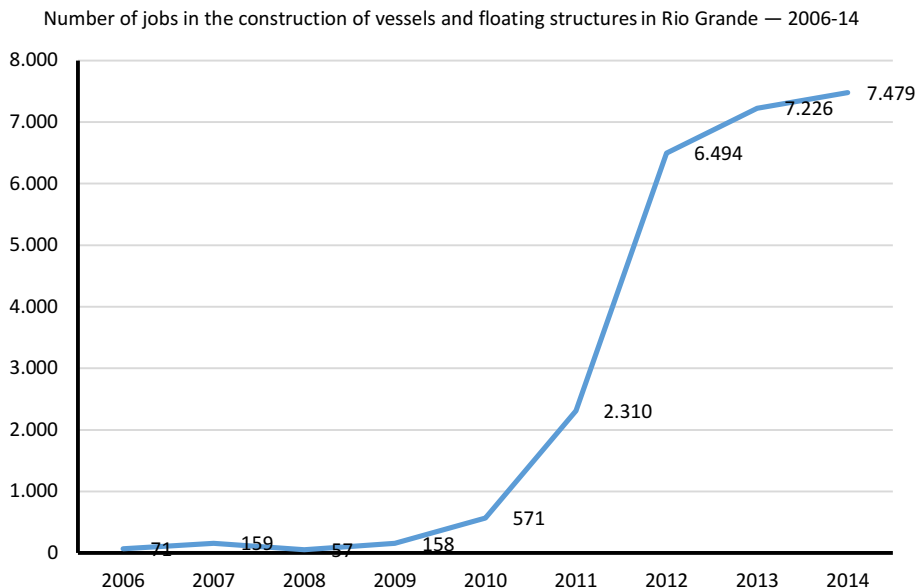
In addition to the expansion of the production capacity, the response on the level of employment was significant. Considering only the construction activities of vessels and floating structures in Rio Grande, direct employment volume in platform manufacturing increased from an average of 111 jobs between 2006 and 2009 to 7,479 in 2014 (Figure 1).

As a result of this expansion, the share of manufacturing activities of other transport equipment in the total Gross Value of Production (GVP) of the state's manufacturing industry rose from 0.8% in 2007 to about 2% in 2014. Within this sector, the construction of vessels has the largest share, increasing from 0.7% of the total GVP of Rio Grande do Sul's manufacturing industry in 2007 to

approximately 1.7% in 2014 (Figure 2).

The share of Rio Grande in the total GVP in the manufacturing activity of other transportation equipment of RS, obtained from the value of fiscal exits of municipalities, increased from 21.3% in 2010 to 95.1% in 2013. In this context, this activity increased from 7.4% of the total revenues of the municipality's processing industry in 2010 to 62.2% in

Figure 1



SOURCE: Brasil. Ministério do Trabalho e Emprego. **Relação Anual de Informações Sociais (RAIS)**. 2016. Retrieved from <<http://bi.mte.gov.br/bgcaged/rais.php>> on Jul. 8, 2016.

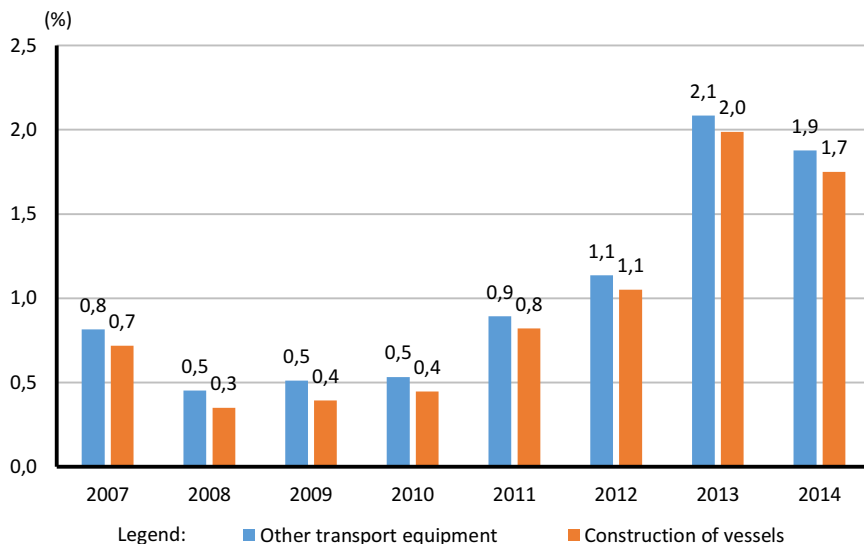
2013, indicating the importance of the shipbuilding cluster for the city and for the industry of Rio Grande do Sul (Figure 3).

Since 2014, however, the segment as a whole and the shipbuilding and offshore cluster of Rio Grande specifically were hit by the crisis. The fall in oil prices from the middle of that year made the world reduce its demand for

ships and floating structures. In Brazil, the progress of the investigations involving Petrobras produced delays in payments, investment decisions and in the expansion of production, which made it impossible or difficult for companies to operate in the sector. The consequences of this crisis were the downsizing of orders and their prices and the employment reduction in the

Figure 2

Share of manufacturing activities of other transport equipment and construction of vessels in the total Gross Value of Production of the RS manufacturing industry — 2007-14



SOURCE: INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). Pesquisa Industrial Anual. 2015. Retrieved from <<http://www.sidra.ibge.gov.br/bda/tabela/listabl.asp?c=1849&z=p&o=23>> on Jul. 8, 2016.

