INTERNATIONAL STUDIES PROGRAM

International Studies Program
Working Paper 08-26
December 2008

Fiscal Federalism and Petroleum Resources in Iraq

Grant Bishop
Anwar Shah

Georgia State University
ANDREW YOUNG SCHOOL OF POLICY STUDIES

International Studies Program
Working Paper 08-26

Fiscal Federalism and Petroleum Resources in Iraq

Grant Bishop
Anwar Shah

December 2008

International Studies Program
Andrew Young School of Policy Studies
Georgia State University
Atlanta, Georgia 30303
United States of America

Phone: (404) 651-1144
Fax: (404) 651-4449
Email: ispaysps@gsu.edu
Internet: http://isp-aysps.gsu.edu

International Studies Program
Andrew Young School of Policy Studies

The Andrew Young School of Policy Studies was established at Georgia State University with the objective of promoting excellence in the design, implementation, and evaluation of public policy. In addition to two academic departments (economics and public administration), the Andrew Young School houses seven leading research centers and policy programs, including the International Studies Program.

The mission of the International Studies Program is to provide academic and professional training, applied research, and technical assistance in support of sound public policy and sustainable economic growth in developing and transitional economies.

The International Studies Program at the Andrew Young School of Policy Studies is recognized worldwide for its efforts in support of economic and public policy reforms through technical assistance and training around the world. This reputation has been built serving a diverse client base, including the World Bank, the U.S. Agency for International Development (USAID), the United Nations Development Programme (UNDP), finance ministries, government organizations, legislative bodies and private sector institutions.

The success of the International Studies Program reflects the breadth and depth of the in-house technical expertise that the International Studies Program can draw upon. The Andrew Young School's faculty are leading experts in economics and public policy and have authored books, published in major academic and technical journals, and have extensive experience in designing and implementing technical assistance and training programs. Andrew Young School faculty have been active in policy reform in over 40countries around the world. Our technical assistance strategy is not to merely provide technical prescriptions for policy reform, but to engage in a collaborative effort with the host government and donor agency to identify and analyze the issues at hand, arrive at policy solutions and implement reforms.

The International Studies Program specializes in four broad policy areas:

- Fiscal policy, including tax reforms, public expenditure reviews, tax administration reform
- Fiscal decentralization, including fiscal decentralization reforms, design of intergovernmental transfer systems, urban government finance
- Budgeting and fiscal management, including local government budgeting, performance-based budgeting, capital budgeting, multi-year budgeting
- Economic analysis and revenue forecasting, including micro-simulation, time series forecasting,

For more information about our technical assistance activities and training programs, please visit our website at http://isp-aysps.gsu.edu or contact us by email at ispaysps@gsu.edu.

Fiscal Federalism and Petroleum Resources in Iraq[1]

Grant Bishop and Anwar Shah
World Bank Institute

[1] Paper prepared for the Andrew Young School of Policy Studies, Georgia State University Conference on Decentralization: "Obstacles to Decentralization: Lessons from Selected Countries" September 21-23, 2008. Draft, do not cite.

1 Overview

With over 95% of Iraq's government budget received from oil revenues, an agreeable inter-governmental framework for managing petroleum resources and for distributing revenues is aptly regarded as the lynchpin of federalism. Iraq has great potential to develop a fiscal framework, consistent with sound principles and best practices, that will distribute revenues equitably and efficiently, decentralize resource management where appropriate, and bind the country together as a stable federation.

As in most resource-rich countries, Iraq's petroleum deposits are unevenly spread and deposits differ in productive capacity, cost of extraction and processing, and quality of crude. Moreover, Iraq's petroleum infrastructure requires extensive repair and reinvestment in order to maximize its production potential. Furthermore, large areas of Iraq remain unexplored, particularly Iraqi Kurdistan and the Western Desert, and preliminary assessments point to large potential reserves.

Iraq's constitution provides for ownership of petroleum resources by "the people of Iraq in all its regions and governorates." While establishing management of present fields under federal jurisdiction, the constitution also recognizes the aspirations for resource development by the historically deprived regions – read as Kurdistan and Basra. The document leaves open the jurisdiction over future fields. The ambiguity of this constitutional assignment defers authorities and responsibilities around resource management, revenue-raising and revenue-sharing to subsequent negotiations and legislation. Furthermore, the constitution establishes an asymmetrical form of federalism, wherein regions have greater autonomy than governorates, providing malleability for intergovernmental affairs.

Few resource-rich federations can avoid granting a preferential share of resource revenues to originating regions – either through regions' own taxation powers or through sharing of federally-collected revenues. Such a preferential entitlement has implications for efficiency of the economic union: The presence of differential "net fiscal benefits" across regions distorts the allocation of factors. Labour migrates to resource-rich regions where oil-revenues fund greater public services at lower levels of taxation. Such circumstances require some federally-coordinated equalization program to mitigate disparities in fiscal capacity.

However, in Iraq as in any resource-endowed country, the division of federal and subnational powers around natural resources is not simply a matter of revenue-sharing; rather, it is a question of how the resource is to managed. Arrangements then necessarily involve the inter-related issues of the oil industry's structure, regional authority over exploration and development, environmental management, revenue-raising mechanisms, the administration of revenues, and the terms for a prospective oil revenue fund.

More specifically to Iraq's case:

- Will a central Iraqi National Oil Company (INOC) monopolize control of current petroleum resources and on what terms?
- How will governorates and regions be represented in the INOC and a federal oil and gas commission?

- What tendering and approval authorities will regions and governorates have within their territories? In particular, will regions have the authority to tender independent and distinct arrangements with foreign exploration and development firms?
- How will petroleum revenues be distributed to regions and governorates? In particular, where will funds be deposited and what are regions' assurances for the prompt and accurate distribution of their entitlements?
- Will stabilization or savings funds be established nationally or regionally? What portion of revenues will be allocated? By whom will a fund be managed and what objectives will guide its investments? What will be the terms for withdrawals? How will a federal fund be accountable to regions and governorates?

The future of Iraq's petroleum industry hinges on competent management of exploration and development. Resource deposits must first be discovered. Development then requires large up-front investments. Efficient production requires that technology be upgraded and capital renewed. Maximizing resource rents means attracting and retaining investment, technical expertise and high-calibre management. Revitalizing the Iraqi oil industry requires that governments, national entities and private enterprise face the correct incentives. That is, arrangements between the federal government and regions must encourage efficiencies within the oil industry.

To inform an appropriate framework for Iraq, we first review relevant features of Iraq's federal structure and oil industry, with an especial focus on geography. Then, as are relevant to Iraq, we propose principles to aid the design of policies for: i) the efficient assignment of ownership, management and revenue-raising around natural resources; ii) revenue-sharing and equalization programs; and iii) saving of oil revenues and stabilization of public finances.

2 Overview of Iraq

2.1 Federalism in Iraq's Constitution

Iraq is presently comprised of 18 governorates (*muhafazah)*. Notably, these are organized as territorial divisions and not ethnic divisions[2]. The constitution formally recognizes the Kurdistan Region and allows for governorates to assemble into regions. A law establishing the process for regionalization was established in October 2006. Under the Iraqi Constitution, regions possess the right to legislate an independent constitution, provided it does not conflict with the federal constitution. A regional government may amend any other federal legislation as it applies within the region's borders. Furthermore, regions hold title to residual powers that the Constitution does not exclusively assign to the federal government. Governorates not organized into a region retain authorities under the principles of decentralization. The autonomy of such unattached governorates is to be organized by law.

The constitution thereby establishes an asymmetrical and flexible form of federalism, creating core federal institutions but intending that the inter-governmental relationship should evolve gradually. Given Iraq's geographically-dispersed and ethnically-diverse character, the

[2] Visser (2007) provides a discussion of federalism in Iraq, arguing that an Iraqi national identity is an enduring concept that will ultimately resist sectarian divisions and support a balanced federation.

ultimate balance between federal shared rule and self rule will be critical to the success of the arrangement.[3]

The Constitution also sets a deadline of December 2007 for a referendum to be held in order for Kirkuk to decide whether or not to join the Kurdistan Region. With the assent of the Kurdistan Regional Government (KRG), the deadline was subsequently extended to June 2007. Although this deadline has passed, no referendum has been held. The KRG views a resolution of Kirkuk's status as intimately linked to federal arrangements on petroleum management and sharing of oil revenues.[4]

Chapter 5 of the Constitution explicitly provides for the authority of provinces in powers not specifically granted to the federal government. The federal powers are established in Chapter 4 and include foreign affairs, defense, customs, currency, immigration, telecommunications, statistics and management of water resources. Environmental protection is included as a joint power, shared between the federal and subnational governments. The constitution is noticeably silent on provision of social services, education and municipal infrastructure. Furthermore, provinces are not assigned specific powers under Chapter 5; they are only granted authority to legislate in areas that do not conflict with explicit federal powers. A law of provincial powers was passed in March 2008, more clearly laying out provincial authorities and setting October 2008 as the deadline for holding provincial elections. This law mainly clarified federal-subnational relations and left precise subnational legislative authorities ambiguous.[5]
Table 1 documents the present functions of the federal government, regions and governorates as reported in Ahmad et al. (2005) based on comments from Iraqi officials.

The ownership of oil and gas is purposefully ambiguous: "Oil and gas is the property of all the Iraqi people in all the regions and governorates" (Section 4, Article 111). However, the subsequent article clarifies the management of present resources, assigning existent fields to the federal government and mandating per capita disbursements to regions and governorates as well as compensation for the "damaged regions":

> Section 4, Article 4 (1): The federal government, with the producing governorates and regional governments, shall undertake the management of oil and gas extracted from present fields, provided that it distributes its revenues in a fair manner in proportion to the population distribution in all parts of the country, specifying an allotment for a specified period for the damaged regions which were unjustly deprived of them by the former regime, and the regions that were damaged afterwards in a way that ensures balanced development in different areas of the country, and this shall be regulated by a law.

On future fields, this article leaves open arrangements to subsequent legislation based on agreement between the federal and subnational governments:

---

[3] Cameron (2007) envisions three scenarios of partial federalism, radical decentralization and a balanced federation. McGarry (2007) projects how regional representation at the federal level and inter-governmental relations might evolve, arguing for regional capacity-building to enable a balanced federation.
[4] Press release by the KRG from April 19, 2008 (Available at: http://www.krg.org/articles/detail.asp?smap=02010100&lngnr=12&asnr=&anr=23835&rnr=223)
[5] See US Institute for Peace Briefing for March 2008 (Available at: http://www.usip.org/pubs/usipeace_briefings/2008/0319_iraqi_politics.html)

> Section 4, Article 4 (2): The federal government, with the producing regional and governorate governments, shall together formulate the necessary strategic policies to develop the oil and gas wealth in a way that achieves the highest benefit to the Iraqi people using the most advanced techniques of the market principles and encouraging investment.

