

OIL PRICE WINDFALLS AND CAPITAL OUTFLOWS FROM MENA OIL EXPORTERS

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ABSTRACT

With the general aim of identifying and explaining which MENA countries export capital, this paper extends the analysis of Sadik and Bolbol (*World Development*, 2003) by using a somewhat longer time period, adjusting the accumulated capital outflows for price changes, and comparing the resultant overseas stocks to the level of national GDP. Saudi Arabia has the biggest overseas accumulation in absolute terms, while those of Kuwait and UAE are largest relative to GDP. MENA's labor abundant countries are not significant capital exporters. Contrary to an initially hypothesized pattern of countercyclical external savings in MENA's labor scarce countries, their overseas accumulation is best explained by the level of oil output per person. Oil production was in turn affected by geology, management decisions, and the OPEC policy context, while population growth was determined by the levels of labor importation.

Key Words: Petroleum exporters, Middle East and North Africa, capital outflows, income per capita, oil price windfall

JEL Classification: F400

The questions addressed in this paper are: which countries of the Middle East and North Africa (MENA) have accumulated significant amounts of financial resources overseas? How large are these funds? Are these the countries with the highest levels of per capita income? How important in this process has been oil exporting? How has this situation evolved over time?

Basic Data

Let us begin with an overview of the basic data on petroleum production and exportation, as given in **Table 1**, for the year 2001. Jordan, Lebanon, Morocco, and Turkey are omitted because they rely on imported petroleum, as does Israel. Of the countries listed in the table, we will not further consider Tunisia because it is a net importer, and will be

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Table 1. Oil Production and Exports for MENA Countries, 2001. (1,000 barrels/day)

	Production	Exports	Imports	Consumption	Production of Natural Gas
Algeria	1,575	1,373	10	224	1,460
Bahrain	48	240	220	24	164
Egypt	748	263	88	555	540
Iran	3,523	2,321	92	1,350	1,427
Iraq	2,039	1,561	20	497	45
Kuwait	2,030	1,760	8	285	160
Libya	1,383	1,144	1	233	113
Oman	899	850	9	57	305
Qatar	841	649	0	30	586
Saudi Arabia	8,809	7,138	5	1,676	1,029
Syria	520	388	174	259	100
Tunisia	79	74	87	88	39
UAE	2,404	2,176	122	351	830
Yemen	443	384	17	78	7

Source: US Energy Information Agency Country Energy Data Reports, www.eia.doe.gov/emeu/world/country/, and author's calculations.

Natural Gas equivalency using energy coefficient of one billion cubic feet/year = 488 barrels/day, from British Petroleum web-site.

Israel, Jordan, Lebanon, Morocco, and Turkey not listed because they import most of their oil.

Table 2. Descriptive Statistics of MENA Oil Exporters.

	Oil/Person	Oil/GDP	Expatriates as % of Population
	2003	2001	1995
Algeria	59	36	<1
Bahrain	65	24	40
Egypt	11	7	<1
Iran	58	23	3
Iraq	276	6	n.a.
Kuwait	869	46	58
Libya	267	29	11
Oman	369	43	27
Qatar	1,399	56	72
Saudi Arabia	403	35	26
Syria	30	19	6
UAE	663	28	74
Yemen	23	30	1

Sources: Author's calculations. Oil production from U.S. Department of Energy, population, and GDP components from *World Development Indicators*, supplemented by Arab Monetary Fund data (www.amf.org.ae). Expatriate population as percentage of total, from United Nations, *International Migration 2002* (UN Publication sales No. E.03.XIII.3).

forced to omit Yemen because many data series do not go back before the establishment of the Republic of Yemen in 1990. In each of the remaining dozen countries, hydrocarbons (oil and gas) are the largest export product, although in Egypt, labor remittances provide more funds to the current account, and earnings on overseas capital have an importance equal to that of oil in Bahrain and Kuwait. Note also in that table that Bahrain imports (from neighboring Saudi Arabia) much more crude petroleum than it produces; most of this is exported after passing through refining processes. While that country is thus technically a net exporter of petroleum, its economic situation is quite different from that of the other countries in the region. A set of data on the oil equivalent of natural gas production in 2001 is also included: this product is most important in Algeria, Bahrain, Egypt and Qatar, and for expository purposes we will refer to either oil or petroleum, meaning oil and gas. Total GDP for all these countries in 2004 was estimated at US\$ 737 billion, of which Saudi Arabia earned US\$192 billion, and Iran US\$126 billion.¹ Their 2004 oil exports averaged 19 million barrels/day.

When analyzing several countries it is often helpful to be able to organize them along a continuum defined by some measure. Several variables suggest themselves for an analysis of the petroleum exporting countries in MENA: per capita income levels, production and export of petroleum, the relative weights of agriculture, petroleum etc. in the economy, population density, and capital scarcity. For industrial countries the typical variable is the capital labor ratio. This paper utilizes an implicit organizational scheme classifying countries by the level of production of petroleum per person. We will refer to countries as labor scarce or labor abundant, relative to this variable. Some relevant data are presented in **Table 2**. In terms of oil production per person, Qatar, Kuwait and the UAE clearly stand out, and will occupy one end of the spectrum in later tables. Correspondingly, Egypt, Syria, and Bahrain reside at the other end. Note in that table that there is a positive correlation between the labor scarcity variable and the importance of the petroleum sector in the macro economy. Furthermore, there is an evident correlation between labor scarcity and the share of expatriates in the population. The next table will indicate that the labor scarce countries tend to be the countries with higher levels of income per capita. One message of this paper is the demonstration that they are also capital exporters, in the literal sense of experiencing frequent and large capital outflows in their balance of payments. The correlation between labor scarcity, importance of oil, and capital exports is not perfect, but this terminology will be useful in describing the phenomenon of capital exportation.

Table 3 provides an overview of the per capita income data, in which levels for the high country incomes are ten times those of the poorest countries—twenty times if the comparison includes Yemen. Once again, Kuwait, Qatar, and the UAE are at one end of the scale, while Syria and Egypt are at the other. The rankings of the other countries are not always clear, because the exchange rates used with two sets of estimates may vary between themselves by a factor of two or three. Indeed, in some cases of importance to us, the World Bank is reluctant to utilize any exchange rate at all to convert from local currency into US dollars. Although there are strong theoretical preferences for the use of a purchasing power parity exchange rate (PPP), the availability of that measure is still

¹ *Middle East Economic Digest* 5-11 August, 2005. p. 39. Data on Iraq not available.

Table 3. MENA Petroleum Exporters: Dollar Value of Per Capita Income, 2003

Country	GNI per capita	\$PPP GNI per capita
Algeria	1,890	5,490
Bahrain	<i>11,260</i>	<i>16,170</i>
Egypt	1,390	3,490
Iran	2,000	7,190
Iraq	na	na
Kuwait	16,340	17,870
Libya	na	na
Oman	7,830	<i>13,000</i>
Qatar	na	na
Saudi Arabia	8,530	12,850
Syria	1,160	3,430
United Arab Emirates	na	<i>21,040</i>
Yemen	520	820

Source: World Bank *World Development Report* (2005), Appendix Tables 1 and 5.

Italicized values refer to a year different from 2003. The GNI per capita data were calculated using the World Bank Atlas method, which may differ from the market exchange rate. The PPP data use a calculated as opposed to a market exchange rate. Data for Algeria, Kuwait, and Saudi Arabia were estimated based on a regression that essentially extrapolates from an earlier value.

Using the data in the electronic version of the *WDI*, per capita GDP for 2002 was US\$3,511 in Libya, 32,248 in Qatar, and 19,718 in the UAE. The Economist Intelligence Unit *Country Profiles* estimated US\$ 2003 GDP per capita as: Libya, 3,206; Qatar, 31,226; UAE 19,630, and PPP in US\$ as: Libya 10,126; Qatar 33,044; UAE 14,490.

EIU *Bahrain Profile*, 2004:

GNI is gross national income
/tablez

limited for this region for our time period, and our analysis will have to rely on market exchange rates. The countries that we are labeling labor abundant generally have significant rural populations and low productivity in their agricultural sectors. This is the brief explanation for their lower per capita incomes.²

One key aspect of the development of the MENA oil exporting countries is the diversification of their income generation activities. Kuwait's earnings from its overseas investments have at times been higher than its earnings from petroleum exports. Bahrain has evolved into a provider of financial services, and several of the Emirates are attempting this, as well. Oman had a sizeable agricultural sector before petroleum exports started, and as such is closer to the high population countries. Saudi Arabia is attempting an ambitious diversification of its economy into agriculture, mining and industry, as well as services, while also pushing for the "Saudization" of the labor force. As such, one might describe this as an effort by the Saudis to evolve into a labor abundant country.

Real Output

Before considering the balance of payments data, it will be helpful to investigate the time paths of real output. The reason for this detour is that per capita income functions as a major point of reference in descriptions of the growth and evolution of an economy. For the labor scarce countries, we posit the existence of a relatively well-defined path for the early stages of petroleum production and exportation, in which income levels naturally followed the growth of production and exports. This was effectively a dramatic case of oil export windfalls, caused by an increase in the output, but not price of oil. In some cases, this pattern overlaps with the more recent case of oil windfalls due to the price increases in the early 1970s. This path is evidently less valid for the countries that are labor abundant, with their larger agricultural sectors.

