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Ownership, Management and Revenue Sharing of Petroleum Resources in Federal and Devolved Regimes

By George Anderson

"Building Knowledge on Petroleum Resources Management"

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George Anderson

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1. Introduction

Petroleum is the most political of all natural resources, so it is no surprise that issues around the ownership, management and benefit sharing from petroleum resources should be contentious and complex in federations with significant endowments of petroleum. Experts in fiscal federalism have developed principles regarding these issues, but the practice across federations is highly varied and very often shows little adherence to any set of coherent principles. This article presents an overview of the principled arguments around the appropriate arrangements for petroleum in federal systems as well as of the actual experience of a number of federations and quasi-federations that have significant petroleum resources.

The article is divided into three major sections, which correspond to the three central questions of ownership, management and revenue sharing. In each section, there is consideration of the normative principles and other factors that might guide a choice of arrangements within a federation. While there are some "best practices", there is no one best way to deal with petroleum in a federal or devolved context. Much will depend on the nature and relative importance of the resource as well as on the character of the political regime and society. When we look at actual practice, a central theme will be that ownership, management and revenue sharing arrangements within federations and devolved countries often relate to one another in surprising ways—the order of government having ownership will not necessarily have the management of the resource and similarly the allocation of the fiscal benefits does not necessarily follow from either ownership or management. So each of these dimensions has a good deal of potential autonomy, which means that each merits careful consideration on its own merits as well as in terms of its interrelationships with the others.

A frequently used definition of federations is that they are a system of government in which there are two (sometimes three) constitutionally established orders of government, each of which acts directly on its citizens and has some genuine autonomy from the other[1]. Historically, the older "classic" federations were largely conceived on what was called a

[1] See Watts, Ronald L., *Comparing Federal Systems,* (3rd. Ed), Montreal and Kingston: McGill-Queen's University Press, 2008, pp. 8-9. Other characteristics can include provision for regional views in central institutions, normally through a second house, and an umpire of the constitution, normal a high court.

dualist model, where the division of powers was characterized by a significant number of exclusive powers for each order of government and where it was assumed each operated quite independently of the other. This dualist model has been contrasted with what is sometimes called "integrated" (or even "administrative") federalism, where there is a good deal of sharing of powers, typically with the federal government having the right to impose its laws in areas of concurrency. While there is some reality to the distinction between these two types of federations, we shall see that all federations have become integrated to some substantial extent.

It is also worth noting that there are arrangements for the devolution of political powers that are not federal. This includes unitary regimes, where devolution is done through legislation, not the constitution, so the legal autonomy of regional governments is theoretically less guaranteed. In practice, some so-called unitary regimes devolve a good deal more authority than some federal regimes and even though devolution is done by simple legislation, the politics of the country might be very protective of regional prerogatives. There are also asymmetric regimes where one or a few regions have special devolutionary arrangements—and these may be constitutionalized or not. Thus we should avoid too narrow an approach to our comparative learning and include some "quasi-federal" and asymmetric regimes where relevant.

This article will show that few federations have provisions for truly sharing the management of the petroleum sector—one order of government is usually clearly in the lead even though there may be some arrangements for some "jointness" on some aspects of petroleum policy or management. By contrast, there are frequently arrangements for sharing petroleum revenues between the orders of government and amongst the producing and non-producing constituent units of the federation, though the manner, justification and extent of this varies greatly. It seems that money is easier to share than management.

2. Ownership

While "ownership" can be a highly emotive political issue, the language associated with ownership and its practical significance vary a good deal across federations. Even where ownership of petroleum resources on land is deemed to be with the constituent units of a federation, the offshore is under federal constitutional jurisdiction. The allocation of management and fiscal powers in relation to petroleum resources are of fundamental importance and they can make technical ownership of minor importance when they are in the hands of another government. Even when they issue rights of various kinds to oil companies, governments keep ownership of the sub-surface resource. Private ownership of petroleum is tied to resources that have been produced.

Because petroleum is so valuable, there can be heated political and legal debates around "Whose oil is it?" and what that means. Some federal constitutions assign the "ownership" of petroleum to one or the other order of government (and even to both jointly), but others never use the term "ownership" (or something similar). Moreover, where it is used, the term ownership means different things in different contexts. More fundamental than the use of the term "ownership" are the rights and duties that a particular government (or private person or collectivity) has in relation to something, whether it is a resource, land, buildings, corporations, intellectual property or whatever.

2.A Constitutional language relating to ownership

A number of federal constitutions are explicit regarding the ownership of petroleum resources:

- Canada: "owner rights to non-renewable natural resources are vested with the provinces" (Art. 92a). India: "states own all the land and natural resources in their territory" (Art. 294). Iraq: "Oil and gas are owned by all the people of Iraq in all the regions and governorates" (Art.111). Malaysia: onshore resources "belong" to states (Art. Xx). Mexico: "All natural resources in national territory are property of the nation" (Art. 27). Nigeria: "federal proprietorship" of minerals, mineral oil and natural gas is affirmed (Sec. 44.3). Russia: "joint ownership" of land and resources (Art xx). Venezuela: all hydrocarbons "belong to the Republic" (Art. 12).

Some others imply ownership without using the term through language more related to powers, such as "vesting", "dominion" "prerogative authorities" and "powers":

- Kenya: all minerals and mineral oils "vest in the national government" (Art. 62). Pakistan: oil and gas within a province or the adjacent territorial waters "vest equally in that province and the federal government" while offshore they "vest in the federal government". Argentina: "provinces have the original dominion over the natural resources existing in their territory" (Art. 124). Bolivia: the central government has "prerogative authorities" in relation to hydrocarbons and land policy (Art. 298) and "control and direction over the exploration, exploitation, industrialization, transport, and commercialization of natural resources" (Art. 351). Indonesia: "the land, the water and the natural resources... shall be under the powers of the State and shall be used to the greatest benefit of the people" (Art 33.3).

Still other constitutions have no language tied to ownership or property.

- The United States and Australian constitutions make no direct reference to ownership or control of onshore resources. In both cases, these federations were formed of former colonies "coming together" into a federal union and their constitutions assign any subjects not explicitly assigned to the federal government to the states through the so-called "residual" power. In Australia's case, the states all passed laws over one hundred years ago declaring their ownership of subsurface resources and "the Australian constitution does not disturb this position"[2], even though it is silent on the matter. In the American case, subsurface ownership follows surface ownership, whether private or public, and large parts of the Western states are still federal lands (which were never transferred as new states were created) with federal ownership of the subsurface.
- Natural resource ownership was very contentious in the negotiations of the Comprehensive Peace Agreement in Sudan in 2005. It was finally agreed that both the CPA and the interim constitution would be silent on the matter, with the provisions relating to petroleum being limited to management and revenue sharing arrangements.[3]

2.B Offshore ownership and "federal lands"

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[2] Crommelin, Michael, "Australia" in George Anderson (ed.) *Oil and Gas in Federal Systems,* Toronto: Oxford University Press, 2012

[3] Haysom, Nicholas and Sean Kane, *Negotiating natural resources for peace: Ownership, control and wealth sharing,* Geneva: Humanitarian Dialogue, 2009

The distinction between the onshore and the offshore is important in most federations. Typically, the maritime boundaries of constituent units within federations are deemed to end at the low water mark and so their jurisdiction does not extend into the offshore, which falls under federal authority. (Constituent units' territory extends part way into the offshore in Argentina, peninsular Malaysia, Pakistan, and the United States, where it is deemed to include all or part of the adjacent territorial sea, which may extend to 12 nautical miles.) In any case, the territory of constituent units or their jurisdiction always excludes the Exclusive Economic Zone that extends to 200 nautical miles or the edge of the continental shelf (with the sole exception of Malaysia where the Borneo states of Sarawak and Sabah are deemed to embrace the offshore zone because they joined the Malaysian federation after the Law of the Sea Treaty had established it).

While all or almost all of the offshore zone is typically under federal jurisdiction, constitutions tend to be silent on the issue of ownership of the zone and rarely use the language of "ownership" in relation to the country's Exclusive Economic Zone.

In federations where most onshore production is controlled by constituent units, a federal government can use its control over the offshore and federal lands as an instrument of a broader petroleum policy. Thus in the United States, the federal government's policy objectives on petroleum supply and markets have affected the rate at with it has promoted activity on federal lands in the Western states and Alaska and in the offshore. In Canada, the federal government made an ill-fated attempt in the early 1980s to steer exploration away from provincially controlled areas to the northern territories and offshore, both of which were under direct federal control.

2.C The limited significance of ownership language

Whatever the language used (or not used) around ownership, what is more important is the allocation of powers or responsibilities regarding the management of petroleum and the allocation of petroleum revenues. Management responsibilities and the allocation of benefits from petroleum revenues do not necessarily follow from ownership. Thus for onshore resources, the primary management responsibility in India, Malaysia, Pakistan and Russia is with the federal government, even though the states are deemed to own the resource in the first two cases or to have joint ownership in the latter two. Iraq's constitution of 2005 famously failed to resolve the fundamentals of oil management, despite the clause on ownership (Art. 111) cited above. As for revenue sharing, the major fiscal revenues flowing from petroleum resources go to the federal government in India, Malaysia, and Russia, despite constituent unit or joint ownership, while in Brazil most petroleum revenues flow to the states and municipalities, despite federal ownership (though the share of the producing states relative to others has recently been reduced).