Table 1: Functional Expenditure Responsibilities in Iraq[6]

Expenditure Category	*Responsibility: Policy, standards, and oversight*	*Responsibility: Provisional/ administration*	*Comments*
Defense	F	F	Benefit and costs are national in scope
Foreign affairs	F	F	Benefit and costs are national in scope
International trade	F	F	Benefit and costs are national in scope
Monetary policy, currency, banking	F	F	Benefit and costs are national in scope
Interstate commerce	F	F	Benefit and costs are national in scope
Transfer payments to persons	F	F	Redistribution
Subsidies to business and industry	F	F	Regional development, industrial policy
Immigration	F	F	Benefit and costs are national in scope
Unemployment insurance	F	F	Benefit and costs are national in scope
Airlines and railways	F	F	Benefit and costs are national in scope
Fiscal policy	F, S	F, S,	Coordination is possible
Regulation	F	F, S, L	Internal common market
Natural resources	F	F	Promotes a common market
Environment	F,S,L	S,L	Benefits and costs may be national, regional, or local in scope
Industry and agriculture	F,S,L	S,L	Significant interjurisdictional spillovers
Education	F,S,L	S,L	Transfers in kind
Health	F,S,L	S,L	Transfers in kind
Social welfare	F,S,L	S,L	Transfers in kind
Police	F	S,L	Primarily local benefits
Water, sewage, refuse	S,F	L	Primarily local benefits
Fire protection	S,F	L	Primarily local benefits
Parks and recreation	S,L	F, S, L	Primarily local responsibility, but national and provincial governments. may establish own parks
Highways			
Interstate	F	S,L	Internal common market
Provincial	F	S,L	Provincial benefits and costs
Interregional	S	S,L	Interregional benefits and costs
Local	L	L	Local benefits and costs
Spending power	F,S	F,S	Fiscal transfers to advance own objectives

Note: **F** is federal responsibility; **S** is state or provincial responsibility (defined as groups of governorates); and **L** is local responsibility (at the governorate level). All municipal functions are deconcentrated from higher levels.

2.2 Ethnic geography

Iraq's population is estimated to consist of 16 to 20 million Arabs (representing 75% to 80%) and 3.6 to 4.8 million Kurds (15% to 20%) with Turkomans, Assyrians or other comprising the remaining 5%.[7] The Kurds form a majority in the north of the country while Shia Arabs

[6] *Source:* Cited in Ahmad et al (2005) as Iraqi officials' views on a framework for Iraq's division of expenditure responsibilities. Original source: Shah (1994).

[7] CIA Factbook (2007)

dominate the country's south. Figure 1 illustrates the distribution of ethnic and religious groups across the country.

The region designated as Kurdistan, encompassing the governorates of Duhok, Erbil and Suleimaniah, has an estimated population of 3.7 million[8] and its majority is Kurdish. The Kirkuk governorate includes a mix of Kurds and Sunnis as well as Turkomans.

While a generalization, the south is dominated by Shiite Arabs. However, Shiite Arabs are not a homogenous group and Iraq's Shiites are divided by significant political and intra-sectarian cleavages. Sunnis represent a minority in Iraq, comprising only 20 to 30% of Arabs.

Internal displacement has been significant in Iraq and displacement has accelerated in response to the rise in sectarian violence following the February 2006 bombing of the Al-Askari Mosque in Samarra. The International Organization for Migration estimates 2.8 million displaced persons within Iraq to date[9] of which an estimated 1.5 million have been displaced since February 2006. Of those displaced since 2006, 64% of surveyed families originate from Baghdad and 20% from Diyala. Around 60% of these displaced families identify as Arab Shia Muslim and 30% as Arab Sunni Muslim.

2.3 Geography of Oil Resources

The potentially richest petroleum resources are located in the Zagros fold and thrust belt, which underlies the eastern edge of the country and encompasses the supergiant oilfields around Kirkuk. Highly significant resources are present in the Mesopotamian Foredeep Basin which underlies Iraq's central northwest-southeast axis and includes those supergiant oilfields southeast of Baghdad and around and Basra in the south.[10]

Iraq's oil reserves are estimated at 115 billion barrels[11], comprising around 15% or the total middle eastern oil reserves. Of proven resources, approximately 75% are located in the south and 25% in the north, including 6% in the present Kurdistan region (and 15% were Kirkuk to affiliate). Iraq has abundant associated natural gas but most is presently flared, owing to the lack of gas infrastructure and relatively low demand in the middle east. By earlier reports, undiscovered petroleum in the western desert is estimated at around 43 billion barrels. A recent study by the IHS oil-services firm estimates additional resources at 100 billion barrels, with much of the additional capacity located in the western desert. Table 2 provides estimates of current production capacity and reserves in existent oilfields. Figure 2 illustrates the location of these oilfields and related infrastructure. The Kirkuk field is the most productive in the north and could boast even greater capacity with additional infrastructure and more sophisticated oil-field management.

No fields in Kurdistan are currently productive. Although Production Sharing Agreements (PSAs) between the Kurdistan Regional Authority and western firms are in place for both

[8] 2002 estimate by the UN Oil for Food Program
[9] IOM, Bi-Weekly Report for July 2006. Available at: http://www.iom-iraq.net/library.html#IDP
[10] USGS World Petroleum Assessment – Middle East and North Africa Regional Geologic Survey (2000). Available at: http://energy.cr.usgs.gov/WEcont/regions/reg2/R2chap.pdf
[11] U.S. EIA Country Analysis for Iraq (2007) citing Oil and Gas Journal. Available at: http://www.eia.doe.gov/cabs/Iraq

fields, Chemchemal and Taq Taq remain undeveloped[12]. However, potential production from Taq Taq is estimated at 100,000 to 200,000 bbl/d with estimates of reserves at the field recently updated from 0.4 to approximately 0.8 billion bbl[13]. Kurdistan's Tawke oilfield has estimated recoverable reserves of 0.23 billion bbl[14]. As evident from Figure 2, transport of petroleum from Kurdistan oil fields to refineries and for export will require passage through pipelines owned by the Iraqi National Oil Company (INOC).

Although much exploration remains to assess the potential of Kurdistan's petroleum resources, current assessments still place the region below the potential of the southern fields, especially those in the Basra area that are already in production.

Table 2: Estimated Capacity and Reserves of Iraq's Current Oil Fields (from EIA, 2007)

Southern Fields	**Estimated Current Capacity (2007E) (bbl/d)**	**Estimated Pre-War Capacity (2003E) (bbl/d)**	**Est. Reserves (billion bbl)**
Rumayla North	500,000	500,000	10
Rumayla South	800,000	800,000	7
West Qurma	180,000	250,000	15-21
Az-Zubair	230,000	230,000	5
Missan (inc. Buzurgan, Jabal Faqi, Abu Ghraib)	100,000	100,000	3
Majnun	50,000	50,000	20
Luhais	50,000	50,000	2
Southern Sub Total (million bbl/d)	**1.9**	**2.0**	
Northern Fields*			
Kirkuk	250,000 [600,000 - 700,000]	700,000	10
Bay Hasan	[50,00 - 100,000]	125,000	2
Jambur	[75,000]	75,000	1
Khabbaz	[25,000]	30,000	<1
Ajil	[25,000]	25,000	<1
East Baghdad	0	50,000	8
Ayn Zalah/Butmah	[10,000]	10,000	<1
Sufiya (other minor fields)	10,000	10,000	<1
Northern Sub Total (million bbl/d)	**0.3**	**1.0**	
Totals (million bbl/d)	**2.2**	**3.0**	

Source: EIA, ITAO, Media Reports, Government of Iraq Ministry of Oil

Bracketed amounts are estimates of potential production with additional export/domestic refining capabilities

[12] U.S. EIA (2007) Country Analysis for Iraq

[13] http://www.oilvoice.com/n/Addax_Petroleum_2007_Yearend_Reserves_Resources_And_2007_Average_Oil_Production/972d1d5c.aspx

[14] http://www.oilvoice.com/n/DNO_ASA_Provides_Revised_Reserve_Estimates_on_Tawke_Field_in_Kurdistan_Northern_Iraq/99d933c1.aspx

2.4 Present Organization of Oil industry

The present structure for Iraq's oil industry was set out along in a 1987 organizational plan and was arranged along both regional lines and functional duties. The Iraq National Oil Company (INOC), which serves as an umbrella for its operating units, is responsible to the Oil Minister, who is the functional head of the industry[15]. Organized as autonomous companies within the INOC fold are:

- The North Oil Company, which is responsible for Iraq's northern oil fields, including Kirkuk, Jambur, Bai Hassan, Khabaz, Ajil, East Baghdad, Sufalya and Naft Khana;
- The South Oil Company, which is responsible for fields around Basra, including the Rumaylah fields, Az Zubayr, Majnun, West Qurnah and Luhais;
- The Parallel North and South companies for natural gas and oil refining;
- State Company for Oil Projects, which provides engineering, contracting and rehabilitation services for oil and gas plants.
- Iraqi Drilling Company, which provides drilling services for the industry;
- State Oil Marketing Company (SOMO), which manages Iraq's crude oil exports and imports of oil products; and
- Additional companies for associated services and support, including the Oil Pipeline Company, Gas Filling Company, Oil Products Distribution Company, Iraqi Tanker Company, Guard Force, Oil Research and Development Company, and Oil Training Institute.

In Iraq, certain service contracts have been extended to foreign firms for development of properties and oil field management. Petrel holds a USD 197 million contract for development of the Subba and Luhais field northwest of Basra. Global conglomerates like Foster Wheeler and Kellogg, Brown & Root have also been contracted to provide services for producing oil fields.

In Iraqi Kurdistan, following from the KRG's own Oil Law, the KRG has awarded PSAs to 25 foreign firms. These PSAs provide a two-stage process for exploration and development rights, also establish a profit-based royalty regime.

2.5 Present Revenue Sharing Arrangement

A 2003 resolution of the United Nations Security Council provided for the sale and export of Iraqi oil by the SOMO. Of these revenues, 5% are reserved for compensation for Iraq's 1990 invasion of Kuwait and 95% is deposited in a Development Fund for Iraq (DFI), housed at the Federal Reserve Bank of New York and monitored by the International Advisory and Monitoring Board (IAMB). Disbursements are made from the DFI to Iraqi government ministries. Since October 2006, disbursements from the Fund have been overseen by a Committee of Financial Experts, authorized and appointed by Iraq's cabinet to succeed the IAMB.

From its inception in 2003 to June 2007, the DFI received $98.9 billion from the proceeds of Iraqi oil export sales, balances from the UN oil-for-food program and frozen Iraqi funds, and

[15] Jaffe (2007) provides these details for the structure of Iraq's oil industry.

disbursed $89.9 billion for the Ministry of Finance, letters of credit for Iraqi ministries, and contracts administered by US Agencies.[16]

The fund generated USD 37.5 billion in 2007.[17] Export sales were USD 37.7 billion of which the DFI received USD 35.8 billion. Additional revenues were received from the UN Oil for Food program, proceeds from assets in foreign countries, refunded letters of credit and interest.