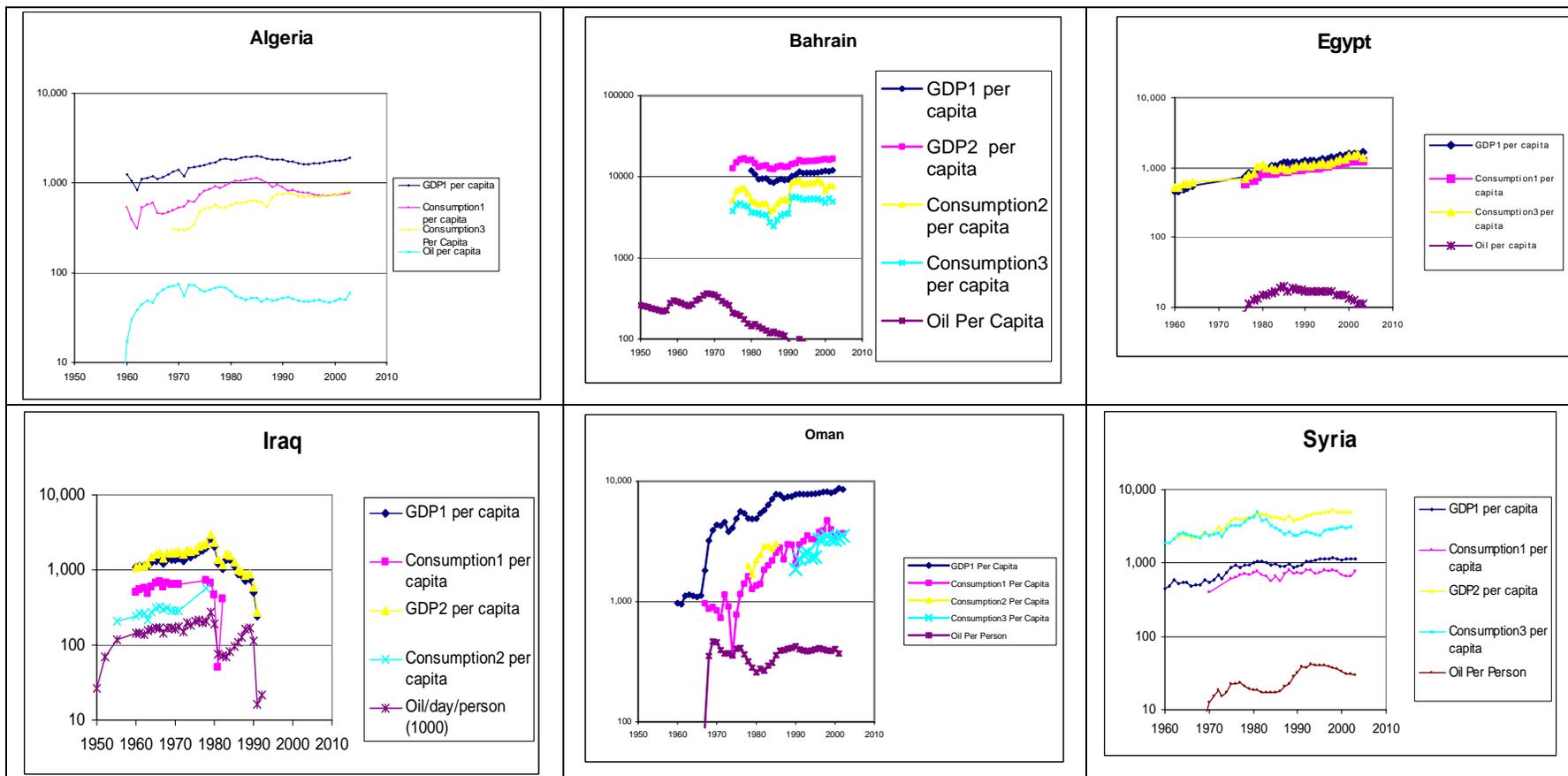
For the dozen countries that we are considering, the time series of per capita GDP and consumption, as well as oil production, are presented in **Graphs 1** and **2**. We have divided the countries into two groups, labor scarce and labor abundant. There is a marked contrast between the slow growth, with mild fluctuations, in Algeria, Bahrain, Egypt, and Syria, depicted in Graph 1, and the larger fluctuations of per capita income for the six more petroleum-reliant countries in Graph 2. The effects of armed violence between Iraq and Iran are evident, as is that of internal disturbances in Algeria in the 1990s. Setting aside those unfortunate cases, an aspect of interest to us in Graph 1 is the relative absence of continued declines in levels of per capita income in this set of countries.³

The illuminating specific case in Graph 2 is the level of real per capita GDP in Saudi Arabia during the period of the 1960s and 1970s, which traces an inverted U, peaking in 1977 at US\$ 16,694 in year 2000 prices. An apparent contrast are the series provided for Kuwait and UAE by the World Bank and IMF, (using national sources), which indicate a

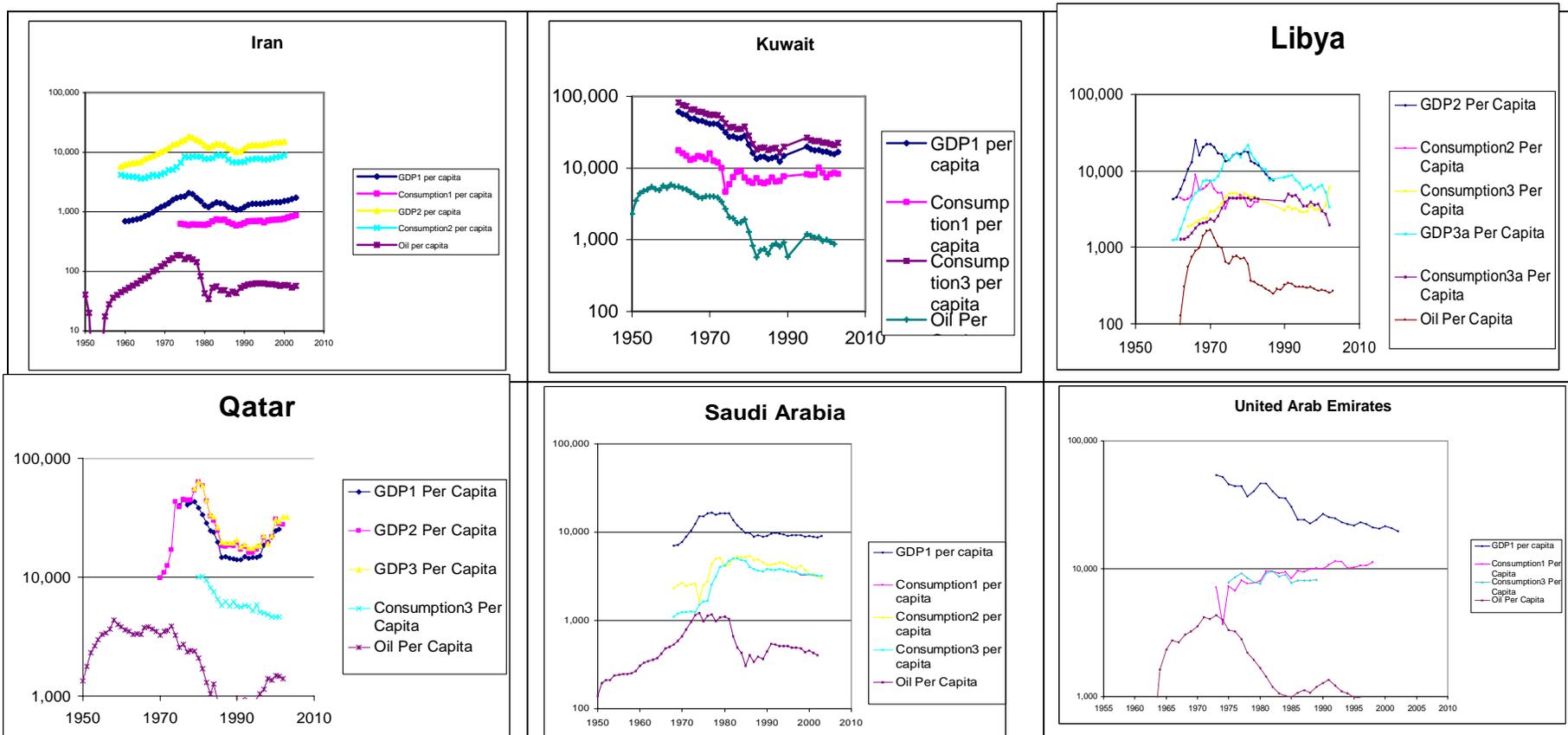
² It goes without saying that an oil exporting country can have high per capita income and a large non-oil sector; Norway and other North Sea countries are the easy examples.

³ The graphs for Iran and Syria illustrate that the WDI did not use market exchange rates for their calculations.

Graph 1. Real Production and Consumption Per Capita for Labor Abundant/Capital Scarce Countries, 1950-2003.
 Vertical axes are US\$ in 2000 prices, and barrels/day/thousand people. Semi-log graphs.



Graph 2. Real Production and Consumption Per Capita for Labor Scarce/Capital Abundant Countries, 1950-2003.
 Vertical axes are US\$ in 2000 prices, and barrels/day/thousand people. Semi-log graphs



decade or two of declining real income levels from the first year for which data are available; 1962 and 1973, respectively.⁴ We assert that the pattern reported in the official data for Saudi Arabia is also true for Kuwait and UAE, for whom the requisite data for earlier years are not available, as well as for Libya and Qatar--for whom the earlier income data are not very reliable. The decline in per capita income also appears in Iran before the 1979 revolution and the subsequent war.

The point of departure for the discussion of this pattern of per capita GDP is the record of per capita petroleum production, for which good data are readily available. Almost all the low population countries have experienced a marked inverted U shape in oil production per capita. This is illustrated in **Graph 3**. In part, this pattern results from the time path of oil production, which peaked in absolute terms in the early 1970s in Iran and Libya, and around 1980 in Saudi Arabia, Kuwait, and Iraq. In none of these countries has oil production subsequently attained the levels reached a quarter century ago. Evidently, the restrictions on oil output associated with the OPEC cartel cannot explain this long term stagnation.