Constitutions establish the fundamental framework for petroleum arrangements in most federations, but these can be amended to reflect changing circumstances. Thus Pakistan in 2010 passed the 18th amendment to the constitution, which represented a radical empowerment of the provinces, including a new clause that established joint ownership of petroleum resources within provincial boundaries. Similarly, the powers of the Canadian provinces over natural resources were strengthened as part of the larger constitutional reforms in 1982.[4] Perhaps the most extraordinary change was in Malaysia where in 1974 the federal government introduced the *Petroleum Development Act,* which gave full ownership rights to petroleum resources in the country to the newly established state oil company, Petronas, which was placed under the direct control of the Prime Minister, even though the constitution stated (and still states) that petroleum resources within the states as "belong" to the states. The implementation of this Act required, in a politically controversial measure, that the states transfer ownership and all exploration and production to Petronas in exchange for a 5 percent royalty on production within their territory. Moreover, the Act states that the ownership and the exclusive rights and powers of Petronas "shall be irrevocable" (Art. 2.3).

In Australia, Canada, and Nigeria, the Supreme Courts all confirmed that the offshore lay beyond the boundaries of the constituent units and so was entirely within federal jurisdiction. But in each case, the federal government reached political compromises to accommodate constituent units adjacent to the offshore. In Australia, the states were ceded ownership and management of the "coastal waters" within three miles of the shore and they were also given a subordinate role in joint management for the offshore. In Canada, the provinces were given equal powers within a joint management arrangement and were allowed to benefit from offshore petroleum revenues as if they were onshore. In Nigeria, the coastal states were able to win revenues from much of the offshore on the same "derivation" basis as operated onshore.

The United States has a particularly complex pattern of petroleum ownership, in that there are extensive federal lands within the states—especially in the West and Alaska, the states' territories extend part way into the territorial sea; subsurface rights in most cases belong to the owner of the surface land, who may be private, which is relatively rare in other jurisdictions.[5] As in the cases discussed above, over time the federal government has made various accommodations with the states regarding management and petroleum revenues from federal lands—which now go 50 percent to the producing state and a further 40 percent to a special reclamation fund for 17 Western states—while maintaining federal ownership. Recently, the revenue sharing terms for the offshore Gulf of Mexico were made substantially more generous for the adjacent states.

2.D Ownership, concessions and contracts

Governments may transfer to corporations or other legal parties various rights and obligations regarding the exploration for and potential development of petroleum resources. The legal instruments for arrangements fall into two broad categories: concessionary systems and contractual systems and the fundamental difference between them relates to the ownership of the natural resources:

- Under a concessionary system, the title to the hydrocarbons passes to the investor at the borehole. The state receives royalties and taxes in compensation for the use of the resource by the investor....

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[4] Howlett, Michael, "The Politics of Constitutional Change in a Federal System: Negotiating Section 92A of the Canadian Constitution Act (1982)", *Publius,* Vol. 21.1, 1991

[5] It exists in Canada for lands transferred to the Canadian Pacific Railway as part of the inducement for building the railway in the nineteenth century.

- Under a contractual system, the investor acquires the ownership of its share of production only at the delivery point.[6]

Thus in both cases, the state does not transfer ownership of the sub-surface resource: rather it issues rights in relation to its management and development.

For the most part, issues around a government's technical ownership of the resource in the ground have not complicated relations with private investors. However, in Mexico, the former provisions of the Constitution, which established the nation's "direct ownership" of petroleum, as "inalienable and essential", was deemed to exclude either concessionary or contractual arrangement whereby a company would have an eventual claim on a share of the petroleum that was produced. The constitution was deemed to restrict any operations that gave a share of the resource at any point to national entities (the federal government or its agents) and so this excluded international oil companies from having concessions, risk contracts and incentive contracts. Over time, this restriction had severe implications for the availability of investment capital and specialized technology for the development of Mexico's petroleum industry, so in 2013 the constitution was amended to state that: "All natural resources... are the property of the nation, and private exploitation may only be carried out through concessions" (Art. 27). This reform has enabled a major opening of Mexico's petroleum sector. The language captures the general distinction between the ownership of the resource, which remains with the government, and the limited rights of concession holders.

3. Management

The central management instrument for the petroleum sector relates to the issuances of rights and licenses to explore and develop the resource. While this authority may be with the order of government in a federation that has ownership of the resource, this is frequently not the case. In general, the federal or central government has control of petroleum rights in developing country federations, but the constituent units in older federations have both ownership and rights management onshore. Federal governments typically manage the offshore, though there a some joint management arrangements. Several constitutional powers in addition to rights management can affect the management of the petroleum sector; these include taxation and revenue raising powers, as well as regulatory powers over the environment, petroleum marketing and transportation. In federations with decentralized rights management, the federal governments have sometimes used these other powers to have a substantial influence on the development of the sector. By contrast, in federations with centralized rights management, the constituent units typically have very limited powers of this type to influence management of the sector.

The petroleum industry's technical complexity, its potential environmental and social impacts, and its economic and political importance all make it very challenging for governments to manage effectively. This can be especially true in developing countries, which may have limited technical capacity and a heavy reliance on the resource. While having significant petroleum resources can be a major asset for a country if they are well managed, too often oil wealth has led to corruption, divisive politics and poor economic policies—the notorious "oil curse".

[6] Tordo, Silvana, *Fiscal Systems for Hydrocarbons: Design Issues,* Washington DC: World Bank, 2007, pp. 7-8

Managing oil within a federal context can be even more challenging than in unitary regimes, in that there can be conflicts between governments over major decisions regarding exploration and development as well as over the distribution of benefits. Even though one order of government normally has the lead on petroleum policy and operations in a federal regime—and there are relatively few instances of truly "joint" management by federal and constituent unit governments—there are some federations in which the constituent units will have a clear lead responsibility for managing the onshore operations of the industry, the federal government may have important policy, fiscal and regulatory powers as well. The opposite does not apply: constituent unit governments typically have very limited instruments for affecting the sector when it is under federal management. This section looks at the various legal authorities which governments, federal and constituent unit, use to affect the management of the petroleum industry.

The legal regime governing petroleum exploration and production normally deals with the following major sets of issues:

- Hydrocarbon rights and their use;
- Revenue matters, including taxation;
- Environmental protection;
- Petroleum transport and marketing.

While it is possible—and in some ways desirable—to have an integrated legal regime in which the hydrocarbon law deals with all of these issues or incorporates other laws by reference, this is frequently not practiced or possible within federations, notably because both orders of government may have distinct, relevant powers. Discussions of oil and gas management often focus especially on hydrocarbon rights and their use—with the government controlling these being the "manager"—but in practice laws and regulations relating to each of these issue-sets may affect the nature and pace of petroleum activity within a country and so it is useful to adopt a broader approach to management—one that includes all the key instruments that may be used.

Much of the normative literature on petroleum management focuses on such sector specific objectives as efficiency and effectiveness, as well as managing the fiscal impacts of petroleum revenues. However, the management of the petroleum sector must also be seen within the broader political and economic context of a federation. The objectives of the federal government and of the governments of both petroleum-producing and other constituent units may all differ on a host of questions relating to economic management, industrial policy, environmental objectives, and the distribution of the fiscal and other material benefits of the petroleum sector. Thus in a federation in which the constituent units play the lead role in managing oil and gas, the federal government may have important concerns about "managing" its own revenues, about economic cycles with oil price booms and busts, about balanced development and some horizontal fiscal balance between constituent units, about "energy security", as well as about protecting the environment. Where a federal government plays the lead role in managing oil and gas, the constituent units—producing and non-producing—will still have concerns about the sharing of revenues, local job and industrial opportunities and social and environmental impacts. Thus there is a need, especially in federations, to take a broad view of oil and gas management as something that takes place in a context of plural governments pursuing plural, and often conflicting, objectives.

We can review the four major sets of issues with a focus on the role of each in petroleum management, especially within federal systems.

3.A The core of petroleum management: rights and their use

The core of any oil and gas regime is the law, or set of laws, which establishes the principles and approach to allocating rights to explore and develop the resource, penalties and fines, the approvals needed for particular operations, the administrative machinery and the economic and fiscal guidelines for investment activity[7]. While such laws are usually thought to be the prerogative of the government that "owns" the resource[8], we have seen that in some federations the government that manages oil and gas rights is given the constitutional authority to manage the resource, even though it is not constitutionally the owner.

In most federations, the government responsible for legislating oil and gas rights—whether federal or constituent unit—does so without any involvement by the other order of government. Thus for onshore resources in Argentina, Australia, Canada, and the United States, the constituent units pass and administer their petroleum laws independently of the federal government, while in Brazil, India, Malaysia, Mexico, Nigeria, Pakistan, Russia and Venezuela the federal governments act autonomously from the constituent units in passing and administering their petroleum laws. The responsible government can administer its petroleum law through different structures: frequently this is done by a government department (such as an Oil Ministry), but another popular model is to have a separate regulator or agency engage in the day-to-day administration, while the Ministry is responsible for overall policy and legislation. In a few countries, such as Malaysia, the management of the petroleum sector has been delegated to the national oil company, which will combine the responsibilities of regulator and operator.

There are a few instances in federal regimes where the government responsible for the petroleum law does involve the other order of government in the preparation of the law or in its administration, but the extent of such involvement tends to be quite limited.

