

ERF Policy Research Report

Oil, Economic Diversification and Development in the Arab World

Ibrahim A. Elbadawi
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PRR No. 35
December 2010



First published in 2010 by
The Economic Research Forum (ERF)
7 Boulos Hanna Street
Dokki, Cairo
Egypt
www.erf.org.eg

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Preface

The Economic Research Forum (ERF) is undertaking a broad initiative to develop a critical mass of high quality research on a number of policy-relevant and high priority areas for the development of the Arab World. This initiative—The Research Initiative for Arab Development (RIAD)—is supported by a number of major international donors and will be implemented over many years.

This report aims at providing ERF with a sound basis for selecting and designing a research program over the next three to five years for one of the major themes of the initiative – oil management and economic diversification.

An earlier version of this report was presented at the workshop on “Natural Resources and Economic Diversification: Towards a Research Agenda for ERF”, held in Cairo in November 2009. The draft was subsequently revised thanks to, among others, the valuable comments from the conference participants.

The report undertakes a review of the literature on the oil curse and economic diversification- two issues of vital relevance to the development of the Arab world. Not surprisingly agreeing with the with the near-consensus view that the curse is real but is not destiny, the report proposes a number of priorities for a future policy-relevant research agenda on the above two broad themes.

First, the macro-institutional issues for escaping the oil curse; and consequently the strategies for escaping it; or in other words, the plan for harnessing the oil resource for long-term development of the Arab world.

Second, the micro-institutional issues of economic diversification, where the report addresses some pivotal questions, such as why and how to diversify, and for what development objectives?

The authors would like to thank Carole Chartouni and Naotaka Sugawara for their able research support as well as the workshop participants for their valuable feedback and comments. Also, they stress that the views expressed are personal and should not be attributed to the Dubai Economic Council or the Center for Global Development.

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Introduction

The Arab world is defined by oil.¹ In addition to their common cultural and historical heritage, the otherwise very diverse countries of this region are linked by their dependence on the hydrocarbon resource base: oil for short reference. Of the twenty-two member countries of the League of the Arab States, 11 are oil exporters. This group accounts for approximately 55 % of global oil reserves and 29% of natural gas reserves. Naturally, the hydrocarbon sector dominates these economies, where it contributes about 50% to GDP and 80% to government revenues (IMF, 2009).²

Moreover, given the linkages between the oil and non-oil Arab economies through the labor market, investment, and tourism, the latter group has also been substantially influenced by oil. The relatively populous non-oil Arab countries have depended on oil investment and aid from the oil-rich, labor-importing Arab countries to finance development as well as to absorb part of their vast labor force as expatriate workers. Therefore, albeit in different ways, both oil and non-oil countries have been subject to the oil cycle and faced similar challenges.

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have been subject to the oil cycle and faced similar challenges.

The received literature suggests that most Arab countries have experienced volatile, short-run growth and long-term stagnation. This has been linked to the failure of most countries to undertake medium-term, counter-cyclical macroeconomic policies. It is also linked to their failure to mediate conflicting interests during post oil booms due to their glaring lack of democracy, transparency, and accountability (Elbadawi, 2005a, 2005b). Related to this is that most, if not all, Arab countries continued to pursue old, state-led development strategies that, arguably, have outlived their effectiveness, as manifested in the massive unemployment crisis that afflicts the Arab world today (World Bank, 2004; Nabli, 2004). The disappointing growth and employment performance of the Arab world is mirrored in the low degree of diversification and sophistication of exports as well as the limited role of manufacturing in most Arab economies. Recent development experiences and the received literature suggest that countries that achieved high and sustained growth, by and large, have diversified economies and are endowed with good economic governance; and most, though not all, had large and dynamic manufacturing sectors (e.g. Imbs and Wacziarg, 2003; Hausmann, Hwang and Rodrik, 2006; UNIDO, 2009).

In this report, we agree with the view that oil is not destiny and that its ultimate impact on development hinges on the underlining institutional and policy environment. However, this report will also show that while oil resources have

provided a huge opportunity to the Arab world to finance accelerated development; it has, nevertheless, complicated the development process in the region. This assessment is consistent with the consensus view in the received literature, which suggests that oil rents impede economic diversification and penalize manufacturing growth by generating Dutch Disease and extreme volatility. Oil rents also promote bad governance and complicate transition to transparent and accountable democratic rule. In addition, the oil sector tends to be located at the periphery of the product space, which makes it difficult for the economy to move into new and more sophisticated lines of products and services (Hausmann and Klinger, 2007).

Section one provides an overview of the role of oil in the Arab economy. Section two discusses the nexus of issues concerning economic diversification, manufacturing and export sophistication, and product space. This section will review the modest performance of the Arab world in these areas and highlight the likely negative effect of oil on this outcome. Section three discusses the evidence that oil economies, including those in the Arab world, have a tendency to experience frequent post-boom, growth deceleration and long-term stagnation, and in some cases absolute decline of output—in other words an “oil curse”.

Section four undertakes a selective review of the literature on the oil curse, with the objective of identifying the most relevant issues for thinking through a strategy for escaping the oil curse or better, avoiding unstable growth and long-term economic stagnation. This will be addressed in section five, which covers some macro-institutional aspects of this strategy.

Sections six and seven deal with the key mandate of this work as an “approach” report designed to propose frontier areas for future research that are also of high policy relevance. Sections six and seven, respectively, cover the future research agenda with regard to macro-institutional solutions for escaping the oil curse and economic diversification of oil-dominated economies with special reference to the Arab region. Finally, section eight concludes this report.

1.1 The Role of Oil in the Arab Economy

Country evidence on oil reserves, shares in exports, and revenues show that Saudi Arabia alone accounts for 20% of global reserves and that oil

looms very large in the economies of these countries (Figures 1.1, 1.2, 1.3). However, before we further articulate the consequences of oil dependency for the region (section 2), we briefly discuss the differences between countries and groupings within the region. This is important to make explicit even as we emphasize the role of oil and its economic and political consequences that pervade the entire landscape of the Arab world. Indeed, the economies of the Arab countries are very diverse: in terms of size of economy and population, economic structures, level of development, geographic location, and type of governance and institutions. For example, in 2008 Qatar—one of the world’s leading exporters of natural gas—had a population of 1.1 million and an average income per capita of \$86,000. This is almost 36 times the income per capita of Djibouti, the Arab country with a comparable population size (at 0.8 million); and almost 15 times the income per capita of Egypt, the most populous Arab country, with a population size of 75.2 million (IMF, 2009).

To highlight the economic diversity of the region more systematically, we follow the ERF (1998) and construct a typology of four Arab country groupings: oil-rich labor importing, which includes, in addition to Libya, the six countries of the Gulf Cooperation Council of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE; oil-rich, labor abundant (Algeria, Iraq, Sudan, and Yemen); Non-oil, middle income labor exporting (Egypt, Jordan, Lebanon, Morocco, Syria, and Tunisia);³ and, non-oil, low income (Djibouti, Mauritania).⁴

As can be seen from Table (1.1) the extent of the disparity across the four groups is clearly very stark. For example, in 2008 the oil-rich, labor importing group accounted for less than 14% of total Arab population but contributed more than 47% to total Arab GDP. The other oil-rich group is more populous but not as rich; with a population three times that of the oil-rich, labor importing countries, it accounted for less than half their contribution to the aggregate Arab GDP. In between the two groups are the non-oil, middle-income labor exporting countries, which constitute the largest grouping in terms of the number of countries and population; with more than 45% of the Arab population but only slightly more than 33% of the aggregate GDP.

Finally, in terms of average per capita incomes, the oil-rich, labor importing average is 3.4 times

Figure 1.1**Oil in the Arab World: Proven Reserves (percentage of world total: end of 2007)**

Notes: 1. OTH means non-OPEC oil-exporting countries. 2. Oil-exporting countries are defined as those whose exports of oil and oil products (which are defined as Division 33 of SITC) exceed 20% of their merchandise exports.

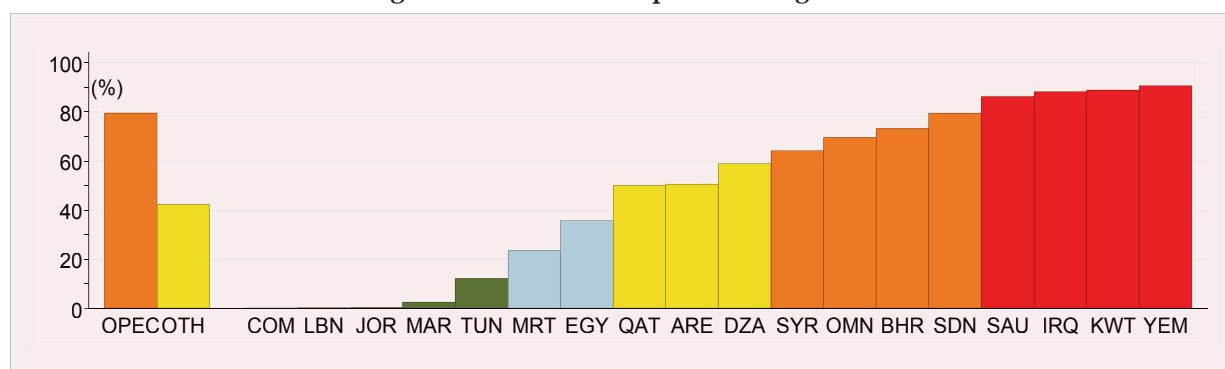
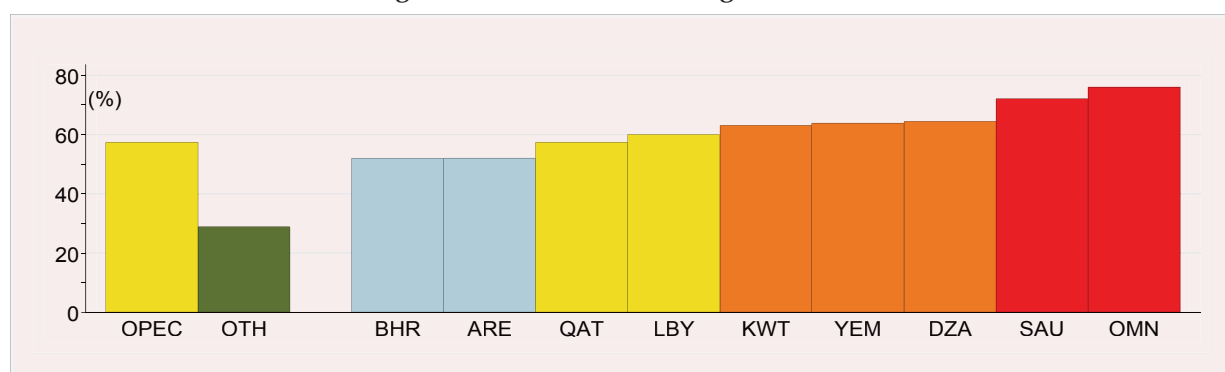
Figure 1.2**Oil in the Arab World: Percentage of Merchandise Exports (average 2000-2008)****Figure 1.3****Oil in the Arab World: Percentage of Total Revenue (average 2000-2008)**

Table 1.1
A Typology of Arab Economies

	Country Name	GDP Constant (USD bn)	Population	GDP per capita (USD Thou- sands)	% of Total Population to Overall Arab Popu- lation	% of GDP Constant to Total Arab GDP	% Ratio of Per Capita Income to Average Per Capita Income to the Arab World
Oil-Rich Labor import- ing (GCC + Libya)	Bahrain	27	1	27.00	0.31	1.07	343.20
	Kuwait	137.4	3.4	40.41	1.06	5.44	513.67
	Libya	88.1	6.2	14.21	1.93	3.49	180.62
	Oman	68.3	2.8	24.39	0.87	2.71	310.06
	Qatar	94.4	1.1	85.82	0.34	3.74	1090.83
	Saudi Arabia	592.9	24.9	23.81	7.76	23.49	302.66
	United Arab Emirates	185.3	4.8	38.60	1.50	7.34	490.70
	Total	1193.4	44.2	27.00	13.78	47.29	343.20
Oil-rich, Labor abundant	Algeria	233.5	34.8	6.71	10.85	9.25	85.29
	Iraq	105.8	30.4	3.48	9.48	4.19	44.24
	Sudan	88	38.1	2.31	11.88	3.49	29.36
	Yemen, Rep.	55.4	23	2.41	7.17	2.20	30.62
	Total	482.7	126.3	3.82	39.37	19.13	48.58
Non-oil middle income labor exporting	Egypt, Arab Rep.	443.4	75.2	5.90	23.44	17.57	74.95
	Morocco	137.1	31.4	4.37	9.79	5.43	55.50
	Jordan	32.4	5.9	5.49	1.84	1.28	69.80
	Lebanon	49.5	3.8	13.03	1.18	1.96	165.58
	Syrian Arab Republic	94.6	19.9	4.75	6.20	3.75	60.43
	Tunisia	82.6	10.3	8.02	3.21	3.27	101.93
	Total	839.6	146.5	5.73	45.67	33.27	72.85
Non-oil low-income	Djibouti	1.9	0.8	2.38	0.25	0.08	30.19
	Mauritania	6.2	3	2.07	0.94	0.25	26.27
	Total	8.1	3.8	2.13	1.18	0.32	27.09
Arab World		2523.8	320.8	7.87	100	100	100

the average income for the Arab world; compared to 0.73 and 0.49 times the Arab average income for the middle-income and oil-rich, labor abundant groups, respectively. As expected, the non-oil, low income countries accounted for only 0.27 times the Arab world average income per head. Interestingly, the data shows that the populous

oil-rich countries of the Arab world are not that rich relative to the Arab mean income. On the other hand, Lebanon and Tunisia, two non-oil, middle income Arab countries, have done very well with the incomes per capita in the two countries, respectively, equaling three and two times the average for the populous oil-rich group.

Oil and Economic Diversification

Diversification of new products correlates with economic development, especially sustained, export-oriented growth. Imbs and Wacziarg (2003) study the patterns of sectors concentrated across countries and time and find that income increases as economies become more diversified. Then economies start to specialize again at high levels of income.⁵ Very importantly from the perspective of industrial development, they also find that this process of diversification holds not only when economies transform from agriculture to manufacturing, but also within manufacturing.⁶ For example, Rodrik (2006a) argues that enhancing production capabilities for a large range of manufactured goods—including the production of new ones—is an integral part of development. Moreover, successful export-oriented strategies that lead to major economic transformations have been associated with significant economic diversification. For example, the empirical literature finds that non-traditional exports are characterized by higher income elasticity, less volatile terms of trade, and higher prospects of dynamic productivity gains (Elbadawi, 2002; Sekkat and Varoudakis, 1998). Also, following on the work of Hausman, Pritchett, and Rodrik (2005), researchers Johnson, Ostry, and Subramanian (2007) find that growth accelerations are associated with structural changes in manufacturing.

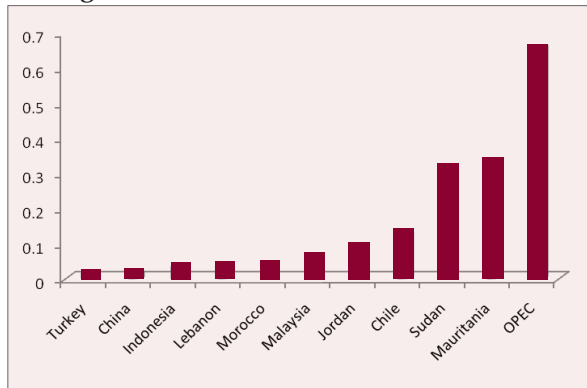
On the other hand, empirical research has found that countries that specialize in primary product exports tend to grow more slowly than economies with diversified export bases. Sachs and Warner

(1997) have shown that the 1970 share of primary exports in GDP is negatively correlated in growth regressions in a sample of 83 countries over the period 1965–1990. Sala-i-Martin (1997) has found a similar result for the 1970 share of primary products in total exports. In the special case of point-source natural resources—those extracted from a narrow geographic or economic base such as oil and other minerals—the literature suggests that prudent and development-oriented management of oil and mineral booms has been the exception rather than the rule. Many countries inefficiently specialize in the resource sector and other non-tradable activities that are likely to depend on it, which might lead to the collapse of output after the end of the boom—so-called “resource curse” (e.g. Hausmann and Rigobon, 2001).

2.1 Manufacturing and Export Concentration

Lack of data precludes the calculation of concentration measures indexes, such as the Herfindahl-Hirschman index (HHI) for the major Arab oil exporters. However, as discussed in the introduction, the hydrocarbon sector looms very large in these economies, especially in the export sector. Moreover, the median level of the HHI concentration index for OPEC (at 66%) is the highest in the world (Figure 2.1).⁷ Even an emerging Arab oil economy, such as Sudan, has a relatively high concentration index (33%) for the period 1992–2005, though this index is likely to be much higher for the post 1998 period, when the country started to produce and export oil.⁸ On the other hand,

Figure 2.1
Export Concentration Index (HHI):
Average (1992-2005)



Notes: 1. Authors calculations from Elbadawi, Kaltani and Soto (2009) HHI data. 2. The median is taken for OPEC and only includes Venezuela, Nigeria, Ecuador and Angola due to data limitations.

some non-oil, middle-income Arab countries have achieved a substantial degree of export diversification. These include Lebanon, Morocco, and to a lesser extent, Jordan.

The concentration of exports from the Arab world is mirrored by the limited role of manufacturing in Middle Eastern economies, which are dominated by the Arab countries, especially when Turkey is excluded. The recent UNIDO Industrial Development Report (2009) contains extensive data on six components of industrial performance: manufacturing valued added (MVA) per capita; manufactured exports per capita; share of MVA in GDP; share of medium/high technology production in MVA; share of medium/high technology exports in manufactured exports; and share of manufactured exports in total exports. The evidence for 2005, the last year for which data is available, shows that for the first five indicators the Middle East and North Africa Region (MENA) uniformly underperformed Latin America and the Caribbean, and East Asia and the Pacific- the two regions at comparable levels of development. MENA was only slightly better than the vastly poorer regions of South Asia and Sub-Saharan Africa. For the last indicator (the share of manufactured exports in total exports), which reflects the direct impact of dependency on the hydrocarbon resource exports in the region, MENA underperformed all of the four developing regions (Table 2.1).⁹

Recent literature draws a strong link between industrialization and the job-creation capacity of developing economies. For example, the above-mentioned UNIDO report documents experiences of countries adopting labor-intensive, manufacturing-based development; The report finds that, overall, this development strategy creates jobs and that the job-creating capacity of strongly growing manufacturing sectors can be spectacular. Also, as industrialization proceeds not only employment expands, but also wages rise over time. Moreover, manufacturing is usually gender neutral with large number of women also being employed. Such experiences contrast sharply with the dominant role of the low-wage, informal sectors that have emerged as the main source of employment in non-oil Arab economies. Meanwhile, open or disguised unemployment among nationals in the GCC countries exposes the limits of their heavy dependence on the hydrocarbon and non-tradable sectors (e.g Assaad, 2002; Galal, 2002; World Bank, 2004; Elbadawi and Loayza, 2008). Therefore, viewing the unemployment crisis afflicting the Arab world, especially among educated youth, the region's failure to partake in the phenomenal global expansion of manufacturing exports over the last three decades has, by any measure, been a major development failure.

The received traditional development literature as well as the more recent Hausmann and Rodrik-led research on export sophistication, product space, and structural transformation advocate a major role for the state in addressing various types of market imperfections and coordination failures (see below). Unfortunately, however, the literature on Arab industrial development suggests that most of the region's governments have either totally abandoned this vital role, or instead, pursued ineffective traditional industrialization strategies that blunted these countries' ability to compete and their productivity growth (e.g. Sekkat, 2009).

2.2 Export Sophistication¹⁰

In addition to their failure to penetrate the global markets for low technology, labor-intensive manufacturing exports, the above evidence also reveals an equally disappointing performance for the Arab countries (MENA outside Turkey) with regard to the share of medium and high technology components of manufacturing. This,

Table 2.1
Industrial Performance in Developing Regions (2005)

Region/ Components	Manufacturing value added (MVA) per capita*	Manufactured exports per capita*	Share of MVA in GDP (percentage)	Share of manufactured exports in total exports	Share of medium/high- technology production in MVA (percentage)	Share of medi- um/high-tech- ology exports in manufac- tured exports (percentage)
Industrialized economies	4,771.0	5,428.2	16.8	85.7	75.2	66.1
Sub-Saharan Africa	63.6	81.2	10.9	62.0	41.3	32.4
<i>excluding South Africa</i>	29.2	38.5	7.6	54.9	17.5	13.3
South Asia	82.1	74.3	14.5	86.3	18.3	20.2
<i>excluding India</i>	79.6	51.9	15.9	84.6	5.2	8.0
Middle East and North Africa	398.1	474.7	12.5	31.7	33.3	27.9
<i>excluding Turkey</i>	381.4	367.1	12.1	22.7	19.2	20.0
Latin America and the Carib- bean	761.2	642.2	18.2	63.4	47.2	55.9
<i>excluding Mexico</i>	703.2	400.2	18.8	51.9	20.9	36.8
East Asia and the Pacific	582.3	885.6	29.5	91.9	97.5	64.1
<i>excluding China</i>	750.0	1,524.9	25.2	89.9	32.8	68.6

Notes: 1. Authors' calculations from UNIDO Database, *Industrial Development Report 2009*; 2. *: MVA is in constant 2000 dollars.

we will argue, should be particularly worrisome for these countries. First, because they have little comparative advantage in basic low technology manufacturing, compared to the very low wages in Sub-Saharan Africa, South Asia, and especially China- the latter having essentially defined the frontier for labor-intensive manufacturing. Second, recent new research pioneered by Hausmann, Hwang, and Rodrik (2006) finds a strong association between the degree of export sophistication and subsequent economic growth. This evidence, argues Rodrik (2006a), suggests that "industrial upgrading is a leading indicator of economic performance" (p. 10) and that productivity levels associated with a country's exports are not fully captured by factors such as human capital or institutional quality.