The other contributing factor to the decline in per capita oil productions was obviously the growth in population, which was especially rapid in the labor importing countries. An exception is Oman, which has a high expatriate population, but shows no evidence of a decline in per capita oil production, nor of national income. In several cases, the peak in per capita production arrived rather quickly, especially for the late starters.⁵ The slower growth of output/person in Saudi Arabia is untypical of most of its fellow GCC members, and is more similar to that of such earlier starting countries as Iran and Iraq, as well as several non-MENA countries. Bahrain's jump in exports had already occurred two decades earlier, and by the 1950s that country was diversifying and did not experience a large bulge in its petroleum production. In the high population, agrarian countries such as Egypt and Syria, the inverted U of per capita oil production did not dominate the path of income per person.

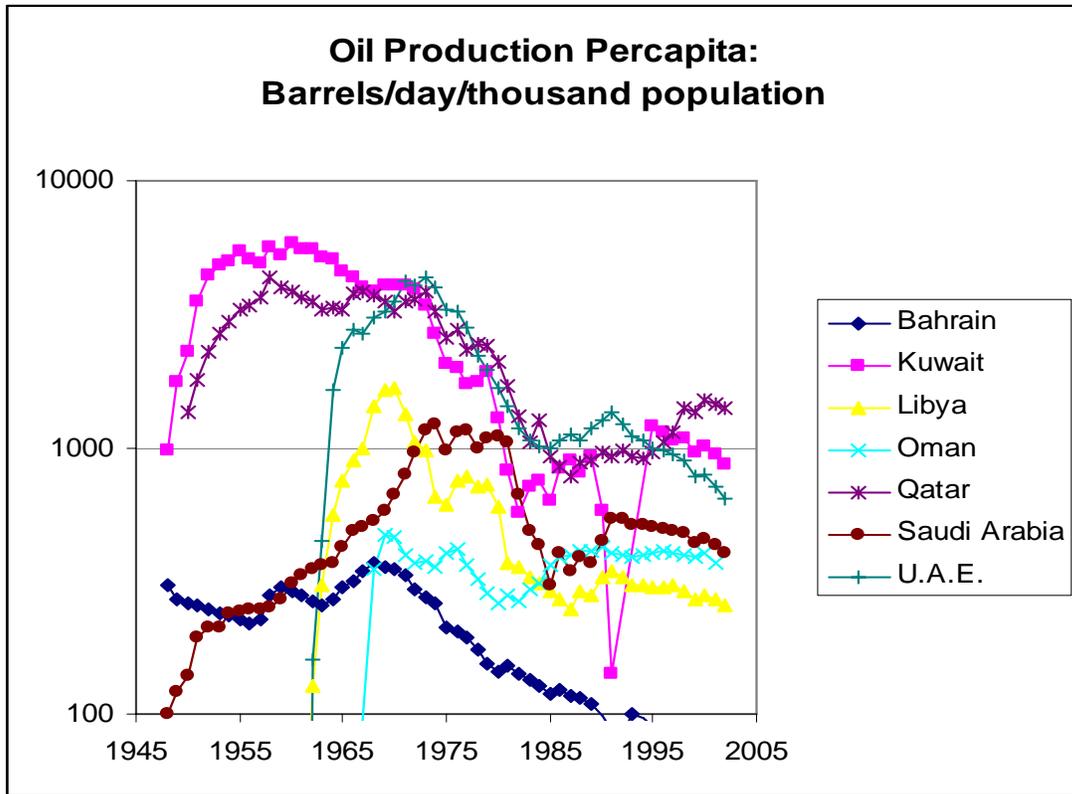
Note also in Graph 3 that, the vertical height of the lines (output/person) is a good predictor of the absolute and relative levels of per capita income. Although degree of diversification is also important—note Bahrain—the non-economic factors of oil production and population appear to dominate economic factors in determining the pattern of income levels. This consideration lends importance to the observation that all of the countries on the Gulf, as well as Libya, have undergone a significant decline of oil production per capita.

For the very low population countries—Kuwait, UAE, Qatar—per capita GDP was very high during the early period of oil exports; over US\$ 50,000 in 2000 prices. There subsequently occurred a nearly continuous decline in real GDP per capita until the

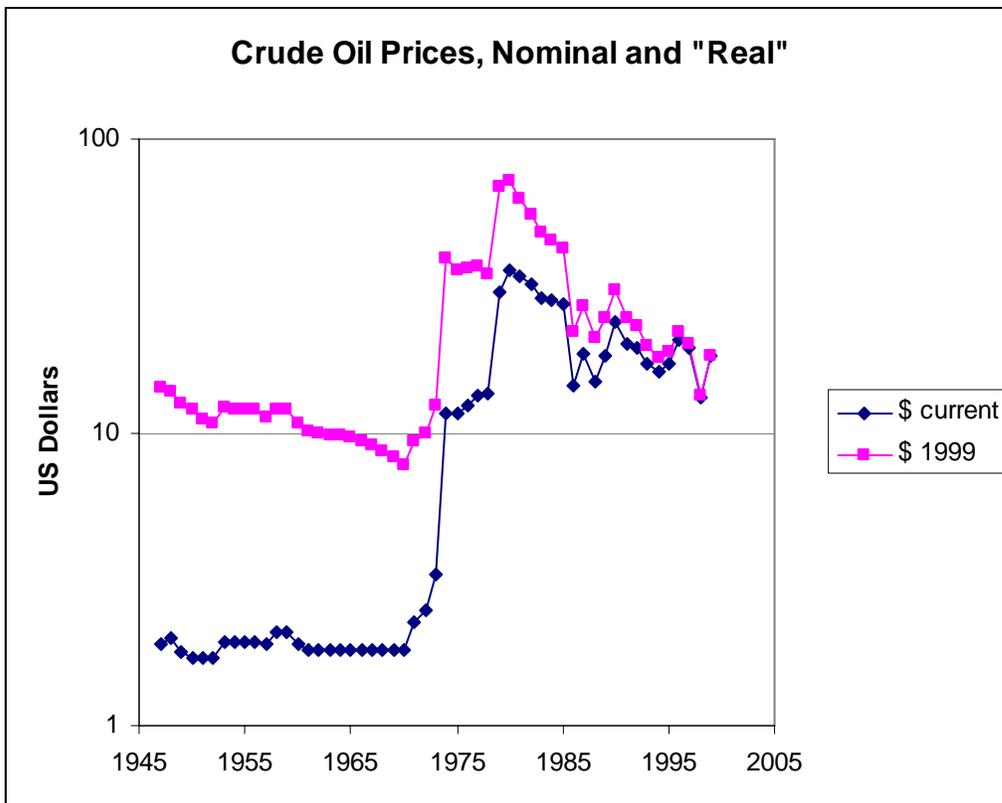
⁴ This paper's tables and graphs were generated using data primarily from the online versions of the World Bank's *World Development Indicators* and the International Monetary Fund's *International Financial Statistics* and *Balance of Payments Yearbook*. The discussion of these series is left to an appendix, where the sources used for the calculated variables are specified.

⁵ First year of oil exports for Libya, UAE, and Oman were 1961, 1962, and 1967, respectively.

Graph 3. Oil Production per capita, 1945-2003



Graph 4. Crude Oil Prices, Nominal and "Real" 1945-2002



present in the UAE, and until the 1990 invasion of Kuwait. The Qatari experience is less well documented, but there is no doubt that all three countries experienced a very marked decline in real output per person—the downside of the inverted-U. The populations of those countries grew rapidly as oil production took off, because their higher incomes allowed natives to hire foreigners to perform less appealing work,⁶ resulting in the immigration of what might be called guest workers--recall the high fractions of expatriate populations in Table 2. The population increase from 1960 to 2003 was over 10-fold in Qatar and Kuwait, and over 40 times in the UAE, corresponding to growth rates of six to almost nine percent per year. It is unlikely that oil production and real GDP could increase at these rates over such an extended period of time, hence the declines in per capita output.⁷

For our purposes, the almost paradoxical conclusion is that these countries had declining real GDP per capita in the 1970s, even when the price of oil was quintupling. The decline in real output per person probably combines a marked increase in income and consumption of natives, and a rapid increase in the population of other, more poorly paid immigrants, whose wages stayed relatively constant. Furthermore, the deterioration in average output levels exaggerates the effect on average living standards, as terms of trade effects were omitted. Nevertheless, the data on consumption also demonstrate a widespread decline in average real levels per capita.

The familiar swings in oil prices are illustrated in **Graph 4**. Although the current (late 2005) increase seems high to many, it is less than a doubling of price since last year, and therefore is much smaller than the experience during the 1970s.

Overseas saving.

To what degree have oil exporters saved part of their foreign currency windfalls, by investing them either at home or abroad? This question has been addressed by researchers at the International Monetary Fund, in the slightly broader context of surpluses from countries exporting non-renewable resources. Davis et al. (2001) discuss funds from oil exporters Kuwait, Oman, Venezuela,⁸ and Norway, as well as mineral exporters Chile and Papua New Guinea. Stauffer (1987) also discussed the oil funds of Alaska and Alberta, as well as a domestic fund in pre-1979 Iran, and Abu Dhabi. Other countries for which such a fund has been mentioned include Russia, Ecuador, Nigeria, Azerbaijan, and Kazakhstan.

⁶ The population growth attributed to immigration followed chronologically the growth in petroleum production. A useful study of population policy in Kuwait is Russell (1989).

⁷ Ignoring all secondary effects, the impact of the increase in the price of oil of $x\%$ in an economy where oil accounts for $y\%$ of production is the product of x and y . If price of oil rises by 25% per year and oil accounts for one third of the economy's output, then the value of output rises by eight per cent. The data on oil prices below in Table 8, and in Graph 4, indicate how infrequent such oil price increases have been.

