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# **Conflicts over Mineral Rents in Petrofederations**

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**Abstract**

Federal countries face critical decisions about how to deal with the wealth of their mineral resources, oil in particular. Building consent and avoiding opposition is difficult when regional governments and municipalities possess varying degrees of autonomy from the central government. The scale of the resources at stake often brings the interests of exploiting regions, other regions, and the central government into opposition. This paper is a summary of the first part of a research study of how oil wealth influences federal fiscal relations. Using qualitative comparative analysis, this paper provides a map and an explanation of intergovernmental disputes in twelve petrofederations: Argentina, Australia, Brazil, Canada, India, Malaysia, Mexico, Nigeria, Pakistan, Russia, USA and Venezuela.

**Keywords:** Oil, Federalism, Argentina, Australia, Brazil, Canada, India, Malaysia, Mexico, Nigeria, Pakistan, Russia, USA, Venezuela.

## Introduction

Compared to unitary countries, federations face special issues in dealing with oil and resource wealth. Federal countries need to make decisions about taxes and regulations while taking into account the different powers that their states or provinces could exert on the process. The sizeable resources at stake can bring the interests of exploiting regions, other regions, and the central government into opposition. Recent studies have examined the challenges that mineral resources, oil in particular, bring to the management of a state's political economy (Sachs and Werner, 1995; Karl, 1997; Humphreys *et al.*, 2007; Dunning, 2008).

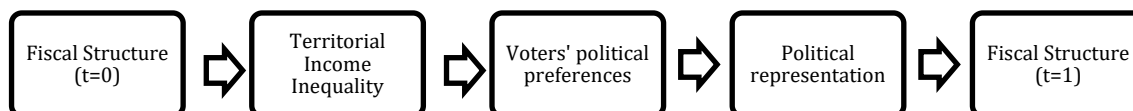
The outcomes of these federal disputes determine not only the territorial allocation of fiscal resources, but also the impact of this wealth in the political economy of a country. In the short term, these outcomes influence the government's ability to manage macroeconomic and budgetary fluctuations. In the long run, there are impacts on social, regional or intergenerational equity.

This paper summarizes the first part of a research study that identifies how oil wealth influences federal fiscal relations. First, it employs qualitative comparative analysis to map and understand intergovernmental disputes in twelve petrofederations: Argentina, Australia, Brazil, Canada, India, Malaysia, Mexico, Nigeria, Pakistan, Russia, USA and Venezuela. Second, from individual case studies, the analysis presents a number of hypotheses that will be tested in the next stage of the project, which will also build of a dataset for quantitative testing.

A major obstacle to comparing subnational issues lies in the fact that each country has a unique political and economic context as well as complex intergovernmental relationships. Also, because there is no theory that explains the connection between oil wealth and federal conflict, we must look at a more general practice, namely intergovernmental transfers of funding within federations.

A general conclusion is that regional income distribution affects the distribution of fiscal resources in a federation (Wibbels, 2005; Beramendi, 2007). This territorial inequality also influences the political preferences of the population of each electoral district differently. In turn, political representation and political representatives reflect the preferences of citizens. These representatives are responsible for voting for changes in tax structures. Any fiscal transfers also have an influence on regional inequality (Beramendi, 2012). Figure 1 illustrates this circular relationship and shows how fiscal structures ( $t = 0$ ), by continuous effects of fiscal transfers, affect territorial income inequality. This inequality influences voters' political preferences in each electoral district, which are interpreted by political representation, who take actions which result ultimately in changing fiscal structures at  $t = 1$ .

Figure 1 – Conceptual representation of fiscal structure change in federations



To develop a theory about oil wealth and federal disputes, this project unveils the specific intervening variables of the oil sector underlying the process displayed in Figure 1. Qualitative comparative analysis is used to illuminate those oil sector variables, which constitute the project hypotheses.

Oil extraction and the government processes of controlling, regulating and taxing it are complex. Two terms that have specific meanings in economics but are often misunderstood are oil rents and oil royalties, shown in Figure 2.

**Figure 2: Oil rents and oil royalties**

oil rents	“Oil rents are the difference between the value of crude oil production at world prices and total costs of production.” (World Bank, 2011)
oil royalties	“Royalty is a payment to an owner for the ongoing use of their asset or property, such as patents, copyrighted works, franchises, or natural resources.” (Investopedia.com) When paid on a natural resource owned by a government on government lands, a royalty is a government revenue—but not a tax.

Other aspects to investigate are the triggers that detonate disputes for oil rents. The historical analysis of the cases indicate that these may be economic or political. Economic triggers are positive or negative resource shocks. Oil discovery is an example of a positive shock and significant reductions in federal transfers an example of a negative shock. Political triggers are regime or government changes. These will be examined further in the following section.

There are three criteria for the types of federal conflict examined here:

1. Existence or absence of conflict. (If there is no conflict, the outcome is cooperation)
2. Parties to the conflict: If it is between the central government and subnational units, it's a vertical conflict; if it is among different subnational governments, it's a horizontal conflict
3. Outcome of the conflict: In a vertical conflict, the outcome varies depending on whether the central government or the subnational unit wins

There are four categories of federal conflict examined in this paper:

1. Cooperation (absence of conflict)
2. Horizontal conflict (among subnational units)
3. Vertical conflict won by subnational units
4. Vertical conflict won by central government

A broad categorization of the intervening variables is shown in three vectors in Figure 3.