An agreement covering 2005-2008 forwards a 17% lump-sum allocation from the DFI to the Kurdistan Regional Government, following deductions for central "governing expenses" including defense, the presidency and prime minister's office. Allocations to other governorates are decided centrally by an act of parliament drafted by the Ministry of Finance.

Present allocations to the governorates are made by the central government from pooled revenues through the Accelerated Reconstruction and Development Fund (ARDF). This Fund is administered by the Ministry of Planning and Cooperative Development (MoPCD) and is presently disbursed on the basis of project lists submitted by the governorate councils.
Table 3 provides the per capita budgetary allocations for capital projects for 2007, also documenting the committed funds and expenditures as of October 21, 2007. Notably, the oil-rich regions of al Basrah, Dhi Qar and Kirkuk receive amongst the lowest allocations. Citing the interference of sectarian violence and the costs of awarding/monitoring contracts as causes, the U.S. Government Accountability Office (2008) noted the low levels of budget execution, both for the governorates (as documented in
Table **3**) and at the federal level.

2.6 Proposed Restructuring and Revenue-Sharing

An Oil and Gas Law, currently in draft and still under revision, will set out a new structure for the oil industry.[18] The proposal will re-establish the INOC as a holding company for the North and South oil subsidiaries as well as for the Iraqi Drilling Company and the Oil Exploration Company. The INOC would be charged with managing existing production in accordance with Article 109 of the 2005 Constitution which grants the federal government authority for present fields. Under the law, participation of foreign oil companies would occur under the auspices of the INOC, primarily through joint ventures.

In 2007, the KRG has passed its own draft law and published a model production sharing agreement (PSA).[19] It has reportedly signed over 25 separate PSAs with, primarily, junior oil companies, including Western Oil Sands, Talisman and Heritage from Canada, the Korea National Oil Corporation and DNO of Norway.

---

[16] IAMB Report, Feb 2008. Available at: http://www.iamb.info/pdf/iamb_02292008.pdf
[17] Ernst and Young, Audit of DFI for 2007 (Available at: http://www.iamb.info/dfiaudit.htm)
[18] An English translation of this law is available at:
http://www.iraqrevenuewatch.org/documents/oil_law_english_20070306.pdf
[19] The English translation of the KRG's Oil and Gas Law is published at:
http://www.ekrp.org/files/docs/OilGasLaw_en.pdf
The KRG model contract is available at:
http://web.krg.org/grafik/uploaded/KRG_Model_PSC_20071112__2008_07_17_h15m59s45.pdf

Notably, companies that had signed PSAs with the KRG were not present on the list of companies qualified to bid on federal development contracts that was recently published by the federal government.[20] Previously the federal oil ministry had cancelled supply contracts with the Korean firm SK Energy over the latter's refusal to cancel its PSA with the KRG.[21]

The original draft law contained annexes categorizing discovered oil fields and assigning their management: present producing fields would be allocated to the INOC; discovered but undeveloped fields would fall under joint jurisdiction of the INOC and regions; and exploration areas would be treated separately.

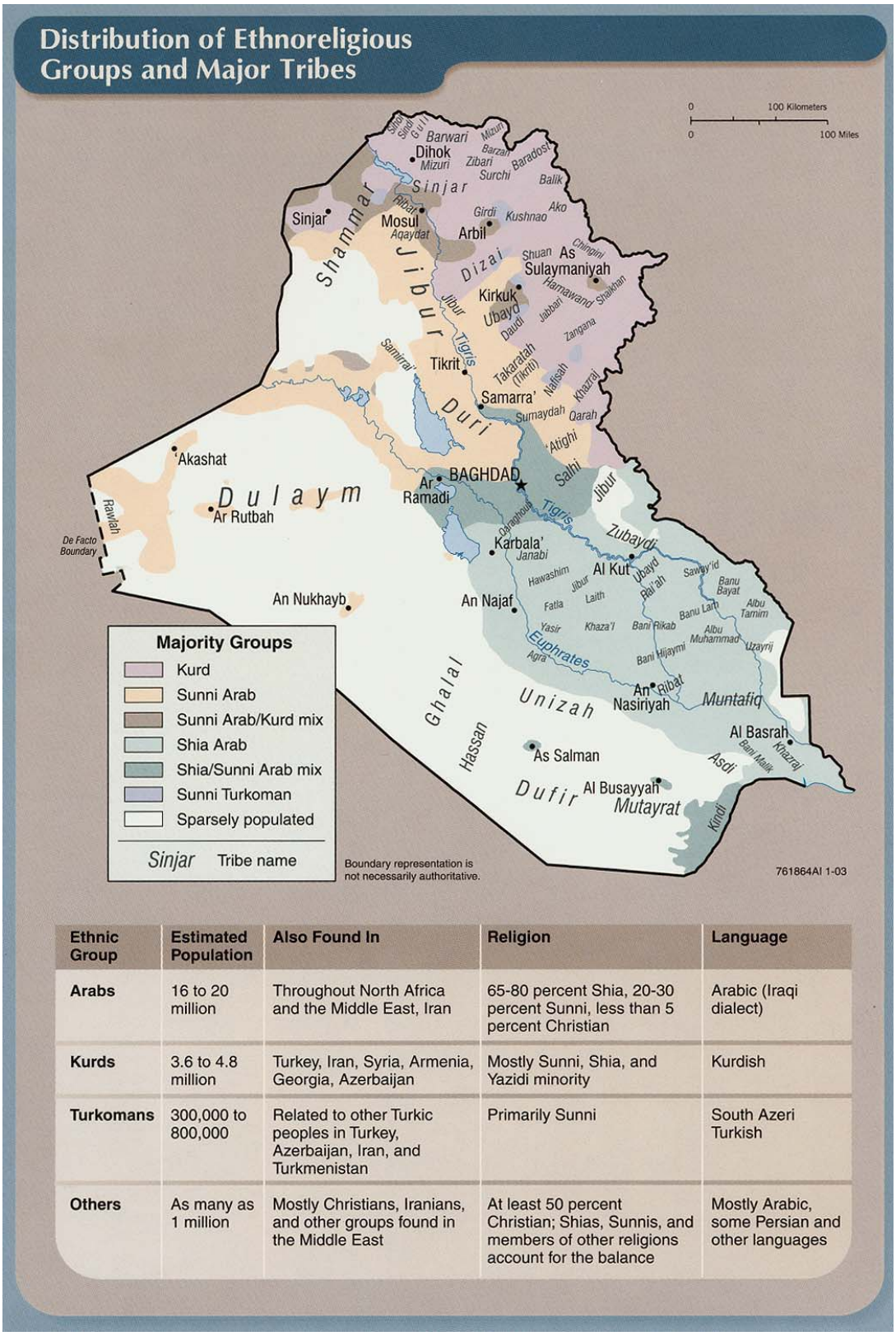
The draft Oil and Gas Law would further establish a Federal Oil and Gas Commission (FOGC), which would oversee the INOC and have authority over contract negotiations with foreign partners. Its initial composition included five central government ministers and five executives from federal institutions, including the central bank and INOC. It would include a representative for each region and include a representative from each "producing" governorate (defined as achieving over 150,000 bbl/day). Kurdistan is presently the only region and only Basra and Kirkuk would have the production necessary to presently qualify as producing governorates. Maysan, Dhi Qar, Wasit and Mosul could foreseeably obtain the necessary capacity in the future (Visser, 2007).

The draft revenue law would grant the KRG a 17% share of oil revenues after deduction for sovereign expenditures of the federal government and strategic projects.[22] The KRG quota would be deposited in a pooled account of Iraq's central bank. The KRG's own oil and gas disputed this particular provision, stipulating that its share of oil revenues should be deposited in a separate bank account, housed at a reputable international bank.

[20] Reported by StratFor at http://www.stratfor.com/analysis/iraq_oil_contracts_and_security_environment (April 14, 2008)
[21] Reported by Reuters on December 24, 2007 (http://www.reuters.com/article/rbssEnergyNews/idUSSEO21450320071224) and February 5, 2008 (http://www.reuters.com/article/rbssEnergyNews/idUSL051392020080205)
[22] An English translation of the draft Law of Financial resources was published by the KRG and is available on their website: http://www.krg.org/pdf/English_Draft_Revenue_Sharing_law.pdf

Table 3: Per Capita Budgetary Allocations by Province for Iraq's 2007 Budget
(U.S. GAO, 2008 from Unofficial U.S. Embassy data)
Amounts in USD '000,000s unless otherwise stated. Amounts Committed and Spent as of October 21, 2007

Province	Population	Budget allocation	Per Capita Budget Allocation (USD)	Amount committed	Percentage of budget committed	Amount spent	Percentage of budget spent
Anbar	1,023,000	$107	$105	$52	49%	$0	0%
Babil	1,500,000	112	$75	127	113	42	38
Baghdad	6,726,432	560	$83	301	54	70	13
Basrah	2,600,000	195	$75	159	82	12	6
Dhi-Qar	1,850,000	138	$75	119	86	2	1
Diyala	1,135,000	110	$97	0	0	0	0
Karbala	738,570	71	$96	62	86	17	24
KRG (Irbil, Sulaymaniya, Dahuk)	3,673,740	314	$85	113	36	0	0
Maysan	900,000	76	$84	2	3	26	34
Muthana	594,350	52	$87	38	73	4	8
Najaf	1,081,203	88	$81	88	100	23	26
Ninawa	2,748,022	226	$82	54	24	17	8
Qadisiyah	937,261	64	$68	64	100	13	20
Salah al-Din	904,000	93	$103	75	81	11	12
Tameen (Kirkuk)	1,149,000	90	$78	58	64%	17	19%
Wasit	1,032,838	83	$80	65	78	20	24
Total	**28,593,416**	**$2,379**	**$85**	**$1,377**	**58%**	**$274**	**12%**



Ethnic Group	Estimated Population	Also Found In	Religion	Language
Arabs	16 to 20 million	Throughout North Africa and the Middle East, Iran	65-80 percent Shia, 20-30 percent Sunni, less than 5 percent Christian	Arabic (Iraqi dialect)
Kurds	3.6 to 4.8 million	Turkey, Iran, Syria, Armenia, Georgia, Azerbaijan	Mostly Sunni, Shia, and Yazidi minority	Kurdish
Turkomans	300,000 to 800,000	Related to other Turkic peoples in Turkey, Azerbaijan, Iran, and Turkmenistan	Primarily Sunni	South Azeri Turkish
Others	As many as 1 million	Mostly Christians, Iranians, and other groups found in the Middle East	At least 50 percent Christian; Shias, Sunnis, and members of other religions account for the balance	Mostly Arabic, some Persian and other languages

Figure 1: Iraq's Ethnoreligious Geography (from CIA, 2003)