⁸ There is a discussion of an earlier experience in Venezuela, in Gelb (1988). See also Devlin and Titman (2004).

The Petroleum Fund of Norway is perhaps the most noteworthy. It was approved in 1990,⁹ and started receiving funds a few years later. It is managed by the central bank, and invests its funds overseas. Presently it has accumulated about US\$ 170 billion, which is around two-thirds of the country's annual GDP. By some accounts, disputes over spending from this fund were a prominent issue in that country's September 2005 election.

Economic theory suggests an important distinction between two modes of saving the foreign exchange windfall from unusually high exports. One scheme would take the money out of the domestic economy via investing it abroad. Such an action thereby sterilizes the demand, income, and employment creating effects of the export windfall. Alternatively, if the funds are transferred to the government or to entities in the domestic financial system, the new funds will be spent or otherwise lent out, stimulating new income and inflationary pressures. Such a process will continue, until the newly generated income, employment and inflation have given rise to new imports that neutralize the initial stimulus.

Both of these approaches will be opposed by those who wish to forgo savings and have the money spent immediately. In this light, the Norwegian experience will bear watching, as the country has one of the highest levels of personal income in the world, and one of the most egalitarian distributions. In most any country, there will be much distrust of the officials entrusted with managing the windfall fund, and in this regard the transparency in the operation of the Norwegian Petroleum Fund is impressive. It is also easy to understand that a principle political problem to the establishment of such funds is the issue of when the money would be spent—who makes the decision, and what are the criteria. For example, a crucial consideration in the saving/spending decision is the question of future income, which depends expected prices, and on when the oil will run out. There is great debate among geologists about when the North Sea oil will be depleted.¹⁰

Needless to say, funds can be accumulated overseas by domestic agents acting independently of the government, and indeed we would presume that this mode would predominate, for a variety of reasons. The Norwegian experience of a government agency accumulating funds in overseas accounts is therefore quite atypical. We should note that national governments and the international agencies have little information on overseas holdings by their citizens and businesses, a situation characterizing not only the MENA countries, but most OECD countries as well.

⁹ "The Petroleum Fund provides a buffer against fluctuating revenues from the petroleum sector. It helps to buffer fiscal and monetary policy against variations in the oil price and in production volume, which may be substantial. The Petroleum Fund is the government's instrument for transferring wealth from oil and gas reserves to a broad-based portfolio of international securities." http://www.norges-bank.no/english/petroleum_fund/

¹⁰ For several decades, Morris Adelman has delighted in pointing out that rather than being fixed, crude oil reserves have expanded tremendously, due both to increased exploration and to technological advances motivated by profit opportunities. A recent survey of his position is Adelman (2002).

Let us return our focus to the MENA countries. First of all, there have been few government programs setting aside savings from oil windfalls into domestic funds. Kuwait has a public institution (Reserve Fund for Future Generations, or RFFG), and a significant part of that of Saudi Arabia is also said to be in public hands (such as the central bank, SAMA), but no official totals are available. Iran under the Shah had a short-lived program with this goal, and has a relatively small exchange stabilization fund today. We will focus on the overseas accumulations by MENA countries, because in almost all cases, domestic financial markets are not well enough developed to absorb this volume of domestic savings. In various articles in the business press one can easily find assertions or conjectures as to the total amount saved abroad, almost none of which is backed by a clear citation to a reputable source. A casual search on the web yielded those included in **Table 4**. One article cited by Sadik and Bolbol (2003, 1771) reported a range of estimates from US\$ 400 to \$2,400 billion. For our purpose here, it can be noted that the largest absolute amounts in Table 4 are those attributed to Saudi Arabia, Kuwait, and Abu Dhabi (UAE). Estimates of the value of national output are also included in that table, which indicate that in these specific countries the alleged amounts invested overseas are multiples of a year's national output. The highest figure in Table 4, US\$2 trillion for the Arab countries for 2003, is more than three times their accumulated annual income. The \$650 billion from Saudi Arabia¹¹ would be about three times that country's annual income, while that of Kuwait, before the invasion in 1990, was also more than three times its yearly GDP. These orders of magnitudes are therefore relatively larger than that of Norway's petroleum fund, which is less than that country's annual GDP.¹²

As our empirical work follows--and hopefully extends--the important contribution to this discussion of Sadik and Bolbol (2003), their major findings will be reviewed. Based on a carefully described methodology using official data, their overall estimate of capital outflows from Arab countries for the period 1975-2000 ranges between US\$ 212 and US\$ 323 billion. The Gulf countries were the major sources of these funds; these authors' accounting has Kuwait and UAE being the largest contributors. Rather surprisingly the estimated accumulated amount of capital outflow from Saudi Arabia was close to zero. Media reports about Saudi Arabia cited above in Table 4 evidently suggest an entirely different situation in that country. In the Sadik-Bolbol results, non-Gulf Arab countries had a negative capital outflow over the period. The authors also detect a switch from accumulating overseas assets up to 1985, to a decline thereafter.

One major effort of this paper has been to produce series that reflect the overall capital outflows—the sum of direct and portfolio investment--of the petroleum exporters of MENA region. Our major data source for the balance of payments is the data published

¹¹ Vassiliev (1998, 404) cites a reference I have not yet found ("MER 16 July 1977"), that "Saudi deposits abroad totaled approximately [US]\$785 m[illion] in 1969, \$890m in 1970, \$1,540m in 1971, \$2,870m in 1972, \$4,790m in 1973, \$19,200m in 1974, \$38,700m in 1975 and \$49,590m in 1976." These numbers parallel this paper's accumulated sums of the net capital account the Kingdom's balance of payments.

¹² Note that the Kuwaiti RFFG is said to account for less than half of that country's overseas holdings. The NBK's *Economic and Financial Review* asserts that "Government institutions were behind most of the capital outflows..." (October, 2004 p. 13), mentioning the Kuwait Investment Authority, the Kuwait Petroleum Corporation, Kuwait Airways Corporation, and the Central Bank of Kuwait.

Table 4. Media Reports of Amounts Invested Overseas from Arab Countries.

Reference	Citation	Comments
Martin, Josh (2005) "Islamic Banking Goes Global," <i>Middle East</i> , # 358 June	"GCC member governments have invested almost \$1 trillion abroad; individuals from those countries hold another \$500 bn in overseas portfolios." [p. 51]	The total GDP of the GCC countries was almost US\$400 bn in 2003.
"Deciphering the FDI Figures," <i>MEED</i> 26 Sept. 2003	"Estimates of the value of the private and institutional Arab wealth invested offshore vary wildly from \$800,000 million at the low end to \$2,000,000 million at the high." [p. 10]	Comparable GDP was about \$600 billion
Nimrod Raphaeli: 05/02/2003 www.saudichambers.org.sa	"Expatriate Arab capital, both public and private, primarily from the Gulf countries, is estimated somewhere between \$600-800 billion."	
Siddiqi, Moin (2005) "The outlook for Arab Offshore Investments," <i>Middle East</i> #356 May	Deposits in BIS: "OPEC's gross deposits totaled \$276.3 bn as of September, 2004." Saudi Arabia \$77.6 bn, UAE \$43.6 bn, Kuwait \$24.9 bn [p 46]	
Sadik and Bolbol (2003) "Arab External Investments," <i>World Development</i> 31:11	"...total value of capital outflows from the Arab countries during 1975-2000 at between \$212 and 323 billion." [p 1771]. "Those of Gulf oil-producing countries close to US\$ 370 billion..." "Other estimates vary from \$400 to 2,400 billion."	Reference to a web page by M. Abed Al-Atti (2002) from Al-jazeera.com, which no longer is available.
Stauffer, Thomas R. (1987) "Oil Rich: Spend or Save? How Oil Countries Have Handled the Windfall," <i>Middle East Economic Digest</i> July 8, 2005 p. 56	By 1983: Saudi Arabia had accumulated between \$90 and \$130 billion... Libya had \$30 billion. Kuwait had ("a year ago") about \$35 billion.	Saudi Arabia GDP in 1983 was US\$129 billion
EIU country profile of UAE, (2004)	"The emirate (Abu Dhabi) [has] more than \$300,000 million in the bank." "Overseas assets held by the emirates" [UAE] \$250 bn	2002 GDP of UAE was US\$71 billion Unclear if intention is to refer to total, official, or private
EIU country profile of Saudi Arabia (2005)	In January, 2004, "Saudi private wealth invested in other countries by companies and individuals was around US\$650 bn." [p. 63]	Citing Saudi minister of economy and planning, Khaled bin Mohammed al-Gosaibi
U.S. Embassy in Riyadh, Saudi Arabia (2004) <i>Saudi Arabia Economic Trends</i>	"Saudis have an estimated \$650-700 billion in overseas assets..." [p. 14]	Saudi Arabia GDP in 2003 was \$215 bn
"Great leaps forward," <i>MEED</i> 1-7 July, 2003	"Although difficult to evaluate, combined public and private overseas assets are estimated at just under \$200,000 million, with the [Kuwaiti] RFFG taking up just under half that amount."	Kuwait GDP in 2003 was US\$38 bn
US DoE, "Opec Revenues: Country Details," http://www.eia.doe.gov/emeu/cabs/orevcoun.html	"Kuwait maintains large cash reserves—around \$80 billion as of late 2004—in its Reserve Fund for Future Generations"	
US Country Studies – web page	"The Financial Times of London estimated Kuwait's overseas investments in early 1990 at more than \$100 billion, most of it in the Reserve Fund for Future Generations."	Kuwait GDP in 1990 was US\$18 bn
"A Financial straight-jacket – The Economy" by Mark Nicholson <i>Financial Times</i> February 26, 1992	"...the Reserve Fund for Future Generations which before the war was valued at \$65 bn. However, local economists reckon that at least \$30bn of this has been liquidated to help cover war costs."	

by the International Monetary Fund (IMF). Our methodology is similar to, but nevertheless simpler than that of Sadik and Bolbol (2003). The basic problem is that the balance of payments data seldom report this item, and so it must be approximated. In particular, we are forced to rely on reported net flows, rather than gross flows.¹³ We present two series: the capital—more specifically, the financial account,¹⁴ and the current account. Recall the standard balance of payments identity that the sum of the accumulated current account plus the capital account plus errors plus changes in foreign reserves, must equal zero. Thus the current account is a proxy for the (negative of the) capital account, when changes in reserves are small, and the errors were really capital flows. This results in lower and upper bound estimates of capital outflows, as also in Sadik and Bolbol. We extend their results in two straightforward ways. First, modifications of those series are presented, allowing for changes in prices as well as the possibility of interest accumulation overseas. Secondly, these series will be related to each country's GDP.