**Figure 3—Independent variables of conflicts over oil rents**

<p>Vector 1: Oil rents</p> <ul style="list-style-type: none"> <li>a. Ownership: Who owns the resources?</li> <li>b. Management: Who manages the sector?</li> <li>c. Distribution: How is revenue distributed?</li> </ul>
<p>Vector 2: Oil sector importance</p> <ul style="list-style-type: none"> <li>a. Central government: How important is it to the country?</li> <li>b. Subnational: How important is it to each subnational unit?</li> </ul>
<p>Vector 3: Oil rents in the federal redistribution policy:</p> <ul style="list-style-type: none"> <li>a. Is there a federal fiscal imbalance between the central government and regions?</li> <li>b. Is there a fiscal equalization system that evens out income or revenues among subnational units?</li> <li>c. Are oil rents used for regional equalization?</li> </ul>

The first vector is the centralization of oil resources, based on three elements: resources property, sector management, and distribution of revenues. These interrelated elements produce a net result that determines both resource allocation and the ability of subnational units to claim resource redistribution. The second vector points to the national and sub-national importance of the oil sector, indicating the potential for conflict over oil-related resources. The third vector addresses the distribution of oil rents, and encompasses redistribution of oil revenues, the redistributive policy across the subnational units and how oil revenues are allocated in federal fiscal redistribution. This vector includes vertical fiscal imbalance, fiscal equalization systems and the use of oil revenues for regional equity.

The three vectors characterize the country's oil sector political economy and in combination comprise the sector's specific institutional setting. These vectors are analytical keys to understanding how the oil economy influences outcomes in the different countries.

The following sections outline each petrofederation's most relevant features and also present a comparison of the effects of the vectors.

### **Oil disputes in federations: the cases at a glance**

The following provides an outline and context of each country's pivotal aspects in its petrofederation dispute: the type of federative conflict, the conflict trigger, and other relevant country-specific information.

In Argentina, there is conflict between oil-producing provinces and the central government. Despite the fact that ownership of oil reserves lies with subnational units, the central government has been able to impose its preferences in the two conflicts analyzed. The first occurred in the early 1990s, and was triggered by a government change as part of market-oriented economic reforms. This oil sector reform struck a bargain in which oil producing provinces received ownership of oil reserves from the Federal level. In exchange these provinces supported the central government's initiative to privatize the

Argentinian National Oil Company, Yacimientos Petrolíferos Fiscales (YPF). The second conflict, and the reform which laid the foundations for it, was influenced by the massive 2001 Argentinian economic crisis. In 2002, the central government reintroduced an oil export tax that led to lower domestic fuel prices and disconnected them from international oil prices. As a side-effect of this tax, investment in oil exploration activities were discouraged, resulting in lower oil production. It also decreased the royalty revenues of producing provinces, leading to increased federal conflict (Zapata, 2012). YPF renationalization in 2013 further centralized the management of the sector.

In Australia, federal cooperation prevails. The oil sector features free market orientation, oil exploration by private companies, and state oversight through market regulation. Mineral revenues are included in the federal equalization process, alleviating the existing regional inequality of mineral resources. Oil is less important than minerals such as iron and coal—two resources which do generate federal conflict. Changes that took place in oil sector regulation reflect the changes in the composition of the federal government (i.e. the political parties which formed that government), which led to more liberal or more interventionist rules (Crommelin, 2012). Legislation over fracking is a responsibility of each state, leading to divergent trajectories on non-conventional oil production.

Brazil has experienced two federal conflicts over oil resources: vertical disputes won by oil-producing states; and horizontal disputes between producing and non-producing states. The first conflict occurred in the late 1980s during the democratic transition and led to decentralized oil royalties—a move that favoured the oil producing states. There was, however, a trade-off: a change in decision on which state benefited from the VAT on fuel. In Brazil, VAT is normally credited to the state of origin, but as a result of the reform process the fuel VAT became a destination-state resource. The second conflict took place following the discovery of massive oil reserves in deep waters, which led to disputes between the non-producing and producing states. In this instance the federal executive supported the oil-producing states. While these states are rich and populous, they do not make up a majority of Congressional votes and thus were defeated in the federal legislature. The dispute is currently being tried in the Supreme Court (Gobetti *et al.*, 2012; Trojbecz 2019). In 2014, the Profit Sharing regime was modified, releasing Petrobras<sup>1</sup> from the compulsory participation in all deep-water explorations.

In Canada, federal disputes occur between oil-producing provinces and the federal government. They have typically been won by the provinces, but with some variation according to place and time. Triggers for disputes are oil discoveries and, similar to the Australian case, changes in the tax structure as a result of a change of government (Plourde, 2012).

In India, federal disputes are mainly vertical and generally won by the central government. They are triggered by oil discoveries. The two main changes in fiscal structures were implemented in the late 1970s and in the 1990s, and led by the central government. The first introduced private investment to the sector but kept some privileges for the Indian oil companies. The second represented a move towards liberalization, with equal conditions for foreign investment. In both changes, the central government remained predominant and kept oil resources highly centralized. (Noronha *et al.*, 2012). The government introduced the new Hydrocarbon Exploration and Licensing Policy (HELP) in 2016 in order to boost private investment and oil production.

In Malaysia, changes in the fiscal structure of the oil sector were a consequence of the economic impact of the 1970s hike in oil prices, as well as party changes in regional level governments. Highly centralized

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<sup>1</sup> The publically-held Brazilian Petroleum Corporation



revenues and expenditures result from the Union control over Petronas<sup>2</sup>. The corporation acts as both operator and industry *de facto* regulator, which empowers the central government to direct oil revenues politically, transferring resources according to the party alignment of the subnational units' governments (Hui, 2012). However, the 2018 conflict between Petronas and the province of Sarawak defied the ownership of resources by the central government, as the subnational unit has claimed provincial control over oil reserves. Sarawak holds most of Malaysia's oil reserves and gas liquefaction plants.

