*Review of Middle East Economics and Finance*

*Volume* 4, *Issue* 2 2008 *Article* 1

# Capital Flight Accounting and Welfare Implications in the MENA Region

Abdullah Almounsor*

*International Monetary Fund, aalmounsor@imf.org

# Capital Flight Accounting and Welfare Implications in the MENA Region*

Abdullah Almounsor

## Abstract

This research brings together the first estimates of capital flight in the MENA countries from 1970 to 2002. In addition, it explains the nature, volume, determinants and growth impact of capital flight in the resource-based and the resource-poor economies of the MENA region on the basis of their respective structural and institutional characteristics. Our findings suggest that capital flight follows a systematic pattern depending on whether a MENA country is resource-based. The resource-based economies are found to be net creditors to the world economy and have experienced more than 273 billion of 1995 USD in capital flight (average of 9.42 percent of GDP). In these economies, capital flight is assisted by natural resource exporting rents, the outward orientation of most economies and the monarchial character of most of their political systems. In assessing the welfare impact, capital flight is shown to negatively and significantly affect economic growth in the resource-based economies. In contrast, the nonresource economies are shown to have experienced a net inflow of an unrecorded foreign exchange of $215 billion in 1995 USD (average of 9.38 percent of GDP). These inflows are mainly reflected in smuggling of imported goods to avoid trade taxes and regulations and are assisted by the inward-looking strategies, one-party or militarily controlled governments and the relatively significant capital controls in these economies. Interestingly, while capital flight is an outcome of government control in resource-based economies, increasing government control induces unrecorded foreign exchange inflows in the resource-poor economies. However, we find no significant effect of unrecorded inflows on economic growth in these economies. Based on these findings, the research provides policy implications for development in the MENA region.

**KEYWORDS:** capital flight, structural and institutional characteristics, the MENA region

---

*The author currently works at the Middle East and Central Asia Department of the International Monetary Fund (IMF). However, this paper was written prior to joining the IMF. The views expressed in this paper are those of the author and do not necessarily represent those of the IMF or IMF policy. I would like to thank Gerald Epstein, James Boyce, Arslan Razmi and James Hientz for their helpful comments and discussions on an earlier version of this paper. The paper also benefited from comments by Peter Skott and Michael Ash, for whom I am thankful. All errors are, of course, mine.

# 1 Introduction

The last three decades have witnessed unprecedented levels of cross-border capital flows that have various context-specific implications for development in developing countries. According to economic theory, capital movements (including capital flight) are attributed to the profit-maximizing behavior of wealthy individuals based on portfolio choice decisions that are motivated by achieving high risk-adjusted return to capital (Collier, Pattillo and Hoeffler, 2001). Accordingly, capital moves from capital-abundant countries (where rates of return are low) to capital-scarce countries (where the returns on capital are high). In a world of free capital mobility, diminishing returns, complete information, and negligible transaction costs, returns to capital will equalize across countries and markets, making agents indifferent between investing domestically or abroad (Boyce and Ndikumana, 2002).

Contrary to these predictions, however, developing countries have experienced large amounts of capital flight in the era of trade and financial liberalization since the 1980s. An important and recent contribution has been made by international and political economists who have shed light on this contradiction by showing that many developing countries are indeed net creditors to the rest of the world (see Pastor, 1990; Boyce and Ndikumana, 2000; and Epstein, 2005). Capital flight from developing countries represents lost potential for economic growth and development. Many analysts have attributed sluggish economic growth and the persistent balance of payments deficits in developing countries to capital flight (Onwidoduokit, 2001). In addition, capital flight can have other adverse consequences for developing countries. First, it reduces the ability of the banking system to create credit for business projects and other productive investment activities. Secondly, and probably most importantly, the loss of capital can affect income distribution by eroding the domestic tax base and by redistributing income from the poor to the rich (Pastor, 1990; Ajayi, 1997).

This paper is concerned about capital flight in relation to economic development in the Middle East and North Africa region (MENA).[1] The MENA countries have experienced among the lowest economic growth rates and the highest rates of unemployment in the world between 1970 and 2002. Although domestic investment rates are comparable to other developing countries, the region seriously lacks the expertise required for industrial transformation. Above

[1] Under the MENA region, we cover the following countries: Algeria, Bahrain, Comoros, Djibouti, Iraq, Jordon, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Saudi Arabia, Somalia, Syria, Tunisia, UAE, and Yemen. Data on the West Bank and Gaza are not available while Qatar has extreme data limitations. Pakistan, Afghanistan, Israel and Turkey are not covered in this study.

all, the region scores low on human capabilities, namely education, skills and health of its inhabitants. The recent globalization wave poses several challenges to the region especially in terms of employment, growth and health of the environment. Among other things, understanding the forces, dynamics, behavior and consequences of capital movement can help policy makers formulate policies that can have a significant impact on the development process in the region. For instance, capital flight or outward portfolio investment may outweigh inflows of foreign capital substantially, thus leading to balance of payments problems and macroeconomic instability, which can adversely affect output growth, employment and other aspects of economic development. In addition, outflows of capital (i.e., capital flight) could lead to dramatic economic uncertainty and therefore deter productive investment. Thus, close attention to these dynamics and the consequences of capital movement, and therefore appropriate policy intervention, is critical for development policy making in the region.

This research, however, by no means tries to explain underdevelopment in the MENA region, since it is complex and multidimensional. Instead, it analyzes the behavior and welfare implications of capital flight in the MENA region in direct relation to certain structural and institutional characteristics, which on their own have direct development implications in the region. Before going into the specifics of the research problem, approach, framework and structure, however, it is essential that we provide a background on the economies of the MENA region during the three decades of our analysis (1970–2002).

## 1.1 MENA Background and Scope

The countries of the Middle East and North Africa have a shared heritage, language and culture, as well as similar political structures. However, their factor endowments are substantially different. While some are resource-rich and labor-scarce states (the countries of the Gulf Cooperation Council), others are resource-rich and labor-abundant states (such as Algeria and Iran), and the rest are resource-poor and labor-rich states (such as Egypt, Jordan and Morocco).[2] Standards of living as well as the sizes of economies also differ vastly among the countries of the region.[3]

[2] This classification is consistent with that of the World Bank. Resource abundance is measured by natural resource endowments, whereas labor abundance is measured by net inflows of workers' remittances to each country.

[3] According to the World Bank classifications (2004), five countries (Egypt, Mauritania, Somalia, Sudan and the Republic of Yemen) are low-income countries; thirteen countries (Algeria, Bahrain, Djibouti, Iran, Iraq, Jordan, Lebanon, Libya, Syria, Morocco, Oman, Saudi Arabia and Tunisia) are middle-income countries, and Kuwait, Qatar and the United Arab Emirates are

The political structures of the MENA region are traditional and persistent. Regardless of the nominal type of regime, the political elites continue to resist political reforms that they perceive as threatening to the status quo. The continuity of the current political organization in the countries of the region is widely regarded as the prime reason behind the marginalization of popular politics and can be thought of as a product of domestic socioeconomic and political environments as well as external manipulation. Ultimately, the monopoly of the state over resources and decision-making activities, outside of the purview of civil society, hinders popular participation in fostering long-term prosperity of the countries of the region (see Abootalebi, 1999). Moreover, the quality of institutions in the MENA region is low by international standards.[4]

The globalization process has had little success in the MENA region. In terms of economic integration, the MENA Region lags considerably behind the rest of the world.[5] According to a World Bank study, the region's trade has grown by 3 percent in the last decade, as compared to 8 percent for the rest of the world. The major Latin American and East Asian countries have made consistent inroads into the region's import markets, while the region's non-oil exports have been unable to significantly penetrate the markets of Latin America and East Asia (see Page, 1998). In addition, the international capital flows of foreign direct investment and portfolio investment have bypassed the MENA region considerably.[6]

The growth performance of the MENA region, on average, in the last three decades has been rather disappointing (see Table 1 below for growth rates and other macroeconomic indicators). Several macroeconomic indicators illustrate the poor health of many of the economies of the region. Mounting external debt,

---

classified as high-income countries. However, per capita real GDP growth in the MENA region over the past two decades has faltered more than in other developing regions.

[4] I constructed an institutional quality index based on indicators gathered by Kaufman, Kraay and Zoido-Lobaton (1999). The index comprises six indicators: namely, voice and accountability, political stability and lack of violence, government effectiveness, regulatory framework, rule of law and control of corruption. The index ranges between –2 (low) and 2 (high). According to the index constructed, the majority of the MENA countries score negative or low estimates, especially in voice and accountability and control of corruption, reflecting the poor institutional quality characterizing the region. A study by Abed and Davoodi (2003) at the IMF presents an updated version of the same indices (2002) and compares the MENA region to Latin America and the Caribbean, East Asia and OECD countries. The MENA region by far has the lowest institutional quality on a regional scale. Only when looking at the rule of law do Latin America and the Caribbean score as low as the MENA region.

[5] This is more pronounced for the resource-poor economies of the MENA region.

[6] The MENA region, on average, received below 1 percent of the world's net foreign direct investment inflows over the last three decades. The estimate is derived from WDI, CD-ROM Edition (2003).

increasing budgetary deficits, falling per capita incomes as well as rising poverty and income inequality characterize most of these economies. The greatest challenge facing the region is to create enough employment opportunities for the large and rapidly growing labor force. According to the World Bank, the region has one of the highest rates of unemployment in the world.

**Table 1(A): Macroeconomic Indicators for Resource-based Economies, period average, 1970–2002**

| Country | GDP per Capita (1995 USD) | Growth rate of GDP (%) | Growth rate of per capita GDP (%) | Inflation (%) | Unemployment (%) | Current Account Balance (% of GDP) |
|---|---|---|---|---|---|---|
| Algeria | 1576 | 3.9 | 1.14 | 11.03 | 20.4 | (2.24) |
| Bahrain | 9,392 | 3.2 | (0.1) | 5.15 | 2.3 | 0.15 |
| Iran | 1,610.2 | 1.94 | (0.8) | 17.57 | – | 2.9 |
| Iraq | – | (12.25) | (15.07) | – | – | 12.8 |
| Kuwait | 16,717.5 | 2.3 | (2.6) | 5.04 | – | 25 |
| Libya | – | (3.8) | (5.4) | – | – | 4 |
| Oman | 4,634.5 | 6.9 | 2.7 | 0.22 | – | 2.81 |
| Saudi Arabia | 8,379 | 4.8 | 0.33 | 4.5 | – | 3.75 |
| UAE | 27,237.5 | 5.8 | (3.5) | – | – | – |

**Table 1(B): Macroeconomic Indicators for Nonresource-based Economies, period average, 1970–2002**

| Country | GDP per Capita (1995 USD) | Growth rate of GDP (%) | Growth rate of per capita GDP (%) | Inflation (%) | Unemployment (%) | Current Account Balance (% of GDP) |
|---|---|---|---|---|---|---|
| Comoros | 499 | 2 | (0.52) | – | – | (7.7) |
| Djibouti | 1,135 | (0.65) | (5) | 11.03 | 43.5 | (10) |
| Egypt | 822.98 | 5.5 | 3.2 | 5.15 | 7.8 | (4.9) |
| Jordan | 1,593 | 8 | 3.9 | 7.42 | 14.4 | (2.13) |
| Lebanon | 2,286 | (18) | (18.4) | – | 8.6 | (6) |
| Mauritania | 476.7 | 2.83 | 0.19 | 6.7 | 28.9 | (11) |
| Morocco | 1,159.5 | 4.05 | 1.86 | 6.4 | 16.6 | (5.8) |
| Somalia | – | 1.74 | (2.98) | – | – | – |
| Sudan | 244 | 4.28 | 1.6 | 42 | – | – |
| Syria | 670.7 | 5.6 | 2.3 | 12.9 | 5.7 | 1.01 |
| Tunisia | 1,721 | 5.2 | 3.1 | 6.02 | – | (5.6) |
| Yemen | 284.66 | 5.3 | 1.4 | 30.6 | 11.5 | 0.93 |

*Source*: World Development Indicators, CD-ROM Edition (2003). *Notes on Table 1(A) and (B):*

[a] Figures represent averages of three-period averages calculated from World Development Indicators, CD-ROM Edition (2003).

[b] For countries that have data shortages, we compute period averages of available data in each decade starting from 1970.

[c] Negative figures appear in parentheses.

[d] Countries without data are not reported.

While the first oil shock (1973) contributed to one of the worst global economic downturns, the MENA region benefited enormously from the wealth generated from oil rents. In particular, the oil-rich states experienced a dramatic increase in growth and investment as well as high rates of capacity utilization. Public sector spending, particularly on infrastructure building and construction projects, largely absorbed the growth in oil revenues. The skyrocketing crude oil prices in the decade of the 1970s provided the conditions for unprecedented high standards of living as these economies tripled the value of their exports of crude oil.

Many resource-poor economies produced some oil of their own and profited directly from the high prices of the era. Most importantly, they witnessed an excess demand for their abundant and relatively more skillful labor from the resource-based industrialization states.[7] This resulted in massive inflows of remittances from their citizens working in the Gulf countries, as well as a rise in their trade shares and capital flows. Flows of aid, cheap loans, outright grants, profits earned by their contractors in resource-rich states as well as smaller amounts of investment inflows provided those governments with unprecedented inflows of foreign exchange (Field, 1994).