The new index developed by these authors ranks traded goods in terms of their implied productivity. Thus for each country j , the index is given by:

$$EXPY_j = \sum_l \frac{x_{jl}}{X_j} \cdot PRODY_l \quad 2.1$$

Where x_{jl} is the exports of product l by country j ; $X_j = \sum_l x_{jl}$ is the total exports of country j ; and $PRODY_l$ is the weighted sum of the per capita GDP of countries exporting a given product, where the weights reflect the revealed comparative advantage of each country in that product:

$$PRODY_l = \sum_j \frac{x_{jl} / X_j}{\sum_j (x_{jl} / X_j)} \cdot Y_j \quad 2.2$$

The higher this index is, the higher the content

of 'rich country products' in exports. This index is motivated by the view that "not all goods are alike in terms of their consequences for economic performance," and that specializing in some products will bring higher growth than specializing in others. In this setting, government policy has a potentially important positive role to play in shaping the production structure. Everything else being the same, countries that specialize in the types of goods that rich countries export are likely to grow faster than countries that specialize in other goods. Rich countries are those that have latched on to 'rich-country products,' while countries that continue to produce 'poor-country' goods remain poor.

Figure 2.2 presents estimates of EXPY in 2003 (the last year of the EXPY series calculated by Hausmann et al) for a few Arab countries and other comparators. Again, given its relatively high income, the above evidence makes clear that exports from the Arab world are characterized by relatively low export sophistication. For example, with only half of Saudi Arabia's income per capita, Malaysia's exports much more sophisticated products (of about 12000 units in the EXPY scale compared to less than 7000 for Saudi Arabia). Moreover, China provides even more spectacular contrasts where with an income per capita of only one fifth that of Saudi Arabia, the sophistication level of its exports were comparable to that of Ma-

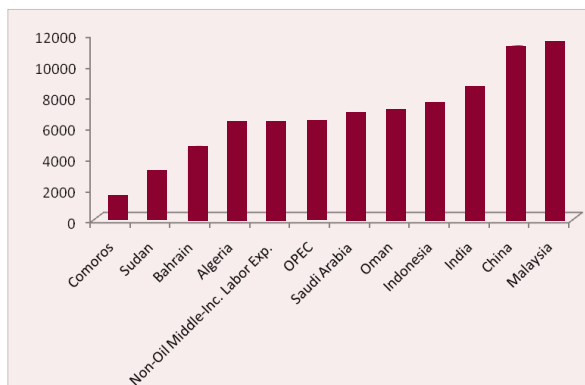
aysia; and with an income approximately equal to the median for the non-oil middle-income Arab group, its EXPY index was almost twice the median score for the group. Finally, and despite their much higher incomes, the EXPY score for OPEC member countries was comparable to that of the non-oil middle-income Arab countries.

At this juncture, and notwithstanding a few notable success stories,¹¹ we pose the question as to why this region's export performance has been so disappointing.

At first glance, it is natural to think that the dominance of the hydrocarbon sector must be an important explanatory factor. Controlling for income per capita and country fixed effects, the share of hydrocarbon fuels to total exports is positively associated with export concentration (HHI), while it has a strong negative impact on export sophistication (EXPY). Moreover, the residuals for large oil exporters fall above the line for HHI (EXPY), and below the line for EXPY, indicating that their performance could not be explained by their level of development and country fixed effects (Figures 2.3.a and 2.3.b).

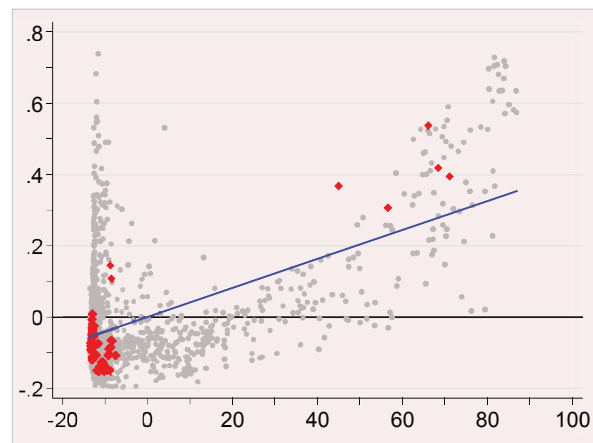
Probing further, we review a recent paper by Elbadawi et al (2009) who estimate an empirical model of export performance (HHI, share of man-

Figure 2.2
Degree of Export Sophistication (EXPY: 2003)



Notes: 1. Authors' calculations from the data base on EXPY of Hausmann, Hwang and Rodrik (2006). 2. The data for Saudi Arabia is for the year 2002. 3. The data for Comoros is for the year 2000. 4. The median is taken for Non-Oil Middle-Income Labor Exporting countries which include Morocco, Jordan, Lebanon, and Syria. 5. The median is taken for OPEC countries which include Venezuela, Nigeria, Ecuador, Saudi Arabia, and Algeria.

Figure 2.3a
Export Concentration (HHI) and the Share of Hydrocarbon Fuel Exports:
Share of Hydrocarbon Fuels/Total Exports (%)

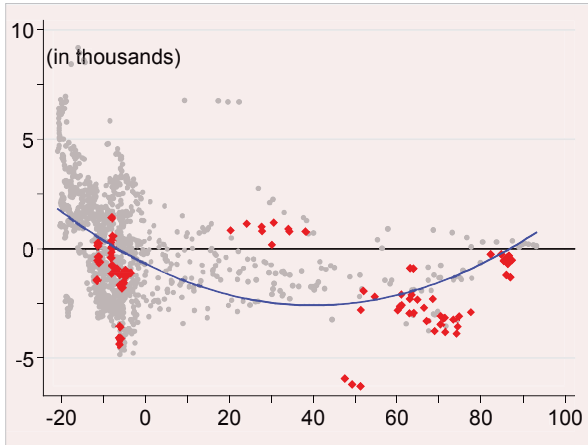


Notes: Based on the fixed-effects regression: $\text{Export concentration (HHI)} = -0.0156^{***} \text{Per Capita GDP(PPP)} + 0.0004^{***} \text{Per Capita GDP}^2 + 0.0033^{***} \text{Share of Hydrocarbon fuels/total exports} + 0.185^{***} \text{Const}$; Where *** indicates significance at 1% level. No. of observations = 1294; and No. of countries = 80.

Figure 2.3b

Export Sophistication (EXPY) and the Share of Hydrocarbon Fuel Exports.

Share of Hydrocarbon Fuels/Total Exports (%)



Notes: Based on the fixed-effects regression: $\text{Export Sophistication (EXPY)} = 293.6556^{***} \text{Per Capita GDP(PPP)} + -3.2801^{***} \text{Per Capita GDP}^2 + -13.5386 \text{ Share of Hydrocarbon fuels/total exports} + 0.0912 \text{ Share of Hydrocarbon fuels/total exports}^2 + 5574.5618^{***} \text{Const}$; Where *** indicates significance at 1% level. No. of observations = 1214; and No. of countries = 142.

ufacturing to total exports, EXPY) emphasizing the role of the real exchange rate as a determinant of profitability of tradable activities, especially non-traditional and new exports.¹² Conditional on other controls,¹³ they find strong association between RER overvaluation¹⁴ and the three indicators, with the former leading to larger export concentration, smaller share of manufacturing exports, and lower degree of export sophistication¹⁵ (Table 2.2). To underscore the significance of this finding, Elbadawi et al discuss specific country experiences in the context of a simple scatter plot showing EXPY against income per capita. They use this to highlight the exchange rate performance of countries that stand out as outliers relative to the level of EXPY predicted by their level of development (Figure 2.4). The scatter plot illustrates that there are many countries that are outliers, relative to the level predicted by a linear relationship between the two variables. Some of these countries have been able to export more sophisticated products than their development level would predict, while others export significantly below their predicted level. For example, China, India, and Indonesia, which maintained undervalued RER, belong to the former group; while Sudan belongs

Table 2.2

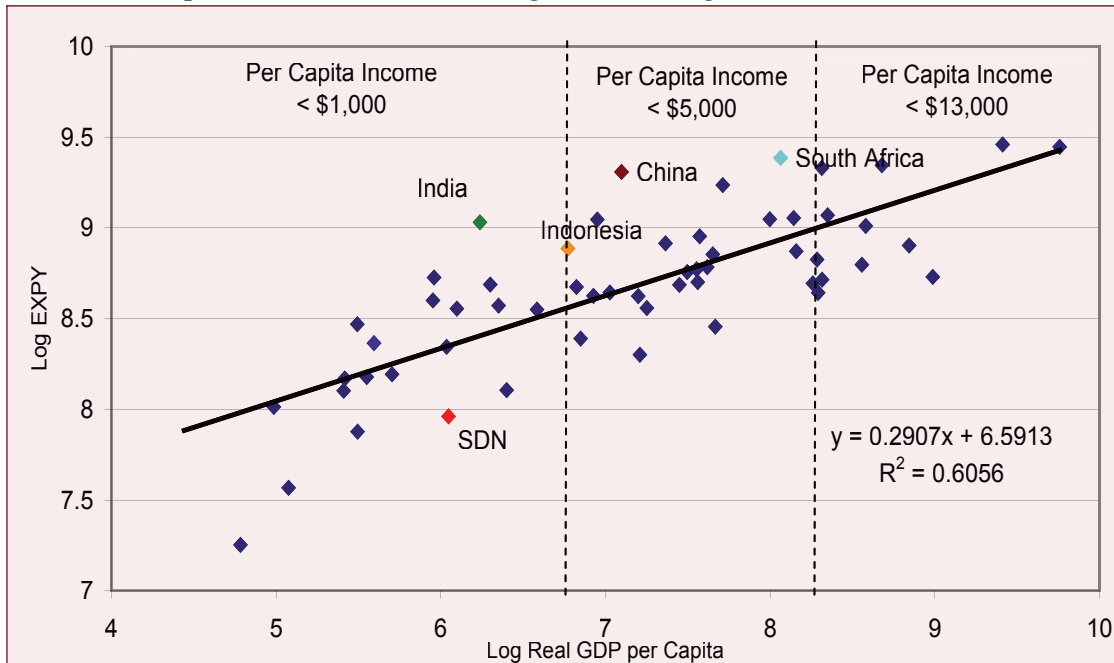
Export Diversification and Real Exchange Rate Misalignment. Cross-country Panel Data 1993-2004: Estimation Method: GMM-IV System Estimator

	Dependent Variable		
	Manufacturing Exports/ Merchandise Exports	Log of Herfindahl-Hirschman Index of Export Concentration	Log of EXPY
RER Misalignment	-0.0297**	0.0013**	-0.0007**
(% difference b/w log REER and its equilibrium)	0.0034	0.0005	0.0003
Standard Control Variables			
Lagged Dependent Variable	0.9465**	0.7443**	0.7636**
	0.0041	0.0304	0.0317
Population	0.2227**	-0.0823**	0.0227**
(in logs)	0.0547	0.0118	0.0047
Real GDP per Capita	0.6782**	-0.1354**	0.0577**
(in logs)	0.1343	0.0232	0.0121
Land per Worker	-0.5469	-0.0219	0.0114
	0.9044	0.1681	0.0516
Landlock	0.1875	0.0717**	-0.0439**
	0.2103	0.0348	0.0133
Dummy for Exporters of Primary Products (not fuel)	-0.4297*	0.0113	-0.0626**
	0.2359	0.0371	0.0162
Dummy for Exporters of Fuel	-2.0313**	0.4502**	-0.0230
	0.2879	0.0751	0.0148
Year Shifts	Y	Y	Y
No. Countries / No. Observations	66/551	62/670	55/385
Specification Test (P-Values)			
(a) Sargan Test	n.a.	0.97	0.98
(b) Serial Correlation:	0	0	0.03
Second order	0.72	0.27	0.14

Notes: Numbers below coefficients are the corresponding robust standard errors. * (**) denotes statistical significance at the 10 (5) percent level.

Source: Table 7 of Elbadawi, Kaltani and Soto (2009).

Figure 2.4
Income Per Capita, EXPY, and Real Exchange Rate Misalignment



Notes: According to Elbadawi et al estimates: China, India and South Africa are countries that experienced and/or engineered extended RER undervaluation episodes, while the RER in Sudan has been overvalued for most of the post-1999 period.
 Source: Figure 12 of Elbadawi, Kaltani and Soto (2009).

to the latter and has been impacted by episodes of major RER overvaluation.¹⁶

China is a much-discussed country whose exports are described as special because they are much more sophisticated than its income level would indicate (Rodrik, 2006b)¹⁷ and also because of its exchange rate policy. Recent studies (e.g. Rodrik, 2007; and Johnson, Ostry and Subramanian, 2007) suggest that China's exchange rate has been undervalued (grossly so by Rodrik's estimates, nearly 50% in 2004, the last year of his analysis).¹⁸

It has been recently argued (most notably by Rodrik, 2007) that empirical findings like the one discussed above are, in fact, a reflection of a deeper causal effect that promises to open a new set of ideas for thinking about growth in which the RER takes center stage.¹⁹ According to Rodrik, countries that have managed to engineer an RER undervaluation appear to have resolved deep institutional constraints.²⁰ First, weak institutions create a wedge between private and social returns, which is different from simply having a low natural capacity for input. Second, to the extent

that the tradable sectors may be more complex and entail more intensive transactions, the wedge between private and social returns may be more severe in tradable than non-tradable economic activities. This can lead to static misallocation of resources in favor of the latter and greater dynamic distortions in the former. When the tradable sector is more dynamic, as would be expected in many low-income, small economies, an increase in the relative prices of tradable to non-tradable commodities can improve static efficiency and enhance growth in a second-best fashion. Therefore, RER undervaluation can be the most feasible and effective approach for alleviating such institutional weaknesses. Another theoretical justification for engineering an RER undervaluation strategy is based on the view that tradable sectors (particularly new and non-traditional tradable sectors) are subject to a variety of market imperfections, such as information externalities (learning and cost-discovery externalities) and coordination externalities. These imperfections keep output and investment in tradable sectors at sub-optimal lev-

els. Again, by raising the profitability of tradable sectors, an RER undervaluation can be an effective strategy in a second-best world. In particular, it can be an effective substitute to traditional industrial policy and all the well known limitations associated with it.

An important qualification, however, is provided by Eichengreen (2007), who argues that targeting certain sophisticated export activities by certain domestic policies, including those that promote RER undervaluation may merely play the role of a facilitating channel to permit the realization of certain favorable conditions. For example, he argues that to the extent that Chinese firms rely on their links to overseas Chinese or to their proximity to Japan and Korea, RER undervaluation or other domestic policies may not be enough for other countries that do not possess such an advantage.

Though the literature is still unfolding and will likely be subject to further refinements and qualifications, such as the issues raised by Eichengreen, there is, nevertheless, a compelling body of evidence to raise concerns about the growth prospects for the Arab world, given the dominance of oil and the prevailing policy environment, most notably with regard to the exchange rate policy pursued in most countries in the region (Elbadawi and Kamar, 2005). On the exchange rate issue, it appears that the median Arab country has not been able to avoid episodes of major overvaluation much less consistently target an undervalued RER as would be recommended by the recent literature. The exceptions were the cases of Tunisia and Morocco (representing the non-oil middle-income group), which have consistently pursued competitive real exchange rate policies. For the case of the oil rich, labor abundant (Figure 2.5.b) and non-oil middle income labor exporting Arab countries (Figure 2.5.c) the link between the RER undervaluation/ overvaluation and subsequent growth is very clear. In the former group extended RER overvaluation (RER misalignment index > 0) episodes have been associated with growth deceleration/ stagnation; while for the latter RER undervaluation has led to higher subsequent growth. However, for the other two Arab groups (oil rich, labor-importing, Figure 2.5.a; and non-oil low income, Figure 2.5.d) the relationship between RER and growth is less obvious. Not surprisingly most Arab countries could not match the stellar growth perfor-

mances of countries like Chile and China, which have consistently pursued what seem to be real exchange rate-led growth strategies (Figure 2.5). Finally, going back to Table 2.2 (of Elbadawi et al regressions) we find that the dummy for exporters of fuel has a significant effect, influencing export performance in a similar fashion to that of the real exchange rate overvaluation. This suggests that there are factors beyond the basic controls and the real exchange rate that are specific to oil producing, exporting countries and are important for explaining the poor export performance of oil and other resource-rich economies.

2.3 Proximity and Product Space

Another important dimension of the recent research on export structure and sophistication that should be particularly relevant to an oil-rich economy is the concept of export clusters and product

Figure 2.5a
Oil Rich, Labor Importing

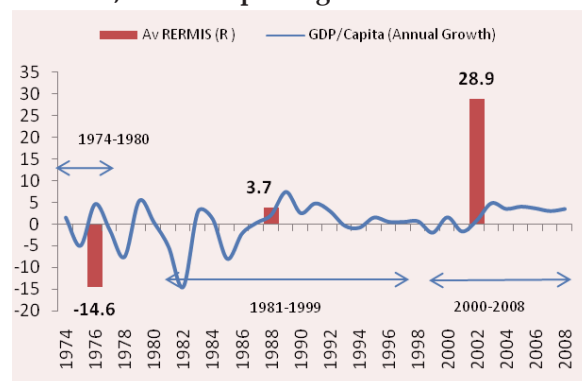


Figure 2.5b
Oil Rich, Labor Abundant

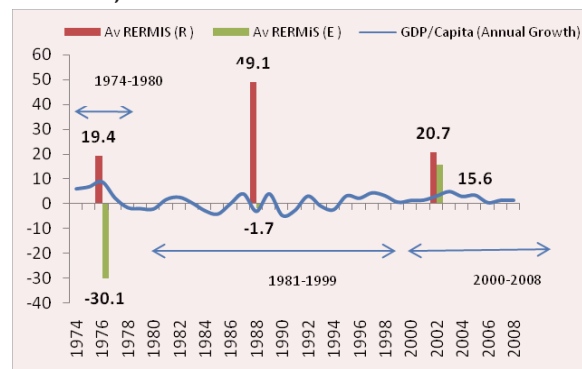


Figure 2.5c
Non-Oil Middle Income Labor Exporting

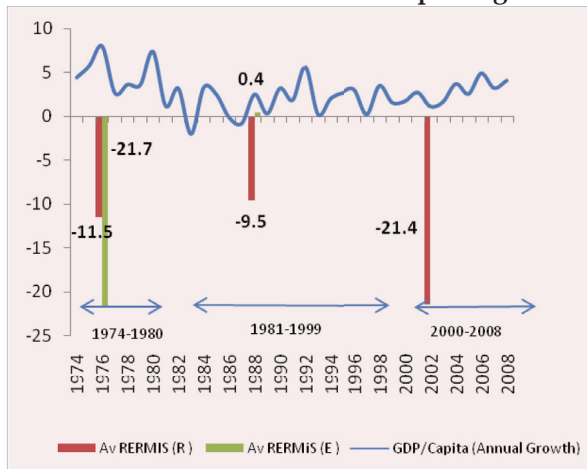
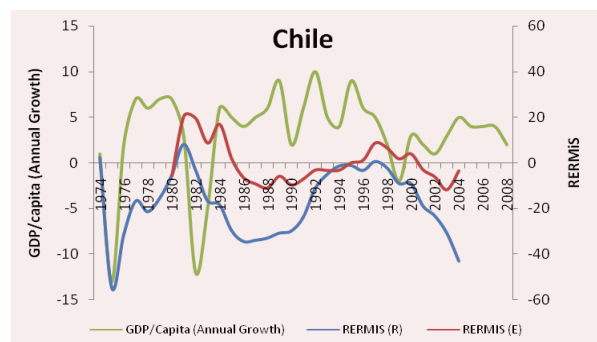


Figure 2.5f
Chile



Notes: 1. RERMIS (R) is the measure of the real exchange misalignment relative to a notional RER equilibrium level according to Rodrik (2007). 2. RERMIS (E) is the corresponding measure according to Elbadawi et al (2009). 3. $RERMIS > 0$ implies RER overvaluation; and $RERMIS < 0$ implies RER undervaluation. 4. A description of the calculation of the RERMIS is contained in the Appendix.

Figure 2.5d
Non-Oil Low Income

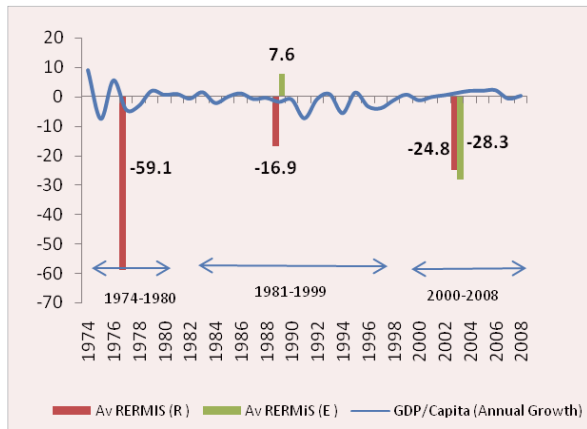
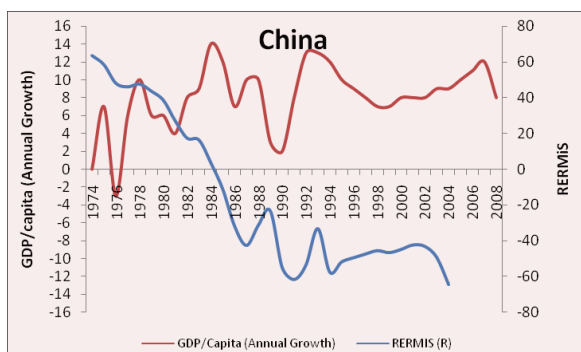


Figure 2.5e
China



space. The insight behind this research is based on two empirical regularities about product specialization and structural transformation across countries, established by Hausmann and Klinger (2007). They find that changes in the revealed comparative advantage of nations are governed by the pattern of what they call “relatedness” of products; and that this pattern tends to exhibit very strong heterogeneity: there are parts of the product space that are dense while others are sparse. This implies, they argue, that the structure of this product space governs the evolution of comparative advantage. Thus they develop a simple theoretical framework to formalize this point and to test the empirical relevance of their theory. In their review of the literature they claim that their findings are not accounted for by the received theory. For example, they argue that, controlling for factor endowments, the initial pattern of specialization has no independent effect in the Heckscher-Ohlin model (Leamer, 1987). Also they note that if we assume, as the Ricardian model argues, that technological differences across countries determine comparative advantage, the product mix will depend on the relative change of productivity across products. However, they once more claim that in the existing literature (such as the quality ladders or variety models: Grossman and Helpman, 1989; Aghion and Howitt, 1992) developing a new variety does not depend on the existing product mix. Hence, they argue, the structure of the product space has no importance

and cannot be a source of path dependence in the context of the received literature.