NOTE: 1. The share of construction of vessels in 2014 is an estimate.

2. The decimal point is a comma.

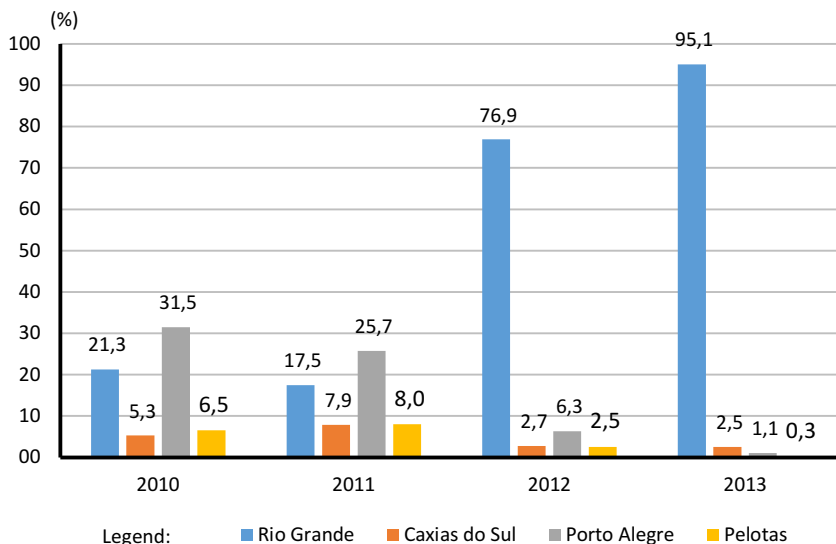
sector. By the end of 2015, considering the peak of employed staff observed in 2013-14, the fall in direct employment in the shipbuilding sector in Brazil was 9,850 jobs, of which 1,730 in Rio Grande (Figure 4). However, if the impacts along the production chain are considered, the reduction of the employment level is much higher.

In addition to the fall in industrial

employment, the impacts from the industry crisis have reverberated throughout the economy, as the country has an innovation system for oil production that is highly competitive in some areas. The continuity of this technological dominance in highly knowledge-intensive activities by a group of Brazilian companies would make it possible to shorten their

Figure 3

Share in the total fiscal exits of the activity of other transport equipment of RS in selected municipalities — 2010-13



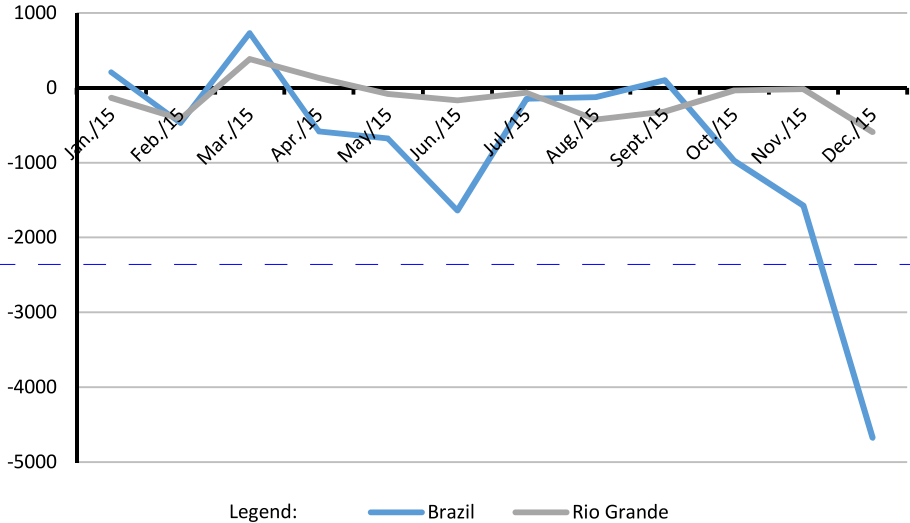
RAW DATA SOURCE: Internal data of the Economics and Statistics Foundation (FEE).

NOTE: 1. Prepared by the Regional Accounts Center of Economics and Statistics Foundation (NCR -FEE).

2. The decimal point is a comma.

Figure 4

Balance of direct employment in the activity of construction of vessels and other floating structures in Brazil and Rio Grande — Jan./15-Dec./15



RAW DATA SOURCE: Brasil. Ministério do Trabalho e Emprego. Cadastro Geral de Empregados e Desempregados (CAGED). 2016. Retrieved from <<http://bi.mte.gov.br/bgcaged/caged.php>> on July 8, 2016.

distance in relation to countries that today are at the technology frontier. This fact shows the impact of Petrobras in the Brazilian economy. In this sense, it is important to resume the deepening of technological development and the mastery of knowledge related to the shipping industry and the oil and gas chain, whose range is not restricted to the oil industry, but it has repercussions in other areas of the economy. With the establishment of a new government in May 2016, the prospects for the sector in Brazil and for the shipbuilding cluster of

Rio Grande will depend on the conditions of the international oil prices, the direction of industrial policies and the role to be played by Petrobras in this process. **P**