Mexico has a highly centralized federal system and as a result the central government dominates revenue distribution. This was partially attributed to the unifying effect of the PRI's<sup>3</sup> hold on power from 1929 to 2000. However, in the second half of the 2000s subnational governments managed to increase resource redistribution through pressure groups on the federal executive. The 2008 and 2014 liberalization processes aimed to reform the fiscal structure of the oil sector. These were central government initiatives motivated by a decline in oil production. This decrease can be explained by federal government budget overreliance on Pemex<sup>4</sup> transfers that led to insufficient investment, decreased production and crisis (Carreon-Rodriguez *et al.*, 2012). The new left-wing Mexican government which took office in 2018 suspended oil block auctions until 2021.

In Nigeria, producing states successfully increased their ownership of oil reserves in 2004 through a Supreme Court ruling. This led to horizontal conflict with non-producing states, with the dispute once again ruled on by the Supreme Court in 2005, favoring conflict mitigation over the constitutional principle of federal ownership. The grievance centered on the "principle of derivation", that provides the central government the discretion to allocate at least 13% of all revenue derived from minerals, and which are distributed mainly to producing states (Iledare *et al.*, 2012).

In Pakistan, federal cooperation predominates on oil issues, as all four provinces have oil reserves. In addition, provinces receive exploitation tax benefits through federal transfers. The high level of concentration that characterized the Musharraf dictatorship (1999-2008) is still reflected in a highly centralized federal system despite the ongoing decentralization process (Ahmed, 2012).

The Russian Federation currently features a clear dominance of the central government over the oil sector. Following the collapse of the Soviet Union there was a period of decentralization, during which producing provinces successfully claimed increased benefits from oil exploration. From 2000 on, there was a recentralization process, in which Putin and his majority party in the Duma - Yedinaya Rossiya (United Russia) - played a critical role. This process transferred control of oil exploration back to the Federation, among other changes. (Kurlyandskaya *et al.*, 2012).

In the United States, oil legislation is fragmented and consists of *ad hoc* decisions made depending on the time and geographical location of reserves. Changes in legislation do not relate directly to the federal dispute, but have an impact. (Mieszkowski *et al.*, 2012). Regulation of fracking lies at the state level, allowing for a decision-making process more prone to the influence of interest groups (Warnes and Shapiro, 2013).

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<sup>2</sup> Malaysian state-owned oil company

<sup>3</sup> Partido Revolucionario Institucional (Institutional Revolutionary Party, PRI) is one of the main political parties in Mexico, and held uninterrupted power in the country for most of the twentieth century, forming every Mexican federal government from 1929 to 2000.

<sup>4</sup> Petróleos Mexicanos (Pemex) is Mexico's National Oil Company.

In Venezuela, PDVSA<sup>5</sup> controls the sector and the central government dominates oil industry decisions. Only in the 1990s was there a period of greater decentralization, allowing discussion of federal distribution of resources and during which producing states managed to increase participation in oil revenues (Manzano *et al.*, 2012). Oil production has been decreasing over the past decade - from 3.2 million barrels per day in 2008 to 2.1 million in 2017 (BP Statistical Review of World Energy 2018). This is due to government overreliance on National Oil Company revenues, which has hindered investment in oil exploration and production that would have maintained oil output.

Table 1 shows the predominant federal relationship regarding the distribution of oil revenues for the countries analyzed.

**Table 1 – Winners of conflicts over oil rents**

<b>Argentina</b>	Central government wins vertical conflict
<b>Australia</b>	Cooperation
<b>Brazil</b>	Horizontal conflict
<b>Canada</b>	Subnational unit wins vertical conflict
<b>India</b>	Central government wins vertical conflict
<b>Malaysia</b>	Central government wins vertical conflict
<b>Mexico</b>	Central government wins vertical conflict
<b>Nigeria</b>	Horizontal conflict
<b>Pakistan</b>	Central government wins vertical conflict
<b>Russia</b>	Central government wins vertical conflict
<b>United States</b>	Cooperation
<b>Venezuela</b>	Central government wins vertical conflict

### **Vectors: comparative study and evidence**

This section provides details on the vectors, and lists the specifics in different countries that led to the generalization. The different components of each vector are defined and the values for each country detailed here.

#### ***Vector 1: Oil fiscal regime centralization: resources property, industry management and distribution of revenues***

This first vector indicates whether oil resources are centralized in the central government or decentralized to the oil-producing subnational units. Where there is decentralized ownership of mineral resources by oil-producing subnational units, resource redistribution claims of the central government

<sup>5</sup> Petróleos de Venezuela, the Venezuelan National Oil Company

or of non-producing subnational units have less legitimacy. However, this property may be influenced by industry management centralization (for instance, the central government's ability to set taxes and rates can lower distributed resources by decreasing the fiscal base). Finally, the distribution of resources influences the demand for oil revenues by subnational units that do not benefit from them.

For this vector, it is important to differentiate onshore and offshore explorations. Onshore explorations usually impose greater burdens on a region's environment, while offshore operations have lower environmental impacts.

Resource ownership is the starting point to understand this vector. For offshore reserves, with the exception of Malaysia, all federations assign ownership to the federal level. In the Malaysian case, ownership is shared for continental shelf explorations of Sabah and Sarawak, Borneo Island provinces. This is because those provinces joined the federation later, and negotiated their entry ensuring that they kept oil property (Hui, 2012). Onshore reserves have a greater diversity of ownership. Argentina, Australia, Canada, India and Malaysia attach them to the subnational units. Pakistan, Russia and the United States have shared resource ownership, while Brazil, Mexico, Nigeria and Venezuela assign onshore resource ownership to the central government.

Federal disputes over oil resources depend on the assignment of the ownership of oil reserves. Ownership by oil-producing subnational units decreases the likely success of the demands for oil derived resources by the central government or by non-oil-producing subnational units. In a strict sense, federal conflict is only likely in cases of central government ownership.

However, even for sub-national reserves ownership, it is possible to identify central government actions that manage to redirect part of the resources through oil sector management. National oil companies are instruments that enable the central government to further influence sector management.