- In Pakistan, the federal government has clear responsibility to control and manage the petroleum sector (even though it is jointly owned with the provinces), but the federal powers fall into a section of the constitution where, since 2010, the federal government is required to involve the Council of Common Interests, a forum of federal and provincial leaders, in the formulation of regulatory policies. The body tries to operate on consensus, but in the event of disagreement an item will pass with the approval of the federal and one provincial government. If no provincial government agrees with a federal proposal, the matter can be referred to a joint sitting of the two houses of Parliament, which are empowered to issue directives to the CCI. Since 2010, the CCI has been involved in approving petroleum policies as well as in the award of exploration blocks, but the influence of the provinces has been quite limited.[9]

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[7] Ororato, William T., *Legislative Frameworks Used to Foster Petroleum Development,* Policy Research Working Paper, Washington DC: World Bank, 1995

[8] Boadway, Robin and Anwar Shah, *Fiscal Federalism,* New York: Cambridge University Press, 2009, pp. 207ff.

[9] Ahmed, Gulfaraz, "Pakistan", in Anderson op. cit., p. 267 and private correspondence

- In India, the constitution provides that only the federal Parliament may make laws relating to oil and gas. However, national legislation does permit the states, which constitutionally own the resource, to grant exploration licences and development leases so long as they strictly adhere to the rules established centrally. Thus the states have very limited decision-making in this area.
- In the United States, Congress has the right to regulate oil and gas activities on federal lands within the states but the states assume concurrent jurisdiction, which means that they can also regulate in these cases, so long as their regulations do not contravene federal law; the federal government can pre-empt the possibility of state laws applying in certain cases. Congress may also deal with state or local regulations on a case-by-case basis, accepting or refusing them, and federal laws require that various federal regulatory provisions be consistent with the laws of a state and with state plans. Historically, the federal government has cooperated with states on such issues a well spacing and the rate of development and production. These accommodations have been reached politically and not imposed by the constitution.[10]
- In Argentina, the federal government administered until 1992 oil and gas rights in those provinces that had been created from federal territories in the 1950s. In 1994, all provinces were given control of oil and gas rights within their territory in a constitutional amendment, but the federal government preserved a significant role in many operations because of its ownership of the national oil company, YPF, which held extensive rights that had been granted previously by the federal government. These will expire over time.

In the first three of these cases the federal government has primary control of onshore petroleum rights, but the constituent units have a very limited role in determining and administering the petroleum law. In Argentina, the federal government has, for a transitional period, an indirect management role through its ownership of YPF in a regime where the provinces controls rights.

The most robust models of "joint administration" of petroleum rights between governments are in the offshore regimes in Australia and Canada. In both cases, the Supreme Courts had found that the offshore fell under the jurisdiction of the federal government, but the federal governments chose to negotiate joint arrangements with the constituent units.

- In Australia, the Commonwealth and state governments negotiated the Offshore Constitutional Settlement in 1979. While the Commonwealth government retained ultimate constitutional authority, it delegated legislative authority for the area within the three-mile limit of the territorial sea to the adjacent states and set up a joint regime for the rest of the offshore. For the larger offshore area, it passed legislation assigning day-to-day administration of each state's offshore area to a "designated authority", which is a state minister and officials. It also created a "joint authority" for each area composed of the federal and state minister, and this is responsible for major decisions, such as which areas should be open for petroleum activity, the granting of exploration and production rights, and the determination of conditions of work and investment. In cases where the two ministers cannot agree, the federal

[10] Mieszkowski, Peter and Ronald Soligo, "United States", in Anderson, op. cit., pp. 318-20

minister has the ultimate power to decide.[11]

- In Canada, the federal government negotiated offshore agreements with Nova Scotia and Newfoundland in the early 1980s. These were substantially inspired by the Australian model, but with significant differences. The day-to-day administration of each offshore area is assigned to an arm's-length agency, whose board is made up of equal numbers of federal and provincial nominees and a mutually agreed chair. Certain decisions, similar to the major decisions in Australia, are deemed "fundamental" and these require the agreement of both ministers, but with no federal override.[12]

Neither of these models is fully joint, in the sense of all decisions being made jointly by the two relevant governments. In both cases, the legislation is federal and day-to-day administration is delegated (to a state minister in Australia and to an arm's length agency in Canada). For fundamental decisions, the Canadian model is truly joint, while the Australian model preserves the ultimate right of the federal minister to decide, even if consensus is the normal objective and practice. It is also worth noting that these models apply to the offshore, where typically the scale of individual operations is much larger (and thus key decisions fewer) than is usual onshore. Adapting such a model to an onshore context could pose distinct issues.

There was some consideration of a joint regime in Iraq. The Constitution provides for the federal government with the governments of the producing governorates and regions "to undertake the management of oil and gas extracted from present fields" and that these governments "shall together formulate the necessary strategic policies to develop the oil and gas wealth…" (Art. 112), but in neither case was the meaning clear and after eight years there is still no agreed federal petroleum law. The industry is effectively managed by the federal government outside Kurdistan and the Kurdish Regional Government within the region; however, in December, 2014, the two governments reached an agreement involving Kurdistan committing to provide significant quantities of oil to the State Oil Marketing Organization of the federal government, while the KRG got significant fiscal concessions and perhaps implicit recognition of oil production above the amounts to be delivered to the federal government.[13]

3.B Fiscal levies on petroleum as a management instrument

The cost of finding and producing petroleum is most often substantially less that the price that is paid for it. This gives governments a strong interest in the fiscal regime governing the sector because of the substantial revenues that may flow to them. In fact, it may be argued that for most governments optimizing their fiscal take is their primary objective in relation to the petroleum sector—but even this involves judgments and preferences related to the timing of revenue flows and other factors. Fiscal levies may be established through royalties, resource rent taxes, corporate income taxes, import and export duties, value

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[11] Commonwealth of Australia, *Offshore Constitutional Settlement,* http://www.ag.gov.au/Internationalrelations/InternationalLaw/Documents/offshore-constitutional-settlement-a-milestone-in-cooperative-federalism-pages-1-10%20ocr.pdf

[12] Cairns, Robert .D., "Natural Resources and Canadian Federalism: Decentralization, Recurring Conflict, and Resolution", *Publius,* 22.1, 1992

[13] Knights, Michael, "Here's What the Big Iraqi-Kurdish Oil Deal Really Means", http://www.businessinsider.com/what-the-big-iraqi-kurdish-oil-deal-really-means-2014-12

added taxes, bonuses, government participation, profit oil, and other instruments. Typically such levies are relatively transparent when they apply to private investors, but many governments that make heavy use of the national oil company have extracted revenues from their NOC on a highly discretionary and non-transparent basis.

In almost all federations, the order of government that has the direct responsibility for administering the sector (which may or may not "own" the resource) also determines the principal fiscal levies on the sector. However, deciding what the fiscal levies will be is different from determining the allocation of the petroleum revenues, as is discussed in section on revenue sharing below. The purpose of this discussion is not to consider the merits of different levies nor the optimal design of a petroleum fiscal regime.[14] Our purpose is, rather, to consider the role that fiscal levies can play in the management of the petroleum sector and what this may mean given the distribution of fiscal responsibilities within federal systems.

There seems to be a general pattern that in federations where the federal government manages hydrocarbon rights and their use, it also determines all—or virtually all—of the fiscal terms on the petroleum industry. Thus in Brazil, Malaysia, Mexico, Nigeria, Pakistan, Russia and Venezuela, the constituent units have no say regarding fiscal levies on the industry or only very limited powers. In some cases, constituent unit taxes of general application, such as a value added tax, cover the petroleum industry. But even here, as in Brazil, the federal government may have the authority to establish complementary laws, which set the basic rules for a particular tax by a constituent unit.[15] In Venezuela, states may tax non-operational contractors serving the oil industry on the same basis as for other industries and this has been a very modest source of revenue for a few producing states.[16] The states in India can levy various charges on the petroleum industry at various stages of development and they also collect some fees levied by the federal government; however, these are minor[17] so they are unlikely to affect the character, pace or "management" of petroleum activities.

In contrast to the very limited powers of constituent units over petroleum management in federations where the federal government controls rights, federal governments in federations where the constituent units control rights do have a number of potentially substantial fiscal powers that can be—and have been—used to affect the pace and character of petroleum development, as well as to achieve the federal government's broader revenue raising and other purposes. Argentina is perhaps the most dramatic current example: while the provinces administer the sector and have the right to impose and collect royalties along with various other taxes on the sector, the federal government has used its power to tax exports (and its power to impose export and import controls) to extract twice as much in petroleum revenues as the provinces do with royalties. The federal use of this instrument has had a major depressive influence on the sector, both because of the weight of fiscal take and because it has forced the internal price for oil and gas below international levels (and thereby reduced the value of royalties received by the provinces).

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[14] For this, see Tordo, op.cit., and Cottarelli (ed.), *Fiscal Regimes for Extractive Industries: Design and Implementation,* Fiscal Affairs Department, International Monetary Fund, http://www.imf.org/external/np/pp/eng/2012/081512.pdf

[15] Rezende, Fernando, "Federal Republic of Brazil", in Anwar Shah (ed.) *The Practice of Fiscal Federalism: Comparative Perspectives,* Montreal and Kingston: McGill-Queen's University Press, p. 84

[16] Manzano, Osmel, and Francisco Monaldi, Jose Manuel Puente, and Stefania Vitale, "Venezuela", in Anderson op.cit., p. 355.