Against this backdrop, the two authors develop a simple product-specific model of human capital that also allows for a heterogeneous degree of substitutability across products. Fixing the output of each skilled worker to 1, goods are ordered in a line so that their prices increase with distance. Assuming that a worker needs to be trained to acquire the product-specific skills to be able to move from one product to another higher value added one, the additional revenues earned by the trained worker for moving from producing the current good i to another good j are given by:

$$\Delta P_{i,j} = f\delta_{i,j} \quad 2.3$$

Where $\delta_{i,j}$ is the distance from good i to good j , equal to zero for $i=j$ and greater than zero for i is not equal to j . Given the assumption that the degree of product substitutability declines with distance, the additional costs from moving from the current good i to good j is given by:

$$C(\delta_{i,j}) = \frac{c\delta_{i,j}^2}{2} \quad 2.4$$

The profit maximization associated with this simple problem, the optimal distance to jump and the maximum profit to be earned are, respectively, given by the following equations:

$$\text{Max}_{\delta_{i,j}} \Pi = f\delta_{i,j} - \frac{c\delta_{i,j}^2}{2} \quad 2.5$$

$$\delta_{i,j}^* = \frac{f}{c} \quad 2.6$$

$$\Pi(\delta_{i,j}^*) = \frac{f^2}{2c} \quad 2.7$$

The distance profile of the profits is humped shaped (Figure 2.6). Remaining at the existing product i no extra profits are gained, but profits increase with distance until it reaches the maximum at δ^* , then it starts to decline until reaching zero at a distance equal to $\frac{2f}{c}$. This simple model shows that economies can stagnate if they specialize in products that are distant (in this model beyond $\frac{2f}{c}$) from other more dynamic or higher

value products. The implications of this model can be generalized to a multi-dimensional product space with n number of goods, represented by a matrix of $(n \times n)$ pair-wise distances. Also since the product space doesn't have to be a continuum, a break in this space larger than $\frac{2f}{c}$ will mean that an incremental jump will not be privately profitable, hence the economy will not experience incremental structural transformation. Therefore, such breaks, which these authors show are more common than not, would represent coordination failures when jumps that are not privately profitable are, nevertheless, socially optimal, since the newly created human capital has positive externality for future firms.

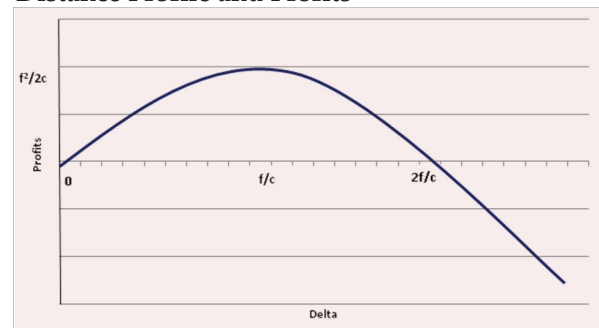
To examine the implications of this literature for oil-rich economies, we can probe further by discussing the empirical proxy for product proximity (the inverse of the distance concept). Mapping out the estimated measures of proximity into the product space allows analysis of its structure, including the location of the oil sector relative to other clusters (Hidalgo, Klinger, Barabasi and Hausmann, 2007). Moreover, the relationship between structural transformation and proximity or density of clusters can be empirically tested using this data (Hausmann and Klinger, 2007).

The empirical measure of the concept of proximity (relatedness), $\phi_{i,j}$, between two products i and j is given by the minimum of the pair-wise conditional probability of a country exporting a good given that it exports another:

$$\phi_{i,j} = \min\{P(RCA_x | RCA_y), P(RCA_y | RCA_x)\} \quad 2.8$$

Where RCA stands for revealed comparative

Figure 2.6
Distance Profile and Profits



Source: Figure 1 of Hausmann and Klinger (2007).

advantage

$$RCA_{c,i} = \frac{x(c,i) / \sum_i x(c,i)}{\sum_c x(c,i) / \sum_{c,i} x(c,i)} \quad 2.9$$

Which measures whether country c exports more of good i , as a share of its total exports, than the average country ($RCA > 1$ not $RCA < 1$).²¹

Using the above two equations and four-digit level international trade data, Hausmann and associates calculate a matrix of revealed proximities between every pair of products. By mapping out the computed proximity measures into a “product space” they (Hidalgo, Klinger, Barabasi and Hausmann, 2007) show a heterogeneous space, composed of very dense clusters, where products are very closely connected. Meanwhile it is clear from the figure that oil and the majority of products fall at the periphery of the product space (Figure 2.7).²² On the other hand, unlike oil, which requires highly specific assets, manufactured products are found at the core of the product space, where the product clusters tend to be very dense. These authors, therefore, argue that the ability of countries to produce new products and undergo structural transformations depends on how many products are in close proximity to their current product mix. As noted by Hidalgo et al, in theory the extent of closeness between products, and hence the density of clusters, should depend on fundamental factors such as intensity of labor, land, and capital; the level of sophistication of the underlining technical, institutional, and human capital; or the logistics networks, inputs or outputs involved in the value chain.

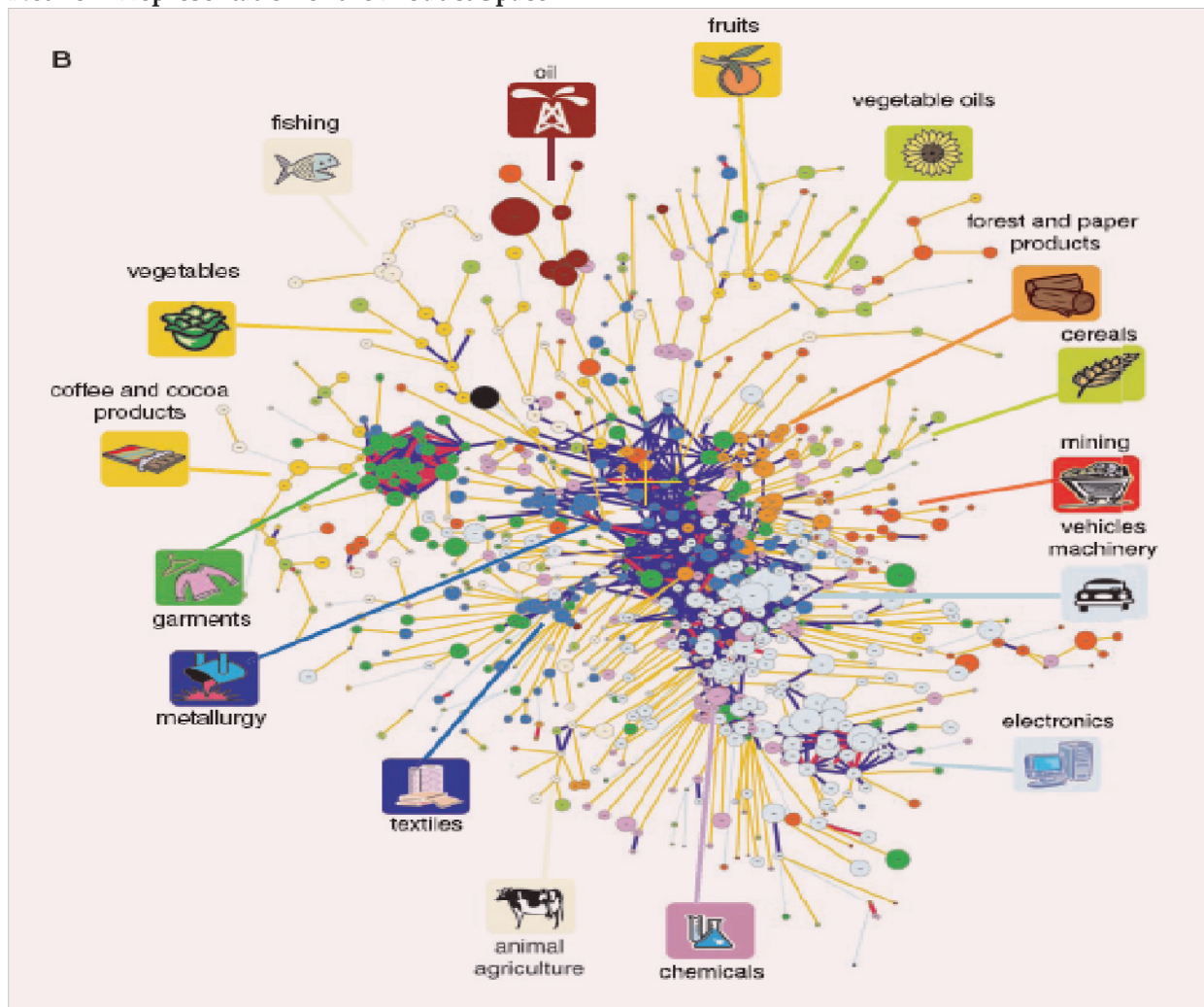
Producing new products requires a combination of specific private and public input. If the new product is in close proximity to the current basket of goods, the private sector may be able to exploit the existing capabilities on its own – the markets, physical and human assets, norms, and institutions that were set up for other pre-existing activities (Hausmann and Rodrik 2006). To produce new products that are further away from the current product mix would necessitate certain capabilities that will not emerge on their own due to coordination problems. The government’s intervention would be crucial in providing complementary input – rules, organization, infrastructure, labor training, and others – that are specific to subsets of activities. In South Korea and

Taiwan, they have taken the form of export subsidies; Singapore and Malaysia created an export processing zone; the Chinese government set up special economic zones. What is evident is the fact that the intervention has to fit the specifics of the context and hence is not fully knowable *ex ante*.

To recapitulate, the various findings from the classical literature on export concentration and the more recent research on export sophistication and product space all suggest that the dominance of the oil sector in the Arab world appear to have complicated the accelerated structural transformation and sustained growth through a variety of channels. The countries of the Arab region have, by and large, been less successful at diversifying their economies; breaking into the global market for manufacturing or producing and exporting higher value and more sophisticated exports commensurate with their levels of income. The oil sector tends to be located at the periphery of the product space, which places a huge demand on the public sector to develop the institutional capabilities to resolve the ensuing market failures.

However, the dominance of the oil sector might itself present a corrosive influence on institutions and governance in oil-rich countries. We turn to these issues in the next two sections.

Figure 2.7
Network Representation of the Product Space



Notes: 1. Source: Figure 1.B of Hidalgo, Klinger, Barabasi and Hausmann (2007). 2. Links are color coded with their proximity value. The sizes of the nodes are proportional to world trade, and their colors are chosen according to the classification introduced by Leamer (1984).

Oil Dependency

“Projects of mining, instead of replacing capital employed in them, together with ordinary profits of stock, commonly absorb both capital and stock. They are the projects, therefore, to which of all others a prudent law-giver, who desired to increase the capital of his nation, would least choose to give any extraordinary encouragement...”
(Adam Smith (1776)²³)

As the above quote suggests, the concern about the resource curse at least dates back to the days of Adam Smith. However, sweeping statements about the perils of natural resource dependency for development, such as the above, are no longer widely accepted. There is now a near-consensus that a natural resource curse is real but is not destiny. On one hand, oil is a valuable resource that has been associated with high per capita incomes. Moreover, many, though not all, oil-rich countries have managed to successfully transform the rents from oil into substantial gains in terms of higher consumption and other aspects of social welfare for their citizens and investments in useful public goods for their economies (Sachs, 2007). A comparison of oil-rich to non-oil developing countries makes clear that the former do in fact outperform the latter in terms of a wide range of economic and social indicators (Table 3.1). Also, as according to the overall development indicators, the major oil-rich Arab member countries of the GCC are obviously in a much bigger league than other countries in the GCC (Table 3.2).

Nevertheless, the oil curse is real and is mani-

fest in many important aspects of the development discourse of oil-rich countries. Oil income is intrinsically temporary because it is derived from non-renewable, depleting stocks. It is also unreliable because oil prices are highly volatile (Collier et al, 2009). Therefore, the consequences of failures to properly manage the volatility of oil incomes; or to effectively use it to accumulate large and sufficiently diverse stocks of tangible (e.g. infrastructure) and intangible (e.g. human and knowledge capital, good institutions) types of capital are likely to be extremely dire for oil-rich countries.

In addition to the problems of limited economic diversification and low sophistication of exports that tend to afflict oil-rich countries, analyzed in the previous section, we briefly discuss below two more features common to oil-rich economies. These are extreme volatility, post-boom growth collapse, and inadequate renewable capital base, or in other words, very low or negative “genuine savings”. Oil-rich economies affected by such problems are likely to be ripe for the oil curse or at least to experience long-term stagnation.

3.1 Post-boom Growth Collapse²⁴

The volatility of oil prices during the past three decades makes it possible to analyze countries’ experiences during and in the aftermath of booms. Table 3.3 summarizes the experiences of oil and non-oil Arab countries and other non-Arab comparators during the first oil price boom of 1971–1980, the oil price collapse of 1981–1986, the intermittent period of 1987–1999, and finally

Table 3.1
Economic and Social Indicators in the Arab World and Comparators (2008)

	Arab Oil Rich, Labor Importing	Arab Oil-Rich, Labor Abundant	Arab Non-oil Middle- Income Labor Exporting	Arab Non-Oil Low-Income	Russian Federation	China	Malaysia	Indonesia	Sub- Saharan Africa
Energy production (barrels / capita)**	235.11	6.15	2.52	NA	6.11	0.95	2.68	0.98	0.70
Life expectancy at birth, total (years)	76	63	73	64	68	73	74	71	52
Mortality rate, infant (per 1,000 live births)	11	55	24	75	13	19	10	25	89
GDP per capita, PPP (con- stant 2005 international \$)	28069	2218	4945	1820	14917	5511	13139	3674	1935
School enrollment, primary (% net)	90	75	89	63	NA	NA	97	95	72
Roads(KM/paved/1000 pop)	2.0	0.3	1.3	1.2	5.3	1.7	2.7	1.0	NA
Electricity production (kWh/capita)	14303	246	1676	NA	6974	2185	3506	597	NA

Notes: 1. Authors' calculation from World Bank's WDI data base, 2009. 2. Data for the last available year is used. 3. **1 KT=0.00071380802249246 Millions of barrels.

the new price surge since 2000 until 2008. This year witnessed the climax of the boom, where the price of oil reached a staggering \$140 pb around July before collapsing to less than \$40 during the second half of the year as a result of the current global economic crisis. The median oil country experience during the first boom was one of growth of GDP per capita above the non-oil exporting developing countries accompanied by high savings. However, growth in the median oil exporting country totally collapsed when fortunes were reversed. This post-boom period drastically distinguishes oil exporters from other developing countries. Savings, on the other hand, also experienced a large adjustment after the boom but still remained above those of non-oil developing countries. Even on this score, however, these savings might not be high enough compared with the optimum levels consistent with non-renewable resource base economies, such as the oil economies.²⁵ The median story thus shows that growth in oil-rich countries has been volatile and some have experienced negative growth rates after the end of the oil boom.

Taking a closer look at individual country experiences of oil exporters, three groups can be distinguished. One group of countries is made up of those that can be labelled success stories given their ability to continue growing even when fortunes have reversed (this would be in the 1980s period). Figure 3.1.a contains four panels depicting the income per capita in PPP terms for Indonesia and Norway but also for Botswana and Chile, which are not oil exporters but nevertheless mineral exporters and have managed to avoid the resource curse. Thus success stories exist for a variety of countries whose exports are primary products. The second group comprises those countries that epitomize the oil curse story. These include Nigeria as well as Saudi Arabia and Kuwait from the Middle East. They are depicted in Figure 3.1.b. Finally, there is another group of oil producing SSA countries that are relatively new entrants into the market, and for this reason they are yet to experience an oil price bust. Precisely because of this they can stand to learn from older oil-exporters in the other two categories. These countries are depicted in Figure 3.1.c; they are Chad and Sudan.

Perhaps the starkest contrast is provided by the comparison of Norway and Saudi Arabia. Per capita GDP (in PPP terms) in Norway rose precipitously from about US \$25,000 in 1980 to US

Table 3.2
Human Development Indicators in the Arab world and Comparators (2008)

	Country	HDI ranking
Arab Oil-Rich Labor Importing (GCC + Libya)	Bahrain	39
	Kuwait	31
	Libya	83
	Oman	56
	Qatar	33
	Saudi Arabia	59
	UAE	98
Arab Oil-rich, Labor abundant	Algeria	104
	Iraq	1001
	Sudan	150
	Yemen	140
Arab Non-oil Middle Income Labor Exporting	Egypt	123
	Morocco	130
	Jordan	96
	Lebanon	83
	Syria	150
	Tunisia	98
	West Bank Gaza	35
Arab Non-oil Low-Income	Comoros	139
	Djibouti	155
	Mauritania	154
Non-oil & Mineral non-oil Arab Countries	Botswana	125
	Chile	44
	Norway	1

Source: UNDP data base.

\$50,000 in 2008. Meanwhile, Saudi Arabia's per capita GDP declined from a peak of US \$35,000 in 1980 to slightly more than US\$ 15,000 in 1990 and only hit US \$20,000 in 2008. Therefore, while Norway's income rose steadily to surpass the OECD median, Saudi Arabia's income seems to have stagnated and could not fully recover from the early 1980s oil slump (Figure 3.2).

Table 3.3
Growth, Volatility and Savings across Oil Cycles

Arab Group- ings	Countries	1974-1980			1981-1986			1987-1999			2000-2008		
		Growth	Volatility	Savings/ GDP	Growth	Volatility	Savings/ GDP	Growth	Volatility	Savings/ GDP	Growth	Volatility	Savings/ GDP
Oil-rich, Labor Importing Countries (GCC+ Libya)	Bahrain	NA	NA	55.00	-4.25	1.36	47.02	2.45	1.51	27.69	3.67	0.35	40.91
	Kuwait	-7.05	1.62	61.51	-6.09	1.94	32.69	-0.10	105.69	13.90	4.56	1.29	41.74
	Libya	NA	NA	NA	NA	NA	NA	NA	NA	17.56	1.98	1.57	27.61
	Oman	3.88	2.58	48.33	7.59	0.68	41.16	1.13	3.33	26.08	3.31	0.61	37.67
	Qatar	NA	NA	NA	NA	NA	NA	NA	NA	42.55	0.60	10.28	67.01
	Saudi Arabia	3.89	2.24	60.08	-8.30	0.76	27.21	-0.34	12.23	24.44	1.59	1.48	44.55
Oil-rich, Labor Abundant	United Arab Emir- ates	-0.33	31.79	73.17	-11.19	0.68	53.44	-0.07	75.67	37.00	2.11	2.01	38.78
	median	1.77	2.41	60.08	-6.09	0.76	41.16	-0.07	12.23	26.08	2.11	1.48	40.91
	Algeria	2.91	0.96	39.42	0.83	2.42	34.61	-0.73	3.73	28.12	2.33	0.71	51.12
	Sudan	2.51	3.61	7.64	-1.50	3.77	4.76	2.56	1.90	8.22	5.31	0.38	16.21
	Yemen, Rep.	NA	NA	NA	NA	NA	NA	1.57	2.13	7.26	0.96	0.80	21.58
	median	2.71	2.28	23.53	-0.33	3.10	19.68	1.57	2.13	8.22	2.33	0.71	21.58
Non-oil Middle Income Labor Exporting	Egypt, Arab Rep.	6.25	0.66	14.13	3.30	0.77	14.91	2.10	0.70	14.76	2.94	0.60	15.16
	Morocco	3.13	0.86	13.58	1.83	2.66	15.69	1.11	5.47	18.15	3.53	0.63	23.41
	Jordan	11.75	0.64	-13.04	1.57	1.57	-10.95	-1.31	5.12	4.18	3.55	0.51	-8.41
	Lebanon	NA	NA	NA	NA	NA	NA	2.95	6.44	-23.34	2.88	1.08	-2.86
	Syrian Arab Re- public	7.33	1.15	14.41	-2.00	2.69	12.03	1.95	3.05	14.77	1.10	1.08	22.01
	Tunisia	4.16	0.41	25.20	0.56	6.13	23.06	2.71	0.91	22.06	3.86	0.38	22.01

Table 3.3
Continued

Arab Group- ings	Countries	1974-1980			1981-1986			1987-1999			2000-2008		
		Growth	Volatility	Savings/ GDP	Growth	Volatility	Savings/ GDP	Growth	Volatility	Savings/ GDP	Growth	Volatility	Savings/ GDP
Non-oil Low- Income	West Bank and Gaza	NA	NA	NA	NA	NA	NA	4.23	1.03	-19.58	-5.28	1.72	-28.48
	median	6.25	0.66	14.13	1.57	2.66	14.91	2.10	3.05	14.76	2.94	0.63	15.16
	Comoros	NA	NA	-10.08	1.21	1.34	-4.02	-0.98	4.14	-4.29	-0.25	6.79	-8.64
	Djibouti	NA	NA	NA	NA	NA	NA	-4.53	0.55	-6.42	1.04	1.51	5.78
	Mauritania	0.33	17.91	-5.49	-0.91	3.90	-0.54	-0.09	43.00	4.77	1.56	2.16	0.87
Other	median	0.33	17.91	-7.78	0.15	2.62	-2.28	-0.98	4.14	-4.29	1.04	2.16	0.87
	East Asia	2.18	1.00	31.71	2.34	0.40	31.25	2.50	0.72	32.39	3.12	0.43	29.01
	Latin America & Caribbean	2.81	0.51	23.07	-0.97	2.83	22.46	0.89	2.14	20.46	2.34	1.05	21.33
	Sub- Saharan Countries	0.50	4.33	23.69	-1.61	0.77	19.78	-0.46	3.63	16.22	2.26	0.57	16.60
	median	2.18	1.00	23.69	-0.97	0.77	22.46	0.89	0.72	20.46	2.34	0.57	21.33

Note: Computed from the World Bank WDI data base, 2009.