The sums of the series on current and capital accounts are presented in the first columns of **Table 5**. There is a comfortable correspondence between our total capital outflows and that reported by Sadik and Bolbol: they report a range between US\$ 212 and 323 billion for the period 1975-2000, and a total current account surplus of US\$154 billion, while our total for nominal capital outflows is US\$ 287 billion.¹⁵ Our tables provide a fuller listing of experiences by countries than those authors provided. In Table 5 the sums of the series on capital accounts, are typically less in absolute value than current account deficits for the capital exporters, because the latter includes errors and omissions as well as changes in foreign reserves.

Some of the results of these calculations in Table 5 are not surprising, such as that Egypt and Syria have no positive overseas accumulations. Neither, however, did Algeria, Bahrain, and Oman, which are usually considered major petroleum exporters. Libya and Iran had modest amounts of overseas savings. The biggest overseas saver was Kuwait, followed by the UAE. Table 5 also repeats the result reported by Sadik and Bolbol, that Saudi Arabia had a negative accumulated current account. The totals corresponding to the current account are larger than those for the capital account, as expected, while the overall stories are consistent.

¹³ Note the contrast between this paper's estimates of net flows and the data from business publications in Table 4, which are presumably gross flows.

¹⁴ The IMF *Balance of Payments Yearbook* currently distinguishes between "capital" and "financial" accounts in the balance of payments. The capital account includes the financial account plus certain inter-governmental flows, primarily relating to debt relief. We will use the term capital account to refer to the financial account only. Changes in foreign reserves and errors of measurement are not included in this measure of the capital account, for all cases except Saudi Arabia, Qatar, and UAE.

¹⁵ Our \$287 datum in the text is the sum of the numbers in the first column, Current Account, but excluding Iran, as Sadik and Bolbol refer only to Arab countries. There are several other minor adjustments that should be made for a precise comparison between our numbers and those of Sadik and Bolbol. The initial and final dates are different between the two studies, and their coverage of Arab countries is complete, while ours is limited to oil exporters. Nevertheless, the totals for the accumulated current accounts should be in close agreement, because ultimately they both are based on the same, official, data.

Table 5. Net Foreign Accumulations by MENA Oil Exporters. (Billion US\$)

	Accumulated Sum of Nominal Amounts		Accumulated Sum of Real Amounts In 2000 US\$		Interest Rate Adjusted Accumulation of:	
	Capital Account	Current Account	Capital Account	Current Account	Capital Account	Current Account
Algeria	4	7	-13	-8	-54	-44
Bahrain	8	-2	-1	-3	-2	-6
Egypt	-14	-11	-19	-18	-45	-42
Iran	28	40	46	85	96	185
Iraq to 1977	5	1	13	36	5	15
Kuwait	101	159	137	200	340	467
Libya	9	32	18	61	38	124
Oman	-3	5	-5	8	-11	18
Qatar	10	17	17	26	38	53
Saudi Arabia	24	49	119	188	399	580
Syria	-4	4	-6	4	-14	3
UAE	66	138	95	194	178	351

Source: Author's calculations, see text and the sources listed in the Appendix. For the presentation, the sign of the capital account was changed from how it is reported in the IMF's *Balance of Payments Yearbook*, so that positive numbers indicate a capital outflow. Periods covered are: Algeria, 1967-2001; Bahrain, 1975-2002; Egypt, 1977-2003; Iran, 1967-2000; Iraq, 1960-1977; Kuwait, 1975-2004; Libya, 1967-2002; Oman, 1974-2002; Qatar, 1976-2001; Saudi Arabia, 1967-2003; Syria, 1977-2003; UAE, 1976-2001.

Table 6. Ratios of Net Foreign Accumulations to GDP. (Percentages)

	Sum of Capital Account	Sum of Current Account	Sum of Real Capital Account	Sum of Real Current Account	Interest- adjusted Capital Account	Interest- adjusted Current Account
Algeria	8	12	-23	-15	-99	-81
Bahrain	2	-20	-7	-39	-24	-80
Egypt	-13	-11	-18	-17	-42	-47
Iran	29	42	48	89	100	192
Iraq to 1977	21	3	56	154	66	66
Kuwait	242	380	341	499	809	1,118
Libya	-47	167	97	333	101	648
Oman	5	8	-24	38	-58	89
Qatar	56	96	101	155	221	308
Saudi Arabia	11	11	59	93	168	270
Syria	-19	22	-33	20	-73	16
UAE	96	199	131	266	257	507

Source: Net accumulations from the previous table; GDP from *WDI*.

One option in approximating the value of the accumulated overseas assets is simply to sum the net values of the current account, and of the capital account balances, as is done in the first pair of columns in Table 5, as well as in Sadik and Bolbol. An obvious extension of this procedure is to adjust for price changes, as “world” prices increased considerably during the last quarter of the twentieth century, in two ways. The first option is to reflate the two series on outflows by expressing all the data in constant prices. For this calculation we have used the US GDP deflator, with the year 2000 as the base year. The second option is to provide calculations that attribute to these overseas investments a return equal to some market rate of interest, for which we use the U.S. Federal Funds rate.

The accumulated sums of the series corresponding to these two modifications are also shown in Table 5. Not surprisingly, the absolute sizes of these revised series in that table are larger than the nominal data. Reflating the net flows by adjusting for price changes has increased the accumulated total amount by a factor of about two during this period. The arithmetical necessity of this result corresponds to the very important real world fact that world dollar prices have roughly tripled since the early 1970s, so that analyzing only nominal values will downplay the importance of capital outflows during the earlier years. The calculations in the last columns of Table 5, including an adjustment for interest accumulation, provide even higher sums than the above correction, because the interest rate was generally higher than the rate of inflation. In general, there is a further doubling of the accumulated total.

One item of particular interest to us is the fact that with these modifications, the message about Saudi Arabia in Sadik and Bolbol has now been reversed; instead of being a net importer, as results when analyzing nominal flows, our latter two measures show this country as being a significant net exporter of capital.¹⁶ Saudi Arabia’s net accumulated external assets are similar in magnitude to those of Kuwait and the UAE, depending on the estimate used. Moving beyond the case of Saudi Arabia, note that the other countries previously classified as net capital importers retain that condition under these new measurements. An intriguing example is Oman, which like its peninsular neighbors is significantly reliant on petroleum and imported labor, yet apparently has not accumulated significant amounts overseas. Finally, note that after making the adjustment for interest accumulation, the sum of capital account net outflows for these countries was about one trillion US\$, and the adjusted amount of the current account surpluses was US\$ 1.7 trillion. These results are much larger than the estimates provided by Sadik and Bolbol, and lend credence to the higher end of the estimates, in the business press, for foreign accumulations cited above in Table 4. For the OECD countries with International Investment Positions reported by the IMF, only Japan has accumulated such a large positive net balance of foreign assets.¹⁷

¹⁶ These calculations thereby reaffirm the basic conclusion of Sadik and Bolbol, regarding the need for “[I]mprovements in the efficiency of Arab investments... [T]his could come about by diversification of the economic structure, financial development, political liberalization, and a leading role for the private sector.” (p. 1771)

¹⁷ Casual inspection of the different country totals suggests that the IMF listings severely understate foreign assets. One reason for this is that not all capital exporters report International Investment Positions. Another

The other extension of the results of Sadik and Bolbol will be the analysis at the individual country level of the relative size of capital outflows, which we will specify by dividing each year's accumulated total by that year's GDP. These resulting calculations for the end of the period accumulated totals are presented in **Table 6**. The high values for Kuwait, the UAE, and Qatar stand out, followed by Libya. Moreover, in these relative terms, the situation of Saudi Arabia is less striking, appearing more similar to that of more populous countries such as Iran.

The conclusion is that there are a handful of MENA countries that have accumulated overseas amounts of funds larger than their national income.¹⁸ It should be remarked that only Switzerland, the United Kingdom and the Netherlands, of those countries for which the IMF presents tables on their International Investment Position, have gross overseas assets larger than their GDP, and only Switzerland has net assets of that size.¹⁹ From this perspective, these MENA countries are world leaders in the exportation of financial capital.