[17] Noronha, Ligia and Nidhi Srivastava, "India" in Anderson op.cit., pp132-3

While the federal government's motives were fiscal, not sectoral, its intervention shows how dramatically a fiscal instrument can affect activity in the petroleum sector.

In Canada, the federal government intervened dramatically after the second international oil shock in 1979 to change the nature and course of the country's petroleum sector. The National Energy Program was a far-reaching scheme to redistribute government revenues from petroleum, to protect consumers from world oil prices, and to promote much greater petroleum activity in the offshore and northern lands under direct federal jurisdiction. The provinces controlled petroleum rights, so the NEP relied heavily on fiscal instruments, including an export tax, a petroleum and gas revenue tax, changes in corporate taxation, and incentive payments for exploration on lands under federal jurisdiction. While the NEP foundered on domestic politics and falling oil prices, it demonstrates how powerful federal revenue powers can be as an instrument to affect the management of the sector in a federation where constituent units control petroleum rights within their boundaries. More recently, in 1997, the Canadian federal government intervened to accelerate development of the huge oil sands resource in Alberta by providing special cost allowances against corporate income tax; these are now being phased out.

Energy security has long been a preoccupation of American governments, so there is a history of "supply-side preferences" that have given special incentives to the petroleum industry to favour its development. These have included special deductions for certain expenses as well as a generous depletion allowance. Estimates of total federal tax preferences for the petroleum industry in 2009 range from about \$3 billion to \$6 billion.[18]

3.C Environmental regulation of the petroleum sector

All countries with petroleum industries will proclaim their commitment to safety and environmental protection. However, in practice the extent of this commitment varies greatly and there are many stories of terrible industry practice and governmental regulatory inadequacy. Environmental regulation is an intrinsic part of the responsibility of oil and gas regulators, but when these regulators are the oil ministry, a special oil regulatory agency or—even more—a national oil company, there is an inevitable conflict amongst their various responsibilities. Strict environmental compliance can add costs and delays and thus hurt government revenues, exports and so on—which means that environmental standards may be compromised. These internal conflicts and compromises are mitigated in many governments by having a strong environmental law and ministry that establishes standards that apply to all industries, including the petroleum industry. In some cases, the implementation of the standards is assigned to the petroleum regulator (with greater or lesser oversight by the environmental authorities); in other cases, the environmental department or agency has hands-on responsibility for regulating the petroleum industry in the field.

Inevitably, the story becomes more complicated in federal systems. When the petroleum regulator is within one order of government (federal or constituent unit) the question is whether the industry is subject in some degree to environmental regulation by the other order of government. The answer has some similarity to that relating to fiscal levies in that when the petroleum regulator is federal, the constituent units typically have weak (or even

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[18] Mieszkowski and Soligo, op.cit., pp325-6.

no) regulatory authority over environmental impacts of the industry. When the petroleum regulator is at the constituent unit level, the federal government usually has considerable regulatory authority. And in all cases, the actual outcomes depend on political will and priorities as well as the ability of the public to bring effective pressure to bear.

An extreme example of local environmental disempowerment where the federal government is the petroleum regulator is Nigeria. States and local communities "have no constitutional or statutory rights, voice, or even consent regarding oil and gas industry projects in their locale." This "total exclusion" from participation in the local industry has "combined with the environmental, socio-economic, and political deprivations of the region to engender the militant campaign for regional and local 'resource control' in the Delta".[19] Venezuela is similar to Nigeria.

In most other federations with centralized oil and gas rights management, the constituent units have some limited role in environmental regulation of the industry. In Malaysia, Sarawak seems to have won political consent to its requirement, which has a dubious legal basis, for environmental impact assessments on certain activities.[20] In Mexico, local governments have very limited legal powers, but have become increasingly effective in bringing political pressures to bear on Pemex to comply with environment regulations.[21] In Brazil, the federal government has exclusive competence over the exploitation of natural resources, but environment is an area of concurrent competence, with federal paramountcy; in practice, the states seem to have little role in regulating the environmental impacts of petroleum activities, though they have voice through various consultative mechanisms. Sub-national governments in India and Pakistan have somewhat stronger legal responsibilities for environmental regulation that bear on the petroleum industry. In Pakistan, the provinces regulate major field operations comprising seismic surveys and drilling, which cannot proceed without an environmental assessment and a no-objection certificate.[22] The Indian constitution has no heading for the environment, but the subject is captured by several other subjects, such as water and land, which are largely state subjects, and forests, which are concurrent; in general, the central power is strongly favoured because it controls so much framework legislation, but the states have a role in administration. Much of the environmental debate for the sector in India relates to inadequate compensation for environmental damage. A few states with large tribal populations in the northeast have been given special status and control over land and natural resources.

The situation is quite different in federations in which the constituent units manage petroleum rights because in these cases the federal government has strong environmental powers, which can impinge very directly on the oil sector. Australia, Canada and the United States all have very old constitutions in which there is no explicit mention of the environment, but the federal governments all have recourse to other powers that permit them to establish environmental standards of virtually all kinds. The Argentine constitution was amended in 1994 to include a new provision (Art. 41) that establishes the right of all inhabitants "to a healthful, balanced environment" and that makes environmental regulation a concurrent responsibility of the federal and provincial governments with the

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[19] Iledare, Wumi, and Rotimi Suberu, "Nigeria" in Anderson, op.cit., p.243.

[20] Hui, Chong Wee, "Malaysia" in Anderson, op.cit., pp182-3

[21] Carreon-Rodriguez, Victor G. and Juan Rosellon, "Mexico", in Anderson, op.cit., p.218

[22] Ahmed, op.cit., p.277

federal laws having paramountcy. All four of these federations have high environmental standards in which the federal government has usually taken the lead and there has usually been substantial coordination, including the delegation by the federal governments of some regulatory responsibilities to state or provincial authorities.
While federal regulations have not been designed explicitly to influence the pace or nature of petroleum activities, they have sometimes had this effect because of requirements for extensive review prior to approval or for costly mitigating measures. In these federations, the federal governments also would have the power to impose a carbon pricing regime—whether a carbon tax or cap-and-trade—which could have a substantial impact on the petroleum industry, but so far none has done so.

3.D Petroleum transport and marketing

The final major area where there can be aspects of "jointness" in managing the petroleum sector relates to the transport and marketing of petroleum once it is out of the ground. In federations where the constituent units manage petroleum rights, federal government powers related to transportation and marketing can have a major impact on the petroleum sector and be a major lever whereby federal government influence petroleum policy, even though they do not manage most rights. Such federal powers can be used to promote the development of the sector or to constrain it.

In the United States in the 1930s oil prices collapsed below ten cents a barrel—well under the cost of production—because of a flood of production following huge discoveries in Texas and Oklahoma. Texas moved to proration production as a way to increase prices, but its efforts were undermined by so-called Hot Oil, which was production that exceeded legally allowable quotas and its efforts largely failed to raise prices. There was chaos in the industry, so the federal government eventually stepped in to prohibit the sale of Hot Oil across state boundaries and it also suggested appropriate production levels to different states. It imposed an import duty on foreign oil. Together these measures raised prices and stabilized the industry.[23] In the 1950s, the federal government established a limit on imports, which resulted in domestic oil prices being at least 50 percent higher than import prices; these were eliminated in the 1970s after the first oil price shock and the federal government brought in price controls. The federal government also had authority over interstate pipelines and in the case of natural gas it actually regulated wellhead prices of natural gas destined for interstate commerce.[24] (While the federal government regulates interstate pipelines, American states have some powers over the "siting" of pipelines, e.g. to protect environmentally sensitive areas, as well as on the technical standards and construction of pipelines.)

In Canada, the federal government also intervened in the 1950s to promote that country's nascent oil industry by supporting the development of the Trans-Canada natural gas pipeline and by reserving domestic oil markets west of a line near the Ontario-Quebec border for Canadian supply, thereby boosting prices for Western producers. However, after the oil price shock in 1974, federal policy shifted towards security of supply and protecting consumers—which was done by restricting exports and controlling oil prices outside the province of production. Export restrictions were tightened further as part of a broad range

[23] Yergin, Daniel, *The Prize: The Epic Quest for Oil, Money, and Power,* New York: Free Press, 1991, pp. 248-59
[24] Mieszkowski and Soligo, op.cit., pp 313-16

of federal measures, including a tax on oil exports, following the second oil shock.[25] While Canadian policy is now essentially market driven, there have been growing claims of aboriginal peoples and provincial governments to have some control over and benefit from pipelines that cross their territory. The position of aboriginals has been strengthened by the Supreme Court's ruling that they have a right to be consulted—which means seriously considered and accommodated where reasonably possible; in practice, this is giving them a lever to gain material benefits. And the province of British Columbia is increasingly arguing that it should get a material benefit from a pipeline traversing its territory, in part because it assumes the environmental risks. Both of these developments are altering the context in which the federal government regulates major pipelines and producing provinces try to capture as much economic rent from their production as possible.