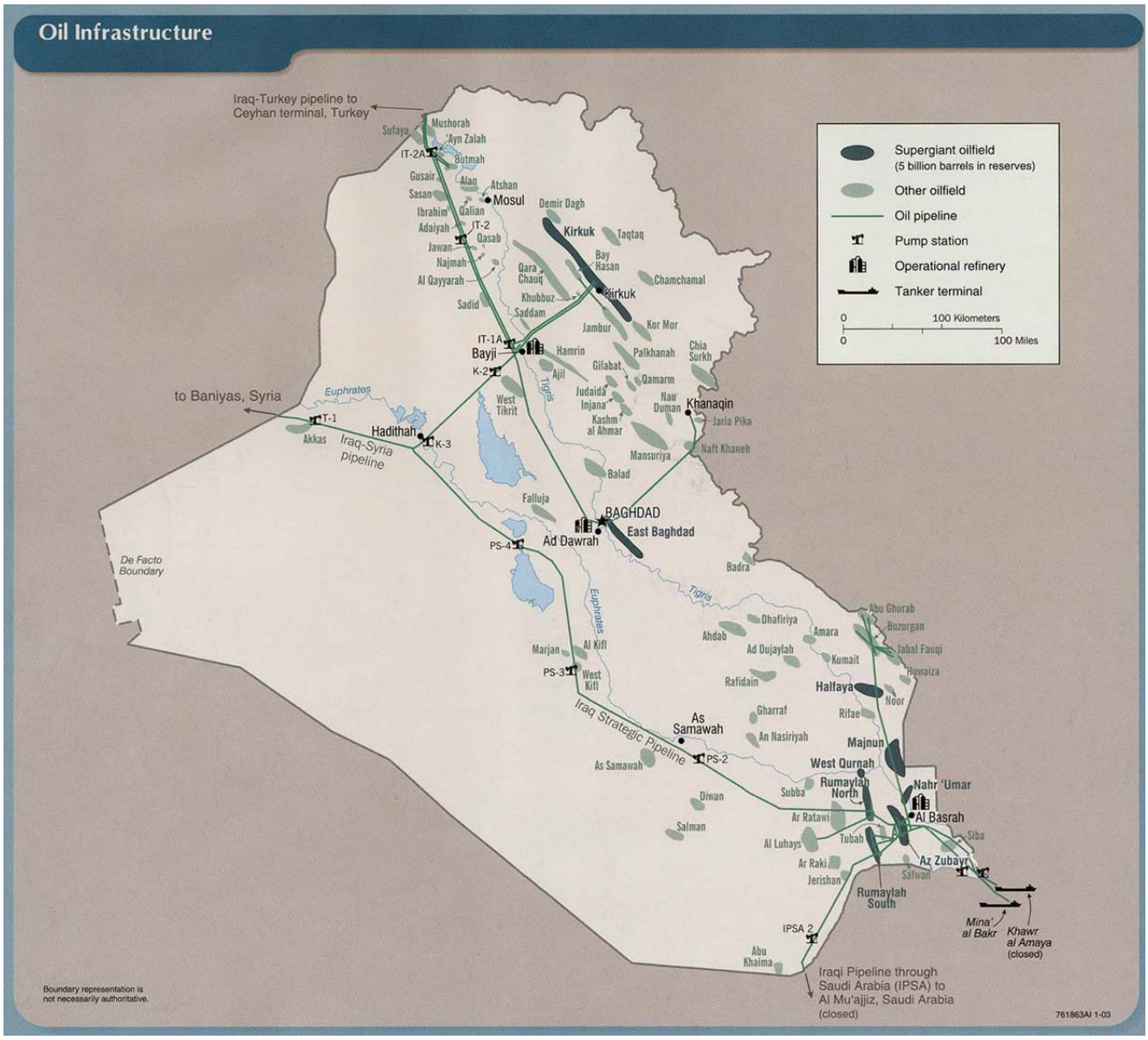


Figure 2: Iraq's Oil Fields and Infrastructure (from CIA, 2003)

3 Principled Federalism for Oil Resources in Iraq

As we have noted, petroleum revenues are the core of public finance in Iraq. While this is undoubtedly due to the present collapse of the broader, diversified economy, Iraq's resources will continue to be the predominate base for government revenues for the foreseeable future. The mutual goals of federal and subnational governments in resource management should then be:

- To capture economic rents from petroleum exports for the owning peoples of Iraq;
- To optimize exploration activities so as to establish knowledge of Iraq's full resource potential;
- To promote the efficient exploitation of resources over the long-term;
- To stabilize public finances in the short- and medium-terms under potentially volatile resource revenues;
- To leverage the resource base for reconstruction and economic diversification;
- To minimize distortions in fiscal capacity across the economic union and promote efficiency of the internal common market;
- To ensure that the oil industry is appropriately regulated –with particular reference to its environmental performance;
- To provide an equitable level of public services to Iraqi citizens in all regions; and
- To mitigate potential macroeconomic destabilization from resource revenues.

Involving both federal and subnational powers, each issue must be addressed in a principled inter-governmental arrangement. Such an arrangement has necessarily political dimensions, requiring some understanding of the common entitlements of Iraqi "social citizenship" whatever an individual's jurisdiction of residence.

However, this arrangement should be nonetheless informed by economic principles. The federation's cohesion will certainly depend on the efficiency and equity of the economic union.

Furthermore, powers must be assigned and the oil industry structured in a manner that ensures the productive efficiency. The production of natural resources occurs in several stages. In general, these are: exploration; development; extraction; transport from extraction site; processing; transport to market; recycling; and closure/site remediation. Government powers will influence this process at multiple stages. As well, not all activities will occur in the same location. Specifically, oil must be transported from the site of extraction to a refinery. Transport of extracted crude is typically by pipeline.

As follows, we apply such principles to each dimension of such an arrangement for Iraq. In general, we contend that the model arrangement is one in which:

- Exploration and Development contracts are administered as a two-stage process with competitive auction for initial exploration rights and a profit-based royalty or resource rent tax imposed during production.

- Regions and governorates, who have requisite technical and administrative competence, have authority to negotiate contracts and to assign exploration and development rights according to a flexible but consistent set of national standards.
- The National Oil Company contracts private firms for certain oil field services, competes with private firms for future exploration and development prospects, and provides pipeline transport to all producers without price discrimination.
- The federal government collects all petroleum revenues in a clear and transparent manner.
- Petroleum revenues are shared on a per capita basis – potentially with some limited preferential share for originating regions and governorates.
- Regions and governorates have adequate fiscal capacity to discharge their expenditure responsibilities, providing reasonably equal levels of public services at comparable rates of taxation.
- As statistical capability allows, a federal equalization program provides transfers to mitigate disparities in fiscal capacity between regions, including those created by sharing of derived petroleum revenues but excluding benefit taxes.
- The federal and subnational governments manage oil revenues according to competent short- to medium-term budget plans for capital expenditures.
- In the immediate term, petroleum revenues are invested in infrastructural investment and reconstruction programs.
- In the longer term, following a sufficient recovery and adequate reconstruction, the federal government directs an appropriate portion of revenues, as part of federal budgeting and consistent with the federation's medium-term expenditure plan, to a federally-administered oil revenue fund.
- Such an oil revenue fund's broad objective should be to maintain a level of wealth for future generations.
- Publicly accountable budgeting with a medium-term expenditure plan – rather than reliance an oil revenue fund's rules – should be the primary means of stabilizing government finances.
- Such an oil revenue fund operates with clear objectives, flexible but contingent rules, a benchmarked asset-management strategy, and direct accountability to government as well as to the regions and governorates.

Based on Iraq's draft Oil Law and draft Law of Financial Resources, the country's legislators generally appear to envision such a regime.

3.1 Ownership and Management

The optimal assignment of ownership is inseparable from the capacity of the owner to efficiently manage the resource. That is, the ownership of the resource should be assigned to an agent whose management will maximize the social surplus from its extraction. This includes both the maximization of resource rents and the promotion of economic development.

From the perspective of a government, the salient features for "ownership" of resources are the powers to:

- Assign exploration and development rights for the subsurface;
- Regulate exploration and development; and
- Exact payment for the extraction of resources and for complementary activities.

Government ownership of the subsurface is optimal, considered against the alternative of initial ownership by the surface owner. Firstly, a "split estate" that severs ownership of the subsurface from ownership of the surface is most efficient, enabling the optimal use of each. Secondly, government ownership of the subsurface is warranted by the "hidden" character of resources, the problems of collective management, efficiencies from pooling exploration risks, and the broad goal to maximize social surplus.[23]

In a federation, ownership of resources should then be assigned to the government with the capabilities to capture resource rents and administer resources most efficiently.[24] Where subnational governments are competent, decentralization of management is desirable in order to bring these decisions closer to those they most impact. The owning government must then possess sufficient administrative and technical capacity to:

- Maximize public capture of resource rents;
- Promote exploration and to organize the competitive assignment of subsurface exploration rights;
- Competently and predictably regulate the development of a discovered deposit; and
- Predictably and consistently assess compensation for surface users.

Two broad alternatives exist for the administration of subsurface rights: i) a competitive regime for granting exploration and development rights; or ii) resource production by a state-owned monopoly. The first alternative does not exclude state equity participation through contracts that entitle the government to a share of proceeds; nor does the second alternative preclude private-sector participation since firms may competitively bid for service contracts. Moreover, it is possible for a regime in which a state-owned national oil company (NOC) participates in competitive bidding for exploration and development rights alongside private firms. However, we consider such a regime to exist within the first broad alternative. Furthermore, another structure might involve government monopolies limited to related-infrastructure or particular components of the production process – for instance, refineries and pipelines. Under such a scenario, private firms would require credible commitments that government control would not be used to squeeze additional rents from producers.

3.1.1 Competitive Assignment

Under competitive assignment of exploration and development rights, the process for assigning rights will incorporate the capture of rents. That is, the taxation structure for resource production must be clear for exploration to proceed smoothly to development. Broadly, rights are assigned according to two approaches: i) a uniform, legislated framework for exploration permitting and royalties/taxes on production, or ii) project-specific contracts that set out the schedule of contingent payments and are assigned by auction and negotiation.

[23] Scott (2008) provides a thorough history of the development of legal regimes for assigning subsurface rights and their economic basis.

[24] Boadway and Flatters (1993), Otto (2001), McLure (2003) and Boscio (2007) discuss characteristics of particular tax instruments, fiscal decentralization and the optimal assignment of resource taxes.

In either case, legislation or contracts generally create a process of two or more stages in which exploration rights may be converted to rights for developing and producing. These rights may be accompanied by set payments at each stage; for instance, a rental fee for land use or an initial payment for the purchase of exploration rights. The legislation or contract will also establish the instruments by which the government will capture rents.