However, reality in the MENA region began to dawn in the mid-1980s when crude oil prices fell sharply as western economies adjusted to the second oil shock in 1979 by using oil more efficiently, contracting domestic demand and developing alternative sources of energy. Oil rents dropped drastically and the flows of aid and remittances within the region were much reduced. In addition, both investment and savings ratios to GDP decreased. The labor-abundant, resource-poor economies had to increase their external borrowing and financing to compensate for adverse trade balances following the fall of crude oil prices. Because of a common heritage of central planning, state intervention theories and socialist legacies that encouraged limited private sector participation and private business initiatives and advocated state control of many of the economic, political and social aspects of people's lives, this option was preferred by these countries over trade and financial liberalization advocated by international organizations in the early 1980s (see Owen and Sevket, 1998; Field, 1994). Nevertheless, with the deterioration of economic conditions, the international organizations (the IMF and the World Bank) brought most of the countries of the region under Structural Adjustment Programs (SAPs). Following the implementation of the latter, however, the region's economic growth still lagged behind the average growth in developing countries.

[7] The Gulf Cooperation Council (GCC) countries of the MENA region were the main actors importing labor during the construction and infrastructure boom between the mid 1970s to the mid 1980s.

## 1.2 Research Motivation and Problem

There has been virtually no study on capital flight in the MENA region, signaling a great deal of needed research in this area to fill the existing gap in the literature. There are two key questions of this paper. First is whether different structural and institutional characteristics (see the next section below) affect the, volume, nature, direction and behavior of capital flight in the MENA region and how? The second question asks what the welfare implications of capital flight in the MENA region are. However, to tackle these questions, the research tries to answer the following relevant questions: How much capital flight is there in the MENA region? How do the resource- and nonresource-based economies compare to each other with respect to the volume of capital flight? Do the determinants of capital flight differ between the resource-poor and resource-rich economies? Finally, how does capital flight affect economic growth in the MENA region and does this effect differ between the resource- and nonresource-based economies of the region?

It is important, however, to highlight that this work is not in the spirit of capital fundamentalism nor is it a refutation of the importance of capital financing in the development process. While we do believe that the flight of domestic capital is a serious drag on a nation's wealth and potential for development, the research does not believe that the MENA region can climb the ladder of industrialization by solely controlling capital flight. Moreover, we do not claim that capital flight alone is responsible for underdevelopment in the MENA region, since underdevelopment is complex and multidimensional. Our research simply tackles untapped areas of research that may prove to be crucial to development decision making in the MENA region in the years to come. The region is in serious need if it is to achieve its development potential. Understanding the behavior and the welfare impact of capital flight in direct relation to structural and institutional characteristics (see the research framework below) can help realize that end. It is for these basic concerns that I study capital flight in the MENA region.

## 1.3 Research Framework

The dependence on natural resources and the legacy of central planning have shaped the development trajectories pursued by the MENA countries. Over the last three decades, the resource-rich states have adopted resource-based industrialization, while the majority of resource-scarce states followed state-led

development strategies in which the states command productive activities.[8] As seen in Table 2 below, the resource-based industrialization states are characterized by their heavy reliance on the industrial sector and the exportation of natural resources along with their outward orientation and the monarchial character of most of their political systems. Moreover, they employ low capital controls and rely more on non-tax revenues. State-led development economies as well as balanced economies rely heavily on agricultural and manufacturing production and exports as well as on the services sector (especially tourism). In addition, they receive significant amounts from external loans, citizens' remittances, foreign aid and grants, and they share a common heritage of central planning and a welfare-state orientation. The latter is assisted by one-party or military governments in most of these countries and exemplified in their trade and finance policies as well as in the internal management of their economies. In addition, they rely more on tax revenues and employ higher capital controls on average than the resource-based economies.

Balanced economies, while sharing some characteristics with their state-led development counterparts, have greater economic diversification as well as more rigorous private sectors than state-led development economies. However, given the similarities between state-led and balanced economies (they are both nonresource-based and characterized by more government intervention than the resource-based states), I combine these two groups (state-led and balanced economies) for ease of understanding and refer to them as nonresource-based economies throughout the paper. As with any taxonomy, this typology is a great simplification of reality, but it will prove useful in helping us understand the nature, behavior and consequences of capital flight in the MENA region. (For an alternative classification, see Richards, Alan and John Waterbury, 1990.)

[8] According to Roger Owen and Sevket Paumuk (1998), the World Bank estimates the output of the public sector, when excluding banks and other financial institutions, in developing countries to have averaged about 10 percent of GDP in 1980. In addition, state-owned enterprises accounted for one-quarter to one-half of the total value added in manufacturing. In many of the countries of the MENA region, however, the contribution of the public sector was considerably higher than those averages.

**Table 2: Structural and Institutional Characteristics of MENA Countries**

| | **Resource-based** | **Nonresource-based** | |
|---|---|---|---|
| | (Algeria, Bahrain, Iran, Kuwait, Libya, Oman, Saudi Arabia and UAE)[a] | State-led development economies (Comoros, Djibouti, Egypt, Mauritania, Syria, Somalia, Sudan and Yemen) | Balanced economies (Jordan, Lebanon, Morocco and Tunisia)[b] |
| Dominant Sector(s)[c] | Industry (Average 55.5% GDP) | Agriculture and services[d] (Average 69% GDP) | Manufacturing and Services (Average 73% GDP) |
| Dominant Export Categories | Fuels, Ores, and Metals (Average 79%) | Food and Agricultural Raw Materials (Average 68%) | Manufacturing and Food (Average 70%) |
| Integration (X+M/GDP) | Relatively Integrated (Average 87.6%) | Least Integrated (Average 69.6%) | Less Integrated (Average 77.9%) |
| Tax revenues % GDP | Low (Average 10.4%) | Relatively High (Average 16.6%) | Highest (Average 19.7%) |
| Capital Controls on Inflows | Low (Average 0.38) | Highest (Average 0.48) | Relatively High (Average 0.46) |
| Capital Controls on Outflows[e] | Low (0.26) | Highest (0.46) | Relatively High (0.42) |

*Source:* World Development Indicators, CD-ROM Edition (2003). *Notes on Table 2:*

[a] Unlike the Gulf Cooperation Council states, Iran, Iraq, Libya and Algeria, being resource-based industrialization states, share a common heritage of heavy state intervention and central planning with the resource-poor states. In addition, their political regimes differ from other resource-based states in that they are ruled by single-party or military governments as opposed to the monarchies of the Gulf states.

[b] Jordan and Morocco, unlike other resource-poor states, are distinguished by their monarchial governments. Such a feature, however, did not preclude these economies from adopting protectionist measures as well as nationalist orientation in managing economic activities.

[c] Exports of fuel as well as ores and metals in Iran were seriously disrupted by the Iranian Revolution in 1979 and later by the Iraq-Iran war that lasted more than seven years. Accordingly, the industrial sector in Iran, on average, accounts for 37.09 percent of total output over the three decades of analysis. The industrial sector in the other countries under the model accounts, on average, for the following percentages of total output: Algeria (51.6 percent), Bahrain (44 percent), Kuwait (58 percent), Libya (65 percent), Oman (61 percent), Saudi Arabia (61.6 percent), and UAE (66.4 percent). For state-led development economies, the share of both agriculture as well as services account, on average, for more than 69 percent of total output. Finally, balanced economies have more balanced sectoral contribution to output. The shares of both the manufacturing sector as well as the service sector register more than 73 percent of total output. In particular, they account for 80 percent in Jordan, 75 percent in Lebanon, 68 percent in Morocco and 70 percent in Tunisia.

[d] The service sector comprises backbone public utilities such as transportation, finance, information as well as communications. The public sector in the MENA region dominates the majority of such activities.

[e] The indices of capital control on outflows are borrowed from Karam (2002). According to Karam, the IMF publishes such indices for member countries in the "Annual Report on Exchange Arrangements and Exchange Restrictions." The indices are as follows (higher values mean higher controls): 0.59 for Algeria, 0.15 for Bahrain, 0.18 for Kuwait, 0.11 for Oman, and 0.27 for Saudi Arabia. For state-led development economies, the indices are 0.60 for Comoros, 0.16 for Djibouti, 0.17 for Egypt, 0.69 for Mauritania, 0.71 for Somalia, 0.67 for Sudan, 0.66 for Syria, and 0.01 for Yemen. Balanced economies indices are 0.05 for Jordan, 0.17 for Lebanon, 0.66 for Morocco, and 0.81 for Tunisia. Thus, the average capital controls for the two categories are 0.26 for resource-based economies, and 0.44 for the nonresource-based economies (0.46 for state-led and 0.42 for balanced economies). The same scaling applies for capital controls on inflows indicators; a higher value means higher controls.

### 1.4 Research Structure

The following section discusses the estimates of capital flight and the trends and fluctuations of those estimates provided in Almounsor (2005) during the time span of analysis in direct relation to the institutional and structural characteristics of the resource-based and the resource-poor countries of the region highlighted above. The notational methodology of estimating capital flight in the region used in Almounsor (2005) is provided in Appendix A for convenience and reference purposes. I use econometric modeling techniques in the third section to test the links between capital flight and the respective structural and institutional characteristics of the countries of the region, on the one hand, and to examine the welfare implications of capital flight on the other. The paper then concludes the discussion on capital flight in the fourth section with some thoughts on policy implications. The research shows an interesting association between the direction, nature, volume of and welfare impact of capital flight and the respective structural and institutional characteristics of these economies.

## 2 Discussion of Capital Flight Estimates and Trends

The estimates of real capital flight in the resource- and nonresource-based states provided in Almounsor (2005) appear in Appendix B in Tables B3 and B4, respectively. The estimates concerning capital flight with interest earnings appear in Table B5. In Tables B6 and B7, I report the estimates of trade misinvoicing in the resource- and nonresource-based economies, respectively.

According to the reported estimates, the MENA region as a whole is indeed a net creditor to the rest of the world. Driven by the resource-based industrialization states, the region registers 57.8 billion of 1995 US dollars of capital flight and, with imputed interest earnings, capital flight of 525.6 billion in current USD. The resource-based economies register the largest volume of capital

flight, amounting to more than 273 billion of 1995 USD, and accumulated interest-earning capital flight of 935 billion in 1995 USD.

As shown in Figure 1 below, total real capital flight in the combined resource-based states was highest during the decade of 1973–1982, a period in which both the first and the second oil shocks took place. This basic observation suggests that some oil exports, the single dominant source of foreign exchange in these economies, have financed capital flight (as also suggested empirically below) in the oil rich states. These amounts of capital were diverted away from domestic investment, welfare programs, employment creation, infrastructure development and other necessary development programs. In only one decade (1973–1982), the resource-based states experienced more than US$300 billion of flight capital, which corresponds to about an average of 30 percent of their GDPs combined. This implies that large amounts of capital generated mainly by oil rents had not been used to finance public development projects. Rather, it suggests that significant amounts of such flows of foreign exchange had fled those states in the form of capital flight to finance external private assets.

The trend of capital flight in the resource-based states is shown to decline gradually over time (Figure 1 below). This is also partially caused by the decline in oil revenues of those states starting in the mid 1980s. However, capital flight from these states may have been affected by internal and external economic and political shock. As shown in Figure 2 below, average capital flight relative to GDP was sensitive, at various degrees, to both oil shocks (1973 and 1979), both the Iran-Iraq War and the First Gulf War (1991), the Mexican currency crisis (1994) and the East Asian currency crisis (1997–2000). Average capital flight relative to GDP in all oil states combined reached 65 percent in the first oil shock, 23 percent during the second oil shock, averaged about 5 percent during the Iran-Iraq War, dropped to a negative 31 percent during the First Gulf War, mounted to about 22 percent during the Mexican currency crisis and was about 13 percent of GDP during the East Asian financial crisis.

The dramatic drop in capital flight (capital inflows) in 1991 could be partly explained by wealthy Kuwaiti elites flooding unrecorded financial assets into these states to escape appropriation by the Iraqi invasion. However, what is puzzling is that Kuwait itself had huge unrecorded capital inflows of foreign exchange in 1991 (more than 30 billion of 1995 USD). In addition, when looking at the trade misinvoicing figures for 1991, we notice that it is positive, implying that this massive inflow of capital in the resource-based states was not caused by export over-invoicing nor reflected in import under-invoicing (tax evasion and smuggling activities). For Kuwait, in particular, the amount of trade misinvoicing is much smaller than the volume of net unrecorded capital inflows for the year