A further example of marketing controls is aggressive interventions by the Argentine federal government through export quotas on natural gas, restrictions on the use of natural gas for electricity, and, most significantly, very high export taxes on both oil and natural gas. The Australian government has similar constitutional powers that would permit it to control exports and internal prices and to impose export taxes, but it has not used them to intervene in this way. Finally, the Iraqi government was able to use its leverage over the marketing of oil exports to reach a major agreement with the Kurdish regional governments on marketing and fiscal matters, as discussed above.

These examples show how powerfully federal powers over markets, exports and transportation can affect the petroleum industry even in federations where the constituent units are responsible for managing petroleum rights. These federal powers, along with federal taxing powers and in some cases control of offshore and federal lands, have been the main instruments used by federal governments to influence petroleum policy at the national level. Their use has involved both cooperation and conflict with producing constituent units (as well as with non-producing ones).

3.E The petroleum management nexus in federations

This brief review has been designed to give a sense of the different management arrangements for petroleum within federations. We have defined management broadly to include all those powers or levers that might be used by a government—whether federal or constituent unit—to influence petroleum policy and activity. Clearly, the allocation of the core responsibility for managing petroleum rights and their use is fundamental in any federal regime. Its assignment may be to a government deemed to "own" the resource, but this is not necessarily the case. We have also seen that other powers or responsibilities can bear on the management of the sector. The overall picture that emerges is one of strong contrasts between regimes where petroleum rights are managed by the federal government versus regimes where they are managed by constituent unit governments.

- In the former, federal governments control virtually all the levers; while constituent units may have some limited fiscal or environmental powers that permit them to influence how the federal government manages the sector, these are typically quite limited, even in the most permissive cases. (The special arrangements in the Australian and Canadian offshores are an exception where there is truly a structure

[25] Plourde, André, "Canada", in Anderson, op.cit., pp.90-94

of joint management.) What matters most in these contexts is the political preparedness of the federal government to consult and cooperate with the constituent units.

- By contrast, when the constituent units control petroleum rights, federal governments still typically have considerable powers to affect petroleum policy: these include taxation and other fiscal instruments: regulatory powers relating to the environment, transportation, internal markets and international trade; and, sometimes control of "federal" lands in the offshore, in federally-managed territories or within constituent units themselves. Thus the policy dynamics around petroleum policy are much less one-sided and each order of government has significant legal powers. This can lead to intergovernmental cooperation or conflict, depending on who controls what government and the nature of their objectives at the time.

4. Petroleum Revenue Sharing and the Fiscal Architecture of Federations

The importance of petroleum within for the economies and government revenues of federations varies enormously. In some cases, petroleum revenues are the largest—even dominant—source of government revenues. In all federations, federal governments determine a broad range of fiscal taxes and levies; they also collect more revenues than they need for their own purposes and some part of these are allocated to the constituent units through a revenue sharing formula or transfers from the federal budget or both. Within the broader context of how governmental revenues are allocated, there can be special arrangements for sharing petroleum revenues. Each regime must determine the weight to be assigned to derivation (where a revenue was generated) and need in allocating revenues. Some regimes give significant weight to derivation for petroleum revenues, but the net effect of this can depend on whether the allocation of other revenues takes account of petroleum income of constituent unit governments. There are arguments for and against a special treatment for petroleum revenues, which may be resolved by finding an appropriate balance. Experience across federations varies greatly.

A central feature of any federation is its fiscal architecture: who has what powers to raise what revenues; how the distribution of revenues is determined; who has what expenditure responsibilities. These questions have both a vertical dimension—between the federal government and the constituent units—and a horizontal dimension—amongst the constituent units. Federations vary a great deal in the extent to which revenues are raised centrally, in their procedures for allocating revenues, and in the distribution of expenditure responsibilities. In all federations, more revenue is raised centrally than is directly spent by the federal government, so there are arrangements for distributing some centrally raised revenues to the constituent unit governments (and even directly to local governments in some cases). Some federations, such as Malaysia, are highly centralized for both revenue raising and expenditure, several others are centralized for revenue raising but quite decentralized for government expenditures (necessitating significant sharing or transfer of centrally raised funds), and a few have relatively balanced revenue raising and expenditure responsibilities (necessitating relatively small sharing or transfers).

Oil and gas production can generate very large revenues for governments. In some oil-dependent economies, such as Nigeria and Venezuela, petroleum levies account for 80 or even 90 percent of all government revenues in the federation. Even in more diversified economies, such as Mexico and Russia, they can be as much as half of all government revenues. Because the cost of developing petroleum is often only a small fraction of its price, governments can collect the normal taxes they would on any business plus the so-called *resource-rent,* which is the potential profits beyond what investors would normally require (and this will vary according to such factors as geological and political risk). In practice, few revenue regimes try to distinguish between resource rent and other revenues from the sector;[26] some governments have extremely simple regimes based on one kind of levy, while other invoke a whole bevy of fiscal instruments.

In some federations all fiscal levies on petroleum are at the federal level; in others, both orders of government collect from the industry. So it matters a lot who decides what charges there will be on the industry and what will be the distribution of petroleum revenues amongst the federal, constituent and even local governments. In fact, the distribution of petroleum revenues has been considered so important in Brazil, Nigeria, and Pakistan that the rules for their allocation are explicitly established in the constitution.

The allocation of petroleum revenues needs to be seen in the broader context of the allocation of all revenues. Federations come at these allocation issues in very different ways. Some treat petroleum revenues as special; others do not. Some accept major disparities in the fiscal resources available to the governments of different constituent units; others try to equalize or at least limit disparities. Before looking in some detail at the varied approaches of federations to petroleum revenue sharing and management, it is important to set the broader context regarding the principles for allocating revenues.

4.A Derivation versus need and sharing versus transfers

One principle for the allocation of revenues is "derivation", which means that revenues (or some part of them) should be allocated to the political unit where they are generated. In federations where the constituent units have extensive revenue raising powers of their own, they typically keep the revenues that they raise[27]; thus, the devolution of taxing powers is implicitly tied to a notion of derivation.

The story becomes more complicated when revenues are raised by the federal government. In this case, a good part of those revenues will be for the federal government's own expenditure needs and the territorial allocation of its expenditures will not necessarily reflect the territorial sources of its revenues. But in all federations some part of federally raised revenues are allocated to the constituent unit governments (and sometimes to local governments too) and this can be done through two alternative methods called revenue sharing and intergovernmental transfers:

- *Revenue sharing:* This approach refers to the sharing of some or all federal revenues with the constituent units according to a set of rules. The rules establish which revenues are to be shared and the proportions that are to go to the various constituent units. The revenues to be shared can be as inclusive as all federal revenues or limited to the receipts from particular taxes and levies. Revenue sharing provides constituent units with lump-sum payments that are unconditional—in fact, in many federations the constituent units' allocations from shared revenues never

[26] Australia's Petroleum Revenue Rent Tax is an exception. https://www.ato.gov.au/Business/Petroleum-resource-rent-tax/

[27] Germany is a rare exception amongst federations in that the richer provinces make some transfers directly to the poorer provinces. These supplement other revenues flowing to the provinces from the federal government as well as locally raised revenues. Feld, Lars. P. and Jurgen von Hagen, "Federal Republic of Germany" in Shah, op.cit., pp.143-46

appear in the federal budget. Rather, all the revenues to be shared amongst the federal and constituent unit governments go directly but into a common national account (outside the federal budget) and from there are distributed to the various governments. Thus such revenues are often considered "own source", even when the constituent units have not determined or collected them.

- *Intergovernmental transfers:* The alternative to sharing all or certain federal revenues is for the federal government to vote to transfer funds from its budget to the constituent units. These transfers can be general-purpose and unconditional, like shared revenues, or conditional, in that they are to be used by the constituent units for specific purposes subject to conditions. Conditional transfers may require some proportion of matching funds from the constituent units. They provide an incentive for the constituent units to undertake programs that are federal priorities though in principle the constituent units can decline to receive them (which rarely happens).

Some federations make use of both shared revenues and intergovernmental transfers.

The principles guiding allocations to constituent units for these two alternative methods have both similarities and differences. Both methods can make unconditional transfers and both can accommodate allocation formulas based on various measures of *need* (e.g. population size, own fiscal capacity, territorial size, cost structure). But only the revenue sharing method can make allocations based on *derivation*, and only the intergovernmental transfer method can make *conditional transfers.*[28] In practice, *the derivation principle in revenue-sharing regimes seems always to be attached to the allocation of a particular revenue stream*, not of all revenues. Thus in India, which pools all federal revenues and then shares a portion with the states, the principle of derivation has no bearing on the allocation. But in Pakistan, the general revenue pool is shared without reference to derivation, but resource revenues, which are established and collected by the federal government, are kept out of the general revenue pool and allocated to the provinces strictly on the basis of derivation.

Federations vary greatly in the extent to which constituent units are financed by revenues they generate themselves, revenues that come through a sharing mechanism (from a general pool and/or based on particular revenue sources), and intergovernmental transfers (unconditional and/or conditional) from the federal budget. In terms of the latter two categories, some federations, such as Nigeria, rely very heavily on revenue sharing; others, such as India, mix revenue sharing and intergovernmental transfers; and still others, such as Canada and Mexico, have little or no revenue sharing and operate through intergovernmental transfers.