The choice of instrument will depend on the information set, risk aversion, liquidity constraints and time-value of funds of the particular government. Risks exist at each stage of the production process, ranging from exploration risks for discovering a resource to technical risks around production to commodity price risks. As well, exploration and development of a particular field generally occurs over many years. A decade may even pass before a discovered resource comes into production. Profits may not accrue for several years. A highly risk-averse government will want to transfer risk to a less risk-averse party. By acquiring greater information about their subsurface through state geoscience or contracted surveys, governments can reduce exploration risk. A government with a high discount rate will prefer payments in the near-term to larger cash-flows in the longer term.

These features argue for resource management by the least risk-averse, most knowledgeable and most patient level of government. Such a government will be capable of maximizing the expected value of resource rents. If another tier of government has greater aversion to risk, lesser information, or higher time-discounting, it will not as efficiently manage the resource.

Under competitive assignment, the optimal arrangement is one in which exploration rights are assigned in a competitive auction or tender process, and a resource rent tax is levied on realized profits. An auction of exploration rights ensures that these rights are assigned to the user with the highest utility.

An initial payment might accompany awarding of rights and land-use fees might be levied during exploration. Requirements should also be attached to exploration and development activities such that a company must complete certain minimum activities by set dates. Rights should be granted for a fixed period; not in perpetuity. Such provisions prevent idle or purely speculative investment of subsurface rights.

A single auction, which grants all rights according to a single up-front payment and imposes no production-based royalties or taxes, is unadvisable. Likely, the number of auction participants will be limited by the size of the *ex ante* payment and bidding will not be competitive. In an uncompetitive auction, bidders with private information about the area's resource potential will not be induced to reveal their true valuation and will strategically underbid.

Moreover, even in a competitive auction, the winning bid will reflect the expected value of the resource and government will forfeit any title to the realized rents. A risk-averse government might then accept the returns from an auction; rather than capture the ultimate realized rents. However, part of the rationale for a government to hold all subsurface rights is that government can thereby best pool exploration risks. Furthermore, unless the bidding

firms have a lower discount rate and lower risk aversion than government, the net present value of the *ex post* capture of rents will exceed the *ex ante* payment. The return to the public from its subsurface resources will be maximized when government captures all realized rents *ex post* rather than expected rents *ex ante*.

However, where *ex post* instruments are used to capture realized rents, an auction may be an appropriate mechanism of most efficiently assigning exploration rights or tendering a project-specific contract. A competitive auction has the feature of assigning the rights to the bidder with the highest expected utility.

Although *ex post* instruments, *ad valorem* or per-unit royalties would be unadvisable. A per unit royalty will also increase the minimum grade that a company is willing to extract from a known reserve. Lower grades, which would be extracted under a pure rent tax, will not be extracted. *Ad valorem* royalties avoid this problem of "high-grading" but nonetheless distort the time-path of production and discriminate against deposits with higher costs of extraction. An *ad valorem* royalty encourages a high-cost project to increase the rate of extraction in order to compensate for the diminished future cash-flows. As well, an *ad valorem* royalty would deter investment in a marginal project with a high capital cost, even though the project would still deliver economic profits.

Most preferable is a resource rent tax, which provides the producer with a sufficient rate of return but appropriates additional rents. This tax is efficient in that it does not distort the time-path of extraction or the extraction decision for the marginal deposit. The tax then captures the economic profits represented by the value of production less the producer's opportunity costs. Such a tax is equivalent to a cash-flow tax with unlimited carry-forward, in which capital costs are immediately deducted from revenues. Losses in any period are carried forward, inflated at an appropriate discount rate, and applied to future positive cash-flows.

However, a resource rent tax exposes the government to "lumpy" cash-flows and its implementation requires administrative and technical sophistication. Tax authorities must be capable of assessing various capital costs and expenses. Government requires technical expertise to adequately gauge the risks to production. Moreover, exploration involves uncertainty and risk. An exploration firm must be entitled to some portion of the ultimate resource rents in order to induce prospecting in the first place: If all realized rents are to be appropriated by the government, prospecting carries a negative expected value and a prospector will not assume the risks of exploration. The government must have adequate technical expertise in order to gauge the required compensation for prospectors' exploration risks and induce an efficient level of exploration.

Comprehensive legislation for a resource rent tax is difficult to design. Nonetheless, both developed and developing oil-exporting countries levy such petroleum profits taxes. However, deposits differ in character and pre-exploration information varies. As well, exploration and development firms are averse to the political risks of legislative amendments or even expropriation. A production sharing agreement (PSA) somewhat mitigates these risks and additionally provides flexibility, allowing the agreement to be tailored to the given project. Simple PSAs allocate a certain share of production to government, mirroring *ad*

valorem or per unit royalties; however, profit-based resource rent taxes can be imbedded in the terms of more sophisticated PSAs.

PSAs must be negotiated, imposing additional transactions costs. Various contingencies must be imbedded in the contract terms and a contracting government must retain legal and technical expertise. Production sharing contracts also potentially lack transparency. While flexibility is desirable, contracts' core provisions should also be consistent and predictable. The contract approval process must be ultimately accountable to government and conducted according to a published model agreement.

Equity participation, wherein government receives an equity share of the project in return for development rights, is another potential instrument for capturing resource rents. When government receives this equity for free, such an arrangement is equivalent to a resource rent tax. A contract for government equity participation also might include in-kind contributions by government. Government might legislate that any project include a minimum government share or the terms of equity participation might be negotiated as part of a PSA. For such an agreement, it is critical that regulatory approvals are administratively separate from contract approval. The same department that acts as an owner should not act as the regulator.

3.1.2 State-owned Monopoly

State-owned national oil companies (NOCs) have become increasingly popular as a means of capturing resource rents while pursuing national objectives for the oil industry, particularly amongst OPEC members. Indeed, numerous NOCs have expanded their operations outside of their own borders.

However, the dual objectives of national development and profit-maximization are potentially in tension. Being isolated from competitive pressures, numerous inefficiencies are alleged of such NOCs – in particular under-performing management, capture of rents by special interests and suboptimal levels of exploration. In particular, the oil industry requires continuous reinvestment in order to expand reserves and maintain capacity. A government may be tempted to sop a SOC of its cash-flows.[25]

Moreover, NOCs might be beset by rent-seeking behaviour, either by associated labour groups or through corruption. Procurement processes must be clear and transparent. Cash flows must be well audited and the NOC must have adequate internal controls.

Management must also have appropriate incentives for cost minimization. The security of a monopoly position creates significant disincentives for such efficiency. Such an environment may fail to attract top technical and management over the long term.

Conversely, NOCs arguably provide the state with a learning-by-doing window into petroleum operations and, proponents contend, align the rates of resource development and extraction with maximization of social welfare. In theory, the cost of capital for a private

[25] Stevens (2003), McPherson (2003) and World Bank (2007b) provide reviews of country experiences with national oil companies – particularly for those oil-producing countries in the Middle East and North Africa region.

developer might induce higher-than-optimal extraction rates. Slower development may also better accord with regional development objectives. A gradual pace of extraction also provides opportunities to develop forward linkages, providing value-added processing, and backward linkages, supplying services and machinery to the petroleum industry.

Although efficiency concerns abound, these are not a *prima facie* case against NOCs. Rather, the efficiency of an NOC depends on surrounding institutional arrangements. In particular, an NOC best exists as an arms-length corporation with rigorous internal controls and public transparency of its balance sheet. Here, government acts as a share-holder, approving long-term investment plans but delegating operations to competent managers. Moreover, government should clearly separate its role as regulator from that as shareholder, with different agencies or governments acting in these capacities.

3.1.3 Ownership and Management in Iraq

Iraq has vast unexplored areas with strong petroleum potential. The recent IHS study projects abundant deposits underlying the sparsely-populated western desert and the largely autonomous Iraqi Kurdistan.[26] Promoting efficient exploration to discover and delineate deposits is an especial priority. To this end, Iraq must attract high-calibre talent and investment to petroleum exploration.

A PSA regime with competitive auctions for exploration blocks and resource rent taxes imbedded in the agreement is an appropriate approach, provided that the negotiating government has adequate expertise and that the ultimate PSA approval is accountable and reasonably transparent.

Under the draft Oil Law, the federal government retains ownership of presently producing oil fields and management is delegated to the Iraq National Oil Company (INOC). The INOC also has a present monopoly on refineries and pipelines. In the short-term, it is appropriate that this arrangement continue since the INOC has established capacity on which to build. Privatization of such a strategic, network industry is a difficult undertaking and very susceptible to rent-seeking. Iraq is certainly not in a position to organize the competitive privatization of its oil industry. The predominance of the oil sector in Iraq's economy also argues for some state role. Moreover, the INOC likely has a comparative advantage in exploration and development of new fields proximal to or associated with existent fields.

Nonetheless, by all accounts, the INOC's existent above-ground infrastructure is gravely in need of renewal and, as evidenced by a two-day strike by Basra oil workers in July 2005, its operations are subject to pressure by special interests. The capacity of the INOC should be leveraged in order to reconstruct infrastructure and revitalize the industry; however, the Iraqi oil industry requires the infusion of state-of-the-art technology and guidance from experienced petroleum professionals. Contracting private oil service firms and IOCs for these purposes can provide internal competition and facilitate technology transfer. As well, subjecting the INOC to competitive bidding for future fields will encourage efficiencies.

[26] See IHS press release of April 18, 2007 (http://www.ihs.com/News/Press-Releases/2007/IraqAtlas.htm)

The draft law[27] envisions an open, competitive regime for contracting in existent fields and for exploration and development contracts. It would establish a framework whereby the Federal Oil and Gas Commission (FOGC) establishes model contracts and creates the general framework for administering rights. The FOGC would be composed of federal ministers and representatives of producing regions and governorates. Competent regional authorities, with sufficient technical and administrative capacity, would administer contracts within their regions. Moreover, the draft law would explicitly recognize the KRG's previously signed agreements. Although mandating a review of these agreements, the law delegates responsibility to the KRG for this review.

This framework accords with the above principles for ownership. It is appropriate that subnational government administer contracts within their territory, subject to their having the capability to do so competently. Subnational governments possess region-specific knowledge, and can administer contracts with better consideration of local externalities and with specific accountability to the region's citizens. Moreover, government management of natural resources is not simply about public finance, but involves promotion of sustainable regional development through forward and backward linkages. A federal framework provides uniform and consistent, nation-wide standards while allowing administrative flexibility for competent subnational governments. Such an arrangement fits with Iraq's evolving version of asymmetrical federalism and with the differing administrative capacities between the KRG and other governorates.

Contracts would provide a two-stage process of preliminary exploration rights for an extendable 4-year period that would convert to 15- to 20-year development rights upon a successful discovery. A 12.5% *ad valorem* royalty would be paid to the Ministry of Oil at the entry flange to the Main Pipeline, either in kind or in cash, based on the prevailing market price. In contrast, the KRG's model Production Sharing Contract provides for both a 10% ad valorem royalty and sharing of petroleum profits according to an R-factor (calculated as the ratio between a producer's cumulative revenues and costs). Iraq's Draft Law's chapter on the Fiscal Regime does not specifically provide for a profit-based royalty or resource rent tax, but such a payment could prospectively be incorporated into a model Exploration and Development contract, as determined by the FOGC.