The federal government is usually the only actor with responsibility for sector management, for both onshore and offshore exploration. Exceptions to this are found in Argentina, Australia, Canada and the United States for onshore operations, and Australia and Canada for offshore. This enables the central government to influence oil revenue distribution, which happens during vertical federal disputes.

Conversely, decentralized industry management in Canada allows tax rate differences among subnational units, thus providing oil companies with another variable for investment choice. Alberta increased royalty rates in October 2007, which led to a strong industry reaction in the form of a relocation of investment to other provinces. Following this, Alberta reversed the hike and encouraged tax breaks in other provinces (Plourde, 2012: 105).

For the third vector, distribution of revenues, only three countries - Mexico, Russia and Venezuela - give ownership of onshore exploration resources exclusively to the federal government. As for offshore exploration, the federal government is the most frequent controller of resources, except in Brazil, Canada, Malaysia and Nigeria.

Table 2 summarizes the elements of centralization of the oil fiscal regime and identifies which type of exploitation prevails in each of the countries under review. The last column tentatively determines the nature of the exploration regime, either centralized or decentralized, on the basis of the data contained in the other columns.

Table 2 – Oil sector fiscal regime nature and prevailing exploration type

	Onshore			Offshore			Prevailing type of exploration	Oil sector fiscal nature
	Reserves ownership	Sector management	Resource distribution	Reserves ownership	Sector management	Resource distribution		
<b>Argentina</b>	Subnational units	Subnational units	Subnational units and federal	Federal	Federal	Federal	Onshore	Decentralized
<b>Australia</b>	Subnational units	Subnational units	Subnational units	Federal	Joint	Federal	Offshore	Decentralized
<b>Brazil</b>	Federal	Federal	Subnational units, Federal and Local	Federal	Federal	Jurisdictions, Federal and Local	Offshore	Centralized
<b>Canada</b>	Subnational units	Subnational units	Subnational units and federal	Federal	Subnational units and joint	Subnational units	Onshore	Decentralized
<b>India</b>	Subnational units	Federal	Federal and Subnational units	Federal	Federal	Federal	Offshore	Centralized
<b>Malaysia</b>	Subnational units	Federal	Federal and Subnational units	Federal and Bornéu Subnational units	Federal	Federal and Bornéu Subnational units	Offshore	Centralized
<b>Mexico</b>	Federal	Federal	Federal	Federal	Federal	Federal	Offshore	Centralized
<b>Nigeria</b>	Federal	Federal	Federal and Subnational units	Federal	Federal	Federal and Subnational units	Offshore	Centralized
<b>Pakistan</b>	Joint: 50/50	Federal	Subnational units	Federal	Federal	Federal	Unclear	Centralized
<b>Russia</b>	Joint	Federal	Federal	Federal	Federal	Federal	Onshore	Centralized
<b>United States</b>	Subnational units, Federal and private	Subnational units and Federal	Subnational units and private	Federal	Federal	Federal	Unclear	Decentralized
<b>Venezuela</b>	Federal	Federal	Federal	Federal	Federal	Federal	Onshore	Centralized

A number of generalizations can be made in relation to this first vector. First, the demands from non-oil-producing subnational units for greater participation in the generated resources are bolstered by the central government owning the oil reserves. Subnational ownership makes those claims less credible. Second, central government sector management allows that government the discretion when subnational governments own the reserves. Third, central government resource centralization makes demands for equitable distribution easier, indicating that resource centralization is a step towards redistribution.

### *Vector 2: Oil sector national and regional importance*

The second explanatory vector is the oil sector's economic importance, both for the country and for the producing subnational units. This is a good measure of potential federal disputes and is often defined by the power relationship between central government and subnational units, which in turn reflects spatial concentration of resources in relation to the distribution of the population within the country.

Invariably, oil resources are important for oil-producing subnational units, while the national importance varies depending on the sector's economic weight. National sector importance can change in the same country for different commodities, based on their economic contribution. The sector's importance may also change over time, following a resource shock. Therefore, a relevant oil sector increases the likelihood of federal disputes. In this study, oil sector relevance at national level is determined to be either dominant, important, significant, or small—based on the oil sector's proportion of the country's GDP.

Among federal countries, the oil sector dominates the economy in Nigeria and Venezuela. Nigeria is among the 10 nations with the largest oil reserves. At the end of 2013 these reserves were estimated to be 37.1 billion barrels. Production expanded significantly in the 2000s and reached 2.4 million barrels per day in 2010. Although oil represented almost all of the country's exports in 2008, the sector's share in GDP declined from 48% in 2000 to 28% in 2010, while gross oil revenues represented 82% of gross federal revenue (Iledare *et al.*, 2011: 229). In Venezuela<sup>6</sup>, the oil sector accounted for 96% of its exports in 2012, comprising the largest source of government revenue (40% to 60%). The sector accounts for approximately 15 to 25% of national GDP (Manzano *et al.*, 2011: 339), and oil revenues made up almost 27% of GDP in 2012 (World Bank).

The federal countries where the oil sector is important are Malaysia, Mexico and Russia. Following the discovery of oil in ultra deep waters, Brazil is also now considered to be part of this group. In Malaysia the sector has contributed 20% of federal government revenues since 1985. The industry grew from 8% of GDP in 1999 to 17% in 2008 (Hui, 2011). In Mexico, oil revenues accounted for nearly 7% of GDP in 2012, and 15% of exports were oil. In Russia, the sector represents 20 to 25% of GDP, and came to contribute 50% of total public revenues. The Russian economy is more dependent on world oil prices than the performance of its non-oil sectors (Kurlyandskaya *et al.* 2011: 284). The oil sector in Brazil is in transition. While it had proven reserves of 15.6 billion barrels at the end of 2013, the discovery of oil in ultra deep waters indicates that this volume is expected to grow substantially in the coming years. In addition, after years of producing close to two million barrels a day, there was a substantial growth in production in 2014. In 2005, the oil sector accounted for 10.5% of GDP, and reached 13% in 2014.