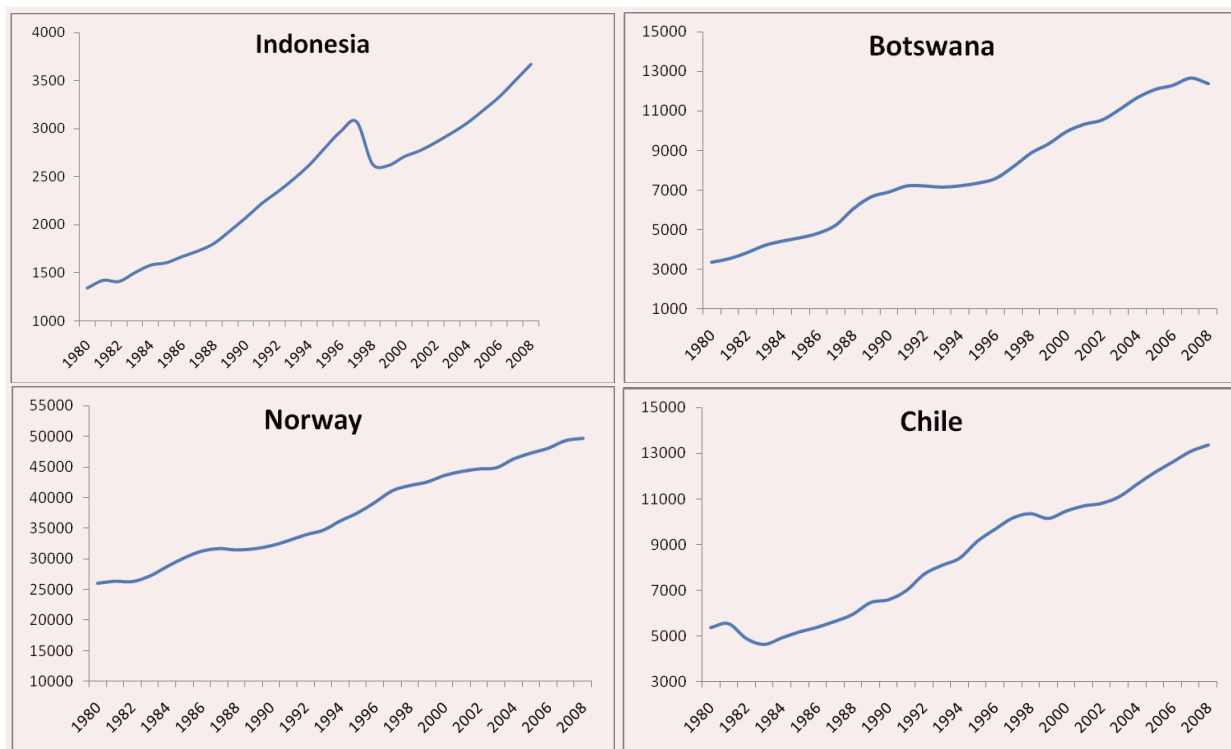
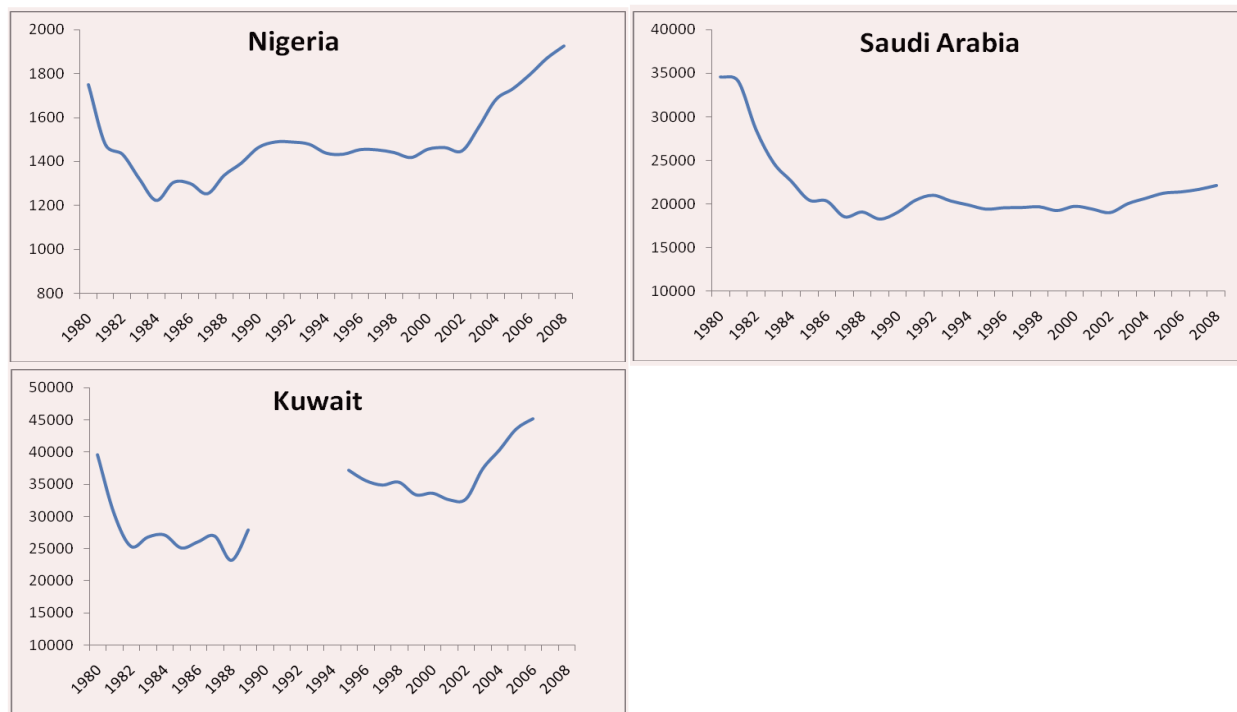
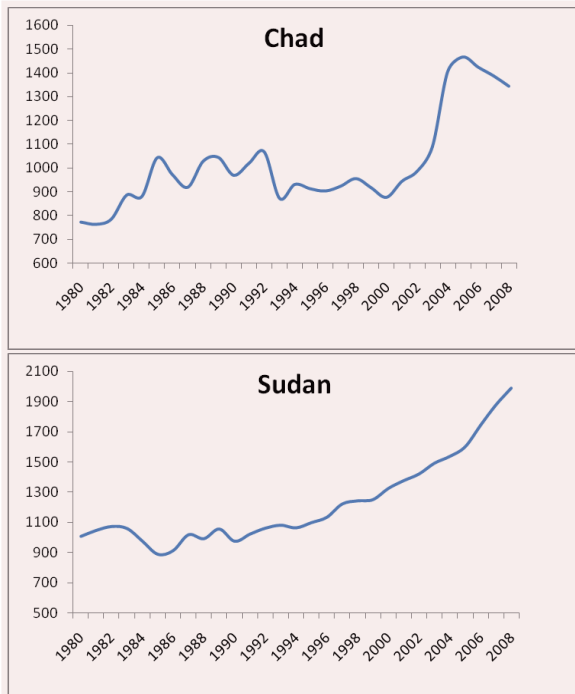
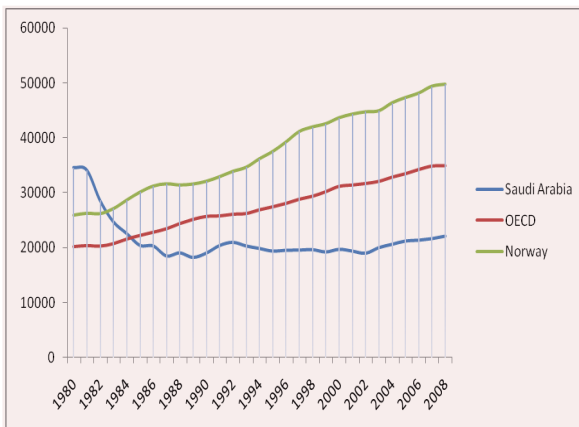
Figure 3.1**Income per Capita (PPP \$2000) in a Sample of Oil-Rich Countries****a. Success Stories:****b. Oil Curse Stories**

Figure 3.1 Continued
c. New Entrants' Stories



Source: World Bank's WDI data base and Elbadawi and Kaltani (2008).

Figure 3.2
The Evolution of Income in Saudi Arabia, the OECD and Norway



Source: World Bank's WDI data base.

Therefore, though some oil-rich countries can in fact achieve higher levels of income and other economic and social indicators, they might, nevertheless, stagnate at levels that are far below their potential, given the resources they command. More importantly, many other less fortunate oil-rich countries may actually experience major post-boom growth collapses leading to absolute declines in their long-term income levels, often times associated with deep debt crises—the so called the “resource curse”.

3.2 Resource Depletion and Negative “Genuine Savings”

“How can we reconcile the seemingly obvious fact that oil makes a country rich with the equally undeniable fact that few countries heavily dependent on the production of oil are as rich, in terms of per capita income, as many developed countries (Norway is an obvious exception), and, moreover, rarely even appear to be moving toward that goal?” (Geoffrey Heal, 2007: p. 156).

Unlike the former manifestations of the resource curse (e.g. economic concentration, extreme volatility, and post boom growth collapse), the full ramifications of the resource depletion nature of oil-based development are not yet fully appreciated. We refer to the above quote from Heal, who argues that the answer to the paradox he poses hinges on the fact that income generated from oil is quite different from income generated by other renewable sources. This has implications for the country's underlying wealth. Once oil-based development is recognized as a process of depletion of one form of asset (the stock of oil) to finance consumption and other forms of assets, the true wealth of Saudi Arabia, for example, may look very different from its apparent wealth as measured by the value of its oil reserves (Box 3.1).

Moreover, once we properly account for the depletion effect of oil in the national income accounts, most, if not all, natural resource exporters appear to be depleting natural capital faster than the rate at which they are building new types of renewable capital. That is, they are generating negative genuine savings. Therefore, even if some of these countries managed to achieve high income and welfare levels, they are not likely to

sustain them in the future. This perhaps might explain why some relatively high income oil-rich countries, such as Saudi Arabia, have so far failed to break through to the income levels of developed economies (Figure 3.3). Worse still, for many other cases, the negative savings can be so extreme that an oil-rich country can experience an absolute post-boom decline in real income relative to the pre-boom levels.

To more concretely discuss the implications of resource depletion we highlight some salient aspects of the theoretical framework used to estimate changes in national income and welfare in non-renewable resource-based economies.²⁶

The model starts with the classical inter-temporal, optimizing problem of maximizing the present value of the benefits (welfare) $V(S)$ that can be obtained from a given level of capital stock (the 'state') S_0 :

$$V(S_0) = \text{Max} \int_0^{\infty} u(C_t) e^{-\delta t} dt \quad 3.1$$

This is subject to a set of constraints imposed by technology, institutions, and resource availability. The solution to this problem leads to the derivation of the following "generic" expressions for the change in welfare over time, which is exactly equal to "genuine savings" and the change in national income over time:

$$\begin{aligned} \frac{dV}{dt} &= \sum_i \lambda_i \frac{dS_i}{dt} (\text{genuine savings}) = \\ \frac{d}{dt} (\text{National Income}) &= \frac{d}{dt} \int_0^{\infty} \sum \lambda_i c_i e^{-\delta t} dt \end{aligned} \quad 3.2$$

Where λ_i is the shadow price²⁷ of capital good i , the stock of which is S_i ; and c_i is consumption of good i . The term for "genuine savings", records the total value of investments, net of resource depletion.

However, to more concretely bring out the implications of this framework for welfare and national income accounts in oil-rich countries, we further highlight the specific features of the solution for the case of an open economy with extraction capital.²⁸ In this economy, extraction is not costless and requires domestic investment I_d

Box 3.1: How "Rich" is Rich Saudi Arabia: the Paradox of Resource Depletion

Saudi Arabia, with proven oil reserves of 262.7 billion barrels, is for some a poster child for the oil producer as economic utopia. Yet a proper measurement of its true wealth suggests that it is not as rich as it appears. There are two ways of measuring the flow income of the average Saudi family:

- If Saudi Arabia could sell its oil (at \$60 a barrel) and invest the proceeds at 4%, then a typical family could earn \$100,000, which does not qualify as rich by Western standards.
- If, instead, Saudi Arabia can just extract as much oil as it can—about 8 million barrels a day—then the per family income is just over a quarter of the above, at \$28,000, barely above the US poverty line.

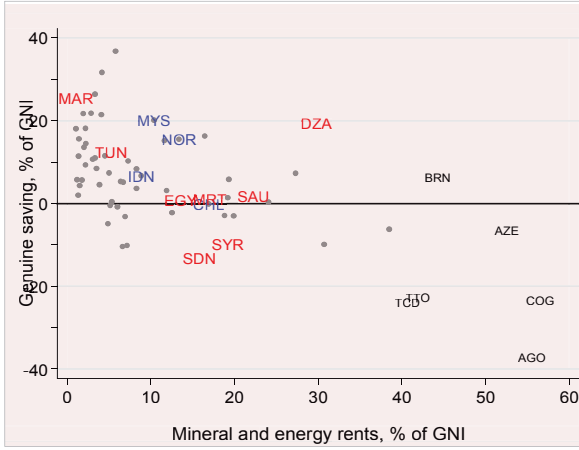
Moreover, the latter option is more realistic since Saudi Arabia cannot sell its entire oil reserves all at once without forcing the price down dramatically. Therefore, the wealth of Saudi Arabia is in fact more apparent than real. Three lessons that can be gleaned from this paradox:

- First, capital markets matter to oil-producing countries as much as the oil wealth itself, because their standard of living depends on access to these markets and how well they use them.
- Second, a resource-rich country, such as Saudi Arabia, is not necessarily "rich" in the conventional sense.
- Third, any measure of income or of wealth change for these economies must allow for the depletion of the natural resource stock.

Source: Heal (2007: p. 156-57).

in the extraction capital K_d but part of the net oil proceeds can be invested (at a rate I_f) in interest-bearing foreign capital K_f with interest rate r . Assuming that the rate (R) at which the resource can

Figure 3.3
Genuine Savings in Mineral and Energy-Rich Countries



Source: World Bank (2006).

be extracted is bounded by the extraction capital ($R \leq \alpha K_d$) and that the output of the resource is proportional to the capital available for resource extraction (that is, $\frac{dS}{dt} = \alpha K_d$), we have:

$$C = \alpha K_d - I_f - I_d + rK_f \quad 3.3$$

The solution of (3.1) subject to (3.3) and other technical conditions²⁹ results in the following expressions for net national income (NNP) and the change in welfare (the change in the state valuation function):

$$NNP = C + rK_f + I_f + I_d - \alpha K_d \quad 3.4$$

$$\frac{dV}{dt} = \text{genuine savings} = \lambda_f I_f + \lambda_d I_d - \lambda_s \alpha K_d \quad 3.5$$

The above two equations clearly imply that without accounting for the depletion effect of oil extraction we cannot properly measure the evolution of welfare and income in oil-rich economies. Hence, income and welfare comparisons like the ones contained in Table 3.1 might be grossly exaggerating the relative performance of oil-rich countries. Also the two equations highlight the critical importance of domestic investment and capital

markets for converting the depleting oil stocks into renewable stocks of other types of wealth.

This framework has been extensively applied by the World Bank (2006) to compute the value of investment at shadow prices ($\sum \lambda_i \frac{dS_i}{dt}$) for a wide range of countries.³⁰ The estimates suggest that most oil-exporting countries will have difficulty sustaining incomes and welfare in the longer run because they have generated negative genuine savings (Figure 3.3).³¹ Also using the same methodology, the World Bank (2006) estimates that as they deplete their natural capital—in this case mainly oil stocks—oil producers are substantially deficient in terms of accumulation of “replacement” tangible and produced capital (Table 3.4). However, major oil-rich Arab countries, such as Saudi Arabia, Libya and, especially Kuwait, appear to have accumulated much more substantial capital than the median for major oil producers. Nevertheless, they fall far short of the capital stocks of high income OECD and their total capital stocks are comparable to those of the upper middle-income group. Moreover, lack of data for most Arab countries precludes comparison with regard to types of capital, especially the intangible capital. As noted by Collier et al (2009), though it is subject to several conceptual qualifications,³² the robustness of the estimates generated by the World Bank’s “green accounting” methodology on the investment deficit of resource-rich economies cannot be easily dismissed. In fact, based on evidence from twelve oil-rich countries, they find that while hydrocarbon revenues rose very sharply since 2000, there were no substantial increases in domestic investment shares in any of these countries. Moreover, they find no statistically significant association between hydrocarbon revenues and domestic investments in this sample.

So far we have discussed the manifestations and symptoms of the resource curse associated with post-boom, economic collapse. This is the lack of economic sustainability in the long term as a result of the failure to generate positive “genuine savings” as the oil stock is being depleted over time. Next we go beyond the question of how to the question of why through a selective but representative review of the literature.

Table 3.4

Capital Per Capita in and outside the Arab World: Produced, Tangible and Intangible

	Capital Per Head (2000 US\$)			
	Total	Intangible	Produced	Natural
Income Group (excl. oil countries)				
Low Income	7,532	4,434	1,174	1,925
Lower Middle Income	22,674	15,517	4,187	2,970
Upper Middle Income	76,538	51,001	16,831	8,706
High Income OECD	439,063	353,339	76,193	9,531
Major Oil Producers	22,952	2,359	7,937	
World (excl. oil countries)	95,860	74,998	16,850	
World	90,210	69,369	16,160	
Arab Countries				
Algeria	18,491	-3,418	8,709	13,200
Bahrain	112,254	..	..	..
Comoros	8,030	5,792	1,270	967
Djibouti	16,248	..	..	..
Egypt, Arab Rep.	21,879	14,734	3,897	3,249
Iraq	..	..	..	..
Jordan	31,546	24,740	5,875	931
Kuwait	140,179	..	..	173,883
Lebanon	69,561	..	..	1,929
Libya	89,434	..	..	1,653
Mauritania	7,959	3,938	1,038	2,982
Morocco	22,965	17,926	3,435	1,604
Oman	49,445	..	..	68,835
Qatar	..	..	..	579
Saudi Arabia	60,605	..	..	..
Somalia	..	..	..	..
Sudan	5,681	..	..	2,951
Syrian Arab Rep.	10,419	-1,598	3,292	8,725
Tunisia	36,537	26,328	6,270	3,939
United Arab Emirates	..	..	..	..
West Bank and Gaza	36,465	..	..	..
Yemen, Rep.	5,911	..	..	..

Table 3.4
Continued

	Capital Per Head (2000 US\$)			
	Total	Intangible	Produced	Natural
Best Performers				
Botswana	40,592	28,483	8,926	3,183
Chile	77,726	56,094	10,688	10,944
Indonesia	13,869	8,015	2,382	3,472
Malaysia	46,687	24,520	13,065	9,103
Norway	473,708	299,230	119,650	54,828
Worst Performers				
Angola	..	..	..	7,813
Nigeria	2,748	-1,959	667	4,040

Source: World Bank (2006)

Learning from the Resource Curse

Thinking through a viable strategy for avoiding the curse clearly requires a theory for explaining it in the first place. There are at least three approaches that attempt to explain the phenomenon—including those that emphasize the Dutch disease, governance deficit and rent-seeking, and extreme volatility. However, as the mushrooming large N regression literature and several case studies have confirmed, it takes major policy failures in all of these dimensions to produce a post-boom collapse in the level of output, not just deceleration of growth.

4.1. The Dutch Disease Perspective

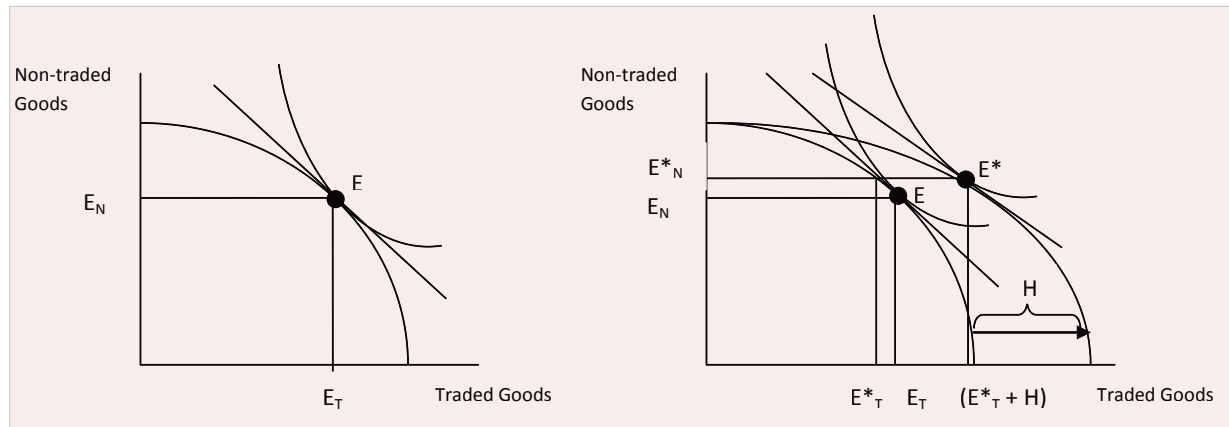
Well known in this literature, the name “Dutch Disease” describes the overvaluation syndrome of the Dutch guilder in the wake of a boom in the Netherlands due to the discovery and production of natural gas in the 1960s, which was blamed for the de-industrialization of the country. In general this hypothesis is based on the notion that the rise in oil revenues generates high overall demand, including for tradable imported goods and services as well as for a wide range of non-tradable home goods and services. The increased demand for the latter group must be met by increased domestic supply, because they cannot be imported. This, in turn, would require that resources and factors of production move from the non-oil tradable sectors (mainly agricultural and industrial exporting sectors) to the non-tradable home goods sectors (e.g., housing, urban consumer services, etc.)