Federal collection of revenues is preferable. Firstly, the federal government presently has the better administrative and technical capacity than the governorates. The federal government then generally has a better capability to negotiate contracts and administer profit-based royalties or resource rent taxes on oil production. Secondly, the oil industry is national in scale and oil is exported for sale. The infrastructure needed for transport and processing spreads across multiple governorates. Exploration blocks and deposits will also likely extend across multiple governorates. Lastly, the federal government is better able to manage volatile resource revenues, and federal collection eliminates inter-regional disparities that subnational collection would create. These latter features will be more fully discussed in the subsequent section.

[27] The unofficial English text of this draft Oil and Gas Law, as of February 15, 2007, was published by the KRG and is available at: http://www.iraqrevenuewatch.org/documents/oil_law_english_20070306.pdf

While the INOC would continue to operate the national pipelines, it would be specifically prohibited from price discrimination and would be obligated to transport on reasonable commercial terms. Firms would have recourse to the Minister of Oil who would collaborate with the involved region and governorate to achieve a resolution.

However, the relationship of the Oil Ministry with the INOC remains somewhat unclear. The Oil Minister would be appointed to the FOGC and the Oil Ministry would act as a regulatory authority. Though the INOC board is not described precisely, it seems that the Oil Ministry would also have an oversight relationship with the INOC if the Oil Minister is to serve on its board.

Producing regions and governorates would also be represented on the INOC board. This latter feature is appropriate, ensuring accountability to subnational governments as befits a federal structure.

As well, the presence of the INOC president on the FOGC potentially creates a conflict of interest. The Draft Law envisions the INOC as a state-owned competitor within the national oil market. The INOC is to be financially and administratively independent, and run on a commercial basis. However, if the INOC is granted a voting place on the FOGC, the company will have a role in federal decisions on oil and gas policy, and on the terms of Exploration and Development contracts.

3.2 Revenue-Sharing and Equalization

Where the federal government receives all resource revenues, government then faces the challenge of apportioning these revenues between federal functions and subnational governments. Broadly, the revenue-sharing arrangement must then balance two potentially competing interests: 1) efficiency and equity within the federation; and 2) political cohesion of the federation and assertion of title to revenues by the resource-rich regions.

As well, many federations provide for some equalization of fiscal capacity between subnational jurisdictions in the interest of the efficiency and stability of the economic union, as well as owing to some common definition of social citizenship. Where originating subnational governments are granted a preferential share of natural resources, these additional revenues enable a resource-rich jurisdiction to provide public services at lower levels of direct and indirect taxation. Whether and to what degree an equalization framework incorporates resource revenues in the calculation of fiscal capacity has significant implications for horizontal equity between subnational units and for allocative efficiency across the federation.

The design of revenue-sharing necessarily impacts the structure of equalization. These arrangements for revenue-sharing and equalization should mutually aim to: 1) minimize distortions from differences in net fiscal benefits across regions; 2) provide adequate fiscal capacity to each subnational government so as to fund comparable services at comparable taxation across the federation; and 3) provide insurance for region-specific shocks and smooth more volatile subnational revenues.[28]

[28] Boadway and Shah (forthcoming), Broscio (2003, 2006) Ahmad and Searle (2006) and Searle (2007) provide discussions of fiscal transfers in resource-rich federations.

More specifically, these arrangements should be structured to:

- Ensure efficiency within the economic union – that is:
  - Dissuade subnational governments from "backdoor" taxation of resource rents: To the degree that a subnational government has recourse to excise or benefit taxes on resource production (such as royalties, transit taxes and licenses), a subnational government may be tempted to use these instruments excessively as a "backdoor" to capturing rents from producers.
  - Accommodate regional expenditures on sector-specific public services: Resource production requires complementary infrastructure and imposes environmental and social externalities. Subnational governments should have access to appropriate tax bases for: i) compelling resource producers to internalize costs, and ii) to fund sector-specific infrastructure.
  - Minimize additional differences in net fiscal benefits between jurisdictions: Differential net benefits would encourage people to move to a resource-rich area, distorting the allocation of labour. For an efficient allocation, consideration of net fiscal benefits should not enter into the individual's migration decision. As well, any federation incorporates some principle of equity such that any citizen, irrespective of region of residence or origin, will have relatively equal fiscal treatment.
  - Provide insurance against volatile resource revenues: A federation often incorporates regions with different industrial structures, which are then subject to different shocks. A federal government can provide "insurance" against swings in the oil price by pooling revenues centrally.
  - Promote efficient rates of taxation across all tax bases: Without adequate transfers from federal revenue for their expenditure responsibilities, subnational governments may be forced to rely too excessively on these bases, imposing higher-than-optimal rates.
- Provide accountability of subnational governments for shared revenues: By sharing according to a widely known and transparent formula, subnational governments remain accountable to their constituents for their expenditures, even where resource revenues accrue in the form of transfers. As well, subnational governments must be capable of accountably and transparently managing revenues, having suitable audit procedures and public financial reporting. Moreover, subnational governments require short- to medium-term planning for public expenditures so as to invest revenues appropriately.
- Preserve the federation through an appropriate revenue-sharing bargain with resource-rich regions: Allocation of some preferential share of resource revenues may be then viewed as a bargaining solution where the share is the "bribe" required for the region to remain peacefully in the federation.
- Avoid multiple or "special" agreements with different regions on revenue-sharing: Despite the practical need for some bargained revenue-sharing arrangement, special autonomy or region-specific agreements of course lead to an unstable revenue-sharing system with inevitable jockeying by each region for the most-favoured arrangement.
- Minimize the stress on the federal equalization program: By increasing the fiscal capacity of the resource-rich region, preferential sharing of resource revenues places additional stress on a federation's equalization program. A higher share of derived resource

revenues for originating regions will impose a higher burden on the federal coffers in order to adequately fund equalization.

- Provide adequate reinvestment for regional adjustment as the resource base is depleted: With an economy dependent on an exhaustible resource, regions should have capacity to reinvest in public services and infrastructure that promote economic diversification and growth of non-resource sectors.
- Not discriminate between regional industrial structures: An equalization program should not make piecemeal accommodation for the costs associated with industry in one region, but exclude sector-specific costs in another region from consideration. Generally, true benefit taxes should not be included in equalization since they match costs of provision with private benefits directly.
- Include all sources of inter-regional disparities in calculation of fiscal capacities: Certain federations exclude resource revenues when computing fiscal capacity. However, resource revenues are a source of government revenues and, moreover, are the very region-specific rents that cause differences in net fiscal benefits across regions. To not consider a source of rents would deviate from the central rationale for equalization.
- Ensure clarity, consistency and transparency of the equalization formula: If the formula changes at the annual discretion of a legislature or committee, then a formula becomes redundant: the "equalization program" is simply a set of annually-determined regional transfers.

These principles imply that the optimal sharing arrangement is one in which resource revenues are primarily collected by the central government and shared with subnational governments on a population basis or distributed according to differential fiscal capacity. Where preferential sharing with regions on a derivation basis does occur, it should be a defined percentage of the derived revenues and not by special agreements for different regions.

Equalization programs may then either be constituted on a fiscal capacity or fiscal need basis. "Fiscal capacity" considers the subnational government's potential revenue. The baseline measure, under a "representative tax system," involves aggregating the potential receipts that would be derived from levying a standard tax rate on the designated set of bases within the particular jurisdiction. "Fiscal need" considers both potential revenues and required expenditures to maintain a standard level of service provision. A formula for "fiscal need" necessarily involves a judgment about the levels and suitable costs of public services.

For equalization, resource rents still best approximate the revenue-raising capacity of a particular deposit. Resource rents from each deposit, rather than realized revenues, should then be included as the base within an equalization formula. This may be accomplished using "stratification," such that each deposit is assigned to a class that approximates its rent. For instance, different classes could be constituted for oilfields according to cost of production or capacity in barrels per day.

As well, the more preferential is the revenue-sharing arrangement with the originating region, then the greater is the funding burden of the equalization program for the federal government. Under a gross equalization program, financed by transfers from the federal government, the

capability of the federal government to maintain equalization then requires a sufficiently positive vertical fiscal gap. The federal government must then retain a sufficient portion of resource revenues for the purpose of equalization.

Most equalization formulae incorporate some averaging provisions in order to reduce the volatility of transfers. Such provisions mitigate against swings in the average rates or standard bases that are exogenous to a particular region. The trade-off to a moving-average for entitlements is that equalization's insurance objectives are compromised. There is a lag between becoming a "have-not" region and receiving equalization entitlements.

Dependent on the rapidity of resource development, costs of service provisions in resource-rich regions can increase. In the resource-rich region, increases in resource sector wages will elevate wages in the region's service and non-tradable goods sectors. This will increase the cost of providing local public goods and services. However, to the extent that this inflation is driven by real increases in demand for factors, neutralizing these cost differences would be inefficient.

The optimal design of an equalization program then involves:

- Near or full inclusion of resource rents, with non-discriminatory exclusion of true benefit taxes, in a clear and transparent equalization formula;
- Inclusion of resources on the basis of potential rents through "stratification" (with different categories of deposits considered on the basis of their potential rents, regardless of the actual tax instrument used);
- A suitable vertical fiscal gap such that the federal government can afford required transfers;
- A multi-year averaging formula that fulfills the insurance objectives of the program while limiting the volatility of transfers; and
- Inclusion of "fiscal need" on the basis of demographic or development factors rather than to account for different costs of service provision.

3.2.1 Revenue-Sharing and Equalization in Iraq

Presently over 95% of Iraq's government revenues are derived from the sale of oil. Consequently, any significant preferential sharing of petroleum revenues will create substantial differences in fiscal capacity between the oil-producing and non-producing regions and governorates. More than 50% of the present production capacity is located in Al Basrah governorate. Around 20% is located around Kirkuk. A referendum on Kirkuk's future – as an independent governorate or as part of Iraqi Kurdistan – is still pending.

Iraq already features an asymmetrical form of fiscal federalism wherein the KRG assumes expenditures for public services in its territory. By the last census, Kurdistan constitutes between 17% and 18% of Iraq's population but, in Iraq's 2007 budget, KRG spending accounted for 11.6% of total government expenditures. All other governorate councils accounted for 5.2% of expenditures. The federal government thus presently dominates public spending outside Kurdistan. Under the present revenue-sharing arrangement, the KRG receives a 17% share of oil revenues after deductions for federal government revenues.

Non-oil revenues are not highly significant. Kurdistan receives around only 2.3% of its budget from non-transfer, own-source customs revenues. Six governorates have enacted tax laws and collect a 5% tax on wages, tourist fees, imports and exports. These may be significant revenues for governorate councils but are minor components of total government revenues. Although Corporate Income Taxes (CIT) are the largest single revenue stream within non-oil revenues, these only represented around 3% of total government revenues in 2007. CIT remains centrally collected.[29]

Oil revenues accrue to the Development Fund for Iraq, and these inflows exceeded projections in 2005 and 2006. Since budget allocations are decided ahead of realized revenues, the KRG contends that these underestimates diminish their entitlements. Furthermore, the KRG disputes central deductions from the overall oil revenues its 17% allocation, arguing that the federal government has an incentive to inflate these deductions.