**Figure 1: Total Capital Flight from Resource-based Countries in Millions of 1995 USD (1971–2002)**

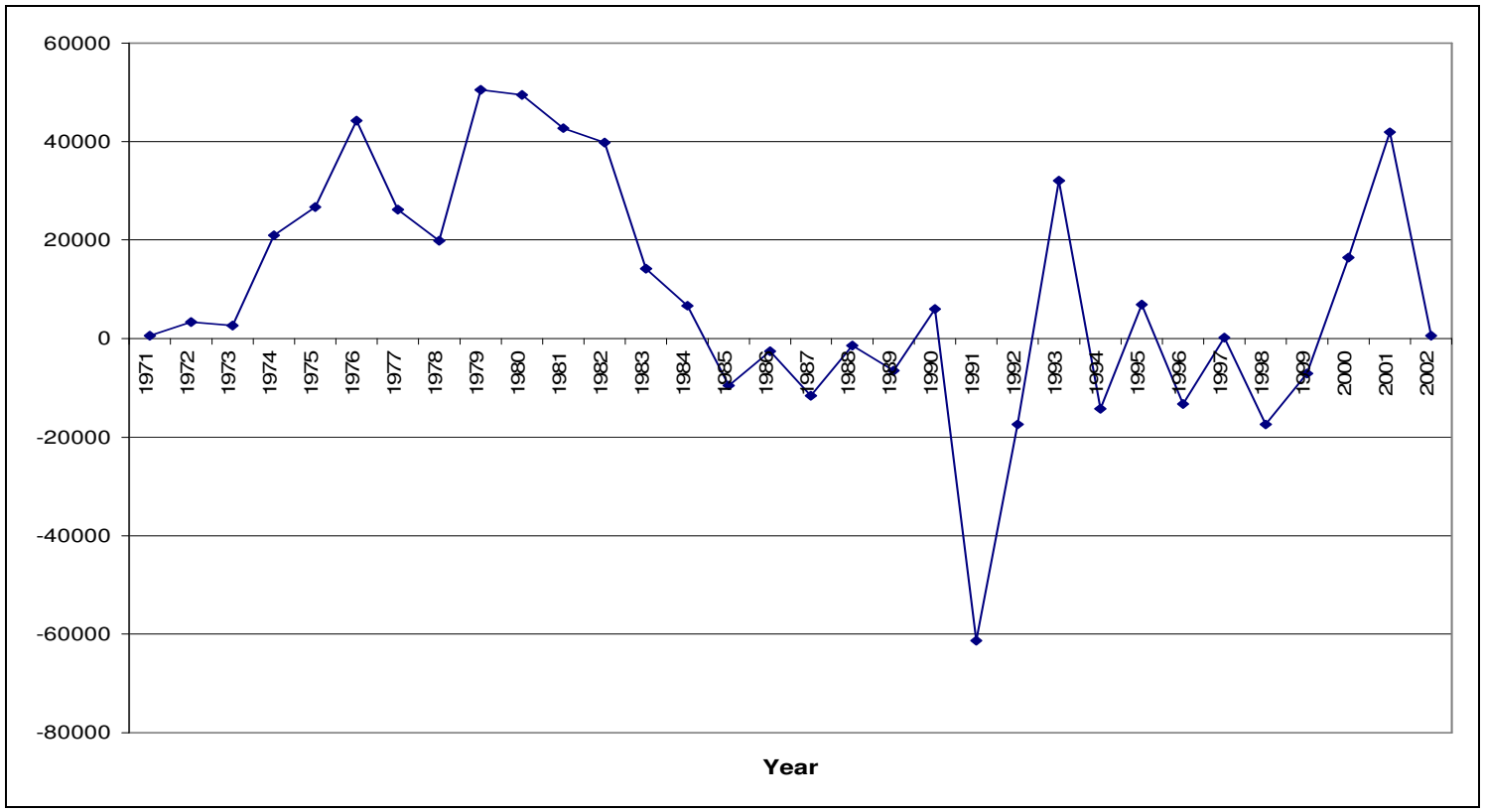
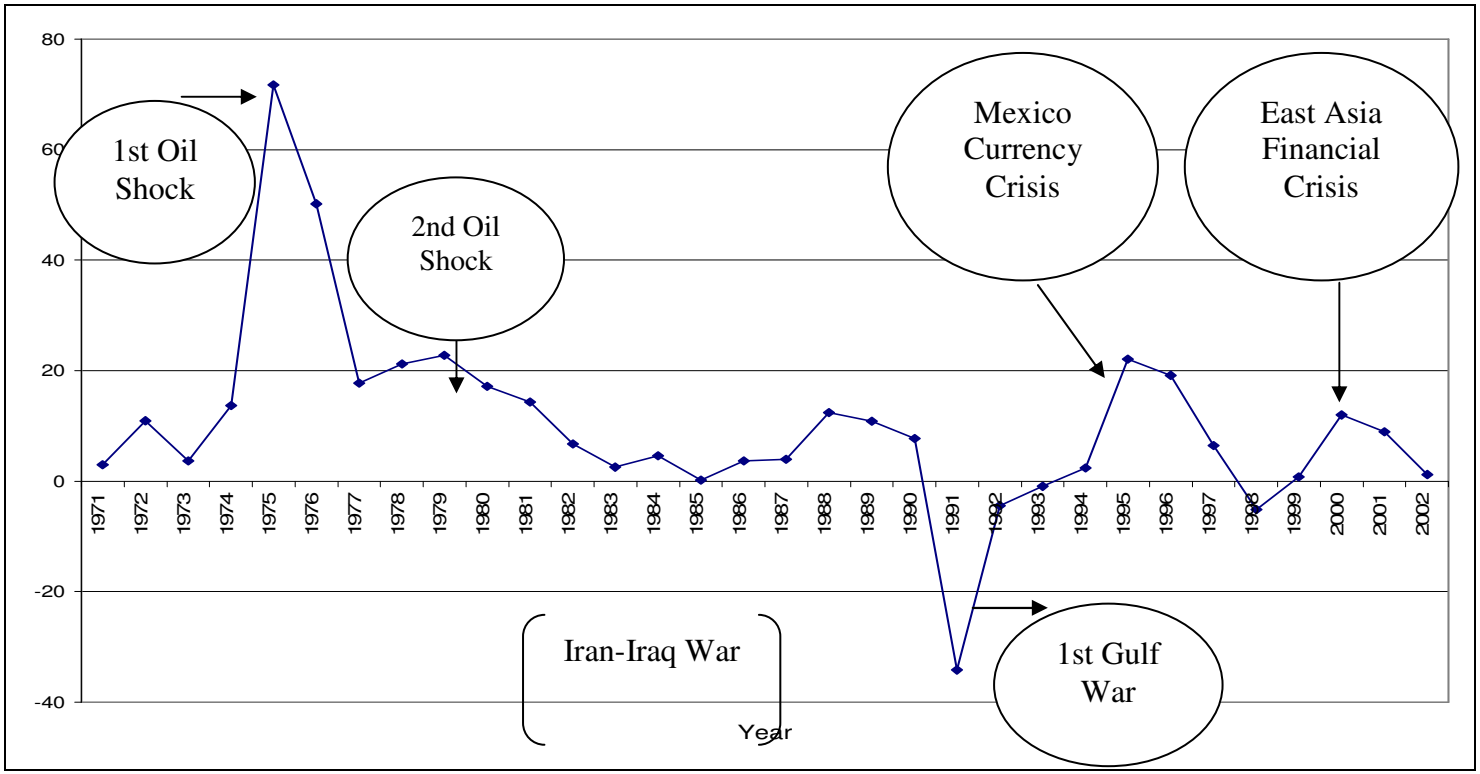


**Figure 2: Average Capital Flight (%) GDP for Resource-based Countries (1971–2002)**



1991, suggesting that such "reverse" capital flight in Kuwait was not reflected in the smuggling of goods and tax evasion activities. Perhaps, future research can give us more insight into this puzzle of capital flight reversal in the resource-based states during the first Gulf war.

When looking at individual country capital flight (Table B3), we notice that Kuwait has the largest amount and the most volatile flight capital among the resource-based states. For instance, Kuwait registered capital flight of 190 percent of GDP in 1975 ($11.7 billion), about 122 percent of GDP in 1979 ($21.9 billion), about 2 percent of GDP in 1982 ($461 million), negative 160 percent in 1991 (-$30.6 billion during the Iraqi Invasion) and about 97 percent of GDP in 1997 ($8.2 billion). Although Kuwait's total capital flight is more than that of Saudi Arabia, the latter registered more than $212 billion in capital flight between 1971 and 1983—a figure that is about 210 percent of that of Kuwait's for the same period. However, capital flight relative to GDP is much higher in Kuwait, given its small size, than in Saudi Arabia during that same period.

Analogous to the case of Kuwait, Saudi Arabia's capital flight relative to GDP was highest during the first and second oil shocks, 22 percent ($20.7 billion in 1974) and 21 percent ($29.6 billion in 1980), respectively. For the other resource-based countries, capital flight relative to GDP reached its peak in 1996 for Bahrain (80 percent of GDP), in 2000 for Iran (about 19 percent of GDP), in 1996 for Algeria (about 11 percent of GDP), in 1983 for Libya (13 percent GDP) and in 1990 for Oman (45 percent of GDP).

The estimates of total trade misinvoicing for resource-based states in Table B6 and Figures 5 and 6 below, with the exception of Iran and Kuwait, show two interesting phenomena throughout most of the period of analysis, export under-invoicing to undertake capital flight and import under-invoicing to avoid taxation on imported goods. Since crude oil is the dominating export category in these economies, under-invoicing of exports predominantly takes place by the oil industry. The under-invoicing of imports is a sign of smuggling of goods and tax evasion, and, since capital goods are the dominant import category in these economies, it is likely that manufacturing industries are the main actors underreporting import transactions.

This study, however, highlights the significance of natural resource rents, mainly crude oil, in contributing to capital flight from resource-rich states. The occurrence of the phenomenon in those states appears to be considerably driven by exporting revenues generated mostly from the early 1970s to the mid 1980s, the era of high crude oil prices, and assisted by the low controls on capital outflows. The estimates of real capital flight provided in Table B3 indicate about a 900 percent increase in capital flight from Saudi Arabia in 1974 following the