In Canada, the sector has significant relevance and corresponded to 3.2% of GDP in 2008. Reserves increased and changed geographically with the Newfoundland and Labrador offshore oil discoveries, reaching 174.3 billion barrels at the end of 2013, with daily production of 3,948 million barrels (Plourde, 2011).

Argentina, Australia, India, Pakistan and the United States all have small oil sectors in relation to their economies. In Argentina, the sector share contributes approximately 6% of GDP. However, the sector has always been considered strategic for economic development. In 2008, oil reserves were 2.5 billion barrels, and they have been decreasing steadily in recent years (Zapata, 2012). In Australia, oil revenues account for less than 1% of GDP. Oil exports account for 8% of the country's total exports. To date, oil revenues have not impacted on federal relations in a meaningful way, but that could change with new investment in attractive onshore projects, given the fact that other minerals have generated federal conflicts (Crommelin, 2012). In India the sector, although small, is a source of major revenue for the Indian treasury, accounting for over 23% of its exports in 2012. In Pakistan, the oil and gas sector has never been a central theme in the federation, and the volume is limited to around 20% of the oil

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<sup>6</sup> Recent economic turmoil in Venezuela after 2013, including the expressive production loss will not be assessed.

consumed internally (Ahmed, 2011: 259). In the United States, the oil sector used to represent 1.2% of GDP, which is small in comparison the country's economy (Mieszkowski *et al.*, 2012). The oil boom of shale gas, however, has been magnifying the sector, with some reports indicating all oil now represents around 8% of GDP (American Petroleum Institute, 2019). As the shale gas production level is still unstable, it is not possible to determine how much the importance of the US oil sector will change.

Table 3 summarizes indicators of the national importance of the oil sector for petrofederations.

**Table 3 – Oil sector importance indicators**

Country	Proven oil reserves 1 *	Production 2*	Oil rents as a % of GDP 3	Oil export in relation to total exports (2012)	Oil sector as a % of GDP	Oil sector revenues as a % of public revenues	Oil sector revenues as a % of federal revenues
Argentina	2.4	656	0.83	8.1%	6.5% (2007) <sup>7</sup>	7.66%	NA
Australia	4.0	416	2.94	4.4%	Energy 16 to 17% (IEA, 2012)	NA	1.2% <sup>8</sup>
Brazil	15.6	2114	2.73	2.2%	13%	NA	NA
Canada	174.3	3948	3.16	22.6%	3.2% (2008)	NA	NA
India	5.7	894	1.25	23.7%	NA	NA	2.5% <sup>9</sup>
Malaysia	3.7	657	5.97	12.0%	17% (2008)	NA	20% <sup>10</sup>
Mexico	11.1	2875	6.79	14.0%	7% (2012)	NA	32% <sup>11</sup>
Nigeria	37.1	2322	15.31	99.9%	35% <sup>12</sup> 28% (2010)	NA	70% 82% <sup>13</sup> (2010)
Pakistan	<1.1	<260	0.88	4.2%		NA	NA
Russia	93.0	10788	13.93	53.7%	20 a 25%	28.3%	NA
United States	44.2	10003	0.90	7.9%	1.2%	NA	3%
Venezuela	298.3	2623	26.73	96.1%	25% <sup>14</sup>	NA	Between 40 and 60% <sup>15</sup>

1 In billion barrels equivalent, data for 2013. Source: BP Statistical Review of World Energy 2014

2 In thousands of barrels equivalent daily, 2013

\* Includes crude oil, tight oil, oil sands and NGLs (the liquid content of natural gas where this is recovered separately). Excludes liquid fuels from other sources such as biomass and derivatives of coal and natural gas

3 Source: World Bank, 2012

4 Source: Economy Watch (IMF)

5 Source: World Bank, in billion current US dollars (BoP)

<sup>7</sup> Source: Abraham and Scheimberg (2008)

<sup>8</sup> Source: Crommelin, 2012:51

<sup>9</sup> Source: Noronha et al., 2012:133

<sup>10</sup> From 1985 to 2010, includes royalties, Petronas dividends, oil income tax and export taxes (Hui, 2012:168)

<sup>11</sup> Between 1990 and 2010, oil revenues represented in average 32% of federal revenues (Carréon-Rodrigues, 2012:205)

<sup>12</sup> Source: OPEP

<sup>13</sup> Between 1998 and 2007 (Iledare et al., 2010:238)

<sup>14</sup> Source: OPEP

<sup>15</sup> Source: OPEP

In almost all countries, oil reserves are located in sparsely populated subnational units. This generally allows for greater central government control, as those oil-producing subnational units do not have enough political power to enforce their interests. The exceptions are Brazil and India, where the oil-producing states are populated, and Pakistan, where all provinces have hydrocarbon reserves. Table 4 details information about oil-producing subnational units' population and political representation.