Quality of governance varies, but most governorates generally lack experience in identifying capital projects, planning expenditures and executing budgets. Furthermore, there is a lack of clarity about governorate responsibilities versus those of the federal government, and inexperienced governorate councils frequently prioritize projects – like electricity and roads – within the federal sphere of responsibilities. At the governorate level, there is a general deficiency of standardized procedures, internal controls, and audit.[30] Governorate councils' financial reporting and auditing systems must be strengthened in order for expenditure responsibilities to be decentralized.

The central collection of oil revenues is preferable, but the consequence is that subnational budgets will remain transfer dependent for the foreseeable future. Preferential sharing would presently favour three producing governorates and the KRG. The large disparities between producing states in Nigeria (a 17-fold difference in per capita fiscal capacity for 2007 between the highest and lowest revenue states) and between districts in Indonesia (a seven-fold difference for 2007) warn against this approach – particularly in the absence of any formal equalization program.

Draft versions of a Law of Financial Resources would perpetuate the current regime of per capita transfers to the KRG, but would address the issue of divergence between projected and realized oil revenues. The draft law would also continue the project-specific grant process through which governorates are allocated funds based on submission of planned expenditures to the Ministry of Finance.

The present draft Law of Financial Resources envisions a "Commission of Monitoring the Federal Financial Resources" composed of federal officials, experts and representatives of regions and governorates. The Commission would provide oversight of federal collection and disbursements, ensuring consistent auditing and reporting.

For the long-term, Iraq must evolve a principled transfer system. It is conceivable that other governorates will form into a region – in particular, such a movement exists within the oil-

[29] World Bank (2007a) documents the present state of public financial management in Iraq.
[30] World Bank (2007a) documents the deficiencies in administrative capability at the governorate level.

rich regions of Al Basrah, Maysan and Dhi Qar.[31] Such a region might assert demands for levels of autonomy comparable to those accorded the KRG. In particular, this prospective region would likely desire similar authority over management of its petroleum resources.

However, given the large potential reserves in the western desert, a per capita sharing arrangement may be in the long-term interest of the majority of governorates and regions – including the KRG and presently producing governorates. If estimates prove correct, the reserves in these yet unexplored areas are comparable to those already discovered. Imbedding a derivation principle in the revenue sharing system would diminish potential returns to the rest of the federation from resources in the western desert.

Again, it is preferable that the federal government collect oil revenues centrally. Subnational governments should have access to benefit taxes and should share regulatory authority for environmental compliance. Ideally, expenditures would continue to be allocated to regions on a per capita basis and to governorates based on their expenditure priorities. This asymmetrical arrangement recognizes the greater administrative capability within the KRG in comparison with the governorates – as well as accommodating the distinctness of Kurdish society and political desire for autonomy. Presumably, an emergent region would also develop better bureaucratic infrastructure, consistent with its scale and regional responsibilities.

If a preferential sharing arrangement eventually becomes politically necessary, an identical share should be accorded to any region. Particular originating regions should not be accorded special treatment. A suitable vertical fiscal gap should be maintained in order to fund equalization transfers for non-producing governorates and regions. Substantial petroleum resources may be located in the sparsely-populated western desert, and development in this area would further complicate a preferential sharing arrangement.

In the event of preferential sharing, an equalization program would be necessary. Such a program should aim to mitigate fiscal capacity differences but might also consider differential expenditure needs – particularly with reference to reconstruction and development. However, at present, Iraq does not have sufficient statistical services to support a sophisticated equalization program, nor do other non-oil tax bases yet substantially contribute to government finances.

3.3 Oil Revenue Funds

3.3.1 Best practices for oil revenue funds

Nonrenewable resource funds (NRFs) have gained increased prominence in resource exporting countries. General objectives of such funds include: i) to save a portion of current resource revenues for future generations, recognizing the exhaustibility of the resource; ii) to prevent domestic currency appreciation and price inflation that may accompany a rapid influx of revenues; and iii) to stabilize government revenues over the medium- to long-term.

[31] Visser and Stansfield (2008) examine the possibility of a southern region and its implications for revenue-sharing across the federation.

Such funds then attempt to counter the exogenous volatility of oil prices on international markets, buffering the transmission of these swings to the domestic economy and to government finances. As well, such funds are often viewed as a means of stabilizing government spending and preserving some level of national wealth. Particularly with an exhaustible resource, the literature argues that saving of resource rents in productive capital provides the social optimum.[32] Inter-generational fairness compels that a present generation should not entirely consume the returns from the extraction of a resource.

However, experience demonstrates that such funds cannot be a substitute for sound fiscal management and proper medium-term budgeting. Such funds may accompany a government's commitment to fiscal prudence and focus political will behind policies for fiscal austerity, but NRFs function poorly as constraints on the behaviour of governments. In practice, these funds are hindered by the very unpredictability of commodity prices, the fungibility of government revenues and the government's access to alternative borrowing, and a government's power to revise a fund's terms.[33]

To expand: Firstly, contingency-based funds often rely on price or revenue thresholds for required deposits or withdrawals, incorporating some backward-looking moving average as the threshold. However, it is exceptionally difficult to discern whether a particular commodity price movement is indicative of a long-run price change.[34] Contingency-based funds may then save or dis-save inappropriately since the transience or permanence of a particular price shock will not be confidently predicted *ex ante*. A major appropriate means of hedging commodity price risk to government budgets may be the use of financial instruments such as futures and options.[35]

Secondly, even with allocation rules, a government may borrow from domestic or foreign lenders on future flows from the fund – particularly during periods of high commodity prices. For such government behaviour, a fund would not achieve either stabilization or saving objectives. Indeed, the cost of borrowed funds may have higher costs, imposing higher interest rates than the opportunity cost of resource revenues. The existence of a fund does not absolve government's need for formulating short-to-medium term spending plans.

Thirdly, a government always has capability to revise the terms of a fund in light of new circumstances or priorities. Governments should be able to adjust spending to new realities. This highlights the need for accountability of government for public spending. A fund cannot substitute for appropriate and accountable budgetary planning.

As well, the operational effectiveness of a fund may be inhibited by: unclear objectives, ineffective internal governance, lack of external oversight, poor reporting requirements, or murky performance measures. Funds can also be plagued by corruption or poor governance.

---

[32] See Hartwick (1977)

[33] Davis et al. (2003), Collier and Gunning (2005), Kalyuzhnova (2006) and Devlin and Titman (2004) provide reviews of country experiences with oil funds and observe the problems that are noted here. All concur on the primacy of good public sector governance for which an oil fund can be no substitute.

[34] See Barnett and Vivanco (2003)

[35] Devlin and Titman (2004) review country experiences and suggest hedging against commodity risks.

Indeed, establishing a fund may perversely make management of resource revenues less transparent by removing these from the government budgeting process.

Most importantly, investment through financial assets may not be the most suitable application of resource revenues. If government aims to save for future generations, funding domestic capital – particularly infrastructural investment – may be a more appropriate immediate use of revenues. While inflationary concerns remain, domestic capital may yield higher returns for the economy than foreign financial assets.

These considerations warn against an oil-exporting country's blind subscription to a NRF – particularly as means to compel fiscal prudence. A fund is much less useful without some plan for government spending priorities in the short- and medium-term. Government must have clear objectives for saving these revenues and complementary policies for their eventual withdrawal.

In practice, the most successful funds are those with explicit budget integration, coherent objectives and clear performance measures, and strong public accountability for the fund's management. Such funds highlight the connection between the domestic non-oil government deficit and NRF inflows or outflows.

The best practices for a NRF include:

- Clear objectives: The purpose of the NRF should be clearly articulated with allocations and operations following from this definition.
- Budget integration: While earmarking or contingent rules may be appropriate, inflows and outflows should be explicitly included as budget line items.
- Coordination with short- and medium-term expenditures: The allocations to the fund should be part of the public budgeting process with adequate discretion and rules that are consistent with the fund's objectives.
- Clear asset-management strategy: Fund managers should be evaluated according to clear performance measures that are consistent with the fund's objectives.
- Transparency of fund operations: A fund must have sound internal audit procedures and responsibilities for public financial reporting.
- Accountability of fund management: Government must have ultimate oversight of and responsibility for the fund, and the fund must be operated in a publicly transparent manner.

In a federation, the federal government ideally provides some insurance against regional shocks, providing transfers to regions during idiosyncratic downturns. Stabilization of regional budgets and inter-regional equality of fiscal capacity should be federal objectives. Firstly, this argues for federal collection of resource revenues to mitigate idiosyncratic, region-specific shocks – particularly from commodity price movements. Secondly, to the degree that the federation faces aggregate risk from shocks, the federal government should largely manage borrowing and lending to mitigate these exogenous movements. A federal government is then best suited to manage a stabilization fund. Thirdly, to the degree that resources fall under national ownership and that social citizenship applies across all citizens of the federation, the federal government should extend this equity inter-generationally to the

nation's future citizens. A federal government should then invest resource revenues to preserve national wealth for future generations.

3.3.2 An oil revenue fund for Iraq

The present draft Law of Financial Resources would create a "Future Fund" into which a "certain rate of the surplus resources shall be deposited for the coming generations" (Article 7). The law delegates the precise objectives, operational policies and oversight to a subsequent agreement between the federal government and governorates and regions.

In the immediate term, Iraq has pressing reconstruction needs, requiring substantial infrastructural investment. Saving of oil revenues would best take place as domestic investment in productive capital. Firstly, such infrastructure spending represents savings for future generations in the form of fixed assets. Secondly, appropriate infrastructural investment can enhance the efficiency of the oil sector and facilitate diversification in the non-oil sector. In the short-term, application of revenues to domestic capital spending is more appropriate than investment in foreign financial assets.

However, the Iraq's poor budget execution and audit capability – particularly at the governorate level – raise concerns about the present ability to absorb such large inflows. Again, a fund cannot substitute for coherent public sector budgeting. Indeed, a fund may face similar accountability issues – especially if not formulated according to clear objectives and operated in coordination with a medium-term expenditure plan.

Iraq requires better identification of capital projects and improved short- and medium-term budgeting. To this end, earmarking of certain oil revenues to capital projects might be appropriate, though fungibility remains an issue. Government must avoid wasteful spending of oil revenues because of limited absorption capacity. If revenues cannot be spent on well-budgeted and accountable projects in the short-term, they should be saved according to a medium-term plan. However, for the Iraq's investment of oil revenues, the focus in the short- and medium-terms should remain spending on capital assets rather than investment in financial assets.