**Figure 3: Total Capital Flight for Individual Resource-based Countries in Millions of 1995 USD (1971–2002)**

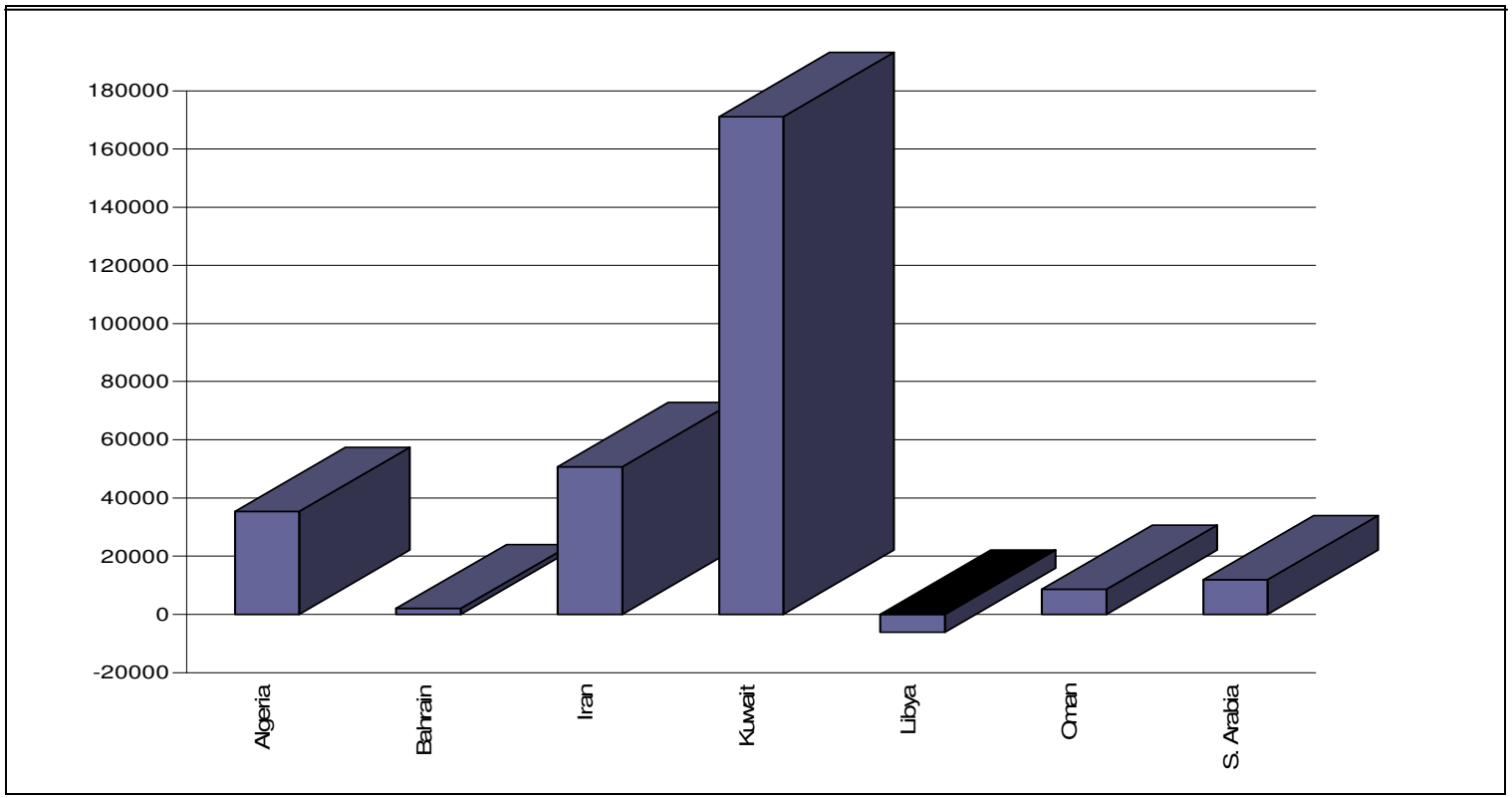


**Figure 4: Average Capital Flight (%) GDP**
**for Individual Resource-based Countries (1971–2002)**

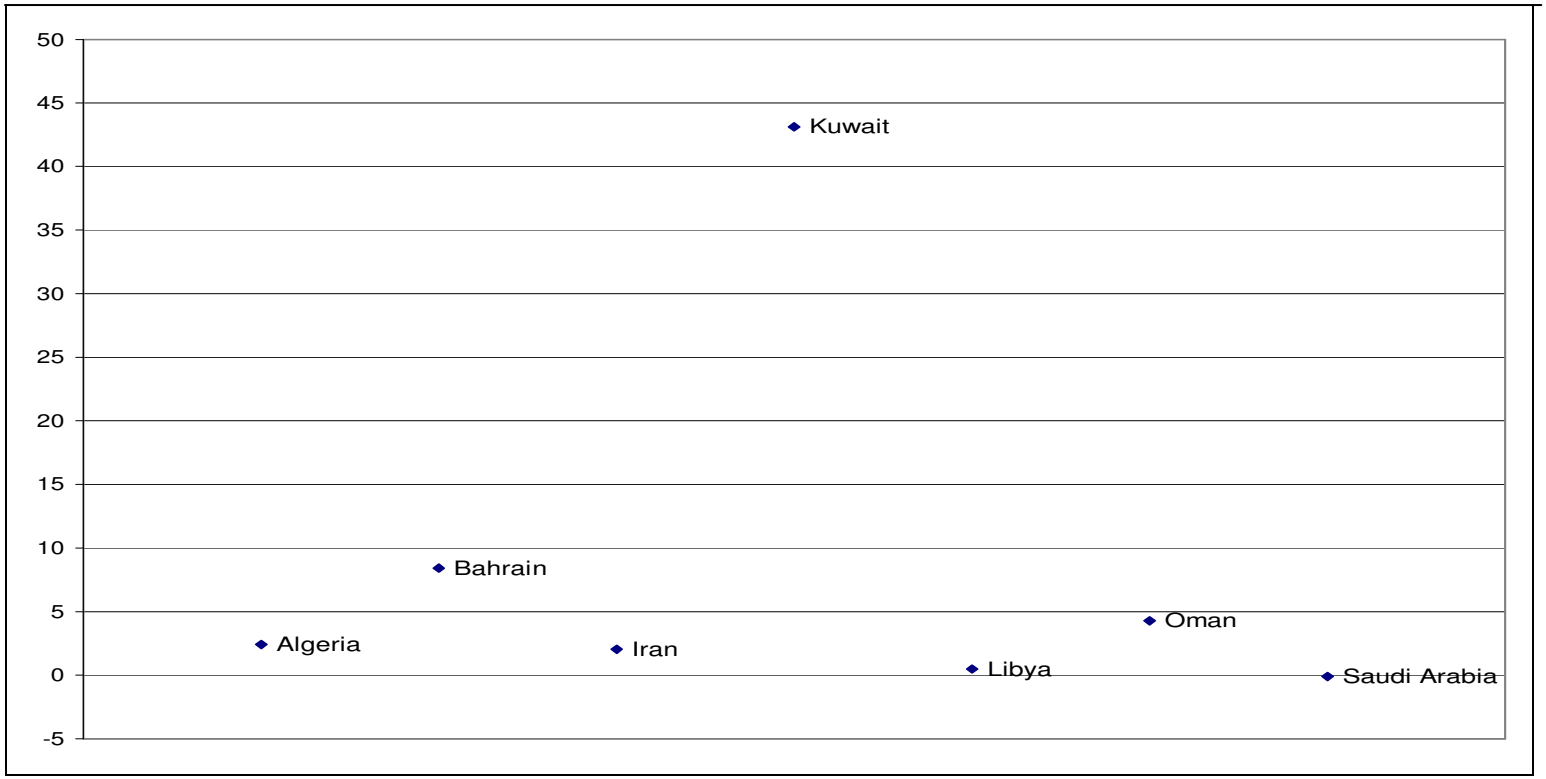


**Figure 5: Export and Import Misinvoicing for Resource-Based Countries in Millions of 1995 USD (1980–2002)**

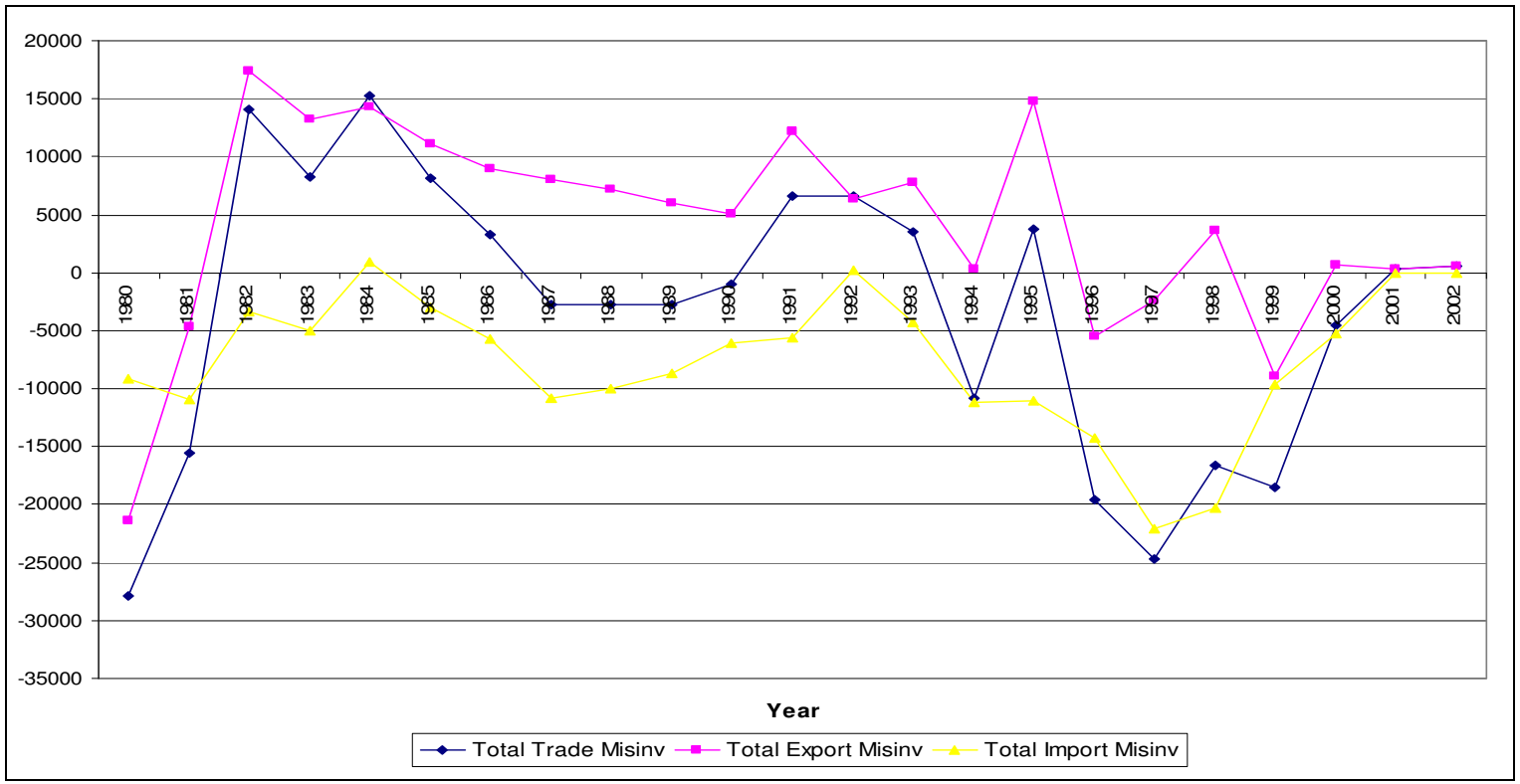
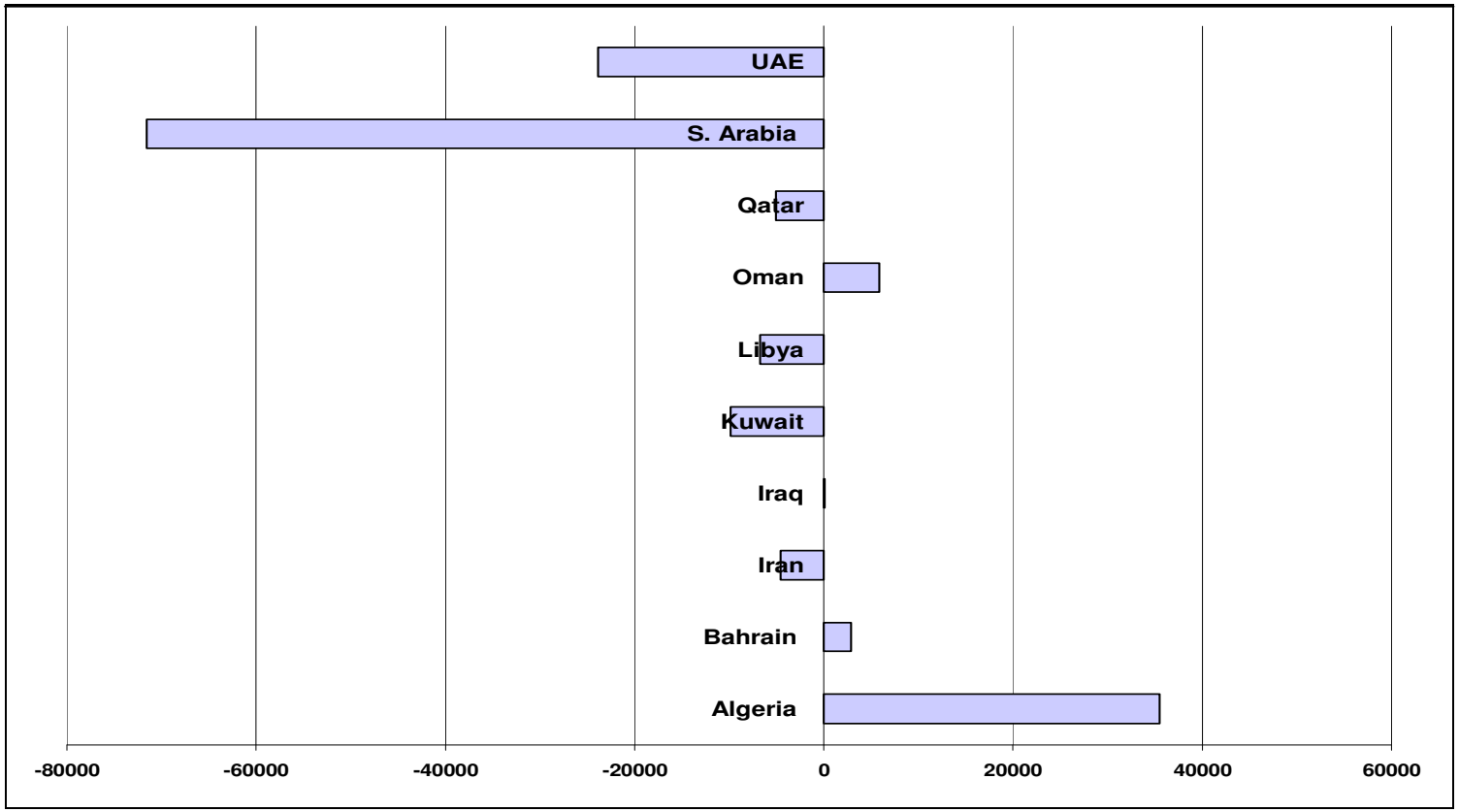


**Figure 6: Total Trade Misinvoicing for Individual Resource-based Countries in Millions of 1995 USD (1980–2002)**



first oil shock, around a 55 percent increase in capital flight from Algeria, more than a 48 percent increase in capital flight from Bahrain, more than a 90 percent increase in capital flight from Kuwait, more than a 653 percent increase in capital flight from Oman, about a 31 percent increase in capital flight from Libya, and about a 865 percent increase in capital flight from Iran in 1979,[9] the aftermath of the Iranian Revolution and the second oil shock.[10]

The link between capital flight and crude oil exports is further evident in the sharp decline of capital flight figures for the resource-based industrialization states in 1986–87 accompanying the fall of oil prices in the same year. The decrease in capital flight in those economies from its value in 1981, prior to the declining trend in prices of oil, to its value in 1987, where oil prices approached their values prior to 1973, was -$2.09 billion in Algeria, -$7.8 billion in Kuwait, -$54.4 billion in Saudi Arabia. However, there was a $0.6 billion increase in Iran, a $270 million increase in capital flight from Bahrain and a $3.5 billion increase in the case of Oman.[11]

On the other hand, the nonresource-based economies appear to have experienced "reverse" capital flight of $215 billion, reflected mainly in large negative trade misinvoicing (see Table B7 and Figures 7, 8 and 9 below). These economies have witnessed unrecorded foreign exchange inflows throughout the period of estimation (except the year 2000). In the year 2000, Egypt with $3 billion and Syria with $2.1 billion in capital flight brought average capital flight in non-oil states to about $2 billion. The trend of capital flight in these states declines more drastically than in the case of the resource-based states, as shown in Figure 7 below.

---

[9] One exception in the case of resource-based industrialization economies is that of Libya, which registered small negative capital flight. This could be explained by the political and economic ideologies of the country. Libya is ruled by a military government, which distinguishes that country from other states within the model, which are characterized by monarchical systems. In addition, while the other economies within the model are characterized by their capitalist and integrative orientation, Libya shares the influence of socialist ideals. This feature, however, coupled with the United Nations' sanctions on Libya for supporting "terrorism," which limited if not constrained Libya's ability to export crude oil, may explain the deviation of Libya's figure of capital flight from most countries adopting the same development strategy.

[10] Note that the second oil shock resulted from the Iranian Revolution. Both the Iranian Revolution and the rise in crude oil prices contributed to the sharp rise in capital flight from Iran.

[11] Note that capital flight was negative in Iran both in 1981 and 1987. However, 1987 was $0.6 billion larger than 1981. In the latter year, capital flight in Iran was seriously disrupted by the Iraqi invasion of the country in 1980, but picked up again in the second year following the invasion. A plausible explanation of the "reverse" capital flight from Iran in 1981 is the need for increased military spending and purchases of USSR-made artillery, thereby decreasing the surplus of recorded and unrecorded capital inflows and therefore capital flight.

However, as shown in Figure 8, unrecorded capital inflows in these economies, on average, may have been less sensitive to economic and political shocks than capital flight in the resource-rich states. More specifically, capital flight relative to GDP fluctuated between 0 and –22 percent as compared to fluctuations between 70 and –35 percent for the resource-based countries. The resource-poor states are less integrated into the world economy, and they adopt a state-dominated approach to economic development. This feature probably mitigates the effect of political and economic shocks on capital flight in the countries under this category. In addition, according to Karam (2002), the countries have higher indices of capital controls on outflows than the economies following resource-based industrialization, which may help explain both the net inflows of foreign exchange and the limited sensitivity to economic shocks.