Every federation must find its own balance between the principles of derivation and need. A justification for the derivation principle when taxing powers are devolved, is that is provides an incentive for constituent units to make use of their powers to raise revenues for their own purposes. There is no such incentive when the federal government determines and collects the tax, so in those cases the justification for applying the derivation principle seems to be that a particular tax somehow "belongs", at least in some degree, to the constituent units where it is collected. This may be tied to ownership, notably in the case of natural resources, but the link is weak or non-existent in many cases. While natural

[28] For a much fuller discussion, see Boadway and Shah, op.cit., pp. 291-391

resources are probably the most important revenue source for which the derivation principle is applied to centrally raised revenues in federations, there are important exceptions: in Russia, for example, derivation is used to allocate national corporate and income tax revenues but not natural resource revenues. Finally, the derivation principle can be applied in degrees—it is not necessarily the case that all the revenues from a source will be allocated on the basis of derivation; in Nigeria, for example, the producing states get 13 percent of petroleum revenues, but the remainder goes into the general pool for allocation amongst all governments, federal and state.

The principle of need is quite flexible and applied in different ways not only across federations but also in relation to particular revenue sources. Some countries, especially OECD federations such as Australia, Germany and Switzerland, have quite highly developed overall systems of *equalization*, though the design of their regimes differs (e.g. in assessing only *capacity to raise revenues* or assessing both this and *expenditure needs*) as does the extent to which they try to achieve *full equalization versus a limit to disparities*. Many other federations, especially in developing countries, do not have a coherent, integrated definition of need nor do they have an equalization program as such. Rather, they apply a number of criteria in the allocation of the revenue pool. These may still result in quite significant fiscal disparities between constituent units and sometimes the formulas used for allocation actually worsen disparities. The United States has never tried to have an equalization program and instead has scores of conditional transfers, each of which has its own formula for allocations; the overall distribution of federal transfers in the United States does not reflect need and so there are major disparities in the fiscal resources available to states.

4.B Provisions and mechanisms governing the allocation of revenues

The most fundamental provisions relating to revenues in a federal constitution allocate taxing and other revenue raising powers. Some federations empower both orders of government with broad revenue raising powers, while others tend to concentrate the most important instruments in the federal government. In some federations, such as Canada and Australia, the ability to impose royalties is tied to the provincial or state ownership of extractive resources. As discussed in the revenue raising section, most federations in the developing world tend to be fiscally very centralized, especially in terms of revenue raising, even if expenditure responsibilities are relatively decentralized—in which case, there needs to be substantial revenue sharing or federal transfers to the constituent units.

The more fiscally centralized a federation, the more important the principles and provisions relating to the allocation of centrally raised revenues. Some federations have constitutional provisions relating to the principles for allocating revenues amongst governments.

- Germany: the federal government may legislate in areas of concurrent legislation with the provinces where necessary to provide for equal living conditions (Art. 72) throughout the country. Canada: there should be "equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation" (Art. 36.2). South Africa: there should be "the equitable division of revenue raised nationally among the national, provincial and local spheres of government" (Art. 214.1). Iraq: the federal government shall distribute "its revenues in a fair manner in proportion to the population distribution in all parts of the country" (plus some transitional provisions) (Art. 112). The Nigerian constitution specifies a number of principles for making allocations from the Federation account, including "population, equality of States, internal revenue generation, landmass, terrain as well as population density". (Sec. 162)

A few federal constitutions have explicit formulas for the allocation of petroleum revenues amongst governments.". In addition to the principles cited above, the Nigeria constitution provides that not less than 13 percent of natural resource revenues shall go to the producing states (Sec. 162). The Brazilian constitution has had detailed formulas for allocating petroleum revenues amongst the federal government, the governments of producing and other states, and the governments of producing and other municipalities. The Malaysian constitution guarantees five percent of royalties to producing states. In general, these arrangements have proven unsatisfactory and given rise to serious fiscal imbalances within the federations, especially when oil revenues are very large—in Nigeria, for example, the richest oil producing state has on occasion had over fifteen times as many revenues per capita and the poorest non-producing state. While in principle it could be possible to design a formula that would be appropriate for very different oil prices and production, in practice these constitutionalized formulas have had the same sharing ratios whatever the circumstances.

This is why there are real advantages to limiting constitutional provisions to a set of principles for guiding the allocation of revenues. Whatever these principles may be, there needs to be mechanisms to consider and decide on the matter. In Canada, this is strictly the prerogative of the federal government, which can consult the provinces as much or little as it pleases. But in several federations there are independent advisory bodies that play an important role. The constitutions of India, Nigeria, Pakistan and South Africa establish such bodies, but they can also be established by federal legislation, as in Australia. In Germany, Ethiopia and South Africa, the constituent units have a formal role in reviewing the sharing of revenues through the upper houses, but in Germany's case the final decision rest with the lower house. Finally, the courts have sometimes played an important role in interpreting constitutional provisions on revenue allocation.

Because government priorities and capabilities change over time, it is best not to have too rigid a system for revenue allocation. In most federations, the federal government has significant discretion not just over the allocation of revenues amongst the constituent units (and in some cases the local governments), but also what share it shall have for its own purposes. In federations with revenue sharing, there may also be intergovernmental transfers, so there can be a mixed system of revenue sharing; in these cases, such as India (and to a lesser extent Nigeria) the mandate of the finance commission might be restricted to revenue sharing and not include fiscal transfers.

4.C Are natural resources special?

Revenues from natural resources are just one source of government revenues, but it is striking how often in federal systems they are treated differently from other sources, notably with a special fiscal benefit going to the constituent units where the resource was produced (or in the case of the offshore, in the zone adjacent to the constituent unit). There are arguments for and against treating natural resources as special:

For:

- Where constituent units "own" the resource, they should get a material advantage. However, even when a constituent unit may have no legal claim of ownership, its population may still feel that the resource "is ours" so it should get some benefit.
- Producing regions should get some special revenues as compensation for local environmental damage, for infrastructure and manpower training costs associated with servicing the industry, and for investments needed to prepare for the time when the resource is depleted. In practice, no federation have implemented such concepts with any rigour, though they account for very small payments in Mexico.
- Resource revenues are a depleting asset and should not be treated the same as income or other current revenues.
- When resource rights management and some relevant revenue-raising powers are decentralized, the constituent units need an incentive of net fiscal gain if they are to have appropriate taxation and royalties; otherwise, they will under-tax and seek to extract benefits in other ways.

Against

- Federal governments are better able to manage the major swings in revenue from the petroleum sector than are constituent unit governments: they have a broader fiscal base, easier access to debt markets, and more flexibility in spending than constituent units normally do.
- Where the petroleum sector is a major part of the economy and/or a major source of government revenues, the management of the sector and its taxation will have a major bearing of macroeconomic policy, which is a responsibility of the federal government.
- Assigning too much to resource producing regions in a federation could lead to major fiscal disparities between constituent units. Such disparities could be inequitable and also cause economic inefficiency if resource rich regions are able to use their fiscal advantage to lower taxes and enhance services, thus leading to "fiscally induced migration" of people and capital.
- A dollar from resources is not fundamentally different from a dollar from other sources. If there is concern about a depleting capital asset, the resource revenues could be assigned to a wealth fund, but income from that fund should be treated like other income.
- Producing regions get non-fiscal benefits, such as employment and investment, from the resource sector and do not need special fiscal benefits.

Economists tend to argue for quite strict limits on treating resource revenues as special, but the politics of many countries have often resulted in many fiscal benefits accruing to producing regions. We now turn to a review of comparative experience.

4.D Comparative experiences in the allocation of resource revenues in federations

Federations vary in terms of:

- Which order or orders of government impose specific levies on the petroleum sector;
- Whether the distribution of petroleum revenues (or particular kinds of petroleum revenues) is determined in whole or in part by the principle of derivation, and, if so, what is the legal basis for this;
- Whether or not the distribution of petroleum revenues to constituent units influences the distribution of other centrally raised revenues to them.

The answers to these questions vary not just between federations, but also, in some cases, within a federation, where different revenue streams (e.g. onshore versus offshore) are treated differently.

Figure One below shows how varied and complex fiscal arrangements around the allocation of revenue powers over and benefits from petroleum can be. The table is necessarily at a high level of generality. The following elaborates a little on the situation in these various federal or devolved regimes.