**Table 4 – Oil-producing subnational units regional influence indicators**

	Subnational units (A)	Subnational units with reserves and production (B)	Federal Impact (B/A);	Producing subnational units Upper Chamber representation	Producing subnational units population (C)	Producing subnational units Lower Chamber representation
Argentina	23+ Federal capital	5	21.7%	20.8% <sup>16</sup>	9.2%	11.6%
Australia	6 + 2 territories	2	25%	31.6% <sup>17</sup>	35.9%	34.7%
Brazil	27	3	11.1%	11.1%	31.8%	24.6%
Canada	10 + 3 territories	3	23.1%	17.1	16.2	16.1
India	29 + 7 territories	2	5.6%	7.3%	7.8%	7.2%
Malaysia	13 + 3 territories	3	18.8%	9.5%	29.1%	28.8%
Mexico	31 + Federal District	2	6.3%	4.7%	2.65%	2.6%
Nigeria	36 + Federal capital	6	16.2%	16.5%	15%	15.8%
Pakistan	4	4			100%	
Russia	21 republics, 7 krais, 48 oblasts, 5 autonomous okrugs and 2 federal cities= 83 <sup>18</sup> subnational units	2	2.4%	2.4%	1.45%	NA
USA	50 states, 1 federal district, 2 federacies, 3 associated states, 3 local home-rule territories, 3 unincorporated territories, and 130 Native American domestic independent nations.	6	12%	12%	23.9%	24.1
Venezuela	23	3	13%	Unicameral	22.3%	15.3%

A number of generalizations can also be made in relation to this vector. First, the greater the importance of the sector to a country's economy, the greater the likelihood of conflict between governments. Second, oil-producing states with smaller populations and weaker legislative representation are more

<sup>16</sup> Provinces and the Federal capital have a representation of three senators, totalling 72.

<sup>17</sup> Source: Australia (2015)

<sup>18</sup> In Federal Council website (<http://council.gov.ru/en/>, accessed on 04/13/2015), there are 178 representatives, two for each jurisdiction.

likely to be confronted by the central government and lose. Third, centralization of resources is a prerequisite for distribution.

### ***Vector 3: Resources redistribution***

The third vector - oil resource redistribution - consists of three elements: federal vertical fiscal imbalance; use of oil revenues for regional equity purposes; and central government equalizing action. These elements are more difficult to compare across countries on a consistent basis. In this sense, case studies were helpful for a conceptual comparison.

The federal vertical fiscal imbalance in the petrofederations studied is generally high. The exceptions are Canada, which has a moderate fiscal imbalance, and the United States, which has a low fiscal imbalance. As for the other countries studied, the imbalance can be considered very high in Malaysia, Mexico, Nigeria, Pakistan, Russia and Venezuela. Argentina, Australia, Brazil and India have high imbalances.

In the United States, there is no fiscal equalization program and federal income distribution programs are not related to taxes on mineral rents received by the states. The intergovernmental federal welfare initiatives provide some equalization to population income, but do not equalize the incomes of subnational governments for public services. Most resources are directed to low-income populations. The amount of federal aid is substantive—it amounted to U\$ 428 billion in 2006—but the allocation of funds is determined by hundreds of federal programs and does not constitute a coherent system based on state capacity or fiscal needs (Mieszkowski *et al.*, 2011: 326).

In Canada, federal fiscal imbalance is moderate and federal fiscal equalization is calculated according to the provinces' fiscal capacity, rather than fiscal needs. Equalization aims to reduce disparities in fiscal capacity after transfers. There are other important transfers addressed to all provinces according to population, for health, post-secondary education, and welfare. These are substantive, large and impactful. Provinces with low fiscal capacity receive payments directly from the federal government. This program represents less than 10% of federal government annual spending. The degree of inclusion of oil rents in equalization schemes has varied over time from total inclusion to total exclusion, and has been at 50% inclusion for some years. However, the current rules also ensure that all revenues from mineral rents are excluded from equalization in cases in which it would lead to an increase in payments. In addition, the increase in mineral revenues in producing provinces resulted in a decrease in their equalization revenues, leading to a complaint that they had achieved zero benefit from the mineral wealth. Although the reduction in equalization transfers also occurred for other revenue sources, the subject has been treated in an emotional way in the case of mineral revenues. In particular, Newfoundland and Labrador gained special transitional protection to prevent lower equalization payments until they reach national average income. Additionally, as exploration is private and mineral rent is determined for each project, the oil revenues depend on the tax negotiation. Therefore, provincial decisions influence provincial mineral rents, and impact intergovernmental transfers (Plourde 2012).

Russia has a very high fiscal imbalance. Fiscal federalism there has evolved into an almost complete centralization of resource collection, although there is substantial redistribution to the regions. Subnational governments have virtually no fiscal power and cannot pursue an independent fiscal policy.



The Federal Tax Code provides bases and rates for all taxes, and many important federal taxes are shared with subnational units on a *pro rata* basis, which means that each regional budget receives the prescribed proportion of taxes paid by taxpayers registered in the region. Thus, the tax system favors higher tax based regions. Russia has no horizontal equalization program and the vertical equalization stems from the federal budget. The mineral tax redistribution system has evolved with the rise in prices and centralization, and with federal government promoting centralization and distribution of the proceeds of the Mineral Extraction Tax (MET). This has reduced the oil-producing provinces' share in this tax revenue from 60% in 2002 to 0% in 2010. Still, the oil-producing regions remain richer than the national average, in large measure because of the oil refining install base of these regions. The centralization of taxes occurred largely because of the growth of income disparities between regions, which pressured the central government to lower these discrepancies through redistribution. Federal transfers are calculated on a *per capita* basis, without considering the subnational units' fiscal capacity. Producing regions – remote, sparsely populated, and with little political weight - did not fight the centralization of oil revenues. Although there is no direct link between oil resources and regional transfers, the former are responsible for almost 50% of the latter and oil revenues are one important source to equalize a regions budgetary revenues (Kurlyandskaya *et al.*, 2012).