How the Dutch Disease phenomenon works is

best explained through a graphical illustration of the classical three (oil traded, non-oil traded and non-tradable) goods model (e.g. Sachs, 2007).³³ Starting from the left panel of Figure 4.1, the economy’s equilibrium E is at the point of tangency between the PPF (the production possibility frontier) and the consumer indifference curve II, and the economy is producing E_N amount of non-tradable goods (vertical axis) and E_T of total oil and non-oil traded goods. The line passing through the point of tangency is the real exchange rate (RER), which is generically defined as the price of non-tradable to tradable goods (p_N/p_T). The steeper this curve the more depreciated (lower) the RER.³⁴ Now in the wake of an oil boom that is totally or mostly spent on consumption, the economy shifts to the new equilibrium depicted in the right panel of the figure. The PPF curve shifts to the right by the amount of the oil boom (H). Notice that there is no vertical shift in the PPF curve because no expenditure is allocated to productivity enhancing investments. The new equilibrium is now given by point E*. The total (oil and non-oil) traded goods output is now increased from E_T to E_T^*+H . Moreover, as discussed above, output of the non-traded has also risen from E_N to E_N^* . However, very importantly, although the aggregate traded goods output has increased, the output of the non-oil traded goods sector has actually declined from E_T to E_T^* .

This process is mediated by the appreciation of the RER (reflected by a less steep curve through the new tangency point: E*). The real exchange

Figure 4.1
The Geometry of the Dutch Disease



Source: Figure 7.1 of Sachs, 2007

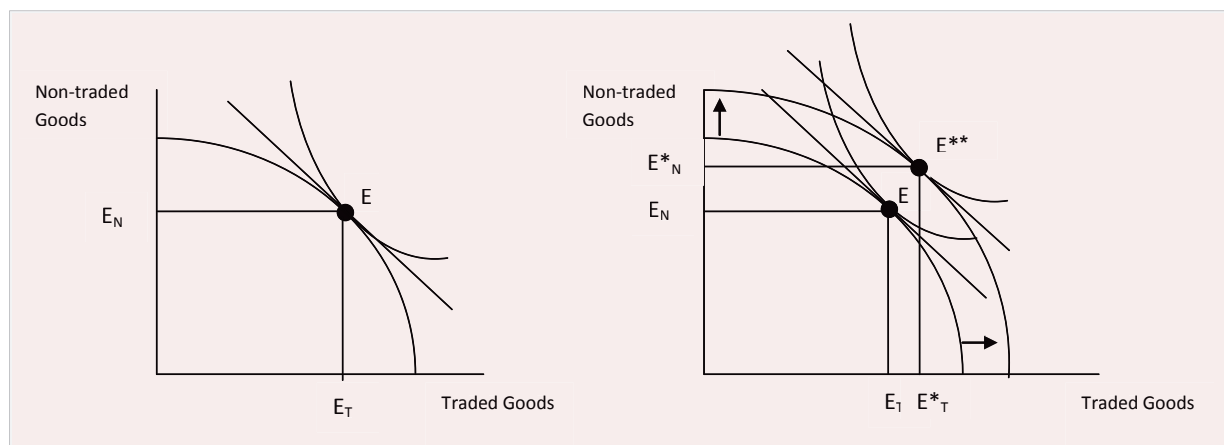
rate (RER), as the relative price of non-tradable to tradables, goods, must appreciate to provide the necessary incentive for the inter-sector transfers of resources and factors to take place. As a consequence of the appreciating RER and, therefore, declining profitability for non-resource tradable sectors, agriculture and manufacturing shrink over time. This is essentially the basic story of the Dutch disease literature (e.g., Corden, 1982; Corden and Neary, 1984).

However, despite the appreciation of the RER and the subsequent squeeze on the non-resource tradable sectors, the pure Dutch disease effect cannot explain the overall collapse of the economy, as evidenced in the collapse of the GDP associated with the “oil curse” phenomenon. This is because, at the theoretical level, it is not clear why the declining share of the non-resource tradable sectors could not be compensated for by the rising share of the non-tradables. goods. However, the disease might become a true disease (i.e. an oil curse) under two very adverse conditions. First, if the squeezed activities assume some special qualities that could not be compensated for by the expanding resource and non-traded goods sectors. Therefore, an extended version of the Dutch disease thesis also assumes that exporting activities in general entail some dynamic properties, such as learning by exporting, and that manufacturing in particular generates increasing returns to scale (e.g., Matsuyama, 1992; Bigsten et al, 2002; Rodrik, 2007). Second, it also assumes that the RER appreciation is too extreme, relative to the RER

levels consistent with the long-term, sustainable path of the RER fundamentals. Again this is also a plausible assumption because the marginal impact of oil booms on the RER can be quite substantial, with elasticity estimates ranging between 40 to 50% (Korhonen and Juurikkala, 2007). As discussed in section 2, RER overvaluation can be very harmful to growth, especially for exports and economic diversification.

Empirical evidence suggests that, by and large, most oil-rich countries tend to experience large post-boom RER overvaluation, however it is important to make the point that an oil boom and the consequent RER appreciation (i.e. the Dutch disease) can be entirely consistent with equilibrium and need not, therefore, lead to an oil curse. Going back to the graphical model, let us assume that all or most of the proceeds from the boom were spent on infrastructure and other types of productivity-enhancing investments. In this case, the PPF experiences an outward (that is a simultaneous upward and rightward rather than just a rightward) shift. In this case the new economy’s equilibrium is shown in the right-hand panel of Figure 4.2. Under this equilibrium (point E^*) both the non-oil tradable as well as the non-tradable goods sectors will expand as a result of the increased productivity due to public investment. Of course the oil and the non-tradable sectors will also be positively influenced by the spending effect, which may or may not lead to RER appreciation depending on the net effect of the RER fundamentals and other short-run policy determinants that

Figure 4.2
The Effects of Investment via an Oil Boom



Source: Figure 7.2 of Sachs, 2007.

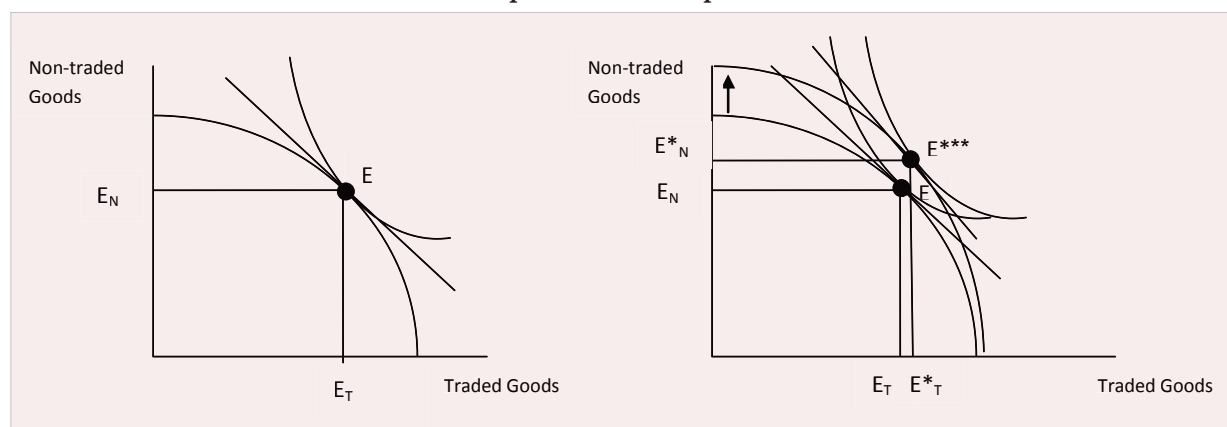
affect RER adjustment between equilibriums (e.g. Elbadawi and Soto, 2009). Moreover, to generate meaningful productivity growth, expenditure on infrastructure and other investments must be tailored to the absorptive and institutional capacity of the economy. This would necessarily require that investment expenditure should be phased in over time and may even have to be adjusted downward to absorb future negative shocks to oil revenues (e.g. Collier et al, 2009). Hence an effective domestic investment program is not likely to lead to incentive-incompatible and excessive RER overvaluation. This is because of the productivity growth effect, which permits an *equilibrium* RER appreciation. In addition, the expenditure profile associated with an effective strategy for building the domestic capital base of the economy must be consistent with long-term sustainability, given the extreme volatility of oil revenues.

Finally, Sachs (2007) argues that in oil-rich but extremely capital-poor economies, the productivity growth unleashed from large capital investment outlays in infrastructure could be so high that an oil boom might be associated with an RER *depreciation* not *appreciation* (Figure 4.3). Indeed, recent evidence for aid-recipient, low-income countries on the RER impact of surges in aid and remittances, which is similar to an oil boom in oil-rich but low-income countries, suggests that the long-run effect of productivity is very substantial and that recent episodes of the aid boom have not been associated with large RER overvaluation (Elbadawi et al, 2008; Elbadawi et al, 2009). Also

Mongardini and Rayner (2009: p. 15) in a recent IMF working paper find similar results for a sample of aid-recipient Sub-Saharan African countries and conjecture that their finding, “reflects the fact that transfers such as grants and remittances are generally channelled to productive investments that boost productivity or ease supply constraints in the non-tradable sector.”

However, the extreme volatility of oil revenues appear to be posing the most serious challenge for these countries with regard to aligning domestic absorption to the long-term sustainable path that defines the RER equilibrium. In this context Hausmann and Rigobon (2003) develop a model to motivate their “inefficient specialization” hypothesis, which augments the basic Dutch Disease by accounting for the impact of the RER volatility on the non-resource tradable sector. They argue that for a resource curse to happen, the non-resource tradable sector must be substantially squeezed beyond a critical size or almost disappear and that the economy must be characterized by financial imperfections. They show that the near disappearance of the tradable sector will be associated with a highly volatile real exchange rate, because with very squeezed or no non-resource tradable sector, only expenditure switching forces will be at play in response to the shocks from the oil sector. In turn, financial imperfection would cause interest rates to rise with increased volatility of the real exchange rate. In their model, a vicious circle between greater volatility and interest rates, on the one hand, and lower investment in the tradable

Figure 4.3
Investment via an Oil Boom and Real Depreciation in Capital-Poor Economies



Source: Figure 7.3 of Sachs, 2007.

sector, on the other, will lead to a steady squeeze of the latter until it eventually disappears and the economy specializes inefficiently in non-tradables. goods. They show that this economy will exhibit higher interest rates, lower capital and wages, and more depreciated exchange rates. Next we consider the volatility of the oil curse.

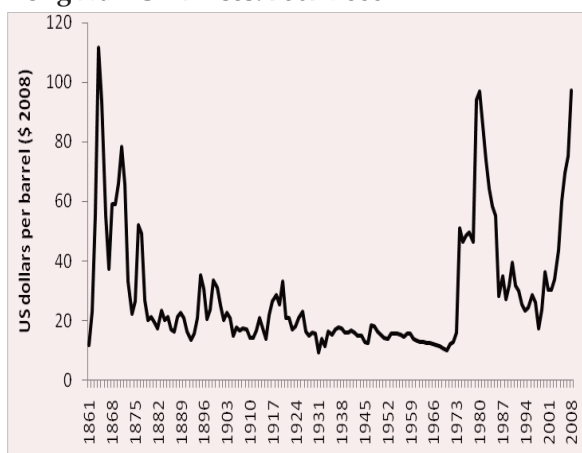
4.2 The Volatility Story

The recent literature on the development impact of external volatility finds that it has been negatively associated with a wide range of economic performance indicators, including growth, investment, income distribution, poverty, and educational attainment.³⁵ Given that oil prices (and hence revenues) tend to be very volatile, the tendency of the oil-dependent economies to experience frequent and oftentimes extreme volatility has been proposed as an alternative explanation for the curse. As noted by Hausmann and Rigobon (2003), one standard deviation shock to the price of oil (estimated at 30–35%) can generate an income shock as high as 6% of GDP in an economy where oil accounts for 20% of GDP. This is a very high volatility effect compared with the median shock for industrial countries (about 2%) or even developing countries (at 4%). The failure to cope with this extreme volatility, it is argued, has been the main factor behind the post-boom economic collapse experienced by most oil-dependent economies. Country experiences show how destructive the oil cycles can be when they are not properly managed. For example, Gelb and Grasmann (2008)

cite three such examples analyzed in the literature, including the Mexican debt crisis precipitated by the debt-financed spending spree against expectations of a longer oil boom that failed to materialize after 1981. Even more glaring examples were those of Nigeria (Budina and Wijnbergen, 2008) and Venezuela, which saw its per capita output reduced to half its real value following the end of the 1974–1980 oil boom (Hausmann, 2001).

In addition to its extreme volatility, oil prices (and hence revenues) are also highly uncertain because they don't follow a discernable trend and are, therefore, very difficult to predict (Figure 4.4). Recent studies analyzing the very long-run evolution of oil prices could not reject the random walk hypothesis. For example, Cuddington et al (2007) find that since the last century real oil and commodity prices have experienced one or more downwards structural breaks, but the data-generating processes seem to follow a random walk. The enormous uncertainty is reflected in the very large discrepancies between prices, especially looking to the distant future.³⁶ In a careful statistical study of oil prices, Hamilton (2008) forecasts oil prices for four years from 2008:Q1, when prices averaged \$115 pb. Based on his forecast he concludes that, "... we might have still "expected" the price of oil still to be at \$115 a barrel, though we would in fact not be all that surprised if it turned out to be as low as \$34 or as high as \$391!" (p. 4). Given these enormous spreads, discrepancies, Gelb and Grasmann calculate that, with oil valued at \$100 pb and futures prices ranging from \$50

Figure 4.4
Long Run Oil Prices: 1861-2008



Source: British Petroleum Statistical Review (reported in Figure 3 of Gelb and Grasmann)

to over \$150 pb, the differences between the two ends of the price spectrum would translate into 50% of the GDP for an oil exporter like Nigeria. These major discrepancies in oil futures appear to be among the reasons why only a few countries have tried to hedge oil price risks through this instrument.³⁷

In view of the uncertainty over future oil prices, Gelb and Grasmann develop a simple but intuitive model to analyze spending decisions when the post-boom outlook is very uncertain. The model is broadly guided by the permanent income hypothesis but also accounts for factors associated with absorption constraints and macroeconomic adjustment to negative and positive demand shocks. Their review of the literature suggests that there is considerable support for an asymmetric response, reflected by a kinked supply curve.³⁸ For example, Collier and Venables (2008) find that favorable changes in terms of trade do not have significant effects on growth, but negative shocks reduce output. In particular, for a typical African country, terms of trade loss of 10% of GDP reduces growth in the following three years by 3.6 percentage points. The implications of extreme uncertainty and asymmetric adjustments are very clear, conclude Gelb and Grasmann (p. 13-14): “under-spending when prices are high can incur a small loss of welfare, but over-spending during a boom can be costly, especially if financed by borrowing.” These implications are

very prominently borne out in their model’s simulations (Box 4.1).

An alternative view (Collier et al, 2009) argues that in oil-rich but capital-poor countries assigning high priority to rapid accumulation of the relatively high return domestic capital should dominate a purely permanent-income driven strategy. This strategy, therefore, is inherently less cautious than the one advocated by Gelb and Grasmann, at least until the domestic capital stock reaches the optimum target level. Nevertheless, the success of this strategy clearly requires that these countries should first attain the capacity to make effective investments. They should also be able to manage the political economy that would afford them the flexibility to undertake timely and adequate downward adjustments in new investments during bad times. However, this is not easy and depends on the quality of governance—both economic and political. We turn next to this issue.

4.3 The Governance Deficit and Rent-Seeking View

There is a vast literature on the role of institutions in economic development. However, the recent debates about the role of institutions in development, particularly in explaining long term income disparities across countries, has been mainly waged through the large N empirical literature. A summary of this literature suggests the primacy of institutions over other competing theories—namely the trade and geography views. Four main conclusions can be gleaned from this literature (Elbadawi, 2005c):

- Institutions have direct effects on income, while geography doesn’t. However, the latter influences institutions through settlers’ mortality (Acemoglu, Johnson, and Robinson, 2001).
- Institutions determine long-term income levels, while neither policy, (including trade), nor geography, have a direct impact on income. However, geography determines institutions (Easterly and Levine, 2003).
- The most compelling evidence in support of the above conclusions is provided by Rodrik et al. (2002), who conclude that ‘institutions rule’.
- However, Sachs (2003) shows that malaria transmission, which is strongly affected by

ecological conditions, directly affects the level of per capita income after controlling for the quality of institutions. This suggests that geography has not only an indirect effect on incomes, as suggested by the above literature, but also a direct effect as well.

In the case of oil-rich countries, the above conclusions could never be more relevant, as oil-rich but poorly governed countries are not likely to acquire the knowledge and the institutional capacity to take the right decisions regarding extraction, savings, and investments; to adopt the most appropriate macroeconomic framework for avoiding the Dutch Disease; or to better manage the rampant volatility that plague their economies. For example, the recent literature on managing oil economies has called for a strong role for the state in oil-rich countries to deal with oil corporations (e.g. Stiglitz, 2007). To maximize the returns for their oil resources, these countries need to deal effectively with the vastly more knowledgeable multinational oil corporations on relatively complex issues, such as the overall terms of agreements; proper evaluation of fiscal terms of contracts; or how best to auction oil rights.³⁹ However, as important as they may be, the most serious drag on

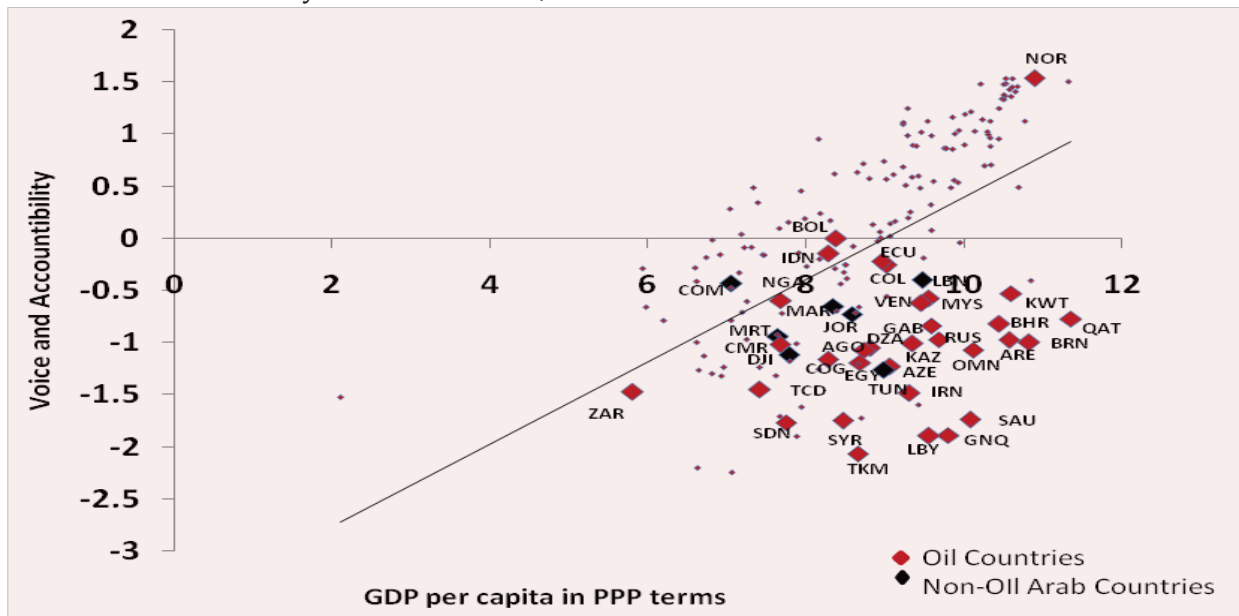
these countries' ability to effectively manage the oil rents for development is not likely to be lack of knowledge or institutional capabilities. Instead, the most devastating aspect of the governance deficits in these countries is more probably the lack of accountability associated with the scale and nature of the rents generated from oil and other point-source natural resources.⁴⁰

Controlling for income and population size, recent empirical literature find that oil rents are significantly and robustly associated with lower public accountability in the oil-exporting countries of the Middle East. However, no significant differences were found between oil and non-oil countries on other aspects of governance (e.g. Ross, 2003; Sala-i-Martin and Artadi, 2002; World Bank, 2003). A comparison of the World Bank's six worldwide governance indicators suggests that while oil-rich countries, especially in the Middle East, tend to suffer from an overall governance deficit (Table 4.1), the latter is particularly glaring for the case of "voice and accountability" (Figure 4.5).

Admittedly, democracy is not a perfect correlate of good economic governance institutions; it has, nevertheless, been a very good indicator of

Figure 4.5

Voice and Accountability in the Arab world, Oil Countries and Non-oil Countries (2008)



Source: Worldwide Governance Indicators, World Bank, 2008.

Box 4.1: Optimum Saving and Spending during Oil Booms

Gelb and Grasmann ask a fundamental question: “How much should exporters be saving, considering the great uncertainty over whether high prices are temporary or longer-term?”

They note that, while the permanent income approach has been a useful guide to prudent spending decisions, it does not, however, provide guidance on how cautious spending patterns should be in the face of uncertain future revenues. In determining the right degree of caution, it is important to factor in absorption constraints and macroeconomic adjustment to positive and negative demand shocks. In this context there is considerable support for an asymmetric response, suggesting a supply curve that kinks in response to large booms and busts. For example, Collier and Venables (2008) find that favorable terms of trade shocks in developing countries do not have significant effects on growth, but adverse shocks reduce output. For a typical African country, a TOT loss of 10 percent of GDP reduces growth in the following year by 3.6 percentage points.

The implications of asymmetry, they argue, are clear: under-spending when prices are high can incur a small loss of welfare, but over-spending during a boom can be costly, especially if financed by borrowing.

Subscribing to the above, they develop a simple, stylized model to simulate optimum spending decisions during the oil boom, which among others, factors, has two key features:

- Simple, reduced-form model, where valuation is directly on “net” public spending, with utility represented by the log of net public spending to allow for diminishing marginal utility
- Net spending allows for two types of efficiency losses: first, beyond a moderate level of spending, the efficiency of spending begins to decline according to a quadratic function; and, second, asymmetric adjustment is assumed, with losses due to sharp declines in spending

Spending is optimized for two revenue profiles:

- A short boom, with oil revenues at 10, 30, and 10 percent of non-oil GDP in the pre-boom, boom, and post-boom periods respectively; and
- A long boom, with the revenue profile 10, 30, and 25 percent. Total spending is constrained to equal total income over the period

So, what does such a model suggest about spending decisions during a boom when the post-boom outlook is very uncertain?