A useful check on our calculations of net overseas assets is comparisons with other available series. One standard source for such data is the International Monetary Fund's tables on a country's International Investment Position, which separately lists assets and liabilities, as well as some of their major components. In principle, these series report market value, or price adjusted values of the accumulation of capital inflows and outflows. For the MENA oil exporting countries, the IMF only publishes this for Bahrain and Yemen--see **Table 7**. Once again, the series for Yemen is very short, corresponding to the reunification of the country in 1990. The net figure for Bahrain is rather low, while both its assets and liabilities are very high, perhaps stimulated by the country's emphasis on diversification into overseas banking. Thus the IMF's Bahraini data remind us of the danger of relying on data on net capital flows stemming from balance of payments accounts, which may hide significant gross positions. Another point about the Bahraini data in Table 7 is that almost all of both the assets and liabilities correspond to the banking sector or the government. There is very little information about assets or liabilities of the non-banking private sector, which remains the major area of our ignorance. The case of the Yemeni data is no better: there is virtually no information on portfolio investment, and almost all the "other investment" involves the general government. In this respect, unfortunately, the IMF series on International Investment Position are not particularly helpful.²⁰

Beyond the consideration of the size of overseas assets at the end of our period, of perhaps equal interest is the time profile of the evolution of these ratios. The

reason would be understatements in the reports that are published, due especially to incomplete information on overseas holdings by individuals.

¹⁸ As a test of the sensitivity of the calculations in Table 5 to the initial year, in Kuwait extending backwards to 1954 by the amount of the increase in the balance of trade surplus raised the final total by some 20 per cent. A parallel backwards extension for the UAE, until 1963, raised the totals by half.

¹⁹ The data for total assets, liabilities, net assets minus reserves, in billion US\$ for the year 2002: Japan \$3,052, \$1,590, \$994, GDP = \$3,986; Switzerland \$1,511, \$1,080, \$370, GDP = \$275.

²⁰ The IMF also has not published data on Norway's international investment position after 1993.

Table 7. International Investment Positions of Bahrain and Yemen, 1990 and 2003.
(Billion Current US\$)

Bahrain	1990	2003
Assets	76	90
Direct Investment Abroad	1	3
Portfolio and Other Investment	58	85
Reserve Assets	2	2
Liabilities	57	85
Direct Investment in Bahrain	1	7
Portfolio and Other Investment	56	76
Memo: GDP	4	10
Yemen		
Assets	n.a.	6
Direct Investment Abroad		-
Portfolio and Other Investment		1
Reserve Assets		5
Liabilities		7
Direct Investment in Yemen		1
Portfolio and Other Investment		5
Memo: GDP		11

Source: *International Financial Statistics Yearbook*, 2004, and Balance of Payments file.
There is some data for Jordan, but the totals for assets and liabilities are not presented.

corresponding time series of accumulated capital flows²¹ relative to GDP are depicted in **Graph 5**. This ratio is not well measured for the first years for which balance of payments statistics are available, because the numerator is understated. For most of these capital exporters, the relative size of their overseas assets reached a maximum some time in the 1980s, after which it declined. The subsequent decline would have been due both to periods of current account deficits, and to a more rapid growth of national output. Our two estimates are not always consistent, but this pattern holds for Saudi Arabia, Iran, and perhaps others. It is not true of Kuwait--in spite of the costs of the first Gulf War--nor of Libya.

Capital exporting evidently is a response to the lack of attractive investment alternatives in the domestic economy. This absence is more marked in the labor scarce countries, which have fewer non-petroleum activities. In this perspective, an interesting hypothesis for future work is that the reduction in overseas assets compared to the domestic GDP in Saudi Arabia and Iran reflects their gradual development of these domestic alternatives for investment. In this light, Oman's low level of capital exports, and high level of expatriate labor, would be viewed as another movement along this path for a major oil exporter.

Using Overseas Assets to Stabilize Income and Consumption

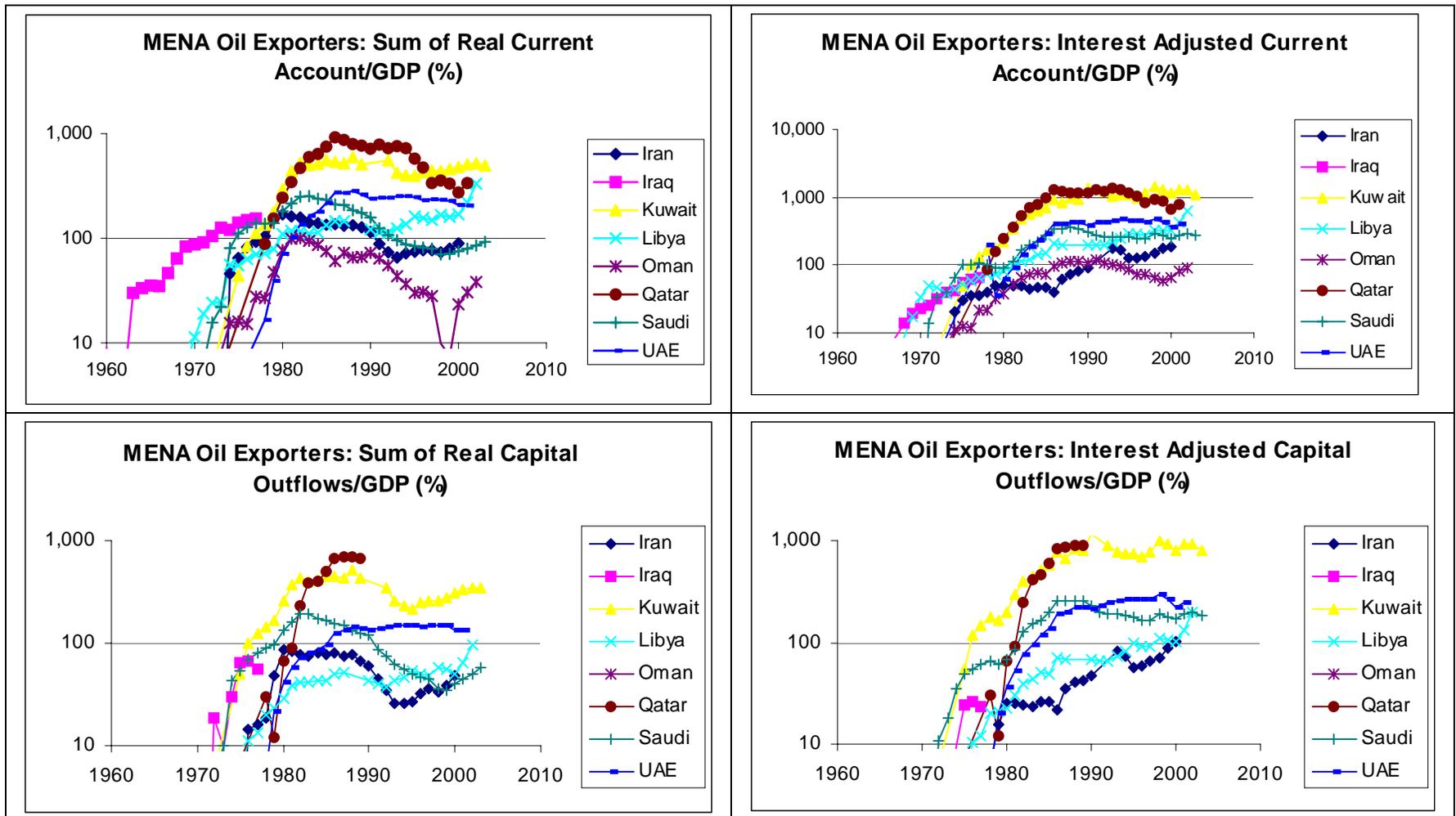
One of the motivations for assembling the balance of payments series was to address two related issues: Could these overseas funds have counteracted fluctuating oil prices, and stabilized income and consumption for the oil exporting countries? Are there indications that changes in overseas capital are consistent with smoothing out income or consumption? Evidently, the analysis can be limited to capital exporters, which eliminates about half of our original list of a dozen MENA oil exporters.

Trade cycles are different from business cycles. For starters, the cycles associated with fluctuations in oil prices will give rise to macroeconomic cycles in the oil exporting countries that are larger than those of more familiar business cycles in the industrial countries. In addition, the standard macroeconomic theory of business cycles generally assumes, explicitly or implicitly, a "normal" level of economic activity—called full employment—around which the economy fluctuates. It is less convincing to speak of the "normal" price of an exported raw material, particularly oil, as recent experience demonstrates. So it is inevitably less realistic to expect that individuals or a governmental entity might treat these overseas assets as a "rainy day fund".

Our analysis of the behavior of per capita output argued that most of the group of labor scarce countries experienced an inverted U in the values of their output per capita, whose peak occurred before the dramatic increase in oil prices in the early 1970s. For Kuwait, the UAE, and to a lesser extent Libya, real GDP per person fell during most of the 1970s, even while the price of their major export rose five times, because their oil production

²¹ Similar patterns emerge with the use of the capital account measure of net investment.

Graph 5. Measures of the Importance of Accumulated Capital Outflows, Relative to GDP.



was not able to keep up with their rapid population increases.²² If the output could not stay ahead of population growth, then certainly savings—a fraction of output—could not have been accumulated in sufficient amounts to maintain anything close to the maximum income per capita corresponding to maximum oil production per capita.²³ For Saudi Arabia, Iran, and perhaps Qatar, this story is still plausible, but less obvious. In Oman and pre-1980 Iraq, per capita income continued to rise.

Moreover, we should recognize that in the labor importing countries, the income of the average guest worker has been much lower than that of the local citizens.²⁴ The idea of evening out income levels between these two groups would not have occurred to people in authority. It is certainly possible that the personal income of citizens continued to rise, while the country's average income fell, due to increased immigration. Data to test this do not exist. Moreover, we might also recognize that economists would generally not have supported a goal of transferences to equalize income, but would instead focus on the desirability of channeling excess funds into productive investments, as opposed to consumption subsidies

An initial hypothesis motivating this research was the idea that accumulated wealth from oil exports allowed real consumption per capita to increase during the 1980s, even while petroleum prices—and output per person—were falling. This consumption smoothing would have involved the restriction of consumption during a previous expansionary phase, either through increased private sector savings, or via taxes on the windfall oil income, subsequently channeled into government savings. The inverted-U pattern of real income per capita certainly would have allowed it. The World Bank's data for the UAE support this hypothesis, while that for Kuwait clearly do not. The hypothesis is also supported by the well-documented fact that during the early periods of oil bonanza, the major areas of expenditure increases were government and investment (Gelb et al. 1988), and not consumption.