Contrary to resource-based economies, the resource-poor countries have experienced negative trade misinvoicing throughout the period of analysis (see Table B7 and Figures 10 and 11 below). As emphasized earlier, the output of these states is dominated by agriculture, manufacturing and services, and the states impose relatively high rates of taxation on international trade activities in those economies.[12] This case of large negative misinvoicing characterizing these economies is not a unique one. Boyce and Nkidumana (2000) identify several factors contributing to such phenomenon, namely, tax evasion and smuggling activities. Those states are characterized by high trade barriers and restrictions, and agents in the international market try to maximize their gains by avoiding import duties. In particular, the negative trade misinvoicing is largely driven by import under-invoicing, as shown in Figure 10 below. Data from the World Bank's World Development Indicators show that the resource-poor economies have, on average, considerably higher import duties revenues as a percentage of total government tax revenues compared to resource-based industrialization states. Although export misinvoicing is positive throughout the period, import misinvoicing is negatively twice as large, thus making total trade misinvoicing negative throughout the period of analysis for these economies.

[12] Note the relevance of this argument to the import misinvoicing estimates in Table B7. Nonresource-based economies employ, on average, considerably higher import duties than resource-based industrialization economies. Thus, the high negative magnitude of import misinvoicing is related to the implementation of high international trade duties in those economies.