In Malaysia, the federal vertical fiscal imbalance is very high, as the provinces only collect 10% of public spending. However, the fiscal responsibilities of the federal level are far higher than the state level. Malaysia is an asymmetric federation, and Sabah and Sarawak are entitled to special aid. Oil revenues are distributed based on the political alignment of the subnational government. Oil revenues have grown from central government control of redistribution that originated from the public ownership of Petronas<sup>19</sup> and its high profitability, mostly retained. Previously, state governments had a low profile in relation to oil revenues and their priority was to generate employment, added value, and gas for local industry. But given the limited fiscal capacity of the state government, with revenues (including federal transfers) decreasing from 20% of federal revenues in the 1960s to 10% in 2010, there is a growing interest from the non-producing states to participate in the revenues. In early 2010, The oil-producing states on Borneo were in a key position in the government coalition. Their role was to increase provinces' political clout to modify prior arrangements and negotiate a higher participation in oil revenues. (Hui, 2012).

In Mexico, there is a huge fiscal imbalance: states receive 90% of their revenues through federal transfers, and municipalities receive 65%. Mexico is a highly centralized federation and the constitution confers absolute control of the oil sector to the federal government. The system does not give any role to state governments, and even municipalities have greater fiscal capacity than the states. Taxes collected from Pemex - income tax and VAT - are more than 70% of federal revenues. Constitutional transfers are very important and mainly based on the population and the capacity to generate tax revenue. The country has no equalization program and oil revenues are an important element in Mexican fiscal federalism, as part of the general revenue pool that is shared between states and municipalities. Producing states receive very little direct fiscal benefit from oil revenues (Carreon-Rodriguez *et al.*, 2012: 212).

Nigeria has a huge fiscal imbalance, but more than 50% of the central government's revenues are redistributed. Oil revenues account for 82% of all federal revenues. Despite federal ownership and control of oil wealth, the federation has historically included compensatory arrangements for producing states, allocating part of the centrally collected oil revenue according to the state of origin. This is called

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<sup>19</sup> Malaysian National Oil Company

the derivation principle. It guarantees at least 13% of mineral revenues to producing states. Producing states received more than 50% of the total federal transfers in 2008, despite representing only 22.3% of the population. The inequality in federal revenue distribution benefits producing states, based on the wide disparity in *per capita* allocation for producing and non-producing states. Nigeria has no equalization program (Iledare *et al.*, 2012).

In Pakistan, provinces rely heavily on the federal government financially, albeit with relative independence that is constitutionally protected. The growing demand for greater provincial autonomy influenced the constitutional reforms approved in 2010. It increased political and fiscal provincial autonomy and with its implementation, it should influence the country's federalism. Presidential power was supreme during the years of military rule, but governance powers are beginning to rebalance once again as the country undertakes democratization. Pakistan has very centralized tax collection, with almost 90% of the provinces' expenditures paid for with federal transfers. Total taxes as a percentage of GDP are 10.7%, which is very low, indicating a lack of government funding. Pakistan has no equalization program. The vast majority of federal revenues (89%) go into a shared pool. The central government's share of the total resources of the pool has declined from 57.4% between 1991 and 2006 to 53.5% in 2009. The provinces implicitly own onshore reserves but they have no voice in determining their management and the fiscal regime. However, despite this heavy centralization, the provinces receive all the benefits of production in the form of royalties, taxes on gas and gas development. Provincial governments receive revenues related to oil by transfers. These revenues are not included in revenue pool distribution, either vertically or horizontally (Ahmed, 2012).

In Venezuela, oil revenues are highly centralized at the federal level, and states receive only a portion through revenue sharing. Venezuela was the first formally federal country in Latin America to re-centralize revenue collection, even before oil prominence. The assumption of the Venezuelan presidency by Hugo Chavez and the promulgation of the 1999 Constitution resulted in an enormous concentration of power at the presidential level. States and municipalities are funded through national budget revenues derived both from oil and non-oil sectors. Between 1997 and 2007 almost 80% of the national budget originated from those revenues, of which almost 50% were related to oil. In addition to budget revenues, a growing part of the funds are redistributed through different mechanisms, which do not require legislative approval, and that decrease state revenues. Subsidies for fuels also work as resource centralizers as they represent losses for PDVSA, and consequently less income tax for redistribution. Venezuela has no equalization program (Manzano *et al.*, 2012).

In Argentina, the federal fiscal imbalance is large. Provinces depend on federal fiscal transfers to finance themselves. Since the return to democratic rule in 1983, the country has been characterized by a centralized form of federalism with a strong presidency. Provinces have a significant role in sector management and receive sizable oil revenues. All levels of government (federal, provincial and municipal) have authority to tax all sectors of the economy, which leads to an extremely complex national tax system. In the current fiscal regime, the federal government collects a range of taxes, which are then shared with the provinces. In particular, this system includes resource sharing arrangements between different provinces depending on the source of income. The exception is federal funds earned from export and import taxes that are only federal. From 2002 onwards, the federal government reintroduced the oil export tax. In 2007 it began regulating energy prices to control inflation and thus disconnected domestic oil prices from international ones. The export tax on fuels, coupled with energy price controls, put the federal government in a dilemma. Reducing the tax rate would link domestic oil prices to international ones, making price controls more evident and therefore leading to rising inflation. However, on the other hand, maintaining the *status quo* would artificially depress oil companies'

profitability, which discourages investment in the sector, and increases the likelihood that reserves and production will continue to fall. YPF nationalization in 2013 was a partial outcome of this issue. With regard to oil-producing provinces, the export tax reduced their fiscal base, therefore decreasing royalty collection. Although the oil-producing provinces were unhappy, they could not reverse the charge as the measure had popular support. Argentina does not have a tax equalization system, and an intricate process mediates oil revenue redistribution (Zapata, 2012).

In Australia, federal fiscal imbalance is a Constitutional design, which assigns most resources to the federal level and redistributes them through tax transfers determined by the needs of each subnational unit. Although this does not prevent vertical imbalance, it does alleviate their consequences. Oil resources are added to the equalization formula and redistributed. Redistribution is very significant, even benefiting states that are richer than the national average. The benefits of oil revenues are widely shared among all states and territories participating in the equalization scheme and are not restricted to producing states. Federal transfers for the year 2006-2007 represented approximately 26% of federal tax revenue. Horizontal fiscal equalization is based on revenue generating capacity and a given state's resource needs (Crommelin, 2012).