- In the case of a short boom, the optimum is to spend 20 percent of incremental oil revenues (or just under 50 percent of total oil income) during the boom years and save the rest
- For a long boom, it is optimal to spend 80 percent of incremental oil revenues revenue, or about 85 percent of total income

Also, the losses due to misjudging the nature of the boom are asymmetric. Slow initial spending results in only a small loss of the potential value of the long boom; in the opposite case, over-optimistic initial spending results in the loss of most of the potential value of a short boom.

Moreover, each scenario is expected with a probability of 0.5. So the expected welfare-maximizing spending level, about 22 percent of incremental boom income, is not much higher than the optimal spending level for the short boom.

Source: Gelb and Grasmann (2008)

Table 4.1
Governance in the Arab World and Comparators (2008)

Arab Groupings	Voice and Account- ability	Political Stability	Govern- ment Effec- tiveness	Regulatory Quality	Rule of Law	Control of Corruption	Overall Governance Average
Oil-rich, labor importing countries (GCC + Libya)	max	1.01	0.82	0.88	0.86	1.24	0.61
	median	0.48	0.42	0.58	0.70	0.50	0.24
	Min	-0.39	-0.84	-0.93	-0.65	-0.81	-0.78
Oil-rich, labor abundant	max	-1.15	-0.50	-0.70	-0.70	-0.44	-0.77
	median	-2.17	-1.20	-0.94	-1.22	-1.11	-1.35
	Min	-2.69	-1.41	-1.36	-1.87	-1.49	-1.66
Non-oil middle income labor exporting	max	0.29	0.35	0.34	0.49	0.41	0.08
	median	-0.94	-0.37	-0.17	-0.11	-0.67	-0.53
	Min	-1.75	-1.94	-1.17	-0.81	-1.13	-1.19
Non-oil low-income	max	-0.43	-0.13	-0.59	-0.54	-0.33	-0.64
	median	-0.92	-0.93	-0.75	-1.01	-0.75	-0.87
	Min	-1.12	-1.01	-1.51	-1.03	-0.80	-1.10

Notes: 4. Source: Worldwide Governance Indicators, World Bank, 2008. Max range = 2.5 and min = -2.5.

how well an economy is managed. A careful analysis of the typology of political regimes in oil-rich economies suggests that: while unstable and factional democracies are as bad as unstable autocracies, well functioning, stable democracies are much better in managing oil resources than long-reigning, benevolent but nondemocratic regimes (Eifert et al, 2003). However, democracy has been a rare exception in the Arab world. Indeed, the region suffers from what has been famously coined by a widely quoted UNDP (2002) report as “freedom deficit”. Despite the demise of the Soviet Union and major regional and world events, including the end of the 1970s oil boom, the Gulf wars, the worsening Palestinian crisis, as well as civil wars and other internal conflicts, no regime in the Arab world has extended the political franchise to the point where citizens could exercise effective control over public policy (Elbadawi, Makdisi, and Milante, 2010). Instead, democracy in other regions of the world has been steadily increasing, as demonstrated by trends in the Polity IV index (Figure 4.6). In the scale of the Polity score (-10: strongly autocratic to 10: strongly democratic), the East Asian and sub-Sahara African averages in 2003 were at -0.6 and 1.35, respectively, while the average for Arab states was -5.5, lower than the Arab average from 1960.

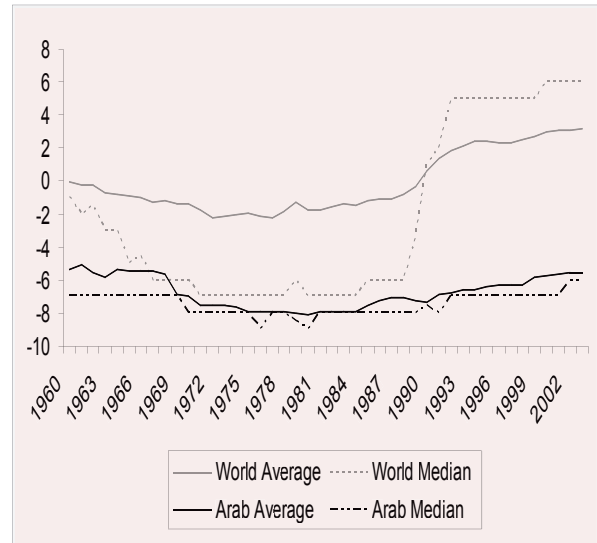
It is perhaps not surprising that, although overall the Arab world has remained stubbornly autocratic, the oil-rich countries have been extremely autocratic, with polity scores in the neighborhood of (-7, -10) for several decades.⁴¹ However, compared to unstable factional democracies in some oil-rich countries of Africa, their stability might be a virtue from the perspective of oil management, since sustainability of effective management is always a concern (Eifert et al, 2003).

Probing further, we organize our review around two questions that, in our view, have defined recent contributions to the literature: How might oil and other point-source natural resources undermine the quality of governance? And how effective can democracy and good institutions be in promoting development in the presence of oil rents?

Democracy and the quality of governance in oil-rich societies.

The theoretical literature on how oil and other point-source natural resources undermine the quality of economic and political governance is

Figure 4.6
Average and Median Polity for the World and the Arab World: 1960 to 2003



Source: Polity IV dataset and Table 2 of Elbadawi, Makdisi and Milante (2010).

vast. For example, one strand of the literature that emphasizes the political economy of oil management argues that oil generates so much wealth that is also characterized by imperfect property rights. Therefore, agents in society find it much more profitable to engage in unproductive, rent-seeking activities in order to appropriate that wealth rather than engage in activities to create new wealth. The imperfect property rights (or the common pool problem) stem from the fact that the benefits of oil wealth are internalized but the costs associated with overspending are diffused among many agents. Therefore, this leads to overspending on average because while a given constituency can internalize the full benefit of its overspending, it will only need to pay a fraction of the additional tax burden.⁴² In oil economies, where resource rents are high and taxes very low, this effect can be very powerful. Moreover, in a dynamic sense, the common-pool problem could also lead to the distorted allocation of spending over time. The mechanism for generating this is that each constituency would like to spend out the boom rather than smooth consumption over time, for fear that others will also spend. This is the so-called “voracity effect”.⁴³

In many cases, the voracity effect also manifests itself in over-borrowing and debt overhang

as countries use oil as collateral to borrow during the boom to finance accelerated expenditure of large infrastructure and other development projects. By and large, the project failure rate under these circumstances is very high, which leaves these economies exposed to very high indebtedness when the boom is over. The debt overhang associated with the oil boom has, therefore, been characterized as a plausible cause of the “oil curse” (e.g., Manzano and Rigobon, 2007).

Democracy, institutions, and economic performance in oil-rich countries.

Recent literature suggests that institutions are shaped by very long processes (e.g. Acemoglu, Johnson, and Robinson, 2001), so much so that they are likely to predate resource discovery (Smith, 2004). The premise is that institutions, especially political ones, are exogenous, however valid instruments do exist for them to be potentially endogenous. The literature has focused on analyzing the interactions between institutions and resource rents in empirical growth models. In particular, this literature assesses the effectiveness of democracy and other institutions of good economic governance in enhancing overall growth or stemming the consequences of the volatility associated with these rents.

Rodrik (1999) links the volatility story to the governance one and argues that the effect of external shocks on growth and economic performance in general is not just the outcome of the failure of adjustment policies in the technical sense; it also reflects the interaction of these shocks with latent social conflicts in society, on the one hand, and institutions for conflict management, on the other. In societies with deep social conflicts (for example, societies fractionalized or polarized along ethnic, religious, cultural, or economic class lines) and weak social and political institutions for mediating conflicts among social groups, Rodrik argues, that the economic costs of external shocks are magnified by the growth-retarding distributional conflicts that are triggered.⁴⁴

Using a simple empirical proxy to test this hypothesis in a global cross-sectional data base, Rodrik finds that the interaction term

(shock × social conflict × lack of economic and institutional capacity)

is robustly associated with the collapse of growth

experienced by many oil-importing developing countries following the oil price hikes in the 1970s. More recently, Elbadawi (2005b) analyses the collapse of growth in the oil-dependent Arab world in 1985–94 (relative to the boom era of 1975–1984) and finds that it can also be explained by Rodrik’s framework. Elbadawi’s analysis suggests that the failure of the Arab region to sustain growth following the end of the oil boom in the mid 1980s is in part explained by its high dependence on a volatile resource base. But he notes that it is also due to the failure to develop the right social contract for generating high enough savings to permit insulating fiscal policy from the oil shocks affecting its economies.

Like Rodrik’s analysis for the case of growth volatility and long-term sustainability, most of the received literature suggests that democracy and good institutions tend to promote a long-term level of growth and other aspects of development in oil-rich societies. For example, in a theoretical model of patronage politics in the context of resource wealth, Robinson et al (2006) show that good institutions may restrain this dysfunctional behaviour. Also Mehlum et al (2005) presents empirical evidence in support of the critical role of good institutions in resource-rich economies.

More recently, Collier and Hoeffler (2009) analyze an empirical growth model using global data from 1970–2001 and a new measure of resource rents.⁴⁵ They find that high natural resource rents and open democracy (as measured by Poliy IV) interact badly as determinants of growth, but checks and balances offset this adverse effect. Based on their results they conclude that democratization in resource-rich economies needs to emphasize strong checks and balances. Their empirical framework is motivated by a simple intuitive model that generates uncertain outcome for the growth impact of democracy in resource-rich economies, depending on whether or not democracy entails enough checks and balances to limit embezzlement of funds and hence maximize provisions for growth-enhancing public goods. Thus the key insight of their paper is modelling the determination of the checks and balances. They assume that politicians would like to heavily tax in order to generate patronage, but they will be deterred from doing so because high taxation provokes scrutiny. They assume that patronage expenditure, P , is determined by the product of the tax rate, t , and disposable income, Y , and the

proportion of revenue which can be embezzled for patronage, e , which is simply given by a linear negative function of the tax rate: $e = \alpha(1-t)$. The decision problem for the corrupt politician is thus given by:

$$P^{\max} = \max_{\text{wrt } t} \alpha(1-t)tY \quad 4.1$$

The following equations show the patronage maximizing level of the tax rate: $t^*=0.5$ and the maximum resources available for patronage (P^*) and public goods (G^*):

$$P^* = Y\alpha / 4 \quad 4.2$$

$$G^* = (2-\alpha)Y / 4 \quad 4.3$$

Hence in this simple model, equations 4.2 and 4.3 describe the outcome of electoral competition with the restraint of endogenous scrutiny. Now when resource rents are introduced at a rate, r , available revenue becomes:

$$[t(1-r)+r]Y \quad 4.4$$

Note that the resource rents are not subject to scrutiny. The new optimization problem now becomes:

$$P^{\max} = \max_{\text{wrt } t} \alpha(1-t).[t(1-r)+r].Y \quad 4.5$$

The patronage maximizing tax rate is given by:

$$t^* = (1-2r) / (2-2r)$$

This result suggests that the higher the revenue from resource rent, r , the lower the tax rate. However, though the resource discovery augments income, it is not clear whether or not it will increase the provision of public goods, depending on the scale of resource discovery, r , and the rate of embezzlement α . Collier and Hoeffler show this by analyzing the interesting case of a scale of resource discovery $r=0.5$, which will be consistent with $t^*=0$. At this rate, both income and government revenue is doubled, because the state previously received half of national income ($t^*.Y=0.5Y$) and now it receives all of national income. Also

now with the tax rate driven to zero, and hence dampening the effect of scrutiny, the rate of embezzlement increases from $\alpha / 2$ to α . Therefore, the provision for public goods in the presence of resource rents is given by:

$$G^{**} = (1-\alpha)2Y \quad 4.7$$

Comparing G^{**} with G^* (in 4.3 above) suggests that the provision of public goods would worsen in the presence of resource rents if:

$$\alpha > 0.857 \quad 4.8$$

This is the upshot of these authors' model, which they use to explain some specific country experiences. For example, they argue that in a democracy with strong checks and balances α will be small, hence provision for public goods is likely to increase. This is the case in Norway, where strong checks and balances limit embezzlements and increase provisions for public goods even with small resource discovery, r . However, for Nigeria the likely high rate of embezzlement (as can be inferred from its ranking across a range of governance indicators) has probably worsened provision of public goods in the context of its moderate-size rate of resource discovery. Finally, Saudi Arabia would be the polar opposite to Norway, though with the same outcome, in a qualitative sense. Though the rate of embezzlements is likely to be very high in this country, again judging by the low governance ranking and the zero rates of taxation, the sheer size of the resource discovery is likely to improve provision of public goods.

Therefore, this simple model provides a nice empirical framework for testing not only the impact of contestable democratic politics on the development of resource-rich societies, but the specific features that might make democracy effective in these countries.

4.4 Summing up

A review of the vast literature on the oil and non-agricultural natural resource curse suggests that there is no one encompassing theory that would explain the fundamental and truly exogenous causes of the phenomenon, the channels through which it operates, and the heterogeneity of country experiences. At the very least, it takes all three approaches combined to explain the oil curse. In

this context, Hausmann and Rigobon's (2003) "inefficient specialization" thesis might be thought of as an attempt to synthesize the combined, if sequential, effects of the Dutch Disease, volatility, and specific institutional failures associated with the financial sector. In their model, the trigger comes from the TOR shocks and RER appreciation. These cause risk-averse investors to prematurely specialize in non-traded economic activities, which in the presence of weak financial institutions, further intensify volatility and economic concentration, leading to the eventual collapse of overall growth. This model, however, leaves out deep political economy channels that might be at work in explaining the phenomenon, such as the ex-post role of weak economic and political institutions in magnifying ex-ante TOR shocks in socially divided societies (Rodrik, 1999).

Therefore, despite the fact that major advances have been made by both the theoretical and empirical strands of the literature, several major issues remain open for further research. First, though the majority view is that there is robust, if conditional, evidence on the existence of the curse, there are still some who continue to question its existence (Lederman and Maloney, 2008). Second, there is now fairly robust evidence that the curse is likely to be conditional on severe governance and human capital deficits, which also appears to explain the heterogeneity of country experiences. Third, the literature is still unfolding regarding which channels produce the curse phenomenon in countries suffering from the twin deficits. Fourth, though most of the theoretical and empirical literature seems to suggest that factors influencing institutional quality and human capital are likely to be causally prior to oil discovery, reverse causation cannot be ruled out.

These issues will be revisited in more detail in the last section, which discusses future research. The received literature has, nevertheless, provided very important insight for discussing strategies for escaping the oil curse. This will be the subject of the next section.

Escaping the Oil Curse: The Macroeconomic Framework

In the above literature review, we briefly discussed the strategic decisions regarding savings and investment of oil rents. However, regardless of the chosen strategy, a complementary macroeconomic framework for medium-term management is required. The framework should be guided by two strategic objectives: optimum savings, consistent with the sustainability considerations of the oil and mineral economies, which would require much higher average saving ratios (over the cycle), compared to the non-mineral economies. And, it should also be guided by stable, optimum expenditures, consistent with a long-term development vision, such as the poverty reduction strategy (PRS) and other Millennium Development Goals (MDGs). For some oil and other mineral-exporting countries the compelling reality of the eventual extinction of the oil and mineral resource in two or three generations (e.g. Norway, Oman, and Gabon) requires that substantial portions of the oil and mineral rents should be saved and prudently invested to prevent a sudden collapse of social welfare when the oil and mineral rents cease to exist. For many other countries, however, this may be a relatively abstract eventuality, with oil and mineral reserves extending for fifty or more years. Nevertheless, even for the latter countries it makes good economic sense to diversify sources of national income by saving for future generations and investing in economic diversity. Moreover, aside from the long-term objectives of saving for future generations, a key objective of short-to-medium term macroeconomic

management should be to insulate fiscal and monetary policy from the volatility associated with the oil and mineral cycles.

However, the evidence suggests that most emerging market economies, especially those dependent on oil and minerals, have not been able to develop effective counter-cyclical stabilization policies. In addition to the political economy and institutional weakness, this evidence has been also linked to the choice of inappropriate monetary and exchange rate regimes (e.g. Sester, 2007); domestic and financial imperfections (Caballero, 2002; Caballero and Krishnamurty, 2000); and recurrent credit constraints in world markets and “sudden stops” (Reinhart and Calvo, 2000). The failure to undertake effective counter-cyclical fiscal and monetary policy results in low credibility and dynamic policy inconsistency (Calderon and Schmidt-Hebbel, 2003).

However, there are also some notable successful experiences that might be a useful guide to the oil-rich Arab world. There are three issues that arise in this context. First, there is now an emerging consensus that because they complicate adjustment to external shocks, the costs of fixed exchange rate regimes, especially hard pegs, might outweigh their benefits for oil-exporting economies. Second, that rule-based fiscal policy, supported by a sufficiently flexible exchange rate regime, can be an effective counter-cyclical fiscal institution. Third, political economy considerations are very critical for the success of special fiscal institutions, especially long-term sovereign

wealth funds (SWFs). Discussion of these two issues follows.

Fiscal Policy Rules.

The centerpiece of the macroeconomic framework is fiscal policy. However, effective counter-cyclical fiscal policy seems to be difficult to come by without credible and predictable fiscal institutions, guided by coherent objectives and underpinned by transparent processes. One such institution is the rule-based fiscal policies, recently adopted by some countries to eliminate the pro-cyclical bias of fiscal policy and to allow automatic stabilizers to work freely along the business cycle and keep surpluses gained in good times out of reach of the political establishment. The “structural fiscal balance” is the key concept driving these rules. In the case of the Chile, for example, the concept is centered on the following structural revenue formula (Garcia et al, 2005):

$$SB_t = OB_t + \left(T_t \cdot \left\{ \frac{Y_t^{trend}}{Y_t} \right\} - T_t \right) + Coppersales(P_t^{trend} - P_t^{FOB})$$

5.1

Where in any given year, t , SB stands for structural revenue adjusted from observed revenue, OB , through two channels. First, the tax revenue plus pension contributions, T , are adjusted for the output gap; and second, the copper sales are adjusted for the difference between trend and actual FOB prices of copper. The long-term path of nominal GDP (Y^{trend}) and the sustainable trend prices of copper (P^{trend}) are estimated by an independent panel of experts appointed by the government. While obviously the technical challenges of estimating these pivotal indicators should not be underestimated, the real challenge for most oil and mineral exporting countries would be the institutional design associated with the process. Next, public expenditure, PE , is given by:

$$PE_t = SB_t - (0.01)Y_t$$

5.2

Thus in the Chilean structural fiscal policy rule, only revenue (not expenditure) is adjusted for the business cycle in the copper sector as well as for the overall output gap relative to its long-term trend. Also the rule imposes a “structural fiscal surplus” ($SB-PE$) equal to 1% of GDP. Note that

when $OB > SB$, funds will flow into the country’s sovereign fund, while if OB falls short of SB , the deficit will be financed by contracting new debt or withdrawing from the savings fund.

The Chilean fiscal surplus rule has been credited for flexibility, counter-cyclicality, and growth-orientation. Since the Chilean structural balance reflects the level that would be observed if the GDP were at its estimated trend level and the international price of copper were at its estimated average long-term level, it should, therefore, eliminate the cyclical effects and temporary shocks of both the GDP and the copper price. As explained by Schmidt-Hebbel (2007), although government revenue follows the business cycle, the government must set its expenditure in a way that tracks the path of structural revenue. And, the constant structural fiscal balance implies that during booms, actual surpluses are higher (and will be saved) and during recessions, actual surpluses are lower, which would require drawing from the copper savings account. Hence, the Chilean fiscal rule implies an active counter-cyclical fiscal policy, which was very clearly borne out by the evidence.

The benefit of the presumed effectiveness of the rule as an instrument for counter-cyclical fiscal policy is manifest in the stability of public spending in investment and key social sectors, especially in education and innovation. In turn, this has led to relatively stable output and inflation, despite the high volatility of the copper sector. Moreover, the ensuing fiscal policy predictability has strengthened government solvency and raised its creditworthiness and improved the country’s sovereign risk rating. Also very critically, the fiscal rule is also linked to Chile’s ability to limit the Dutch disease consequences of the recent (2005–08) massive copper boom (Garcia et al, 2005; Schmidt-Hebbel, 2007).

However, it is not clear if the Chilean fiscal policy rule (and the stabilization program associated with it: the 1% fiscal surplus) can be successfully adopted in other countries, where institutional capacity or democracy standards are not as good, such as the Arab oil-rich countries. The Chilean fiscal rule was a culmination of a long history of fiscal prudence reflected in the achievement of surpluses on a cash basis for twelve consecutive years and the creation in 1987 of a fiscal revenue stabilization fund financed by proceeds from the

copper sales. Therefore, while it may be argued that fiscal institutions can be effective instruments for overall institutional development, they may need a minimum level of good governance to be successful on a sustainable basis. Indeed, available econometric literature suggests that, controlling for institutional quality, there is no robust evidence that stabilization and savings funds lead to better management of natural resources (Davis et al 2003; Fasano, 2000).⁴⁶

Moreover, another debatable issue is the adoption of the fiscal surplus target rate of 1% of GDP. In the first place, why a structural surplus of 1% and not a balanced budget? The case for the former has been argued for the case of Chile on the grounds that global capital markets tend to have a lower tolerance for public debt in emerging market economies, especially those susceptible to large commodity shocks. Moreover, net asset accumulation over time by the government might be necessary to meet public sector commitments and contingent liabilities that grow at higher rates than the fiscal revenues (Garcia et al, 2005).⁴⁷ However, in 2008 the Chilean government reduced the fiscal surplus target rate to 0.5%, which has been assessed as desirable from a business cycle perspective, because the earlier rate would have required significant asset accumulation that could have been accomplished at the expense of greater volatility in fiscal instruments and hence GDP (Kumhof and Laxton, 2009).