**Figure 7: Total Capital Flight from Nonresource-based Countries in Millions of 1995 USD (1972–2002)**

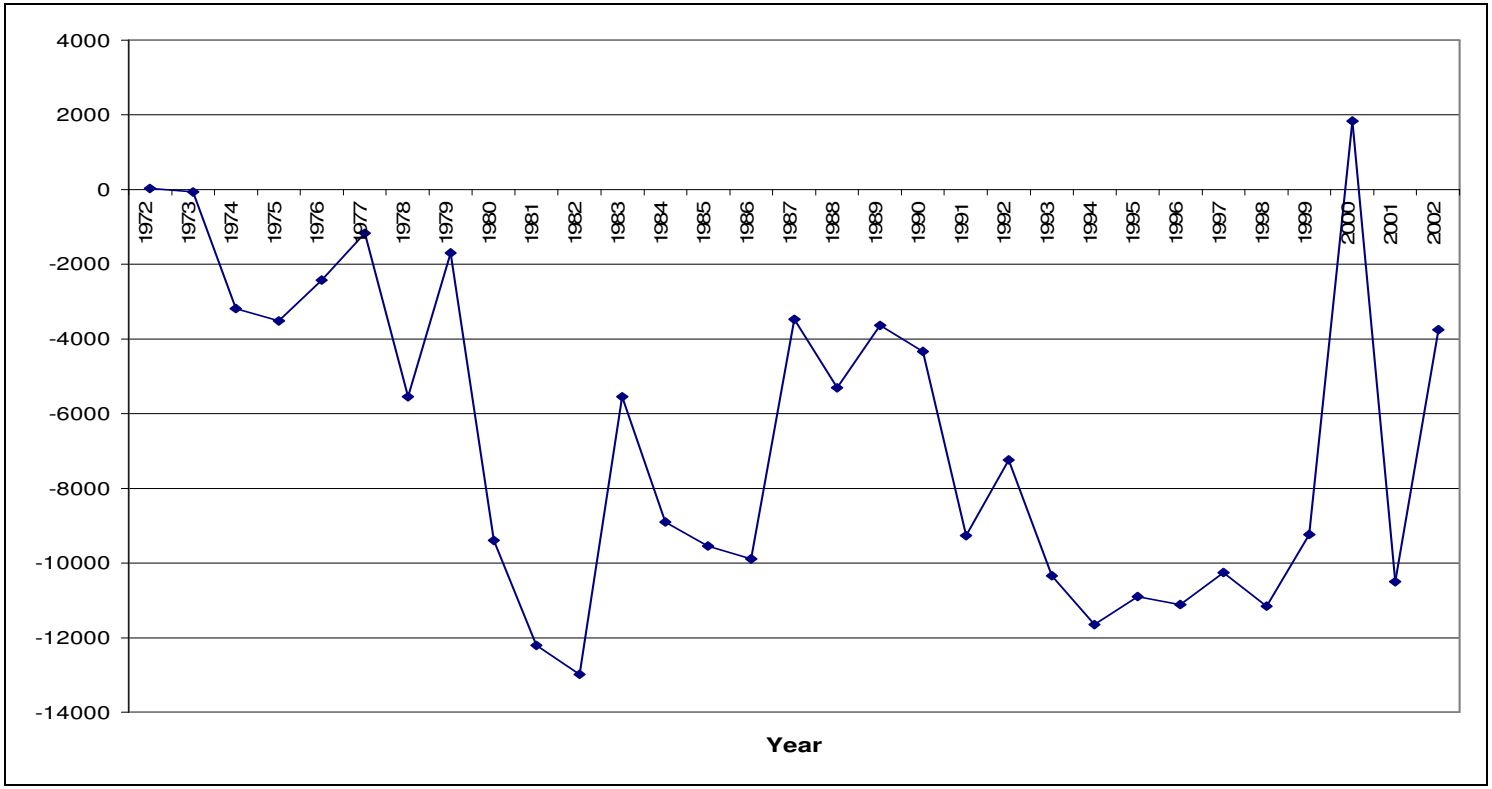


**Figure 8: Average Capital Flight (%) GDP for Nonresource-based Countries (1972–2001)**

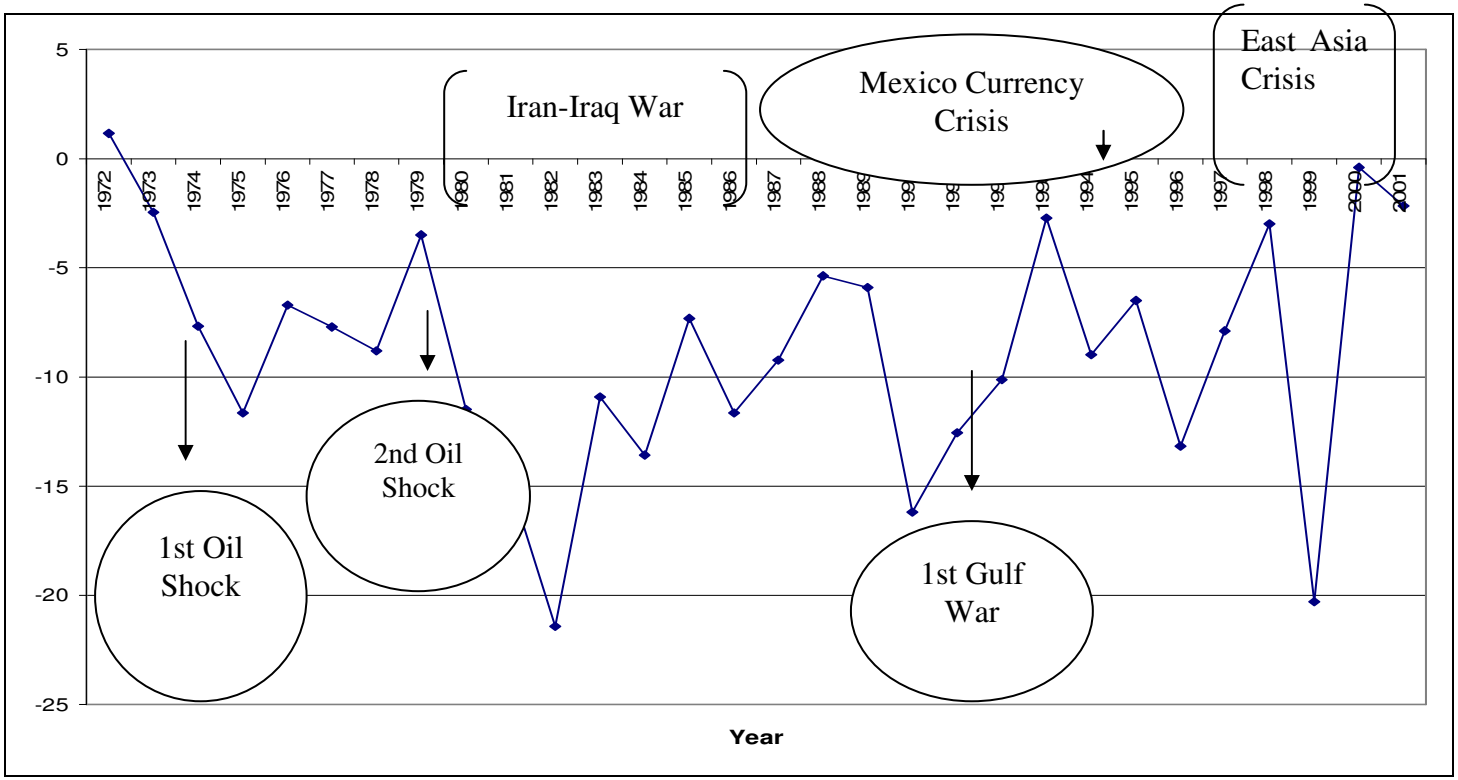


**Figure 9: Total Capital Flight for Individual Nonresource-based Countries in Millions of 1995 USD (1972–2001)**

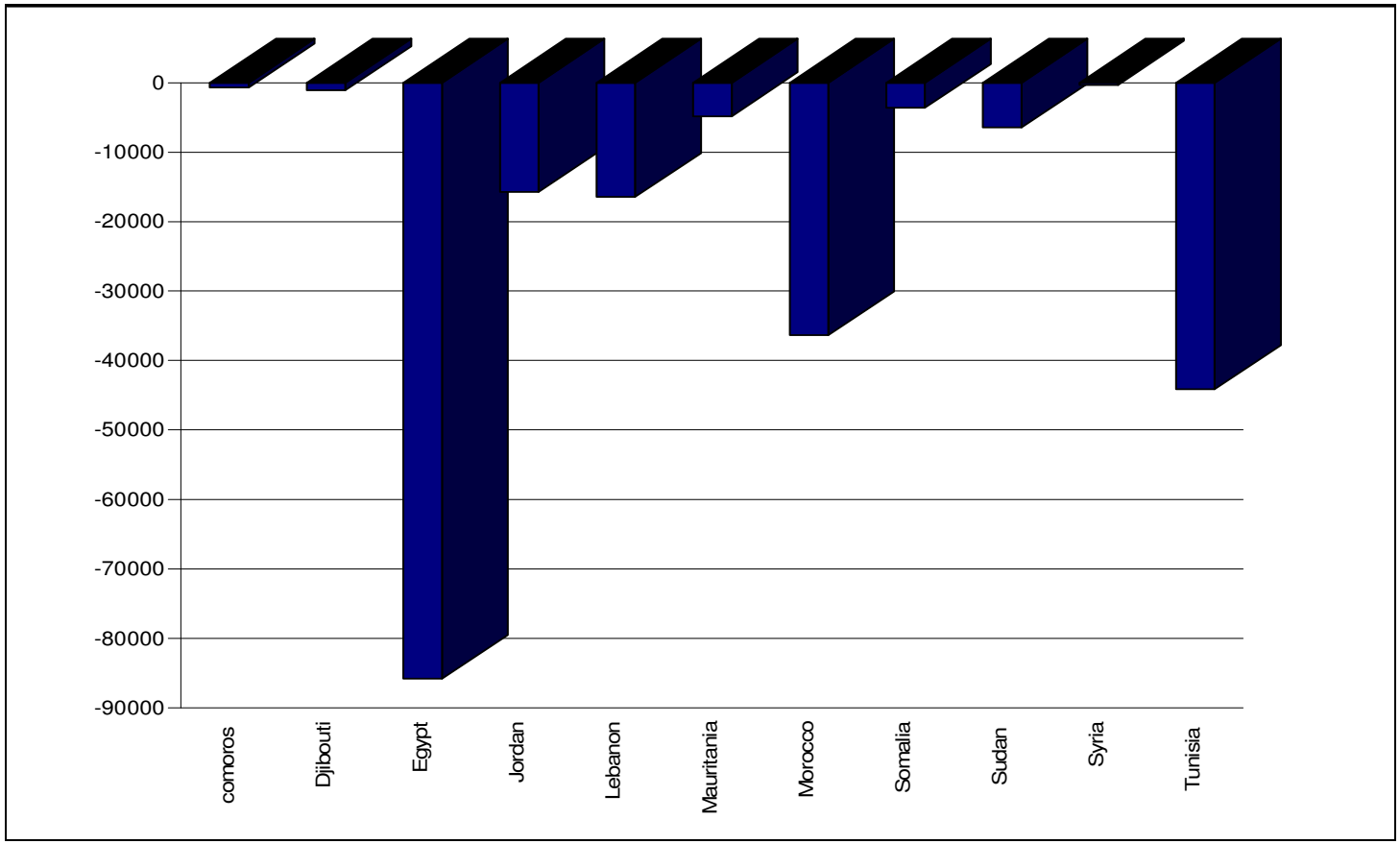


**Figure 10: Export and Import Misinvoicing For Nonresource-based Countries in Millions of 1995 USD (1980–2002)**

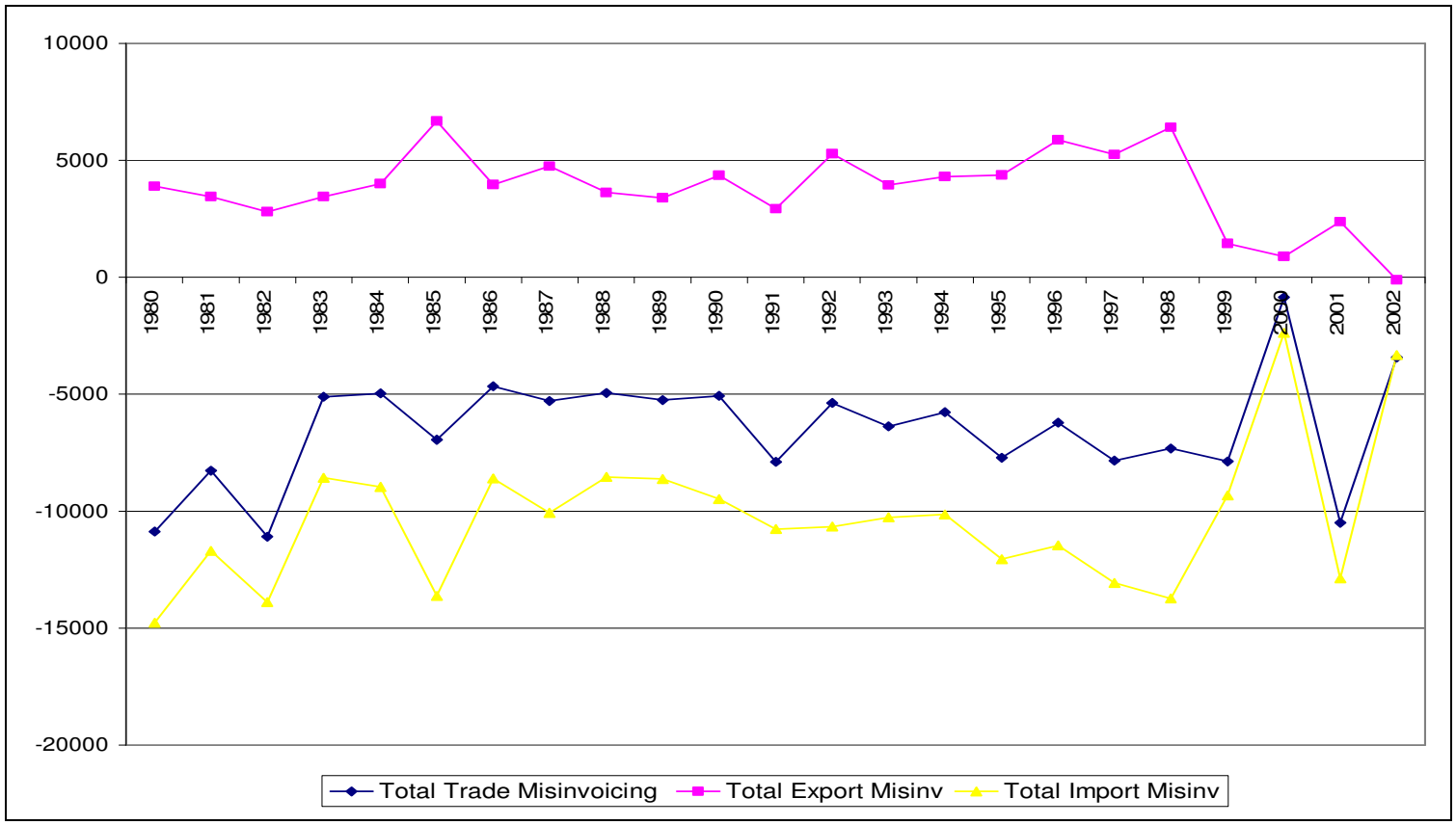
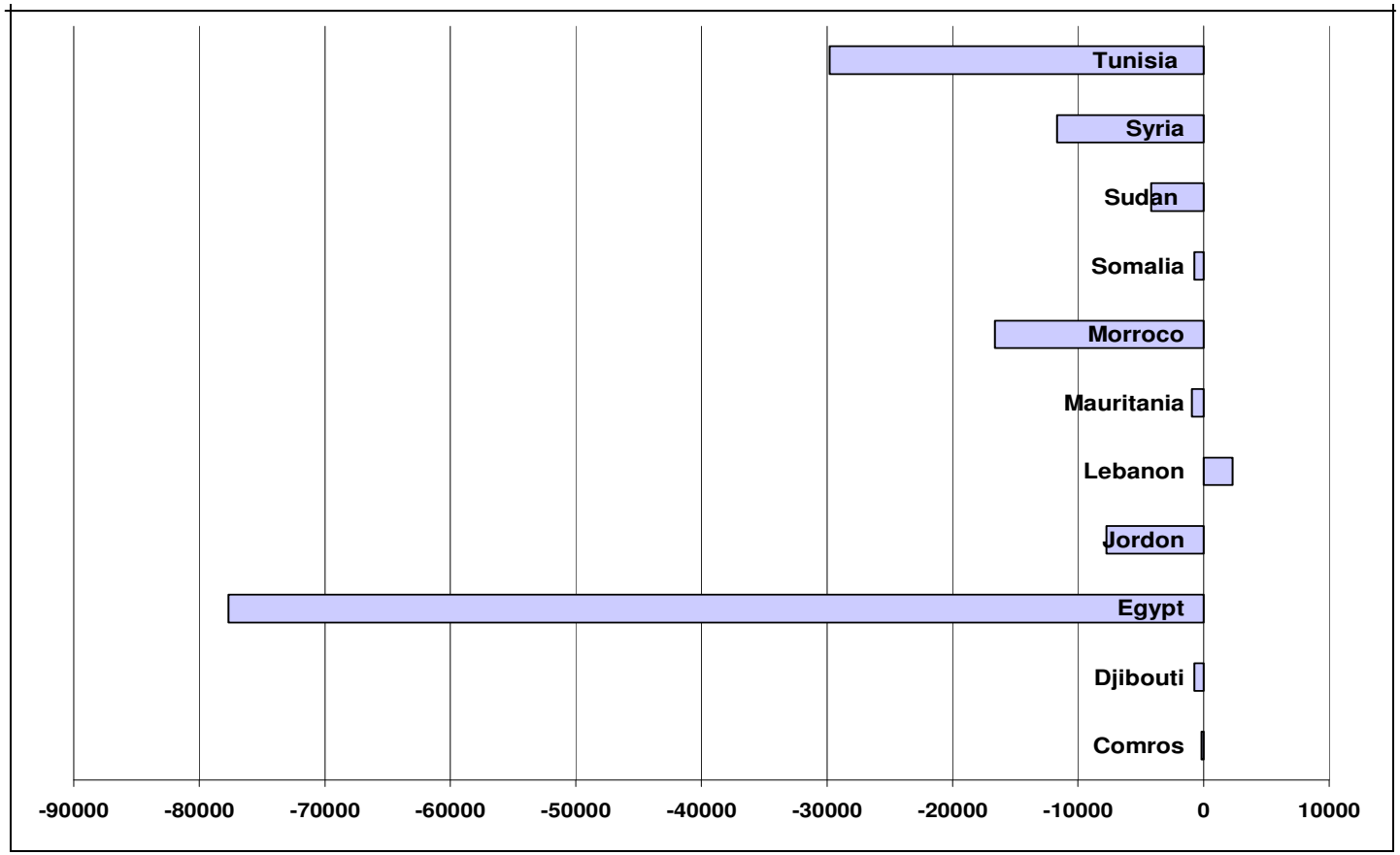


**Figure 11: Total Trade Misinvoicing for Individual Nonresource-based Countries in Millions of 1995 USD (1980–2002)**



Coupled with poor institutional quality and effectiveness, the reliance on international trade taxation adopted by the nonresource-based states have paved the way for domestic importers to undermine government revenues through tax evasion and smuggling activities in order to maximize their gains. Import duties as a percentage of total government tax revenues are substantially reduced by those agents underreporting their import transactions.

# 3 Empirical Analysis of Capital Flight

The empirical literature on capital flight has intensified since the 1980s following the Latin American debt crisis. Since then, there has been a substantial number of empirical studies on capital flight from different countries. Whether capital flight is a cause or a consequence (or both) of a poor macroeconomic environment is worth investigating. In particular, studying the causes and impact of capital flight in the MENA region can shed some light on some of the factors that contribute to underdevelopment, low economic growth and poor standards of living. In addition, studying the impact of capital flight on the economies of the MENA region, especially resource-based states that have a large stock of capital held abroad in foreign exchange, can help explain some of the unequal distribution of income and wealth and the erosion of social welfare programs and social safety nets in those economies.

This part of the paper focuses on the determinants of capital flight and briefly explores its welfare implications in the resource-based and resource-poor MENA countries from 1970–2002 in direct relation to their underlying structural and institutional characteristics. The following provides a literature review on the determinants of capital flight, the empirical methodology of understanding the behavior of capital flight, and its growth impact followed by the empirical findings, conclusion and policy implications.

## 3.1 Literature Review

On the reversal of the direction of capital movement predicted by conventional economic theory, Boyce and Ndikumana (2002) point out that if investment is riskier in developing countries, the net risk-adjusted returns may be lower, and this, according to them, could explain why capital flight flows in the opposite direction. Some authors such as Razin and Radka (1991), Dooley and Kletzer (1994) and Bjerksund and Schjelderun (1995) focus on government differential tax treatment between local and foreign capital. Yet, others pay more attention to macroeconomic instability (such as high budget deficits, volatile inflation and exchange rates, and large current account deficits) and political instability (such

as revolutions, social unrest, strikes and coups) in some developing countries as determinants of capital flight (see Hermes, Lensink and Murinde, 2002).

FitzGerald and Cobham (2000) and Boyce and Ndikuman (2002) add corruption in developing countries by some elites and dictators who accumulate private wealth fueled by their respective government borrowing from abroad. (Boyce, 1992, calls this debt-fueled capital flight.) Others point out the global integration of capital markets having increased the ease by which nationals can move their assets abroad (see FitzGerald and Cobham, 2000). In addition, factors such as financial repression, weak institutions, ineffectiveness of macroeconomic policies, business cycles, overvaluation of exchange rates and a poor investment climate have been cited as contributing to capital flight from developing countries (Boyce and Ndikumana, 2002; Hermes, Lensink and Murinde, 2002; Schneider, 2003).

Pastor (1990, 15) asserts that a poor investment climate is not a major cause of capital flight "if the investment climate in a country is unfavorable enough to push out local capital, why would savvy international bankers invest their own funds in the form of loans." Instead, he attributes capital flight to discriminatory treatment of local and foreign investors in Latin America, enhanced access to foreign credit by local elites and to what he calls "loan pushing" by debtor countries and international organizations. For a summary of the main findings of selected studies on the determinants of capital flight, see Hermes, Lensink and Murinde (2002) and Boyce and Ndikumana (2002).

The rest of this paper studies the determinants of capital flight in the resource-based countries and the determinants of unrecorded foreign exchange inflows in the resource-poor countries of the MENA region, on the one hand, and their welfare implications, on the other. Given the distinct characteristics between resource- and nonresource-based economies and the different volumes and natures of unrecorded foreign exchange flows between the two groups, I estimate separate regressions for each category. Before going into the details, we need to present the data and methodology of estimation.

## 3.2 Data

The data and sources used in our empirical investigation are described in Table B14 in Appendix B. The independent variables are classified into five categories: macroeconomic environment, fiscal policy, capital inflows, financial development and political and institutional variables. The dependent variable is capital flight relative to GDP where the capital flight estimates are obtained from Tables B3 and B4.

## 3.3 Empirical Methodology

As Boyce and Ndikumana (2002) point out, the existing economic theory does not offer a clear-cut way of determining a priori which independent variables should be included in the empirical model of the determination of capital flight. Thus, I follow a stepwise approach of adding relevant explanatory variables one at a time and retaining only those that are statistically significant.

As highlighted earlier, I estimate two separate panels for the resource- and nonresource-based countries, respectively. In both regressions, I used the Hausman specification test to choose between fixed and random effects, and I rejected the null hypothesis that the coefficients estimated by the efficient random effects estimators are the same as the ones estimated by the consistent fixed effects estimators, indicating that I should use the fixed effects regression. The fixed effects estimators control for omitted variables that vary between cases, but are constant over time. One of the main advantages of using fixed effects, among other things, is that it takes care of omitted variable bias.

Each of the two fixed effects models is specified in the following way:

$$KF_{it} = (\alpha + \psi_{it}) + \beta X_{it} + \varepsilon_{it} \qquad (1)$$

Where for a country $i$ at time $t$, $KF$ is capital flight relative to GDP (obtained from Tables B3 and B4), $\psi_{it}$ represents individual or country fixed effects to capture unobservable individual country characteristics, $X$ is a vector of time-varying independent variables and $\varepsilon$ is the error term. The results of the estimation are provided in Table B8 for resource-based states and Table B9 for nonresource-based states. In columns 1 through 24 in Table B8 and columns 1 though 18 in Table B9, I regress capital flight on independent variables used previously in the literature on capital flight as well as on relevant variables to the respective characteristics of the countries of the MENA region. In so doing, I only retain the significant variables for the benchmark regressions for the resource-rich states (column 24 in Table B8) and nonresource-based states (column 18 in Table B9).

However, when testing the benchmark regression for the resource-based states for heteroskedasticity using the Breusch-Pagan/Cook-Weisberg test, I find that the variance is not homoskedastic (with a high Chi-squared value of 107.28 and a low probability of 0.000). Although this does not lead to biased estimates, it can make inferences and hypothesis testing misleading. Thus, I correct for this problem in the same regression by using heteroskedasticity-consistent standard errors and covariances (note that the coefficients do not change, only the P-values change in the regression). I also tested the model for multicollinearity using the Variance Inflation Factor (VIF), and the results indicate no presence of

multicollinearity between the independent variables (average VIF score is 4.06). To test for autocorrelation, I used the Durbin-Watson test, and the score is 1.64, indicating no presence of autocorrelation between the error terms. This test rules out any possible distortions in the regression that could arise if there exist some unit roots in any of the data series. Finally, I tested the normality of the residuals, the possibility of outliers in the regression and the goodness of fit (see Appendix C, Figures C1, C2 and C5) and found that the residuals are normally distributed, and there is no presence of significant outliers driving the results in one direction or another. Figure C5 shows the goodness of fit of the benchmark model and the normality of the residuals. Based on this regression, I also run a dynamic model by incorporating the effects of past capital flight on present capital flight (Table B10). This model also passes the autocorrelation test with a probability of 0.46 of the Breusch-Godfrey serial correlation LM test.