Unfortunately, this hypothesis of a counter-cyclical consumption pattern receives little support from our admittedly imperfect calculations of national income aggregates, represented above in Graph 2, for Iran, Libya, Qatar, and Saudi Arabia. Oman did not experience an appreciable decline of GDP per capita, and the other countries were what we are labeling high population countries, and did not experience a significant oil bonanza business cycle. The data indicate cases of major declines in GDP per capita, not only the fall of 35% in Iran from 1978 to a 1988—a period of war and revolution, but a peacetime fall in Saudi Arabia of 50% over that same period. Those are, admittedly, unusual cases. At the other end might be the case of Egypt, whose real per capita GDP only fell once between 1960 and 2003, according to the *WDI*, by one percent in 1990/91. Syria's GDP/capita declined by about ten percent during the 1980s. The patterns of the

²² One basic data problem is that the real GDP series do not incorporate effect of these export price increases, and the requisite calculations of terms of trade adjustment are not available for these countries.

²³ One could certainly generate a formula for savings that would generate a stable level of maximum per capita consumption for the 1970s, but only if one knew the after-the-fact behavior of oil prices. No one had that foresight.

²⁴ Again, data are scarce. For conversational examples of income differentials of the order of twenty, see *Middle East Economic Digest* (15-21 July, 2005, page 30) and Richards and Waterbury (1998, 369).

income fluctuation are thus: some cases of trivial declines of output, others where wars and other armed conflicts dominated the economic possibilities, while three to six of our countries had accumulated enough overseas to support income and consumption by ten percent over a decade, and experienced fluctuations of at least that magnitude.

So the “broad brush” answer to the question of whether the oil bonanzas actually produced a stabilization of national consumption is, “Definitely not,” for most of the labor importing countries (Kuwait, Qatar, and UAE, as well as Saudi Arabia, Libya, etc.), while the more general response might well have been – “Who would ever think of that?” Or “Why not put the money elsewhere?”

Nevertheless, it may still be worthwhile to pursue this in a more analytical fashion. One point of departure is the work of Gelb et al. (1988), whose work included an analysis of this topic for the 1970s, referring to a group of non-OECD oil exporters, including Algeria and Iran, but none of the more labor scarce countries in our group of capital exporters.²⁵ Our calculations—not included here to save space—indicated that the oil price windfalls were clearly higher for Kuwait and Saudi Arabia, but that this was less true for the UAE and Libya. It turned out that the calculated oil price windfall was actually negative for Oman and Qatar. This resulted from the dramatic growth of non-oil GDP, which actually lowered the ratio of exports to GDP.²⁶

Calculations based on comparing ratios for certain benchmark years suggested that the response of certain countries (Kuwait, Saudi Arabia, UAE) was indeed to favor capital exports over imports, while the opposite occurred in Algeria and Libya, where imports increased more. Iran and Iraq occupied intermediary positions. Moreover, this pattern was not constant over time. The response to the last price increase affected predominantly capital exports in most countries, as if the countries had achieved maximum imports, and were willing to let the new found wealth stay abroad.

As a more formal exercise, **Table 8** presents some estimated regressions of what would be described as reduced form equations. We demonstrate that the capital exporters are in fact the labor scarce countries, using the labor scarcity variable that was introduced above in Table 2. Three sets of regressions were run. In the first set, the independent variable is the change in exports, while the dependent variables are changes in imports, capital outflows, and current account balances. The key result is that the variable Oil/L, our measure of labor scarcity, has the predicted positive impact on capital exporting, and a

²⁵ Gelb’s book, titled “Oil Windfalls, Blessing or Curse?” is an important comparative analysis which addresses the possibility that the oil windfalls can have negative impacts, along the lines emphasized in the “Dutch Disease” literature, as well as a broader political economy perspective that argues that the funds were not used in socially beneficial ways. Those questions are not addressed here.

²⁶ Gelb’s oil windfall is measured in his equation 5-5 (page 58) as $(Z_t - Z_t^h) / Y_t^h$, where Z_t is the actual level of oil production, and Z_t^h is its hypothetical level; their difference is compared to an hypothetical level of non-oil production Y_t^h . The values of the hypothetical variables – the counterfactuals--are generated using the Chenery-Syrquin norms for real income and its sectoral distribution. He approximated oil production by using an aggregate from the World Bank and the *World Development Indicator* of mining, petroleum, electricity, water, and gas. A fuller investigation would need to estimate structural equations for each country.

negative impact on importing. This result appears to be robust to changes in the specification of the equation; either by deflating the variables by GDP, or directly dividing the independent variables by the change in exports. Inclusion of the lagged dependent variable in a distributed lag formulation did not substantively change these results. Moreover, it is the case that many questions regarding this behavioral response remain uninvestigated, as the econometrics of these equations is at best rudimentary. In particular, we have not identified statistically any acceleration of capital exporting, when the magnitude of the windfall grew.

The explanation of the impact of the labor scarcity variable on capital exporting is straightforward. The labor scarce countries are those without many domestic investment alternatives, in either rural or urban sectors. This perspective highlights the situation of Saudi Arabia, which is aggressively working to develop its internal economy, and simultaneously appears to be lowering its overall capital exportation. While it can be argued that the Kingdom is wealthy enough to make economic mistakes in this difficult process, it is also the case that many outside observers believe the political stakes to be high.

Applications.

Beyond the academic point of demonstrating the link between changes in overseas holdings and changes in the price of oil, our interest naturally turns to other examples of the use of these funds. We have established that by the mid-1970s a few countries quickly accumulated overseas holdings of a value greater than a year's national output. Let us try some other examples that illustrate the size of these funds.

The most visible case is probably Kuwait's spending associated with the 1990/91 Gulf War. As noted above in Table 4, the business press of the time mentioned Kuwaiti outlays of US\$ 20-30 billion, mostly financed from the RFFG, whose pre-war holdings were variously asserted to be \$US 65-100 billion (when the country's GDP was less than US\$ 20 billion). The IMF's Balance of Payments series indicates that, over the two years 1991-92, there was a reduction in reported Kuwaiti overseas capital of US\$ 50 billion, and an unusually large errors and omissions of US\$ 20 billion. Thus there is a congruence between the orders of magnitude reported by the business press, and that of the IMF. The first Gulf War was also very costly to Saudi Arabia; one newspaper article mentions a total cost of nearly US\$ 60 billion, much of which was paid by drawing on the Kingdom's more liquid foreign assets (*Financial Times*, January 30, 1992).²⁷

A second application is the size of the current Saudi expansion plans; their government is currently seeking some US\$623 billion in foreign investments over the next fifteen years

²⁷ "Saudi contributions to coalition allies, plus war-related imports and expenses totaled an estimated \$70 billion." John Thomas Haldane "Despite Huge Gulf War Outlays, Saudi Investment Boom Resumes," *Washington Report on Middle East Affairs* December/January 1991/92 p. 89. Commitments from Saudi Arabia, Kuwait, and UAE to the U.S. government for 1990-91 totaled US\$36 billion, according to "Cost of the War in the Gulf," Hearing before the Committee on the Budget, House of Representatives February 27, 1991.

Table 8. Regression Results

	R ²
1). $\Delta\text{Imports} = 272 + 0.14 \Delta\text{Exports} - 0.23 \text{Oil/L} \times \Delta\text{Exports}$ (3.59) (5.51) (1.92)	0.38
2). $\text{Capital Outflows} = 422 - 0.14 \Delta\text{Exports} + 2.63 \text{Oil/L} \times \Delta\text{Exports}$ (1.83) (1.92) (7.18)	0.49
3). $\text{Current Account} = 686 + 0.05 \Delta\text{Exports} + 2.54 \text{Oil/L} \times \Delta\text{Exports}$ (2.86) (0.66) (6.31)	0.54
4). $\Delta\text{Imports}/Y = 0.40 + 0.43 \Delta\text{Exports}/Y - 5.17 \text{Oil/L}$ (0.73) (43.9) (2.70)	0.82
5). $\text{Capital Outflows}/Y = -2.10 + 0.01 \Delta\text{Exports}/Y + 44.2 \text{Oil/L}$ (2.46) (1.14) (10.3)	0.49
6). $\text{Current Account}/Y = -2.42 + 0.04 \Delta\text{Exports}/Y + 66.9 \text{Oil/L}$ (2.55) (2.73) (13.2)	0.57
7). $\Delta\text{Imports} / \Delta\text{Exports} = -0.46 + 1.87 \text{Oil/L}$ (0.33) (0.43)	0.02
8). $\text{Capital Outflows} / \Delta\text{Exports} = 0.74 - 0.49 \text{Oil/L}$ (0.47) (0.06)	0.003
9). $\text{Current Account} / \Delta\text{Exports} = -0.17 + 7.77 \text{Oil/L}$ (0.16) (1.27)	0.07

Note: The absolute value of the 't' coefficient appears in parenthesis under the estimated coefficient. Y is the nominal value of GDP. The variable "Oil/L" is the oil/person variable of Table 2, normalized to a scale of zero to one. The other variables are measured in million current US\$.

The equations were run on a pooled sample for the twelve countries.
(WindResults14.sno)

(*Oil and Gas Journal*, May 23, 2005). This amount is certainly less than the accumulated funds overseas, and indeed looks relatively small when viewed on a per year basis. Quite clearly, the government needs technology and management expertise, not financial funds.