Finally, another issue of interest is that while the structural fiscal surplus approach might be construed as premised on PIH, the principle might be consistent with the accelerated domestic capital accumulation view of Collier et al. For example, the choice of the size of the target surplus could be linked to capital investment requirements in the domestic economy along the lines of the Collier et al framework. However, more fundamentally, trend output could be estimated based on the concept of "optimum" or "desired" capital stock. For example, trend output is estimated in the Chilean fiscal policy rule by a Cobb-Douglas production function with constant returns to scale:

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha} \quad 5.3$$

And, the capita stock is constructed by the commonly used formula:

$$K_t = K_{t-1}(1-d) + GFCF_t \quad 5.4$$

Where d is the annual depreciation rate and GFCF is the gross fixed capital formation corrected for intensity use. When the oil-rich country is substantially capita-poor, relative to a notional optimum level that is consistent with economic diversification and long-term sustainability, a high enough GFCF can be used. This will lead to a higher estimated trend GDP and structural balance, given the desired level of public stock.

The Political Economy of Natural Resource Funds (NRFs).

Several arguments can be made in favor of NRFs as instruments for augmenting transparency, accountability, and good governance, especially under conditions of weak governance, limited transparency, and when the executive branch is not accountable or subject to effective parliamentary oversight (Gelb and Grasmann, 2008). Nevertheless, there appears to be a consensus that resource funds are neither necessary nor sufficient for sustaining good macroeconomic management in volatile oil and other mineral economies (Davis et al, 2003). Yet there has been a mushrooming of NRFs, and 23 have been recently identified, including 14 owned by oil exporters (Rietveld and Pringle, 2007). Humphreys and Sandbu (2007), who argue that the economic case for resource funds is "surprisingly" weak, suggest that the rationale for NRFs is political.

Indeed, the agenda for oil management entails fundamental decisions that have major consequences for inter-generational entitlements to the rents as well as the temporal distributional issues among various groups in society. Undoubtedly, this is a deeply political strategy and success would, therefore, require a political process, a social contract, for organizing consensus and buy-in on the part of a wide network of stakeholders in the society in question. A credible social contract must be a product of a legitimate participatory political process and must be fiscally viable. The latter requirement is in turn dependent on the quality of the economic governance: effectiveness, accountability, and transparency of economic policy. This is generated by the political system and the technical soundness of the economic strategy for managing the oil rents. The most difficult issue is what determines the political process underlining the desired social contract. The prevail-

ing political institutions prior to the oil boom (or before a country become an oil producer) are important determinants of how oil rents are likely to be managed. For example, the fact that Norway was already a well functioning democracy has a lot to do with the stellar success of this country in managing its oil rents. So politics affect how oil is managed.

On the other hand, oil also affects politics. The presence of large and concentrated rents in the hands of the public sector can weaken agencies of restraint in the political process and transform the social and political institutions of an oil country into what is referred to in the political science literature as the “rentier state” (Karl, 1999). Moreover, and even worse, another strand of the literature finds that natural resource rents are associated with increased risks of civil wars (e.g., Collier and Hoeffler, 2004). The corrosive effect of oil rents is most dire when the political process is still unfolding or dominated by autocratic regimes, where it could give rise to a self-reinforcing “legacy of overly-centralized political power, strong networks of complicity between public and private sector actors, [and] highly uneven mineral-based development subsidized by oil” (Karl, 1999 page 34).⁴⁸

The economic and political keys to successful management of oil rents are: political stability; a measure of political legitimacy; long policy horizon; high savings; strong competitiveness underpinned by a powerful non-oil constituency. Using these performance criteria as a framework to assess the experiences of a variety of political regimes in oil exporting countries, Eifert et al. (2003) construct an exhaustive typology of political regimes and associated performance (see their Table 2). A summary of the main findings follows:

- *Successful regimes:* There are very few success stories outside mature democracies such as Norway or other old democracies in resource-intensive countries like Australia and new ones like Chile. However, partial (non-factional) democracy is very promising, with Botswana and Indonesia as notable examples. Moreover, reformist “autocracy” also has some successes (UAE, Chile under the military). We will argue, however, that the likelihood of stable, reformist development autocracy in socially fractionalized Africa or

the Arab world is very remote. This is because autocracies in such societies are likely to be captured by sub-national entities along ethnic, cultural, or religious lines. The experiences of the historically benevolent authoritarian Asian bureaucracies (e.g. the Republic of Korea, the Province of Taiwan and, more recently China) are not necessarily transferable to the Arab world.

- *The failures:* Paternalistic autocracy has some measure of legitimacy, a long planning horizon, and stability. Its undoing is lack of transparency, low competitiveness, and unsustainable fiscal policy. This leaves two more political regimes, namely predatory autocracy and fractional democracy, which are simply non-starters because of their limited political legitimacy, short-term policy horizon, and little or no savings.

However, the most relevant research and policy issues, especially for the oil-rich Arab world, are not likely to be illuminated by stressing, as we did above, the value of good governance and democracy for successful management of oil rents. Instead, as Humphreys and Sandbu⁴⁹ recommend, research should start by trying to understand the political incentives that make politicians unwilling to abide by the economically optimal policy rule. In this context they argue that the design of NRFs should not only approximate optimal fiscal policy but also create political incentives (or at least attempt to neutralize the political disincentives) for respecting the policy. They ask the question as to whether NRFs can be used to realign incentives in the political process in a way that reinforces sustainable commitment to the optimum policy rule. They develop a theoretical model of interest-group politics with power rivalry to systematically analyze this issue. They identify three broad sets of responses:

- First, NRFs can be designed to make discretionary finance more difficult in the future, and this will also reduce the incentive for reigning politicians to overspend now.
- Second, broadening the decision-making authority will lead to greater predictability and moderation in future spending and will also have a similar effect at present.
- Third, NRFs can have beneficial effects by en-

hancing transparency through educating voters about government successes and abuses in managing resource wealth.

The analysis in the previous sections makes clear that the development of the Arab world crucially depends on better management of the oil sector. However, there is very little research on the policy challenges and development consequences of oil for the region. It is not surprising, therefore, that while the received literature on the economics and politics of oil management is still unfolding, the knowledge gap is particularly severe in the Arab region. In particular, a critical mass of rigorous policy research for better understanding and, hopefully, better informing development policy in the oil-rich Arab world is lacking. In this context we propose three research projects that should be accorded high priority because, in our view, they constitute cutting-edge research in the literature that is also relevant to the development policy agenda of the region.

The two proposed research projects are: macro-institutional strategies for escaping the oil curse, and economic policy and export diversification with special reference to the Arab world.

Issues for Future Research: Escaping the Oil Curse

This project would address two broad sets of issues: understanding the oil curse and building on that understanding to research strategies for escaping it; in other words, strategies to harness the oil resource for the long-term development of the Arab world.

Understanding the oil curse. There is fairly robust evidence that the curse is real though a minority opinion still questions its existence when resource abundance (such as net resource exports per capita) measures are used instead of the resource dependency measures (such as resource exports/GDP), which has been the staple of the “large N” econometric literature on the development impact of oil.⁵⁰ However, other contributions find that even when measures of resource abundance are used, the curse seems to hold against a variety of robustness checks.⁵¹ Therefore, there appears to be a near consensus that the curse is, indeed, real. However, almost all the empirical literature finds that the existence of the curse is conditional on bad governance. This finding also resonates well with the theoretical strand of the literature. More recently, in an ambitious but carefully done paper, Collier and Goderis (2008) use a panel co-integration empirical growth model to analyse two issues that, in our view, constitute the point of departure for further research on the oil curse question.

Firstly, the report finds robust evidence that the change in the non-agricultural export price index is positively associated with growth, but the

level of the index has a strong negative growth effect. This suggests that commodity booms have positive short-term effects on output but adverse long-term effects. Therefore, the curse operates the in the long-run.

- The distinction between the short and long-term effects is an important area for future research
- Specifically, the analysis of the short and long-run effects should be based on an even more flexible model that embeds panel co-integration, such as the Pooled Mean Group (PMG) estimator (see appendix II):⁵²
 - Like panel co-integration, the PMG imposes the same long-run coefficient across countries
 - However, it is more flexible than the former because it allows the short-run dynamic effects to vary across countries
- Analyzing the distribution of the short-run effects of the oil boom might provide useful insight on how the boom interacts with country characteristics even in the short-run

Secondly, these authors also find that, conditional on bad governance, controlling for the real exchange rate, public consumption and private consumption as channels of the resource curse, higher commodity prices no longer have a negative, long-run effect. The empirical significance of these channels corroborates recent political economy literature. This literature predicts that

permanent resource booms when government accountability is lacking allow politicians to expand public sector employment or to directly boost private consumption to enhance their popularity (e.g. Robinson and Torvik, 2005; Robinson et al, 2006). In addition to these distributional aspects in resource economies, another strand of the literature suggests that bad governance also discourages overall savings and overall spending, which is reflected in appreciated real exchange rates (e.g. Matsen and Torvik, 2005). Moreover, the significance of the real exchange rate channels also coheres with the recent literature on its role as an instrument in the development strategy for economic diversification, sophistication and growth (see section 2).

However, the above empirical evidence, while intriguing is, nevertheless, not yet sufficiently corroborated by other work, which suggests that this should be on the agenda for future research. Also, the evidence on the real exchange rate raises some further conceptual and empirical issues that should be considered as well:

- Assess the empirical relevance of these and other channels against a variety of robustness checks
- Distinguish between real exchange rate appreciation that may or may not be consistent with RER overvaluation:
 - In principle, only the latter should be the appropriate channel for the kind of extreme Dutch Disease associated with the oil curse.

Thirdly, this literature emphasizes a particular aspect of bad governance: lack of checks and balances (e.g. Humphreys and Sandbu, 2007; Collier and Hoeffler, 2009). However, given the glaring democracy deficit in the Arab world, the research should address the following questions:

- What is the likelihood of attaining the required standard of checks and balances for averting the oil curse under conditions of extreme autocracy; or,
- Is it possible to design an economic governance system that is incentive-compatible with the required level of checks and balances in an otherwise essentially non-democratic but fairly stable political regime

The macroeconomic framework. The medium-term, macroeconomic framework for oil management is inextricably linked to the underlining savings-investments strategy for oil rents. For example, most rule-based, fiscal institutions (such as the Chilean structural fiscal surplus rule) and natural resource funds (most notably the Norwegian and the GCC sovereign wealth funds) are based on variants of the permanent income hypothesis. More recently, however, Collier et al (2009) argue that the PIH-based strategy is not appropriate for oil-rich but capital-poor economies. Instead, they propose an alternative savings-investments strategy that would target an accelerated build-up of domestic capital stock. Under this strategy, the larger portion of the oil savings generated during the boom would be used to finance domestic investment rather than being invested in the lower returns global capital market.

This research could contribute to this literature by further analyzing the following issues:

- Compared to the PIH, does the proposed domestic capital strategy offer a more balanced social welfare approach between current and future generations?
- Also, might it achieve a better balance between short-term stabilization and longer-term structural transformation?
- And, what are the political economy constraints that might impede scaling down investment during oil busts?
- Moreover, might this strategy be more appropriate for the oil-rich, labor abundant Arab countries, given that their economies are likely to be deficient in terms of domestic replacement capital?

However, the research on the macroeconomic management of oil in the Arab world remains relatively undeveloped, even without accounting for the complex dynamics entailed by the alternative Collier et al propose. It is pertinent to mention that the current crisis has shown that fiscal policy is more important than previously thought. However, while developed countries have been effective in deploying counter-cyclical policy in the past, their developing counterparts have not been that successful. Especially in commodity exporting countries, fiscal policy has been pro- not counter-cyclical

- Pro-cyclical, discretionary fiscal policy dominates in resource-rich countries
- Instead, rule-based fiscal policy has been relatively effective as a counter-cyclical policy instrument in developing countries
- However, only a handful of democratic and well managed, natural resource-rich countries adopt rule-based institutions (e.g. Botswana, Chile, and Norway)

Based on the above lessons from the received literature, this research should address the following important political economy questions for the Arab world:

- Given the democracy deficit and lack of accountability and transparency that characterize economic governance in the Arab world, are rule-based institutions feasible in this region, or;
- Instead, might these rule-based institutions be the vehicles for addressing, or at least avoiding, the above wider governance problems that afflict the Arab world
- In particular, how useful might the proposals for encouraging transparency and respect of established expenditure rules on the part of policy makers be for the design of these fiscal institutions, especially NRFs.⁵³

Notwithstanding these political economy challenges, fiscal policy models of medium-term expenditure smoothing still need to account for productivity growth, different rates of return on government debt, and on financial, physical, and social investment (Leigh and Olters, 2006). These issues will be even more important under the proposed domestic investment strategy. Other issues for future research include addressing the inherent arbitrariness of fiscal rules (e.g. whether to target deficit, spending, or debt); how high the benchmark should be (e.g. why should the Chilean fiscal surplus be fixed at 1% rather than, say, 0.5% of GDP). Moreover, under the domestic investment strategy, some desired level of capital stock will be the main target for fiscal expenditure. Then there is the issue of the tradeoffs between simplicity and flexibility in the design of fiscal rules. Finally, there are also more practical policy issues for the oil-rich, labor-importing economies of the GCC that would require further research:

- Given the limited capacity of these economies to absorb major new investment in infrastructure, it would be interesting to assess the social returns for these countries of investments in infrastructure and other sectors in the regional Arab economies (or African and Asian economies for that matter); and,
- Under what conditions are such investments likely to be a better alternative strategy for generating higher returns but also for diversifying risk, given that several SWFs from these countries have been hit hard by the current global financial crisis?

The other component of the macroeconomic framework is monetary and exchange rate policy. There is a large literature on the optimum monetary and exchange rate regimes for developing countries, including oil-rich countries. However, there is little research on this literature concerning the Arab world, despite the fact that the choice of a monetary and exchange rate regime is considered one of the most important macroeconomic policy decisions a country must make. This can be articulated for the case of the GCC countries along the following lines:

- Except for Kuwait, which switched to a basket peg in 2008, all other oil-rich GCC countries maintained their currency peg to the US dollar
- With the perfect capital mobility that prevails in these countries, the pegged regime means that they do not have an independent monetary policy
- However, the rationale for this choice is that by giving up exchange rate flexibility and monetary policy independence these countries can import US monetary stability under free capital mobility

However, recent experiences have shown that the pegged exchange regime might have come at a huge cost to these countries. This is because the often divergent fundamentals between the US and these economies complicate their capacity to undertake counter-cyclical macroeconomic policy:

- When the US economy slows down the Fed will likely adopt expansionary monetary policy through cutting down interest rates, such as

during the current global crisis

- Should this coincide with an oil boom the appropriate response in the GCC economies should be one of monetary tightening
- However, to maintain the currency peg, their interest rates cannot significantly diverge from that of the US
 - This was the situation in 2008, which led to the inflationary spell in the GCC
 - Instead, there had been previous episodes when monetary restraint in the US precipitated deflationary pressures on the GCC economies

This research, therefore, should analyze alternative exchange rate regimes and their technical and political economy feasibility for the GCC. As mentioned above, there is very little research on this area regarding the GCC countries,⁵⁴ but a few ideas have been floated in the literature for oil and commodity exporters, including:

- A basket peg that includes the price of oil together with the dollar and other major currencies (Setser, 2007); or,
- Simply pegging to the price of oil (or the main commodity export) as in Frankel and Saiki (2002) proposal

It has been noted that the GCC countries have so far been able to conduct counter-cyclical macroeconomic policy during the current downturn because they have a tremendous fiscal space provided by their accumulated reserves and large SWFs. However, this begs the question as to whether other regimes might be better for these countries from the viewpoint of counter-cyclical macro policy.

The polar opposite to the fixed regimes is pure floating, which remains largely confined to developed and a few developing countries with exceptionally strong macroeconomic management capacity, such as Chile. Even in the Arab countries that have recently adopted inflation targeting regimes, such as Egypt and Tunisia, these regimes remain substantially managed. In fact, in a paper discussing exchange rate regimes for the MENA region, John Williamson proposes intermediate regimes for this region.⁵⁵ The point of departure, he argues, was that an appropriate exchange rate and monetary regime should not be judged pure-

ly on whether or not it's prone to crises. Based on this criteria alone, floating regimes will have no contenders. However, he argues that floating will lead to significant long-term misalignment and will, therefore, have adverse consequences for growth and development. He concludes that for developing countries this should not be an acceptable bargain. Instead, an appropriate regime should be one that is capable of minimizing the danger of provoking speculative attacks while helping to avoid real exchange rate misalignment.

This project, therefore, should also evaluate existing exchange rate regimes in GCC and non-GCC Arab countries, including analyzing:

- The typology of exchange rate regimes in the Arab region and their relative performance in terms of counter-cyclical policy and real exchange rate competitiveness
- The underlining political economy behind the choice of the exchange rate regime—for example, the presence of influential exporters might lead to the choice of a managed float with a bent toward RER depreciation; or a “flexible” rather than “strict” inflation targeting that also account for the RER as a secondary target (an extended Taylor Rule).

Issues for Future Research: Economic Diversification

We start with some thoughts on the question of whether and how to diversify oil economies, with special reference to the economies of the Middle East, and then suggest some possible issues for research. Globally, diversification has been an objective of many primary exporters for many years. As a whole, developing countries have been spectacularly successful; whereas 80% of their exports were primary commodities in the 1960s, today 80% are industrial products. With only a few exceptions, those countries identified as particularly resource-rich, whether hard-mineral or hydrocarbon-based, have been less successful, and this extends to countries in the Middle East. Whether this reflects the difficulty of countering the strong pull towards primary specialization impelled by current comparative advantage (“sectoral Dutch Disease”) or political and governance weaknesses due partly to rent-seeking (“institutional Dutch Disease”) or other factors is an open question.

Before considering specific macro and micro policies and research questions, a few basic questions should be considered:

Why Diversify? It is not automatic that countries have to move away from resource-based sectors to develop. Some now-developed countries such as Australia base their economies on natural resources, and Finland, the US, and many other countries did so for an extended period. Some studies, such as Lederman and Maloney (2008), suggest that with good-quality complementary

inputs of human and governance capital, resources provide a positive base for development.

In advocating policies to diversify, we should be very clear on the objective of these policies. Is it for **future income growth**: to create domestic sector capacities with dynamic learning that can substitute for oil when reserves decline, or for **insurance** against technology change (such as clean nuclear reactors and improved batteries for vehicles) which would offer the world substitutes for oil? Is it for **asset diversification** -- perhaps it is not politically or strategically acceptable to accept a future where almost 100% of the country’s assets will shift from below ground to banks abroad. Is it to create jobs? If so for whom, at productivity and skill levels corresponding to what level of expected future income? And why not jobs in the non-traded sectors? These differences are important; for example, if insurance ranks high in the set of objectives, a country might expect to pay a long-term cost for following this option even if specialization in oil is expected to be the most productive activity for a long time to come.

Diversification policy is often equated to industrialization. This raises the question of whether there is anything special about manufacturers, or can other sectors such as services play a similar role?

These questions are important for Middle Eastern resource exporters, especially because of the large differences between the two types of countries:

- Lower-income countries with large populations relative to resources, and
- Higher-income countries with very small populations, in particular the GCC countries. Saudi Arabia is usually included in this group but fits only to some degree, since its population is quite large and growing rapidly.

The first set of countries face more “normal” problems. They are relatively low income, their oil reserves are limited, their populations are young, growing, and seeking employment opportunities and avenues for on-the-job learning. Even if they are currently oil exporters, they need to think about alternative areas of comparative advantage in a relatively short-term context. In some cases a combination of population and income growth could erode their oil exporter status, as has happened in other countries such as Indonesia.

The issues will be very different for the latter GCC-type countries. They have many years of low-cost reserves. Some 80% of their labor force is foreign, and most nationals work in public employment. A form of industrial policy which involves combining domestic investments financed by oil income with imported industrial labor is essentially another form of rentier policy, an alternative to investing in such sectors in a foreign country. As high-income countries, they might also want to target high-productivity service sectors or sophisticated components of production chains as nodes of diversification, so raising the emphasis on investing oil income in the creation of high-level skills.

One interesting research question is therefore to attempt to go back to basics to understand the particular benefits that diversification policy is trying to obtain for the different types of countries.

This question is closely related to the nature of the externality or market failure which diversification policy is aiming to identify and address. Noland and Pack (2008) motivate industrial policy in several ways: infant industries, coordination failures across sectors, first mover costs, and rent-shifting in oligopolistic sectors. As discussed in the extensive survey by Harrison and Rodriguez-Clare (2010), it is also necessary to consider the criteria needed for industrial policy to be “a good investment” over the long run. Even if successful in the sense of creating a more diversified economy, diversification policy can be a losing proposition

in strictly economic terms. Some apparently successful interventions, such as South African support to its automotive sector, have been criticized on such grounds (Flatters, 2005), and Noland and Pack note that industrial policies may have been more successful in shifting resources around and changing sector composition than in increasing productivity and incomes.

Diversification, Oil or Other Sectors? A second general question is diversification within hydrocarbons versus diversification to sectors outside and unconnected with this sector. Many resource-rich countries’ first move away from primary production is towards resource processing, as well as perhaps developing capabilities in supplier industries. Some countries in the Middle East, in particular Saudi Arabia, have made massive investments in petrochemicals, including developing substantial private sectors. These tend to be highly capital and skills intensive, and the record of heavy industrial investment in resource exporters is a mixed one (Auty, 1990). But they do provide increased opportunities for domestic supplier industries, as well as an incentive to develop the technical skills of nationals in the related areas. An interesting research question could be to compare the benefits from the hydrocarbon-based industry relative to those sought from diversification in the wider sense.

Country-Based or Regional Approaches? While most of the literature on industrial policy focuses on the choices for individual countries, collective regional action can be important in some contexts, for example in Africa with many small, landlocked countries. Another question for research could be to ask what specific regional policies—including those related to the sharing of markets, labor flows, and the possibility and financial viability of cross-country investments—are needed to encourage diversification. Are there tradeoffs, for example, between the desire of individual capital surplus countries to diversify holdings of assets and the concept of using surplus export income to support regional investment funds?