Having preferred fixed effects over random effects (following from the Hausman specification test), in Table B9 regression 18 where there is the largest number of significant independent variables, I then test for heteroskedasticity using Breusch-Pagan/Cook–Weisberg test and find that the variance is heteroskedestic. I correct for this problem in the same regression by using heteroskedasticity-consistent standard errors and covariances (the coefficients remain the same, only the P-values and standard errors are now more accurate).

However, the model fails the multicollinearity test (average VIF = 11.3). Running a correlation matrix, I find that the variables Tx_trade (taxes on international trade relative to current revenues) and M_duties (import duties relative to total tax revenues) are highly correlated (0.90). Although the presence of multicollinearity leaves the estimates "BLUE," it can lead to large standard errors as multicollinearity between the regressors increases.[13] Thus, I drop the variable Tx_trade and run the same regression again. The new model shows no presence of multicollinearity (VIF <10), but still suffer from heteroskedasticity, which I correct for in the same regression (regression 18 in Table B9). I then test the benchmark regression for autocorrelation using the Durbin-Watson test. The score for this test is 2.11, which implies no presence of autocorrelation. This test rules out any possible distortions in the regression that could arise if there exist some unit roots in any of the data series. Finally, I test for the normality of the residuals and the possibility of existing outliers in the fitted values in Figures C3, C4 and C6, respectively, and find that the residuals are normally distributed, and there is no presence of significant outliers. Figure C6 shows the goodness of fit for the benchmark regression and the normality of the residuals. Based on this regression, I also run a dynamic model by incorporating the effects of past capital

[13] This refers to Best Linear Unbiased Estimators.

flight on present capital flight (Table B10). This model also passes the autocorrelation test with a probability of 0.31 of the Breusch-Godfrey serial correlation LM test.

Finally, I estimate two separate economic growth equations to explore the welfare implications of capital flight in the resource-rich countries and welfare implications of net unrecorded foreign exchange inflows in the resource-poor countries. For both regressions, I follow traditional growth models in regressing economic growth on some fundamentals and widely acceptable institutional determinants. However, I include capital flight as a percentage of GDP to the growth equation to assess whether it significantly affects economic growth when controlling for conventional variables. In each model, I follow the Hausman specification procedure to choose between fixed and random effects. For the resource-based economies, the test score indicate that random effects are preferred to fixed effects, contrary to the case of nonresource-based countries where fixed effects were preferred by the Hausman test. However, I report both random and fixed effects for each category to check for robustness to an alternative modeling technique.

The random effects (GLS) model is specified as follows:

$$Growth_{it} = \alpha + \beta X_{it} + (\varepsilon_{it} + e_{it}) \quad (2)$$

where $e_{it}$, the only new term, refers to the random effects component. The fixed effects model is specified the same way as equation (1):

$$Growth_{it} = (\alpha + \psi_{it}) + \beta X_{it} + \varepsilon_{it} \quad (3)$$

These benchmark models pass the same diagnostic tests provided earlier on the determinants of capital flight. The models use heteroskedasticity-consistent standard errors and covariances. They also pass the multicollinearity tests with average VIF scores of 7.05 and 10.42 for the resource- and nonresource-based countries, respectively. Testing for autocorrelation, the Durbin-Watson score is 2.21 for the random effects model and 2.30 for the fixed effects model. Finally, they pass the normality of the residuals test provided in Figures C7, C8, C9 and C10. In Figures C9 and C10, I report the goodness of fit for each of these benchmark regressions. The following section discusses the results of our empirical analysis. However, since this research focuses on capital flight not economic growth per se, I only focus on the coefficients of capital flight in the growth equations in the resource- and nonresource-based economies of MENA to explore the related welfare implications resulting from the issue at hand.

### 3.4 Empirical Results

A combination of four variables remain significant when used simultaneously in the case of the resource-based states (Table B8, column 24) and four variables for nonresource-based states (Table B9, column 18). In the benchmark regression for resource-based states (Table B8, regression 24), it is shown that capital flight is mainly driven by the current account balance (%) GDP, the level of GDP per capita, the growth rate of real GDP in 1995 USD and the extent of political rights in these states.

The positive effect of the current account balance in oil states stems primarily from the effect of oil export revenues since most of the foreign exchange earnings in resource-based states are generated by exporting natural resources (an average of 79 percent of total exports come from oil exports). However, some researchers express concerns about including the current account as an independent variable when it is actually used to calculate residual capital flight. I dropped the current account variable to see what the effect was on the regression. I found that all the other variables remain with the same effects, but the explanatory power of the model (R-squared) and the joint significance test drop dramatically. I therefore keep the current account in the model. The second significant variable is the level of GDP per capita, which has a positive effect. This mainly suggests that the larger the size of a MENA oil country, the larger the amount of capital flight relative to GDP, and this is probably associated with the presence of large industrial sectors dominated by the production and exportation of crude oil and its derivates to the international market. The growth rate of GDP in 1995 USD is negatively related to capital flight in oil states. This effect implies that low growth rates of overall economic activity induce capital flight and could be linked to the lack of investment opportunities in these states. Interestingly, political rights is the only noneconomic variable that is statistically significant and negatively affects capital flight in the resource-rich states of the MENA region (the political rights variable is measured on a one to seven scale such that a score of one represents the highest degree of freedom and seven the lowest). This implies that lower political rights may mean stronger monarchies, thus more privilege to certain elites to undertake capital flight.

The benchmark regression for nonresource-based states (Table B9, regression 18) shows that unrecorded foreign exchange inflows relative to GDP is significantly driven by the level of GDP per capita, the current account balance relative to GDP, and duties on imported goods relative to total tax revenues. The only variable that positively affects capital flight is the current account balance relative to GDP. I also experimented by dropping the current account variable in this regression and found that other factors still have the same effects, but the model's explanatory power (R-squared) and the joint significance test become

smaller. I therefore retain the current account variable. Since the resource-poor countries have large amounts of external debts, I experimented including change in external debt adjusted for exchange rate fluctuations relative to GDP as an independent variable. Interestingly, positive changes in external debt lead to increases in unrecorded foreign exchange inflows in the resource-poor countries. It also improves the explanatory power of the model and the coefficients joint significance test. However, adding change in external debt makes the model suffer from multicollinearity. I therefore take this variable out of the benchmark regression. Moreover, since these economies rely heavily on workers remittances, I tried to incorporate workers' remittances in the regression, but the coefficient was insignificant and thus left out of the model. However, there is a possibility that unrecorded remittances may account for a significant part of the unrecorded foreign exchange inflows. A study by International Labor Organization (ILO) (1999) highlights large unrecorded remittances in some Arab countries, mainly Egypt and Sudan. Since there is no available time series data on unrecorded remittances in the resource-poor states, I could not account for them in the benchmark regression.

In the benchmark model, as opposed to the case of resource-based states, GDP per capita negatively affects capital flight in nonresource-based states. This implies that the larger the market size or level of development in these states, the less capital flight or the more unrecorded inflows (and more tax evasion and smuggling activities). This could also mean that a larger market size is associated with a better investment climate, thus providing a disincentive to those undertaking capital flight to move their assets abroad, and instead providing an incentive to engage in illegal trade transactions to maximize their gains. Import duties relative to total tax revenues have a negative impact on capital flight (or induces unrecorded foreign exchange inflows). This suggests that agents in the international market engage in the smuggling of goods and tax evasion activities in nonresource-based states, and this is supported by the large negative import misinvoicing presented in Table B7. Thus, the unrecorded foreign exchange inflows in nonresource-based states mostly respond to government taxation on imported goods.

Finally, when introducing lagged capital flight as an independent variable in both resource- and nonresource-based states, the results are consistent with the previous models, but add the significance of lagged capital fight as an independent variable. This implies that agents undertaking capital flight in the resource-based states build on their ability to move capital abroad in lagged periods, and agents in nonresource-based states build on their ability to evade taxes and smuggle goods in lagged periods. However, the growth rate of GDP becomes insignificant in resource-based states, and imports relative to GDP becomes significant for nonresource-based states. In addition, the explanatory

power of these dynamic models is the same as those of the static models in both regressions. Thus, I rely on the static models for the main conclusion and implications for development.

The welfare implications regressions for the resource-based states show that capital flight, when controlling for conventional factors, negatively affects economic growth, even under different specifications and modeling techniques. This may imply that capital flight reduces foreign exchange that is needed to import capital goods necessary for industrialization. In addition, the drain of capital weakens the government's ability to invest in public investment projects that provide domestic employment opportunities and therefore stimulate economic growth. For the resource-poor economies, our empirical analysis reveals a positive but insignificant effect of unrecorded foreign exchange inflows on economic growth, even under an alternative specification and modeling technique.

# 4 Research Conclusion and Policy Implications

This research discusses the first estimates of capital flight in the MENA countries from 1970 to 2002. In addition, it explains the nature, volume, determinants and growth impact of capital flight in the resource-based and the resource-poor economies of the MENA region on the basis of their respective structural and institutional characteristics. Quite evidently, the resource-based economies rely heavily on the industrial sector's production and export of natural resources, mostly crude oil. In addition, they have adopted a relatively outward-oriented stance and relatively more freedom of capital movement policies compared to the nonresource-based economies of the region. Moreover, most of their political systems are monarchial in character with extremely limited public participation.

In contrast, the nonresource-dependent economies of the MENA region rely on agricultural and manufacturing production and exports as well as on the service sector. They also have adopted more inward-looking policies, such as higher trade taxes and relatively more restrictions on capital movement than the resource-dependent economies. Interestingly, these countries have relatively more political freedom and public participation, and they have made significant progressive political reforms. All these distinct institutional (both economic and political) and structural characteristics of the resource-rich and the resource-poor economies of the region provide a unifying framework through which understanding the volume, nature, behavior and impact of capital flight in the region becomes easier.

Indeed, our findings suggest that capital flight follows a systematic pattern depending on whether a MENA country is resource-based or not. The resource-based economies are indeed net creditors to the world economy as they have

experienced more than 273 billion of 1995 USD in capital flight (average of 9.42 percent of GDP). Capital flight in these economies is fueled mainly by the proceeds of oil exports in foreign exchange, the single most important source of capital inflows in these countries. As shown in Figures 1 and 2, the largest amounts of capital flight were indeed during the times when these countries enjoyed unprecedented amounts of crude oil exports in foreign exchange. In particular, the decade of the 1970s and into the early 1980s accounts for most capital outflows from the resource-based economies of the MENA region. Interestingly, the higher the market size and level of development, the higher the capital flight in these economies. However, lower rates of economic growth seem to lead to pessimism on the part of the capital flight agents, thus inducing them to transfer fortunes abroad for better investment opportunities.

Most interestingly, lower political rights increase capital flight in these countries. Since these countries are predominantly monarchies in nature, this implies that a decrease in political rights may essentially reflect stronger government control (represented by certain elites) and citizenry suppression, thus more privilege for those elites to undertake capital flight. In this case, capital flight is not a response to but rather an outcome of increasing control of domestic authorities. It is hard, if not impossible, to pinpoint the agents involved in such activities. However, the monarchial character of the political systems in these countries with limited accountability, along with the relatively more freedom of capital mobility, did help facilitate the occurrence and frequency of capital flight in these economies. In studying the welfare implications of capital flight in the resource-based countries, we find that capital flight negatively affects economic growth. This result is consistent and robust to alternative specifications and modeling techniques. The implication here is that more capital flight reduces potential investment and employment potential, thus adversely impacting economic growth.

The estimates of capital flight in the nonresource-based economies indicate a net inflow of unrecorded foreign exchange of 215 billion in 1995 USD (average of 9.38 percent of GDP). However, it is shown in Table B7 that more than 150 billion in 1995 USD of unrecorded foreign exchange inflows is reflected in trade misinvoicing, mainly import under-invoicing. This suggests that importers engage in illegal trade transactions outside the purview of their respective governments to maximize their gains. Import under-invoicing signals smuggling of goods across borders and tax evasion activities to avoid high duties and regulations on imported goods. Opposite to the case of the resource-based economies, “reverse” capital flight in the resource-poor economies responds negatively to higher levels of development or market sizes (higher levels of development bring in unrecorded foreign exchange inflows). In addition, higher levels of import duties induce unrecorded foreign exchange inflows (or lead to

"reverse" capital flight). Since reverse capital flight in these economies is mainly reflected in tax evasion and smuggling of goods across borders, this suggests that more unrecorded inflows take place in response to protectionist trade policies, such as higher taxes on imports. In this case, increasing domestic authorities' control (through restrictions on international trade activities) induces unrecorded inflows of foreign exchange into these countries, contrary to the effect of increasing government control in the resource-based economies on the direction of capital flight. Moreover, the current account balance has a positive and similar effect to that of the resource-based countries. However, since these countries have "reverse" capital flight, this means that a higher current account balance reduces these amounts of unrecorded foreign exchange inflows. Intuitively, a higher current account balance here may be caused by lower amounts of imports (as a result of import duties) and therefore less smuggling and tax evasion activities, which in turn implies less unrecorded foreign exchange inflows. Finally, in examining the welfare impact of unrecorded inflows, we find no significant effect of the unrecorded foreign exchange inflows on economic growth in the resource-poor countries of MENA even when using different specifications and modeling techniques.