Certain authors contend that the Iraq's present bureaucratic deficiencies warn against government management of oil revenues, arguing that revenues should be distributed directly to the nation's citizens.[36] However, Iraq's substantial need for investment in public goods and services counsel against such an approach. Indeed, the social returns to public spending likely exceed those from private expenditures. At present, capacity-building in the bureaucracy is a prerequisite for a viable state. Present deficiencies argue for capacity-building; not a perpetual abrogation of state capacity. Furthermore, such an approach would be difficult to implement and would be prone to corruption and leakages.[37]

[36] Birdsall and Subramanian (2004) authored a prominent article arguing this point, which exhibits such dividend policies in Alaska and Alberta.

[37] World Bank (2007a) identifies the problems with direct redistribution and the report of the Iraq Study Group (2006) similarly doubts the capacity to implement such transfers.

In the longer term, an oil revenue fund may be a useful complement to coherent and accountable public-sector budgeting in order to save surpluses and stabilize government spending. Such a fund should be coordinated with the federal budget. The federal government should assume primary responsibility for budget austerity, rather than relying on fund rules.

Contingent rules provide guidance for allocation to the fund, but government should retain appropriate discretion. Explicit provisions for discretion are preferable to perverse incentives for government's to borrow or to manipulate fungible revenues in order to fulfill its required allocations. The transfers to and from the fund should be explicitly integrated with the federal budget.

Oversight of the fund would best include representatives of regions and governorates. Subnational representation would provide a check on the federal management and promote accountability of the fund. Furthermore, including the regions and governorates in governance of the fund provides an additional incentive for their participation in inter-governmental affairs. As well, to the extent that the fund exists to insure federal and subnational finances against negative shocks, regions and governorates should be involved in approving discretionary withdrawals from the fund. The law governing the fund should feature clear directives for asset-management, auditing and reporting.

4 Conclusion

Iraq's requires a workable federal arrangement around its petroleum resources. Our discussion of principles undergirding such arrangements enables us to suggest a framework for Iraq. We observe that Iraq's current draft legislation generally accords with this framework.

Broadly, decentralization should bring regional development and governance closer to citizens while preserving federal coordination. Ideally, when properly orchestrated, decentralization enhances both the accountability and efficiency of government. In relation to natural resources, we argue that decentralization should occur through subnational management of resources and sharing of revenues with subnational governments. A caveat to decentralization of management is that subnational governments must possess the capacity to competently administer subsurface rights and regulate resource development. For decentralization of revenues, subnational governments must have robust and effective systems for capital planning, procurement, budget execution and audit.

In its coordination role, the federal government should provide national standards for resource management, collect revenues from profit-sharing or resource rent taxes centrally, distribute revenues according to an equitable formula, and provide "insurance" against volatile revenues. Moreover, the federal government must safeguard against wasteful spending of windfalls where subnational governments lack the capacity to absorb revenues. The stabilization of revenues requires competent medium-term budgeting at the federal level. Where disparate fiscal capacities result from preferential sharing of revenues, a federal government should coordinate a system of equalization transfers and should maintain an appropriate vertical fiscal gap for that purpose. An oil revenue fund may assist in

management but cannot be a substitute for fiscal discipline. Such a fund should function with clear objectives, and public accountability for its operations. A fund would likely benefit from oversight by subnational governments – particularly if stabilization of government finances is the objective. Such a framework ensures that resource management a cooperative enterprise between levels of government.

In addition to ongoing insecurity and political instability, Iraq faces additional development challenges: its present public financial management shows significant administrative deficiencies – particularly in regards to capital planning and budget execution; its non-oil infrastructure is in desperate need of renewal; its oil sector requires large injections of capital and technical expertise; and government finances rely almost entirely on resource revenues.

However, Iraq's draft legislation provides a hopeful vision for recovery: Administratively competent regions will administer production-sharing contracts according to national standards, tailoring resource management to their own objectives for regional development. Additionally, subnational governments will be represented in formulating these federal standards.

The federal government will maintain the state-owned core of the oil industry, but a representative council will ensure that the INOC transitions to a market participant and is constrained from predation. As well, the INOC will competitively tender for technical services in order to assimilate new technology and enhance efficiency in the sector. Moreover, exploration rights will be granted through competitive auctions, and production sharing contracts will likely feature profit-based royalties so as to maximize the capture of resource rents by their public owners. Federal collection of revenues will prevent disparities in fiscal capacity.

An asymmetrical revenue-sharing system will provide regions greater flexibility to manage their affairs with funds shared on a per capita basis. Such per capita revenue-sharing has the added feature of pooling exploration and production risks faced by any particular region. Governorates will remain nested within a federally-administered transfer system, promoting investment in targeted capital projects and encouraging enhanced bureaucratic capacity.

The focus of public expenditures should remain infrastructural investment and reconstruction in the short- to medium-term; however, the government envisions eventual saving of oil revenues through a "Future Fund" in order to provide inter-generational equity. Such a fund would be appropriately integrated with the federal budget, but regions and governorates would likely be represented in oversight of the fund, providing an additional check on federal spending.

A large gap remains between the vision on paper and the realities of implementation. However, Iraqi legislators' proposed framework draws from best principles and practices for fiscal federalism around natural resources. An economically-sound and equitable framework for managing petroleum resources would indeed assist Iraq in achieving a stable and balanced federation, and emerging from this period of strife.

5 References

Ahmad, E., Boadway, R., Brosio, G., Ebel, B., & Searle, B. (2005). *Iraq: Considerations on intergovernmental fiscal relations for the constituent assembly* No. WP/05/69)IMF Working Paper.

Ahmad, E., & Mottu, E. (2002). Oil revenue assignments: Country experiences and issues. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal policy formulation and implementation in oil producing countries*. Washington, DC: International Monetary Fund.

Ahmad, E., & Searle, B. (2006). On the implementation of transfers to subnational governments. In E. Ahmad, & G. Brosio (Eds.), *Handbook of fiscal federalism*. New York: Edward Elgar Publishing.

Baker, J. A., Hamilton, L., & Eagleburger, L. S. (2006). *The iraq study group report* Vintage Books.

Barnett, S., & Vivanco, A. (2003). Statistical properties of oil prices: Implications for calculating government wealth. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal policy formulation and implementation in oil-producing countries*. Washington, D.C.: International Monetary Fund.

Birdsall, N., & Subramanian, A. (2004). Saving iraq from its oil. *Foreign Affairs, 83*(4), 77-89.

Blanchard, C. M. (2007). Iraq: Oil and gas legislation, revenue sharing, and US policy. *Washington, D.C.: Congressional Research Service*.

Boadway, R. W., & Flatters, F. R. (1993). The taxation of natural resources. *Washington, D.C.: The World Bank*.

Boadway, R. W., & Shah, A. (Forthcoming). *Fiscal federalism: Principles and practice of multi-order governance* Cambridge University Press.

Brosio, G. (2003). Oil revenue and fiscal federalism. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal policy formulation and implementation in oil-producing countries* (). Washigton, D.C.: International Monetary Fund.

Brosio, G. (2006). The assignment of revenue from natural resources. In E. Ahmad, & G. Brosio (Eds.), *Handbook of fiscal federalism* (). New York: Edward Elgar Publishing.

Cameron, D. (2007). Making federalism work. In M. E. Bouillon, D. M. Malone & B. Rowswell (Eds.), *Iraq: Preventing a new generation of conflict* (). London: International Peace Academy.

Central Intelligence Agency. (2003). *The world factbook* From http://www.odci.gov/cia/publications/factbook.

Collier, P., & Willem Gunning, J. (2005). Asset policies during an oil windfall: Some simple analytics. *World Economy, 28*(10), 1401-1415.

Davis, J. M., Ossowski, R., Danile, J. A., & Barnett, S. (2003). Stabilization and savings funds for nonrenewable resources: Experience and fiscal policy implications. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal policy formulation and implementation in oil-producing countries* (2003). Washington, D.C.: International Monetary Fund.

Devlin, J., & Titman, S. (2004). Managing oil price risk in developing countries. *The World Bank Research Observer, 19*(1), 119-139.

Hartwick, J. M. (1977). Intergenerational equity and the investing of rents from exhaustible resources. *American Economic Review, 67*(5), 972-974.

Jaffe, A., & James A. Baker III Institute for Public Policy. (2006). *Iraq's oil sector issues and opportunities* James A. Baker III Institute for Public Policy, Rice University.

Kalyuzhnova, Y. (2006). Overcoming the curse of hydrocarbon: Goals and governance in the oil funds of kazakhstan and azerbaijan. *Comparative Economic Studies, 48*(4), 583.

McGarry, J. (2007). Liberal consociation and conflict management. In M. E. Bouillon, D. M. Malone & B. Rowswell (Eds.), *Iraq: Preventing a new generation of conflict*. London: International Peace Academy.

McLure Jr, C. E. (2003). The assignment of oil tax revenue. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal policy formulation and implementation in oil producing countries*. Washington, D.C.: International Monetary Fund.

McPherson, C. (2003). National oil companies: Evolution, issues, outlook. In J. M. Davis, R. Ossowski & A. Fedelino (Eds.), *Fiscal policy formulation and implementation in oil producing countries*. Washington, D.C.: International Monetary Fund.

O'Leary, B. (2007). Federalizing natural resources. In M. E. Bouillon, D. M. Malone & B. Rowswell (Eds.), *Iraq: Preventing a new generation of conflict*. London: International Peace Academy.

Otto, J., Andrews, C., Cawood, F., Doggett, M., Pietro, G., Stermole, F., et al. (2006). *Mining royalties: A global study of their impact on investors, government, and civil society*. Washington, D.C.: World Bank Publications.

Otto, J. M. (2001). Fiscal decentralization and mining taxation. *The World Bank Group Mining Department,*

Scott, A. (2008). *The evolution of resource property rights* Oxford University Press.

Searle, B. (2004). Revenue sharing, natural resources and fiscal equalization. *Challenges in the Design of Fiscal Equalization and Intergovernmental Transfers,*

Shah, A. (1994). *The reform of intergovernmental fiscal relations in developing and emerging market economies*. Washington, DC: World Bank.

Stevens, P. (2003). National oil companies: Good or bad?–A literature survey. *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee, Scotland, may,*

United States Government Accountability Office. (January 2008). *Iraq reconstruction: Better data needed to assess iraq's budget execution* No. GAO-08-153) Report to Congressional Committees.

Visser, R. (2008). Ethnicity, federalism and the idea of sectarian citizenship in iraq: A critique. *International Review of the Red Cross, 89*(868), 809-822.

Visser, R., & Stansfield, G. R. V. (2008). *An iraq of its regions: Cornerstones of a federal democracy?* Columbia University Press.

World Bank. (2007a). *Investing in oil in the middle east and north africa: institutions, incentives and the national oil companies* No. Report No. 40405-MNA)

World Bank. (2007b). Iraq - subnational public financial management: A diagnostic report. *Washington, D.C.: The World Bank.*