- *Argentina*: The federal government introduced a heavy export tax, which effectively took about two-thirds of petroleum revenues, even though the provinces own the resource and levy a royalty. Their take was further reduced when the export tax caused domestic prices to drop.
- *Australia:* Australia has what is perhaps the most equalizing fiscal regime of any federation: federal revenue sharing and transfers take account of all state revenues as well as of the different cost structures associated with each state's delivery of a standardized bundle of public goods. Thus while states keep onshore revenues, they get little net fiscal benefit from them. This may incent them to focus more on stimulating activity than on trying to raise their own source revenues through royalties. Despite state ownership of onshore resources, the federal government has introduced a Petroleum Resource Rent Tax that applies within the states to collect some portion of "rent".
- *Bolivia:* Bolivia had a major debate on whether to federalize, which the relatively affluent petroleum producing regions strongly supported. After an extended political process, the new constitution is formally unitary, with the central government controlling petroleum management and revenue distribution. There are elected departmental governments: producing departments receive 12.5 percent of the main petroleum revenue while non-producing ones receive 31.25; this benefits the producing departments, especially those with small populations.[29]
- *Brazil:* Brazil had a regime that strongly favoured not just producing states, but also "producing municipalities", including revenues from their adjacent offshore areas. With major new offshore discoveries, the allocation of fiscal benefits—particularly as between producing states and municipalities versus non-producing ones—became a major issue in Brazilian politics. In 2014, representatives of non-producing states in Congress forced through a new law that raises the percentage of petroleum revenues for non-producing states and municipalities, while lowering that for producing states and municipalities and, to a lesser extent, for the federal government.
- *Canada:* Canada has an equalization program, designed to lift poorer provinces to a national standard. However, it does not bring richer provinces down to a national standard and richer provinces get most federal transfers on the same basis as do poorer provinces. Higher petroleum production and prices caused the producing provinces to have per capita fiscal resource capacity approach twice that of non-producing provinces. The federal government, with limited access to petroleum revenues (mainly through the corporate income tax, but without a special levy on the sector), has not be able to reduce the disparities between producing and non-

[29] Just Quiles, Marco, *The Bolivian Hydrocarbon Revenue Sharing System and its Impact on Territorial Inequalities,* Berlin: Free University MA Thesis, 2013, http://www.social-globalization.uni-kassel.de/wp-content/uploads/2013/06/Just-Quiles-The-Bolivian-Hydrocarbon-Revenue-Sharing-System-and-its-Impact-on-Territorial-Inequalities.pdf

producing provinces significantly.

- *India:* Despite state ownership, the much larger share of petroleum revenues flow to the centre, where they are pooled with other revenues for general sharing without reference to derivation. India does not have a formal equalization system, though its revenue sharing reduces disparities. Producing states have complained about their small fiscal share and lack of a share of offshore revenues.
- *Indonesia:* Indonesia has separate rules for allocating oil versus gas revenues: oil revenue goes 84.5 percent to the central government, 3.1 percent to the provinces and 12.4 percent to the districts; natural gas revenue goes 69.5 percent to the centre, 6.6 percent to the provinces and 24.5 percent to the districts. In both cases, the share going to districts is allocated one half to the producing districts and one half to the rest. This arrangement produces major fiscal disparities between districts and provinces. As part of the peace deal in 2005, Aceh is to receive 70 percent of petroleum revenues for nine years and then 50 percent after that. Papua and Papua Barat, which have

much smaller production, will receive 70 percent for 25 years, before dropping to 50 percent.[30]

- *Iraq:* Petroleum arrangements were left ambiguous in Iraq's hurried completion of its federal constitution in 2005. Since then the federal government has controlled the petroleum sector outside Kurdistan while the Kurdish government has controlled it within the province. Attempts to draft a Petroleum Law, which would clarify matters, have failed. Kurdistan was meant to send 83 percent of its oil revenues to the federal government and in exchange it was to receive 17 percent of the federal budget, equivalent to its share of the population; it produces about 10 percent of the country's oil. This arrangement was frequently violated by both sides, but in December, 2014, the Iraqi and Kurdish governments agreed on a cooperative arrangements regarding exports from Kurdish controlled areas and revenue sharing.
- *Malaysia:* Because Malaysia's states are very weak fiscally compared to those in most federations, their share of royalties, while only a small part of total petroleum revenues, has been important for producing states and they are seeking to enlarge it. Petronas is the major source of petroleum revenues for the government and the system is not transparent.
- *Mexico:* Mexico has always had a highly centralized regime, with the states fiscally very dependent on the federal government. However, producing states get almost no advantage from production, except for small amount in limited conditions. For many years, the government decided on what revenues it would take from the national petroleum company in a non-transparent manner. It has recently moved to a transparent fiscal regime for petroleum.
- *Nigeria:* Oil dominates government revenues in Nigeria and the distribution of these revenues is a perennial political issue. The system gives producing state 13 percent of oil revenues plus all the other transfers that other states receive, so Nigeria has huge fiscal disparities between states, with per capita differences as much as fifteen times or more, depending on prices. Even so, the producing areas in the Niger delta have had poor economic and social development, partly because of bad local governance, partly because of federal neglect. The poor conditions have led to

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[30] Agustina, Cut Dian, and Ehtisham Ahmad, Dhanie Nugroho and Herbert Siagian, *Political economy of natural resource revenue sharing in Indonesia*, London School of Economics, Asian Research Centre Working Paper 55, March 2012, http://www.lse.ac.uk/asiaResearchCentre/_files/ARCWP55-AgustinaAhmadNugrohoSiagian.pdf

widespread crime and oil theft. The federal government has accelerated its direct efforts to aid development in the delta through special regional agencies.[31]

- *Pakistan:* As part of far reaching reforms to its federalism in 2010, Pakistan amended the constitution to acknowledge joint ownership of natural resources between the federal and provincial governments. In addition, it was agreed that the producing provinces would receive all petroleum revenues. Pakistan is a small producer, so the revenues are not important nationally, but they are significant for Baluchistan, which has a small population and large share of production.
- *Russia:* Russia amended its constitution to deprive the producing "subjects of the federation"—which had huge territory but mostly very small populations—of any control over the petroleum industry or special benefit from petroleum revenues. However, the derivation principle does influence the distribution of corporate and income taxes, so the producing regions enjoy a significant indirect fiscal benefit because of high local corporate and personal incomes.
- *United States:* While the American petroleum industry is huge, it is a relatively small part of the country's economy, so revenues from the sector have not been significant nationally, but they have been very important for several producing states, a few of which have had much higher fiscal revenues per capita than other states. Sharing with states of mineral revenues from federal lands within states started in the nineteenth century and increased to a fifty percent share by 1970, with another forty percent going into a fund for reclamation and infrastructure projects in 17 western states. Coastal states with offshore production receive only a very modest share of some offshore petroleum revenues and are campaigning for more.

There are a few general observations that can be drawn from these experiences. Some countries, such as Argentina, Brazil, Canada, Indonesia, Nigeria, Pakistan, the United States, have significant fiscal advantages for producing constituent units, while others, such as Australia, Bolivia, India, Iraq, Mexico, and Russia do not. Pakistan moved recently to enhance the fiscal advantage of producing constituent units, while Brazil and Russia moved to limit it. The extent of fiscal advantage varies from Nigeria, where it is extremely high, to relatively modest in Pakistan. Australia is unique in the extent to which it "claws back" the fiscal advantage of producing states by reducing their other transfers. Canada and Indonesia also have some mechanisms that work in this way, but they are partial.

Figure One: Petroleum Revenue Determination and Allocation in Federal Systems

Country	Levies determined by	Derivation applicable	Impact on other allocation of other revenues	Importance of petroleum revenues
Argentina -onshore -offshore	Provinces plus federal (export tax) Federal	Yes. Each government keeps its revenue. No	No impact NA	Moderate nationally; high for producing provinces

31 Osaghae, Eghosa E., *Resource Curse or Resource Blessing: The Case of the Niger Delta "Oil Republic" in Nigeria,* Okada: Igbinedion University, mimeo, 2013, osagheaeeghosa@yahoo.co.uk

Australia -onshore -offshore	 States levy royalties; federal Petroleum Resources Rent Tax Federal (beyond 3 miles)	 Yes. Each government keeps its own revenue No	 Yes. Full impact. They are included in calculation of state fiscal capacity, a key determinant of federal transfers NA	 Low (but other resource revenues moderate to high)
Bolivia	Central government	Yes.	No	High nationally and for regions
Brazil -onshore -offshore	 Federal Federal	 Yes, same for both onshore and deemed offshore zones: four way allocation to federal, producing states and municipalities and other states	 No	 Moderate nationally, high for key producing states and municipalities
Canada -onshore -offshore	 Provinces Provinces with federal	 Yes. Provinces keep own revenue. Yes.	 Yes and No. Onshore and offshore resource revenues can cause reduction in equalization payments for eligible (poorer) provinces, but have no impact on other federal transfers.	 Moderate nationally; high for producing provinces
India -onshore -offshore	 Federal Federal	 Yes. States get federally determined royalties, but federal keeps other, larger imposts. No.	 No. State royalties no impact on revenue sharing or other transfers from federal level NA	 Low nationally; moderate in one or two states
Indonesia -onshore	 Central	 Yes. Producing regions and	 Yes. Some offset through general	 Low to moderate nationally. Low

-offshore	Central	provinces get a share. Special shares for Aceh and Papua No.	transfer. NA.	to very high for producing regions. Low nationally
Iraq	Federal and Kurdish	Not formally. Federal revenues to be distributed to regions on basis of population. KRG illegally kept some revenues from own production.	Federal government periodically withheld payments to KRG in response to KRG's illegal oil exports and withholding of some revenues.	Very high for all governments, both producing and non-producing.
Malaysia -onshore -offshore	 Federal Federal	 Yes. States get 5% royalty onshore (to 3 mile limit). Depends. Borneo states get royalty from entire offshore. Other states not.	 No. Royalty payments, whether from onshore or offshore, no influence other transfers.	 Moderate to high nationally. Small absolutely but moderate for producing states.
Mexico -onshore -offshore	 Federal Federal	 Limited. Producing states receive very minor payments in certain conditions No sharing of offshore revenues	 No impact on other federal transfers NA	 High nationally. Low for producing states.
Nigeria -onshore -offshore	 Federal Federal	 Yes. Producing states get 13% of revenues, balance to federal. Adjacent states get 13% from most of adjacent offshore, but not all.	 No No	 Very high nationally and for producing states.
Pakistan -onshore -offshore	 Federal Federal	 Yes. All petroleum levies (out to 3 miles) to producing provinces. No.	 No impact on other transfers. NA	 Low nationally. Low to moderate for producing states. Very low.
Russia			NA	High nationally.