A third comparison relates to the Saudi government's purchase of control of the foreign oil company ARAMCO in the 1970s. Our balance of payments data for Saudi Arabia begins in 1967; by 1975 the sum of nominal capital outflows was \$21 billion, while the reference cited above provided a total accumulated outward investment from Saudi Arabia for that year of US\$ 38.7 billion. The book value of foreign direct investment in the kingdom was US\$1 billion in 1972, the year before the first phase of the buyout, which was completed later in the decade. A market-type valuation of those assets surely would have been higher than the book value, and would have been rising as the price of oil rose.²⁸ This author has seen no reference to a total price tag—indeed, part of the agreement was discounts for the previous owners on purchases of Saudi oil for export, and an IRS tax write-off for any difference between what the companies might claim they were worth, and what they were to be paid.²⁹ It seems most likely that the ultimate cost to the Saudis was significantly less than their liquid overseas assets, which continued to grow most robustly.

What of the immediate future? What size windfall might be produced in the year 2005? In September the price of oil reached US\$ 70/barrel, while the increase in the average price for the year was about forty percent. As, the price increase itself—ignoring any petroleum output response—would have been about US\$ 100 billion. In terms of the MENA countries, this would account for about one seventh of their combined GDP of around US\$ 700 billion; and a small fraction of global GDP of US\$ 40,000 billion. This redistribution of income from oil importing nations to the exporters will be sizeable only for the major oil exporters.³⁰ We should expect to see increased efforts at diversification, along with further overseas investments. As can be seen in **Table 9**, if we use the estimated equations (2) and (3) from Table 8, the increase of export revenues by US\$ 100 billion would lead to an increased capital outflow of a range centered on US\$70 billion, mostly coming from Saudi Arabia (US\$ 26 billion), Kuwait (US\$ 14 billion), the UAE (US\$ 13 billion), and Qatar (US\$ 9 billion). This is quite a rough calculation of what is evidently a very important macroeconomic phenomenon; and our point is that most of the windfall will go into capital outflows.

Conclusions.

The paper began with a tentative grouping of MENA oil exporters along the line of relative importance of petroleum and gas to the rest of the economy. This ranking

²⁸ One published statement about the compensation is Rodman (1988, 255): “The companies were to cede an immediate 25 percent to be gradually increased to 51 percent by January 1, 1982. The compensation figure of %510 million was based upon book value updated to account for inflation.”

²⁹ See “New Boss at Aramco,” *Time Magazine*, March 22, 1976.

³⁰ Some readers will recall the fears of global recession during the early 1970s, as a result of the increases of the price of oil, which in that period was five times. Although there certainly was a recession, it was not as severe as many had predicted, because oil exporters recycled their funds.

Table 9. Predicted Changes in Imports and Capital Account, Due to an Increase in the Price of Oil of Forty Percent

	Oil Exports in 2004: 1,000 b/d	Oil/L	Calculated Value of Oil Exports in 2004 (US\$ bn)	Increased Value of Exports Resulting from a 40% Oil Price Increase	Predicted Changes Due to the Oil Price Increase in: (from Table 8)		
					Imports (Eqn. 1)	Capital Outflows (Eqn. 2)	Current Account Surplus (Eqn. 3)
Algeria	1,373	59	18	7	1	0	1
Bahrain	240	65	3	1	0	0	1
Egypt	263	11	3	1	0	0	0
Iran	2,321	58	30	12	2	0	2
Iraq	1,561	276	20	8	1	3	4
Kuwait	1,760	869	22	9	0	13	15
Libya	1,144	267	15	6	1	2	3
Oman	850	369	11	4	0	2	3
Qatar	649	1,399	8	3	0	8	9
Saudi Arabia	7,138	403	91	36	3	23	29
Syria	388	30	5	2	0	0	0
UAE	2,176	663	28	11	0	12	14
Total	19,863		254	101	8	63	80

approximates the importance of immigrant labor in these economies, leading to the terms labor scarce or labor abundant. The paper can be conceived as an effort to relate that conceptual ranking to per capita income and capital exporting.

With regard to per capita GDP, the issue arose with regard to the fact that the low population oil exporters underwent dramatic declines in real per capita income during the 1970s and 1980s, when oil prices were rising. This was explained as a result of immigration policies. Support for this point was adduced in the time pattern of oil production per person. An implication is that these declines should probably not be interpreted as reflecting bad economic policy, but this issue is not pursued here. Another point about the evolution of per capita GDP is the prevalence of declines resulting from armed conflict. Evidently, changes in per capita GDP caused by normal macroeconomic fluctuations (monetary and fiscal policies) are less prevalent in this region, or at least they are drowned out by other factors.

The next issue was the size of overseas assets accumulated by these oil exporters. The business media have presented figures that are equivalent to multiples of our capital exporting countries' annual GDPs. The one study that attempts to measure these overseas assets, by Sadik and Bolbol, provided results that were significantly smaller. We argued that a straightforward summing of capital outflows underestimated the process, because it ignored price increases of over three times, as well as interest accumulation. Adjusting the relevant data for those factors increased the accumulated amounts to close to the numbers mentioned in the business press. It also provides the basis for our identifying certain countries—basically in the Gulf—as capital exporters, while other MENA oil exporters, like Egypt and Syria, were not. Interesting intermediate countries are Iran, Oman, and Libya.

This led to the final question, the impact of oil price windfalls on external capital accumulation, and its flip side, the potential of these external funds to minimize income declines caused by decreases in oil prices. Our results provide moderate support for the idea that this occurs. The current windfall in MENA might be 0.5% of world GDP, which is not large, although it will be concentrated among a small group of labor scarce capital exporting countries.

Data appendix

The major sources for the data are the online versions of *World Development Indicators*, and *International Financial Statistics*, and *Balance of Payments Statistics*, which were available through library subscription. Although the data from these sources should be, and basically was identical, it is the case that the length of the series varied in several countries. It should be noted that on some occasions these data were supplemented for the earlier years, by data from the published versions.

Table Z's data were taken from the printed version of the *World Development Report*.

The population series came from the electronic *WDI*, supplemented by data in the printed *International Financial Statistics* 1988.

The balance of payments data from the online web version of the *Balance of Payments Yearbook* was supplemented for the following cases. The current account for years not covered in the *BoP Yearbook* were taken from the *IFS Yearbook* for 1988 for: Egypt, Iran, Syria, . All balance of payments data for Iraq was taken from the 1988 *IFS Yearbook*. For Qatar and the UAE, the UN-ESCWA *National Accounts Studies of the ESCWA* were used for balance of payments data, for which the capital account was somewhat sketchy. The Saudi Arabian balance of payments data file was downloaded from SAMA ([www.??](http://www.sama.gov.sa)).

Data on oil production is taken from *Twentieth Century Petroleum Statistics* for the period up to 1980, and from US Department of Energy, Energy Information Agency <http://www.eia.doe.gov/emeu/international/petroleu.html#ProductionA> and includes Crude Oil, Natural Gas Plant Liquids, Other Liquids, and Refinery Processing Gain for the period after 1980, and crude oil before then.

Nominal and real prices for crude petroleum were available from the British Petroleum *Statistical Review of World Energy 2005*, downloaded from the BP web-page www.bp.com. The series was updated to 2004 with data on Brent prices from the US DoE.

Non-oil output was calculated by summing the subtotals in the *World Development Indicators* for agriculture, manufacturing and services. This implies that mining, electricity, and gas are unavoidably excluded from this series. Non-Oil production for 1993/95-2000/02 was calculated from the data on production by sectors from Arab Monetary Fund web-site (www.amf.org) for Kuwait, Libya, Oman, and UAE.

For graphs Test1 and Test 2, the following convention in labeling was used. Data on real per capita GDP and consumption directly utilized the source (*WDI*), and was labeled "1". Series which were generated by this author, were given labels "2" or "3". Those labeled "2" are described below; the consumption data labeled "3" were calculated using the country's CPI index, converted into US dollars in the CPI's base year, and then reflatd into 2000 US dollars using the US GDP deflator.

Bahrain: GDP2 utilized the series on constant price GDP in WDI, converting to 1985 dollars and reflating to 2000 dollars using US prices. Consumption2 was calculated by multiplying GDP2 by the ratio of nominal consumption to nominal GDP.

Iran's national income data was downloaded from the Central Bank of Iran's web-site. GDP2 and consumption 2 took the corresponding CBI series in constant prices, converted to US dollars, and reflated to 2000 prices.

Iraq: All data come from the printed *International Financial Statistics Yearbook* 1988. GDP2 and Consumption2 were calculated from the constant values in 1969 prices, then converted to dollars and reflated.

Kuwait's Consumption1 was calculated multiplying the series on nominal consumption by the ratio of real to nominal GDP—thereby deflating consumption by the GDP deflator.

Libya's real GDP in 2000\$ was calculated (19?? To 19?) converting the *World Development Indicators* series from constant LCU; for 1993? To ?, the *World Development Indicators* dollar values were deflated by the US deflator.

Qatar: GDP2 is calculated by deflating the WDI series dollar values of GDP by the US price deflator. GDP3 is calculated by dividing nominal GDP by the CPI index, converting into dollars, and reflating to 2000 values. The consumption data is taken from the *IFS Yearbook*; this data coincides with the that of the series in the WDI, for the much shorter period in the WDI.

Saudi Arabia's GDP for 1963-1967 was taken from the *International Financial Statistics Yearbook* 1988.

UAE Consumption1 is calculated by multiplying the ratio of nominal values of consumption and GDP by the Real GDP values in WDI. Consumption3 is calculated using the fixed price series on consumption in WDI, converting into dollars, and reflating to 2000 prices.

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