How to Approach Redistribution? Unlike normal economies, rents represent a high share of GDP in oil exporters. How these rents are “owned” and how they are distributed across the citizenry has to be a central issue, since this will affect incentives, especially on the labor market. If governments are forced to make transfers to their population in one

way or another, this implies an important divergence between private and social costs of employment. Wage payments will be a cost to private employers. But from the perspective of an oil-exporting government, a wage in an industrial firm might not be a cost but a benefit, relative to the alternative of making a transfer in another way (public employment, subsidy, etc) if it provides opportunities for productive activity and gain in skills. Seen in this light, policies that encourage and subsidize private employment could be seen as a form of conditional transfer program.

7.1 A Three-Policy Country Framework

Theory and country experience outside MENA suggest that three policies will be important for diversification.

- 1) Limiting booms and busts and managing the exchange rate to avoid extreme overvaluation that can force the economy into premature specialization on resources and non-traded goods (Hausmann and Velasco 2005). As well as general fiscal and monetary policies, measures can include selective policies, for example, to limit the flow of resources into key, non-traded sectors (real estate) during booms. Such policies have been used by some oil exporters (Malaysia).
- 2) A reasonably open trade policy, to limit the severe overvaluation of economies that will, by their nature, have high import coefficients.
- 3) More or less selective measures to encourage investment in non-oil tradable sectors and to bring down the costs of production in these sectors. They can include broader measures such as human capital formation, general infrastructure, and overall business climate reform, as well as more targeted measures directed to certain sectors or activities. The latter can include tax concessions and subsidies, specific infrastructure, industrial parks, etc., they can also be tailored to encouraging exports or to production for the domestic market.

Successful resource-based countries such as Malaysia, Chile, or Indonesia have followed variants of such policies (Gelb and Grasmann, 2010). But there may be some constraints, due to location or environment, that severely limit what particular countries can do in particular sectors. Despite good management and generous industrial incentives, sparse and relatively remote Bo-

tswana has not been successful in establishing a robust industrial sector to diversify away from diamonds. Within the diamond-processing industry also, given the very low transport cost of the raw commodity, its industrial activities are not competitive with the leading global complex in India which has access to superior technology, scale economies, and higher-productivity (and possibly cheaper) labor.

7.2 Microeconomic and Institutional Research Issues

Research in this area could start off from the body of work on industrial policy broadly defined. Harrison and Rodriguez-Clare (2010) provide an extensive review of research in this area and its conclusions. Other studies, such as Chandra (2006) provide detailed case material on the role of policies in encouraging export diversification in countries such as Chile, Malaysia, and Kenya. For the MENA region, Galal (2008) and contributors analyze the use of industrial policy in several countries, including case studies on Egypt, Morocco, Turkey, and Jordan. Other contributors review the motivation for and experience of industrial policies in Asia and the implications for the Middle East, and also consider the political economy of industrial policy.

From this body of research, it is clear that there is no simple answer to the question of whether industrial policy, in the "vertical" sense of targeted incentives directed towards a particular set of industries, has been effective or not. Noland and Pack (2008) suggest that the key to East Asian success has been far more due to "horizontal" policies that benefit many sectors, though not necessarily equally. These measures included encouraging rapid and high-quality human capital formation, an area where the Asian economies have been outstanding, and sustained high savings. This pattern is contrasted with that for the MENA region, including by Nabli et al (2008) who note the dominance of "vertical" industrial policy, often involving state-led industrialization and the dominance of sector control and decision-making of relatively "closed" groups, often with strong ties to the state and supported by oil-funded spending. The result has been relatively inward-looking production systems, lacking technological dynamism and unable to compete successfully on world markets. In contrast, despite a generally gloomy take on active

industrial policy, Noland and Pack find that the one area where the Asians clearly got it right was in calibrating assistance to export performance, since this provided perhaps the one clear indicator of progress in competitiveness.

Studies of the Asian experience also flag the institutional structure and mechanisms of engagement between government and private sectors: the use of targets, incentives and recognition (especially for export success), and the ruthlessness with which the Asians were prepared to terminate some preferential measures to firms that failed to achieve export. The studies also show committee structures set up to jointly review evidence of progress, as an insurance against capture. This contrasts with the picture of sustained, long-term relationships between the state and industrial leaders in MENA, the lack of transparency in the region, and the development of interest groups that have perpetuated the use of vertical policies long past their usefulness. The result has been stagnant, uncompetitive industries less able to make an economic contribution to growth and employment creation.

The objective of research would therefore be to apply this body of work to the oil exporting countries in MENA. A first step could be to better understand how the MENA countries fit into global patterns in areas related to comparative advantage and competitiveness. A second component could be to go more deeply into the incentives in these countries, relating to prices, wages, and other elements of the business climate. A third strand could be case studies of diversification, or diversification potential, of selected MENA countries relative to comparators, possibly on a sector basis.

7.3 Application of Product Space Concepts

Recent research on product space (see section 2.3) may be used to get a more refined picture of the comparative situation of the oil exporters. This could include work to update and extend existing data bases on the sophistication and “closeness” of products and country export bundles. These would be used to benchmark the oil exporting countries, to provide an indication of the non-oil export areas that countries with their characteristics might be expected to consider, taking into account features such as their size, level of technical sophistication, and level of income. Given that the

current product mix is heavily weighted towards oil, does this approach provide useful indications of potential future comparative advantage for the oil exporters in other areas?

The research on product proximity and structure of product space could potentially have profound implications for the way we think about structural transformation and development policy and institutions. For example, two major contributors to this literature (Hausmann and Klinger, 2007) suggest a roadmap for future research, which includes the following research questions:

- First, does the structure of the product space matter for growth: specifically, do countries that specialize in the deeper (and denser) part of the product space grow faster?
- Second, what is the impact of distance to the frontier in a given product to the probability of upgrading to a new product
- Third, what factors affect the ability of countries to move to distant products: for example, from oil to biotechnology
- Fourth, is there a role for economic policy: is there a case for policies that could move a country from a sparse part of the product space to a denser one, then leave the rest to the natural process of proximity between products
- Fifth, do successful transitions, as in East Asia, usually happen as a consequence of countries being in the right part of the product space from the start or, instead, due to strategic move toward the denser part of the product space?

It would be important to extend these data and the approach to include international services, since these are likely to play an important role in the region.

7.4 Prices, Factor Incentives, and Market Failures

Market and coordination failures exist in all countries and are more pervasive in developing ones. Industrial policies may be advocated to compensate for them, including those preventing agglomeration externalities. For oil exporters in particular, industrial policies are often urged to contribute to another objective – to compensate for an “overvalued” exchange rate held at appreciated levels because of the exports of oil. But this may not be empirically evident in macroeconomic comparisons. In the 2005 ICP round, the US price

level, with a PPP income of \$41,674 is 100. The un-weighted PPP income average for Bahrain, Kuwait, Qatar, and Saudi Arabia is almost the same at \$40,547 but their average price level is only 69.5. Similarly Syria and Egypt, with PPP income a multiple of India or Bangladesh, have comparably low price levels, far below that of Tunisia or Morocco which have been more successful in export diversification.⁵⁶

While the MENA oil exporters may experience real exchange rate volatility depending on export prices, they are therefore not high-cost countries in the normal sense of having high prices relative to the Balassa norm for countries at their income level (Rodrik 2006b, 2007). No doubt this is because of pervasive subsidies on energy, food, and other goods, and low non-oil taxes; on the basis of comparative costs their real exchange rates are not appreciated. This may not, however, mean that they are low-cost in terms of production. The exchange-rate based measures do not capture regulatory costs or labor costs (in particular of nationals) relative to the productivity of the non-oil economy.

An interesting area for research could therefore be to analyze the cost elements of MENA's oil exporters in a comparative context, to understand how policies, including those on the distribution of oil rents, actually influence the cost structures of these countries relative to comparators. The approach could embody an element of value chain analysis, to benchmark particular sectors in the oil exporters with comparable industries in competitive countries.

What oil-related cost disadvantage, if any, would industrial policy aim to compensate for? If the issue is high productivity-adjusted labor costs or low levels of skill relative to that needed at the income level of the country, policy could include training grants, perhaps some employment subsidies, conditional on exports. If the issue is more one of density and first-mover costs, the approach might emphasize industrial zones.

7.5 Comparative Case Studies

Drawing on the matching process, research could include a number of comparative case studies of particular countries in MENA, including one or more comparators for each. The case studies would build on a common framework, to include:

A) Overview:

- existing economic structure and endowments (including human capital, both national and diaspora)
- dependence on oil and how this shapes the economy
- (for comparators, a review of the pre-diversification situation)
- the imperative for diversification and the perceived nature of the inhibiting constraints

B) "Horizontal" Policies:

- macroeconomic management: expenditure stability and exchange rate management to provide a stable production base
- policies to build high-quality human capital; return and immigration policies;
- policies to reduce general costs of starting and growing businesses, including encouragement of new entrants, general tax, trade and investment policies

C) "Vertical" Policies that influence resource allocation, between (a) non-oil traded and non-traded sectors, and (b) between particular industrial or other traded sectors.

- selectivity in trade, investment, tax and public expenditure policies,
- other specific industrial policies, including those that discriminate between incumbents and new entrants

D) Institutional arrangements for implementing diversification policies

- the nature of the private sector and relationships with key government ministries
- the political economy of policy implementation: control or capture?
- the potential for institutional innovation – for example, industrial zones are often urged to create islands of efficient infrastructure; perhaps they could be thought of also as potential islands of accountability and transparency?

7.6 Choice of Comparators

East Asian countries usually feature prominently in any discussion of diversification policy and economic success. They certainly can do so for the present research, which can build on, for example, the comparison between MENA countries by Nolan and Pack. But there are several other

types of comparisons that might be interesting, which could also be used to encourage joint work by researchers in the region and outside:

One special category of comparators could be the group of hydrocarbon exporters, including some countries outside the region, such as Trinidad and Tobago and Indonesia, which have made special efforts to diversify within the hydrocarbon sector, including towards sectors such as petrochemicals, fertilizers, steel. There are several notable examples in MENA, including Saudi Arabia and Algeria.

Another special comparator set could be small states, such as Singapore and Mauritius, that have made and are still making particular efforts to diversify their economies, whether towards industrial or service-based and knowledge-based activities. These might be of special interest to the GCC countries.

A third set of comparators could be (country x sector) cases of relevance to MENA. For example, the experience of Central American countries in moving to computer assembly and high-level tourism (Costa Rica), diversification in Guatemala, and export-processing zones in the Dominican Republic. Why, for example, should Syria or Egypt not become the assembly point for electronics exports to the EU?

7.7 Data

A first component of research could involve stock-taking of the major data bases, both globally and for MENA countries, relating to a number of variables: country macroeconomic and sector data governance and business climate, including issues relating to regulation, firm performance, and economic/trade structure. These indices could include: WDI macroeconomic and sector data, human resources, governance databases, business climate and firm surveys, labor market and comparative costs, UNIDO industrial data bases and trade data and sophistication and logistics indices. The aim of this research would be to better understand where the MENA countries fit into the global picture and to locate possible comparators for the oil exporters, both locally and outside the region, considering especially the two groups of countries. What do these cases suggest about the potential for diversification, into broad categories of industrial, service, and other activities?

Conclusions

This report highlights the important role of oil in Arab economies, and discusses the promises and challenges it has entailed for these economies. In particular, the report analyzed the evidence on the tendency of oil economies, including in the Arab world, to experience frequent post-boom growth deceleration and long-term stagnation, and for some cases absolute decline of output—in other words an “oil curse”. With the objective of identifying the most relevant issues for developing a strategy for escaping the oil curse, this report also undertakes a selective review of the literature on the oil curse.

The mandate of this approach report was to propose frontier areas for future research that are also of high policy relevance. In this context, the report proposes a potential future research agenda on two broad sets of themes. The first is on the macro-institutional issues for escaping the oil; and consequently on the strategies for escaping it; or, in other words, for harnessing the oil resource for long-term development of the Arab world. The second theme is on the micro-institutional issues of economic diversification, where the report addresses some pivotal questions, such as why and how to diversify, and for what development objective.

Notes

1. Elbadawi and Makdisi (2007) identify oil and conflicts as two factors explaining the “democracy deficit” in the Arab world and show that controlling for these two factors eliminates the significant Arab dummy that shows in modernity models of democracy. Arguably, at least some conflicts in the region might, in turn, be endogenous to oil.
2. The reserves estimates in the IMF (2009) report include Iran and are equal to 65% for oil and 45% percent for natural gas.
3. The Palestinian Territories, which belong to this group, are excluded for lack of data.
4. Comoros and Somalia, which belong to this group, are excluded for lack of data.
5. This happens until countries attain the income level of Ireland. Therefore, growth is associated with a high degree of specialization only at relatively high levels of income.
6. See also Klinger and Lederman (2004) and Carrere, Strauss-Kahn and Cadot (2007), who confirm Imbs and Wacziarg’s pioneering work using more recent data sets.
7. The empirical literature uses a variety of measures to capture export diversification. Elbadawi (2002) uses a measure that is the residual of exports after the ten largest three-digit commodity groups have been accounted for. Imbs and Wacziarg (2003) capture concentration (the inverse of diversification) through the use of a Herfindahl-Hirschman index (HHI), coefficients of variation of sector shares, and maximum-minimum spreads. Lederman and Maloney (2007) also make use of HHI as well as of the share of natural resources in total exports.
8. The share of oil in Sudan’s exports has exceeded 90% since 2006; and proceeds from oil also accounts for more than 70% of the total public sector revenues.
9. However, the share manufactured to total exports for SSA reported in this table is much larger than other estimates, including those of the IMF (2007).
10. This subsection draws heavily from Elbadawi, Kaltani, and Soto (2009).
11. Tunisia, for example, has been frequently referred to as an example of successful industrial transformation in the Arab region.
12. They estimate system GMM dynamic panel regressions, covering 96 countries during 1993-2004, which is the only period for which the EXPY data is available.
13. As in the received literature these include factors of production such as population, land per worker, natural resources, and geographic variables.
14. According to the definition of the RER adopted here, an RER overvaluation (undervaluation) is associated with a higher (lower) level of RER relative to its equilibrium.
15. Imbs and Wacziarg (2003) indicate that poor countries tend to diversify their production structure, but beyond a certain income threshold, further growth is associated with product concentration. However, Elbadawi et al regressions do not concentrate on this effect, because their sample is confined to developing countries.
16. See Rodrik (2007) for the RER estimation for China, Indonesia, and Malaysia among others, and Elbadawi et al (2009) for the case of Sudan.
17. More recent contributions have questioned Rodrik’s earlier assessment of the sophistication of Chinese exports, arguing that they are in line with China’s level of development (e.g. Kumakura, 2007).
18. For example, China was a subject of criticism by some US lawmakers because it has pursued a policy of strategic RER undervaluation to “unfairly” increase its competitiveness in the American market.
19. For other work in the literature on the role of RER undervaluation in promoting growth and export diversification, see Williamson (1997) and Elbadawi and Helleiner (2004).
20. Country examples from Rodrik (2007) are China, the Republic of Korea, Taiwan, Uganda, and Tanzania.
21. Notice that RCA is essentially equal to the weight of the PRODY index (equation 2.2).
22. Hidalgo et al (2007) find that the product space is indeed very sparse as suggested by the distribution of ϕ ; with 5% of its elements equal to zero, 32% of them smaller than 0.1 and 65% taking values below 0.2.
23. Quoted in Lederman and Maloney (2008).
24. This sub-section draws heavily from Elbadawi and Kaltani (2008).

25. For example, using a computable general equilibrium model with a 20-year horizon, Gelb and Associates (1988) estimate optimum savings rates as high 60–70% of the oil revenue boom; and Elbadawi and Majd (1993) also derive similar estimates in an inter-temporal two assets (oil and non-oil) welfare maximizing model applied to the oil surplus economies of Gulf Cooperation Council (GCC). These optimum savings ratios are much higher than those achieved by the oil exporting countries during boom times.
26. This draws heavily from Heal (2007).
27. This shadow price is the value of an extra unit of the good, which equals the market price (if it exists) corrected for external costs or benefits associated with the use of the good.
28. This is one of three cases analyzed by Heal as an extension to the Hotelling's model (1931).
29. For example, in any solution to this problem the social returns for both types of capital must be equal if there is investment in both (i.e. $u' = \lambda_f = \lambda_d$ if both I_f and I_d are positive). At the optimum, however, the shadow prices should change at different rates, since they reflect different fundamentals (the change in λ_f should reflect the difference between the discount rate and the interest rate on foreign assets, while the change in λ_d should reflect the difference between the discount rate and the efficiency in the extraction technology: α). Hence due to the contradictory implications of these conditions a country cannot spend on the two types of capital at the same time. The likely sequence is that countries would invest first to build their extraction capital (or domestic capital in general) until an appropriate level of domestic capital is built before switching to invest overseas, leaving extraction (or domestic capital) constant.
30. The formal empirical definition of "genuine savings" is public and private savings at home and abroad (net of depreciation) plus current spending on education to capture intangible human capital minus depletion of natural exhaustible and renewable resources minus the damage due to the stock of pollutants (CO_2 and particulate).
31. See also Heal (2007), who further adjusted the World Bank's calculations for productivity and population growth. However, the qualitative conclusion remains unaffected.
32. For example, Collier et al (2009) note that because different forms of investment might have different rates of return, the composition as well as level of savings matter. In this context, they point out that if the domestic rate of return is double the world interest rate (at which, according to the Hotelling (1931) rule, the rent on the resource is expected to increase), the depletion of \$1m of natural assets would be fully offset by \$0.5 m of domestic investment.
33. This follows very closely the exposition of Sachs (2007).
34. In this simple graphical model, the expression for the RER that is consistent to non-traded goods equilibrium is given by a linear equation: $E_N = \text{constant} - 1/(p_N/p_T) E_T = \text{constant} - (1/\text{RER})E_T$.
35. See for example Hnatkovska and Loayza (2004), Inter-American Development Bank (1995), Gavin and Hausmann (1996), Ramey and Ramey (1995), Aizenman and Marion (1999), Caballero (2000), Flug et al. (1999), and Duryea (1998).
36. Hamilton (2008) demonstrates that the random walk standard error for an "s" quarter forecast into the future becomes $\sigma\sqrt{s}$.
37. However, as Gelb and Grasmann suggest there are also institutional and political factors, associated with the asymmetric nature of the political payoff, that tend to limit the use of hedging through future contracts, forward markets, commodity swaps, and bonds. In particular, politicians get little visibility and political benefits for profits made, but losses open them to charges of misuse of public money and corruption.
38. See for example, Cover (1992) for the U.S., and Kandil (1999) for the Middle East and the more recent paper by Collier and Venables (2008), who provide a summary of research on the impact of terms of trade shocks in developing countries.
39. In their book on escaping the resource curse, Humphreys et al (2007) devote considerable attention to these issues. See also Collier (2008) and Collier and Goderis (2009), who strongly advocate auctioning as an instrument for selling oil rights by countries emerging out of conflicts. These countries tend to

- lack capable institutions and knowledge and are highly susceptible to corruption.
40. Gelb and Grasmann (2008) suggest that the markets for oil exploration and production are experiencing a rapid change with the recent emergence of state owned oil companies from relatively advanced energy importing developing countries, such as China, India, and Malaysia. This, they argue, has exerted a lot of competition that is bound to favour emerging small oil producers. Also, Elbadawi and Kaltani (2008) made a similar assessment of the increasingly active role of China on sub-Saharan Africa's energy sector.
 41. However, there are two exceptions among the oil-rich group: Kuwait, which is ruled by what can be characterized as the closest Arab regime to a constitutional monarchy; and Algeria, which is ruled by a partial democracy (Elbadawi and Makdisi, 2010).
 42. For an analysis of the common-pool problem see, for example, von Hagen and Harden (1994).
 43. See, for example, Hausmann, Powell, and Rigobon (1993); and Lane and Tornell (1999).
 44. Social conflicts and lack of effective institutions for mediating them could affect the response to external shocks in many ways: by delaying adjustment in fiscal policy and in key relative prices, most notably the real exchange rate; by generating increased uncertainty in the economic environment; and by diverting resources from productive to distributive activities.
 45. They built a new series of resource rents using the following methodology. First, they defined rents as the difference between natural resource price and extraction costs. Second, for each point-source natural resource, they multiplied the estimated rents per unit of output by the volume extracted; then they add up the outcome for such resources (e.g. oil, gas, coal, iron, copper, etc). Finally, for each year they divide total rents by GDP for the country in question.
 46. See also Ossowski et al (2008), who in a recent IMF Occasional Paper test the effectiveness of fiscal institutions in explaining non-oil primary balance. However, arguably this is not very informative on the issue of counter-cyclicality (for a critique of the IMF's perspective on this issue, see Collier et al, 2009).
 47. These include pensions; minimum revenue guarantees issued to private infrastructure concessions; government guarantees on bank deposits and quasi-fiscal losses of the Central Bank (Schmidt-Hebbel, 2007).
 48. Quoted from Eifert et al. (2003), who comment that although Karl's diagnosis may seem overly deterministic, it nevertheless offers a fairly accurate description of how oil rents are managed in many countries.
 49. The following paragraphs draw heavily from Humphreys and Sandbu's article.
 50. See for example Lederman and Maloney (2007), who argue that, unlike the resource dependency measure, the abundance measure is consistent with theory; and that when used as a proxy for resource rents no oil curse is found. Instead, they find a robust positive association between resource wealth and long-term growth.
 51. See, for example, Arezki and van der Ploeg (2008).
 52. The PMG is developed by Pesaran, Shin, and Smith (1999).
 53. These are briefly summarized in section 5; however, for a detailed discussion see Humphreys and Sandbu (2007).
 54. Razzak (2007) and Elbadawi and Kamar (2005) are among the few exceptions.
 55. See Williamson (2005).
 56. The PPP price levels for particular components of absorption, such as food, may of course be different from the overall ICP price level, an area for research. However, subsidies may be one reason why dummy variables for oil exporter status are significant in explaining lack of diversification even when exchange rate variables are included; the measures of the latter do not fully account for the incentives working against other sectors.

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