-onshore -offshore	Federal Federal	No. But derivation does apply to corporate and personal income tax. No.	 NA	 Low to moderate nationally
United States -onshore: state land -onshore: federal land -offshore	 States Federal Federal	 Yes. States keep revenue. Yes. Federal gives states revenue. No	 No. US has no integrated sharing or transfer regime, but many conditional transfers. NA	 Low nationally. High for some producing states. Low nationally
Venezuela	Federal	No	NA	Very high nationally.

5. Good Governance and Fiscal Probity

The presence of significant petroleum resources can offer major opportunities for betterment, but it can also add to the challenges of achieving good governance—both in controlling corruption and in managing a resource-based economy subject to volatile prices. While major principles of good governance—including clarity on responsibilities, transparency and probity—are well known, they can be undermined in a context of a highly profitable oil sector and be even more difficult to manage in a devolved or federal regime. Some petroleum producing countries have tried to address these challenges with special stabilization and savings funds and federal regimes are increasingly adopting fiscal responsibility laws, as well as detailed provisions regarding financial governance in their constitutions.

We have already encountered the notion of the "oil curse". One dimension of this is the risk that petroleum revenues present for corruption, while a second, quite distinct dimension, is the challenges that a large petroleum sector can present for managing a diversified economy through economic cycles. Fortunately, "the resource curse is not inevitable: a range of countries with prudent and transparent management practices (including Botswana, Canada, Chile and Norway) has benefited from resource wealth".[32] The challenges of successfully managing resources revenues are greater in developing countries with large resource sectors. And there can also be additional challenges if the political regime is significantly devolved, as in federal systems. The International Monetary Fund and World Bank have developed guidelines for good fiscal practices for resource revenue management. We can review some of the more important principles, with special attention to their application in a federal regime.

[32] International Monetary Fund, *Guide on Resource Revenue Transparency (2007),* p.3

The principles include:

- The need for *clarity of roles and responsibilities*, including the legal framework, the fiscal regime, and transparency regarding revenue flows and borrowing as well as required expenditures by resource companies on social or environmental purposes or consumer subsidies, without explicit budget support. Arrangements for assigning or sharing resource revenues between central and subnational governments should be well defined and explicitly reflect national fiscal policy and macroeconomic objectives.
- The need for *open budget processes.* Budget frameworks should incorporate a clear policy on the rate of exploitation of natural resources, with the context of overall fiscal and economic objectives. Resource related revenue funds should have clear operational rules coordinated with fiscal policy and the investment policies for such funds should be clear. The government accounting system or special fund arrangements should identify all resource revenue receipts on a timely and public basis.
- The need for *public availability of information.* There should be transparent and comprehensive reporting, including on all assets and debt. The non-resource fiscal balance should be presented as an indicator of macroeconomic impact and sustainability. Debt reports should identify any direct or indirect collateralization of future resource production, as well as any risks or obligations from debt. Estimates of the asset value of probably production should be clear, as should contingent liabilities associated with the resource sector. Finally, price risks and contingent liabilities association with resource revenues should be explicitly considered in budget documents.
- The need for *assurances of integrity.* Audit procedures and internal controls should be clear. Tax obligations and rights should be clear and the scope for discretionary action by tax officials clearly defined. A national audit office should report regularly on revenue flows between companies and government.[33]

These principles set a high standard which few, if any, countries fully realize. Moreover, complying with them, notably those associated with coordinated fiscal policy, will be especially difficult in a federation with highly devolved resource management and taxation. We have seen that many federations have quite rigid rules on the sharing of resource revenues or of centrally imposed revenues generally and this can present challenges for macroeconomic fiscal management in that revenue flows to the constituent units are not coordinated with fiscal policy. In principle this could be dealt with in federations with revenue sharing by having an arrangement whereby resource revenues (or even revenues more generally) are shared not just between the orders of government but also with a resource revenue fund (or funds—one for stabilization and one for savings). Russia adopted a stabilization fund in 2004 and it became a principal instrument for holding down excessive liquidity, and lowering inflationary pressures at a time of skyrocketing petroleum prices. In 2008 it moved to a new approach whereby oil and gas revenues were accounted for separately from other revenues and part of them were included in the federal budget, this part being called the oil and gas transfer. The size of this transfer was set and the balance of resource revenues went into a reserve fund or, above a certain threshold, into a

[33] Ibid.

national wealth fund[34]. There is no such formal arrangement in Nigeria and federal measures to hold back some centrally collected revenues for various purposes, including for revenue stabilization, have been found illegal by the Supreme Court and are objected to by the states, but the federal government persists. [35]

A number of federations have tried to address these issues of fiscal coordination through fiscal responsibility laws. Such laws can establish fiscal targets as well as procedural rules for transparency and accountability. This can include rules around borrowing and incentives for fiscal prudence[36]. While such laws can be helpful, it can be a challenge to get the political agreement necessary to put them in place. This is more likely to happen in the context of addressing a crisis, when the federal government must step in, as happened in Brazil in the 1990s. As well, if the federal government makes large, discretionary transfers to the constituent units, it may use this as a lever to win their cooperation. However, the challenge can be especially acute when the overwhelming share of revenues going to constituent units is through revenue sharing because the federal government may have limited leverage, as has been seen in Nigeria.

The issue of transparency takes on an additional importance in federal regimes with revenue sharing in that the constituent unit governments have a material stake in knowing exactly what revenues have been collected. However, no federation gives the constituent units a role in relation to the auditing of the federal accounts, with the national audit office typically named by the national government, perhaps with parliamentary approval. In some federations, such as India, there is one national audit office that serves the national and constituent unit governments. This has efficiency advantages but also limits the extent to which constituent unit governments can interfere with the audit function—which has been a problem in some states in Nigeria, where each state has its own audit office. Some of the newer federal-type constitutions, such as South Africa (Sec. 213-218) and Kenya (Sec. 220-229), give strong authority to the central government to establish rules relating to fiscal prudence.

6. Summary Observations and Some Recommendations

A number of federal and other devolved systems of government have had to deal with the issues of oil and gas ownership, management and revenue sharing. The approaches they have developed reflect their constitutional history (where oil and gas may not have been an issue when the basic law was drafted), their political culture, and the importance of the resource itself within a national context. The federations with devolved management tend to be the older federations in which the petroleum sector is not central to either the economy or government revenues. Even so, in these federations the federal governments have important fiscal and legal levers that they can use to influence the development of the petroleum sector. Federations in developing countries tend to have given almost all the management instruments relative to the petroleum sector to the central government. In some cases, such as Malaysia and Russia, the federal government captured these powers through legal or constitutional change when the industry was significant. Management control may be linked to ownership, but often it is not—especially in developing country

[34] Kurlyandskaya, Galina and Gleb Pokatovich, Mikhail Subbotin, "Russia", in Anderson, op.cit., pp298-300

[35] Iledare and Suberu, op.cit., p240

[36] Liu, Lili and StevenB. Webb, *Laws for Fiscal Responsibility for Subnational Discipline: International Experience,* Washington DC: World Bank, 2011

federations.

In developing countries with federal regimes, there is a natural pressure to have centralized management of the oil sector, but too often this has been done with little sensitivity to circumstances in the producing regions:

- The issues are complex, major oil companies are extremely sophisticated, human and financial resources to build management adequate capacity in the country are limited. If the resource is very large, it will necessarily be of national significance. All of these are reasons for centralized management.
- Against this, producing regions naturally have a strong interest in petroleum exploration in their regions because of the potential impacts on the environment, employment and society. Thus there are strong reasons to find a way to give real voice to producing regions.
- The challenge is to find a workable balance, one that permits timely and effective decisions and avoids competing governments using their powers for narrow partisan or personal gain.

Federations have very diverse approaches to revenue raising and allocation. In all federations, the federal government raises more revenues, through taxes and debt, than it spends on its own purposes, so some federally raised revenues flow to the constituent units, through revenue sharing or fiscal transfers or some combination of these. When revenue sharing is used, the allocation of revenues can be determined using various criteria, including need (or rough proxies for need) and derivation. However, the choice of these criteria by federations has been very political. When resource revenues have been isolated from other revenues for sharing, the derivation principle has been given some weight. But many federations pool resource revenues with all other revenues for sharing—in which case principles other than derivation are used for allocation. And still others rely principally on fiscal transfers—in which case derivation is not applied either (in fact, there can be a negative impact on transfers if the constituent unit has direct access to resource revenues).

- While the technical challenges to resource revenue sharing are less difficult than those for joint management, the politics can be extremely contentious. There is a case for giving some extra fiscal benefit to producing regions, but this should be done in a way that does not create major distortions between regions of the country. It is wise to avoid rigid formulas in constitutions, which may not prove appropriate for all contexts.

While there are few hard rules, architects of federal regimes would do well to consider such basic economic principles as efficiency and equity, as well as the benefits of transparency and accountability, in designing arrangements around natural resource management and revenues. They will also need to consider the importance of the natural resource sector within the country and the broader political context or understanding on which the country may be based.