In Brazil, the 1988 Federal Constitution began a new fiscal era characterized by two opposing movements. While services like education and health expenditures were decentralized, there was also fiscal centralization. From 1995 to 2008, taxes increased from 27% to 36% of GDP. The central government holds 53% of tax revenues, while states hold 27% and municipalities 20%. Despite the high degree of fiscal centralization the central government is responsible for most of the public debt. Since 1997, royalty revenues increased, disproportionately benefitting both oil-producing states and oil-producing municipalities. To compensate for the fiscal imbalance, an intergovernmental transfers system, adopted in 1967, redistributed the industrialized goods tax and income tax (Gobetti *et al.*, 2011).

India has a high fiscal federal imbalance and the country has no equalization program. The Indian fiscal regime for hydrocarbons includes various taxes, most of them collected by the central government. However, some taxes are collected by the producing states while the remainder are collected and then shared jointly by the central government and the subnational unit. Political action has increasingly influenced the size and distribution of intergovernmental transfers. The failure to systematically address the issue of public service equalization has led to increased regional disparities. Regional equity is an issue that tends to gain importance in an era of coalition politics, as regional political parties in the federal government coalition seek to influence resource allocation to the benefit of their regions. In addition, it creates pressures for greater participation of lower government levels in sector policy formulation. Some oil resources, such as onshore royalties and the income tax of oil producing companies, are included in the revenue-sharing formula. Royalty distribution does not follow the subnational unit of origin. Interestingly, most of the oil-producing states' economic and social indicators are below the national average and they are calling for a greater share of transfers from the central government (Noronha *et al.*, 2012).

Table 5 summarizes the vector elements. Large vertical fiscal imbalances predominate among petrofederations, while only a few countries have equalization systems. There is also great variation in how oil revenues affect the resources of subnational units. Countries with significant fiscal centralization and important oil sectors such as Russia, Mexico and Venezuela, have more equitable oil resource ownership, but always through vertical redistribution. This is not the case in Nigeria, where tax arrangements favors the producing regions.

**Table 5 – Redistributive characteristics of petrofederations**

Country	Vertical fiscal imbalance	Central government equalizing action	Oil rents use for regional equity
Argentina	High	No	No
Australia	High	Based on subnational units needs	Yes
Brazil	High	Favours poorer subnational units	No
Canada	Moderate	Based on subnational units fiscal capacity	50% for regional equity
India	High	No	No
Malaysia	Very high	No	Use for patronage
Mexico	Very high	No	Indirect influence
Nigeria	Very high	No	No
Pakistan	Very high	No	No
Russia	Very high	Only vertical equalization based on federal budget on a per capita basis	MET totally centralized
United States	Low	Only interpersonal	No
Venezuela	Very high	No	Indirect influence

## Conclusions

This work is the first step in the study of the relationship between oil wealth and federal conflicts. It adopted a conceptual structure that models oil fiscal structure change as a result of an exogenous shock, either economic or political, which affects regional distribution of wealth, preference of voters and political action. Based on case studies of twelve petrofederations, it sought to identify oil sector-specifics that influence this relationship.

Therefore, the aim here is to build an analytical tool to explain the Fiscal Structure (seen in Figure 1), in terms of the three vectors: the resources (de)centralization; the importance of national and subnational oil resources; and how oil wealth is geographically distributed.

Time is a relevant issue, as countries go through changes over time, modifying the elements of interest. This was accounted for as much as possible, by looking at historical information available for each country. Table 6 summarizes vectors and federal outcomes by country. For vector 3, oil revenues only were included in regional equity.

**Table 6 – Vectors and federal outcomes**

Country	Oil sector fiscal nature	Oil sector national importance	Oil rents use for regional equity	Federal Outcome
Argentina	Decentralized	Small	No	Central government wins vertical conflict <sup>20</sup>
Australia	Decentralized	Small	Yes	Cooperation
Brazil	Centralized	Important (considering pré-sal)	No	Horizontal conflict
Canada	Decentralized	Significative	50% for regional equity	Subnational unit wins vertical conflict
India	Centralized	Small	No	Central government wins vertical conflict
Malaysia	Centralized	Important	Use for patronage	Central government wins vertical conflict
Mexico	Centralized	Important	Indirect influence	Central government wins vertical conflict
Nigeria	Centralized	Dominant	No	Horizontal conflict
Pakistan	Centralized	Small	No	Central government wins vertical conflict
Russia	Centralized	Important	MET totally centralized	Central government wins vertical conflict
United States	Decentralized	Small	No	Cooperation
Venezuela	Centralized	Dominant	Indirect influence	Central government wins vertical conflict

From table 6, we can infer that countries with relations of cooperation (i.e. Australia and the United States) have a decentralized fiscal nature and a small oil sector. There is no clear pattern for federal redistribution of oil rents. There was only one country – Canada - where subnational units prevailed in a vertical conflict. In this case there is a decentralized fiscal structure, with a significant oil sector and half of the total oil revenues used for regional equity purposes. The majority of the countries examined have had vertical conflicts with the predominance of the central government, such as in Argentina, India, Malaysia, Mexico, Pakistan, Russia and Venezuela. The fiscal nature of these countries is centralized, with the exception of Argentina. The importance of the sector in the economy varies widely: from minor to dominant. Oil revenues are not used for regional equity purposes and when they generate equitable effects, this occurs through vertical transfers or is due to the importance of oil revenues in total federal revenues. Horizontal conflict takes place in Nigeria and Brazil. These countries feature a centralized fiscal structure and dominant or important oil sectors but the oil rents are not used to equalize wealth.

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