The results of this work have various implications for development in the MENA region. Clearly, the development strategy of dependence on the industrial sector led by the production and exportation of crude oil and its derivatives has its drawbacks. Aside from the depletion of the natural resources and thus possible deindustrialization, it seems that this strategy has put the public wealth generated from exporting natural resources in the hands of certain political and business elites who exploited it in their favor. Perhaps, this provided a disincentive for them to adopt strategies that were more favorable to the public as they continued to accumulate private wealth outside of their countries. However, most of these economies are shifting away from natural resource dependence to diversify their economies and allow for more public, democratic participation in decision-making. Although, this has not moved far enough, it is moving in the right direction.

Moreover, most of the resource-based economies have liberalized trade further, lifted some restrictions on their capital accounts, and have joined the World Trade Organization (such as Bahrain, Saudi Arabia, Kuwait and Oman). This shift may have weakened the ability of certain elites to accumulate private wealth from natural resource rents, but it may also have opened many other avenues for the wealthy elites to exploit public wealth including stock market manipulation and predatory lending. The resource-based states need to undertake appropriate measures to control capital flight and pave the way for capital flight reversal. Such reversal of capital would help finance industrialization and public development projects that create employment opportunities and enhance

productive capacity. As suggested by the empirical analysis, although reduced forms may not be sufficient, these countries can reduce capital flight by facilitating domestic investment opportunities that would stimulate economic growth and provide an incentive for capital to remain within. Moreover, more public political participation and political rights would reduce capital flight as democratic institutions and public provision help narrow the avenues available to certain elites to undertake capital flight. Finally, economic diversification away from the reliance on the industrial sector and oil exports would help reduce capital flight in two ways. First, it would put less foreign exchange from oil exports in the hands of the agents of capital flight. Second, developing other industries increases domestic investment opportunities and stimulates economic growth, thus reducing the likelihood of future capital flight. For most of these oil rich states, a "golden age" would have been possible if those funds were directed to internal development programs. Indeed a full reversal of capital flight has great potential, when coupled with prudent policies to control future flight of capital, in creating employment opportunities, stimulating domestic demand and in breaking the vicious cycle of underdevelopment and low economic growth.

The massive inflows of unrecorded capital since the 1970s ($214 billion of 1995 USD) in the nonresource states of the MENA region raise some concerns for these states, and they need to focus efforts to unveil the sources of such unrecorded foreign exchange inflows. In addition, tax evasion through import under-invoicing erodes the domestic tax base, adversely affects government redistributive programs, contributes to inequality and poverty and endangers government fiscal stances. Moreover, the smuggling of goods could be associated with more costly activities such as the drug trade and money laundering. Thus, appropriate measures to monitor the massive outflows of untaxed international trade transactions and to suppress tax evasion and the smuggling of goods across borders are in fact desirable and necessary. For instance, the governments of these states could lower tariffs on imported goods and introduce a comprehensive sales taxation system to compensate for forgone tariff duties. This way, the governments can collect more revenues on the one hand and suppress tax evasion and smuggling activities on the other. Not only can this help halt these illegal transactions, but it also can help raise more income to correct social inequalities and fund public projects and redistribution programs.

# APPENDIX A

### Methodology of Estimating Capital Flight

Following Boyce and Ndikumana (2000) and according to the residual approach developed by the World Bank (1985), we define capital flight as the difference

between recorded capital inflows and recorded foreign exchange outflows. The rationale behind such characterization lies in the argument that capital inflows are either used to finance current account deficits or else accumulated in the central bank as foreign exchange reserves. Accordingly, flows that do not go to either account are regarded as capital flight, which finances private external assets. More specifically, a surplus of inflows over reported uses reflects capital flight. The residual here captures unrecorded flows and usually implies attempts to avoid rules, regulations and social control by local governments.

The starting point of estimating capital flight and thus private external assets is the *Balance of Payments Statistics* published annually by the IMF. To carry out the estimation, I use the World Bank measure adopted by Boyce and Ndikumana (2000),[14] among others, as follows:

$$KF_{it} = \Delta DEBT_{it} + NFI_{it} - (CA_{it} + \Delta RES_{it}) \quad \text{(A1)}$$

where $KF_{it}$ refers to capital flight in current USD for country $i$ in time period $t$, $\Delta DEBT$ refers to change in total external debt stock, $NFI$ refers to net inflows of foreign investment, $CA$ refers to the current account deficit (negative sign), and $\Delta RES$ refers to the changes in the accumulation of foreign exchange reserves (net additions). This equation illustrates that capital flight is the difference between total capital inflows (the change in total external debt stock plus net inflows of foreign investment) and recorded foreign exchange outflows (financing the current account deficit and accumulating foreign exchange reserves in central banks). If the difference is positive, this reflects capital flight; if it is negative, it reflects net unrecorded capital inflows.

Since the BOP external debt data are reported in USD and many MENA countries hold debt denominated in a variety of currencies, I adjust external debt for exchange rate fluctuations on the USD value of the stock of long-term debt (see Tables B1 and B2 in Appendix B for details on the composition and volume of external debt in the MENA region). In the BOP statistics, debt stock data are converted to USD using the end-of-year exchange rate. In periods of significant fluctuations in the exchange rates of the currencies in which debt is denominated,

[14] As Boyce and Ndikumana (2000) point out, researchers at the World Bank recognized that many external private assets are scrupulously concealed in the Balance of Payments (BOP) statistics. In addition, when comparing external borrowing BOP data to that in World Debt Tables, they found that BOP statistics underestimate external debt. Finally, the official data on the value of exports and imports in the BOP data are undermined by widespread trade misinvoicing, motivated among other reasons by the desire to avoid controls on transferring foreign exchange abroad or by the desire to evade import restrictions or custom duties. After correcting the BOP data, researchers recalculated net errors and omissions, thereby obtaining a "residual" measure of capital flight.

year-to-year changes in the dollar value of stock of outstanding debt can differ markedly from the actual net flows during the year under consideration. If so, then estimates of capital flight obtained from equation (A1) will be biased. Depreciation of the British Pound relative to the USD at the end of any given year compared to another, for instance, will reduce the dollar valuation of this portion of a country's debt stock and the estimates of capital flight based on this apparent change in debt stock will be correspondingly reduced. Conversely, when the currencies in which debt is denominated appreciate against the USD, capital flight estimates are inflated. Thus, I adjust for exchange rate fluctuations in long-term debt stock as follows. Since

$$\Delta DEBT_t = DEBT_t - DEBT_{t-1} \tag{A2}$$

then

$$\Delta DEBTAdj_t = DEBT_t - NEWDEBT_{t-1} \tag{A3}$$

where $\Delta$ *DEBTAdj* refers to the change in long-term external debt disbursed at the end of the year adjusted for exchange rate fluctuations and *NEWDEBT* is total long-term external debt valued at the beginning of the year. In other words, $\Delta$ *DEBTAdj* is the difference between end-of-year debt stock and beginning-of-year debt stock when both are valued at the end-of-year exchange rate.

For country *i*, the USD value of the beginning-of-year stock of debt at the new exchange rates is obtained as follows:

$$NEWDebt_{i,t-1} = \sum_{j=1}^{4}\left[\left(\lambda_{ij,\,t-1} * LTDebt_{i,\,t-1}\right)/\left(EX_{jt}/EX_{j,\,t-1}\right)\right] + IMFCR_{i,t-1}/\left(EX_{SDR,\,t}/EX_{SDR,\,t-1}\right) + LTOther_{i,t-1} + LTMult_{i,t-1} + LTUSD_{i,t-1} + STDebt_{i,t-1} \tag{A4}$$

where *LTDEBT* is the total long-term debt stock, $\lambda$ being the proportion of long-term debt held in currency *j* for each of the non-US currencies (Swiss Franc, British Pound, Japanese Yen, and Duetsche Mark). *EX* is the end-of-year exchange rate of the currency of denomination with respect to the USD; *IMFCR* is the use of IMF credit; $EX_{SDR}$ is the exchange rate of the Special Drawing Rights (SDR) with respect to the USD; *LTOther* is long-term debt denominated in other unspecified currencies (but reported in USD); *LTMult* is long-term debt denominated in multiple currencies (but reported in USD); *LTUSD* is long-term debt denominated in US dollars; and finally *STDEBTt* is short-term debt (reported

in USD).[15] I then modify the residual equation (A1) to account for exchange rate fluctuations in long-term external debt as follows:

$$KF_{it} = \Delta DEBTAdj_{it} + NFI_{it} - (CA_{it} + \Delta RES_{it}) \quad \text{(A5)}$$

However, researchers also found that the trade data in the current accounts of BOP statistics are misreported. Accordingly, if the current account deficit is overstated (i.e., import over-invoicing or export under-invoicing), the capital flight estimates will be smaller in equation A5. Conversely, if the current account deficit is understated (i.e., import under-invoicing or export over-invoicing), the capital flight estimates will be higher in equation A5. To correct for trade misinvoicing in BOP data, I compare each MENA country's export and import data to those of its trading industrial partners, using the *Direction of Trade Statistics* database. Here, I assume that data from industrialized countries trading partners are relatively more accurate, and I interpret the discrepancy between these and the data from their MENA trading partners as evidence of trade misinvoicing.

For an individual MENA country, *i*, in year, *t*, export and import discrepancies with industrial partners are computed as follows:

$$DEXP_{it} = PEXP_{it} - (1+CIF_t)*EXP_{it}) \quad \text{(A6)}$$

$$DIMP_{it} = IMP_{it} - (1+CIF_t)*PIMP_{it}) \quad \text{(A7)}$$

$$MISINV = (DEXP/ICXS) + (DIMP/ICMS) \quad \text{(A8)}$$

where *DEXP* and *DIMP* refer to export and import discrepancies; *PEXP* and *PIMP* refer to exports and imports of a MENA country recorded in industrial countries' official statistics; *EXP* and *IMP* are exports and imports of a MENA country as reported in its own statistics; *CIF* refers to the cost of freight and insurance; and *ICXS* and *ICMS* refer to the share of each MENA country's exports to industrial countries in total exports to the world and the share of each MENA country's imports from industrial countries in total imports from the world, respectively.[16] *MISINV* refers to global trade misinvoicing of each MENA country. A positive sign of *DEXP* indicates net export under-invoicing; a negative sign indicates net export over-invoicing. Similarly, a positive sign of *DIMP*

[15] The adjustment for exchange rate fluctuations excludes short-term debt, debt in other currencies and debt held in multiple currencies.

[16] I standardize the cost of freight and insurance to 10 percent of the value of exports or imports throughout our computation.

indicates net import over-invoicing; a negative sign indicates net import under-invoicing. Thus, I correct the trade data in the current accounts of each MENA country and add total trade misinvoicing to the calculation of capital flight in equation (A5) as follows:

$$KFAdj_{i\,t} = KF_{it} + MISINV_{it} \quad \text{(A9)}$$

I then adjust for inflation by transforming capital flight into constant 1995 USD using the US Producer Price Index (PPI). The rationale here is that a dollar that fled in, say, 1974, from Saudi Arabia, for instance, is worth more than a dollar that fled 15 years later. To make the value of capital flight comparable at different dates, I adjust them for inflation as follows:

$$Real\ KFAdj_{it} = KF\ Adj_{it} / PPI_t \quad \text{(A10)}$$

The final adjustment we employ concerns interest earnings on past capital flight. This step is important to account for gains in asset values over time through market appreciation or interest earning. Following the same logic, the USD value of a certain amount of Kuwaiti capital flight, for instance, invested abroad in, say, 1976, is worth more than the USD value of the same amount of Kuwaiti capital flight in, say, 2000, due to those accumulated interest earnings.[17] In addition, imputing interest earnings to the entire amount of capital flight provides an estimate of its opportunity cost to the nation on the assumption that such funds would have otherwise been available for domestic investment and development programs. Thus, I compute the stock of interest-earnings adjusted capital flight (*Interest KF Adj* $_{it}$) as follows:

$$Interest\ KF\ Adj_{\ it} = Interest\ KF\ Adj_{\ I,t-1}\ (1+TBILL_{\ it}) + KF\ Adj_{\ it} \quad \text{(A11)}$$

where *TBILL* is US short-term Treasury bill rates used as a proxy for the interest rates on past capital flight.[18]

[17] Although capital flight is used to finance the acquisition of assets abroad including fixed assets such as real estate and liquid assets such as saving deposits and stocks, some of these funds are likely to be used to finance consumption, rather than being invested. However, there are no obvious ways of accounting for funds that finance such consumption.

[18] See Boyce and Ndikumana (2000) and Epstein (2005) for further details on the methodology.

# APPENDIX B: Tables

**Table B1: Currency Composition (%) of Long-term Debt: Weighted Averages (1970–2002)**

| Country | USD | Swiss Franc | British Pound | SDRs | Multiple Currencies | Japanese Yen | French Franc | Deutsche Mark | Other Currencies |
|---|---|---|---|---|---|---|---|---|---|
| **Resource-based** | | | | | | | | | |
| Algeria | 41.05 | 1.06 | 2.51 | 0 | 6.25 | 11 | 15.87 | 6.87 | 15.36 |
| Iran | 45.97 | 0.67 | 0.19 | 0 | 5.39 | 5.25 | 1.94 | 8.66 | 2.85 |
| Oman | 50.4 | 0 | 12.9 | 0 | 1.3 | 4.6 | 2.82 | 1.84 | 19.4 |
| **Nonresource-based** | | | | | | | | | |
| Comoros | 22.56 | 0 | 0 | 0.56 | 4.78 | 0 | 34.28 | 0 | 37.79 |
| Djibouti | 8.99 | 0 | 0 | 3.22 | 8.9 | 0 | 45.28 | 0.23 | 33.36 |
| Egypt | 52.97 | 2 | 1.71 | 0.09 | 4.45 | 6.18 | 9.07 | 8.02 | 15.47 |
| Jordan | 43.97 | 0.31 | 10.35 | 0.49 | 6.33 | 7.95 | 4.01 | 9.77 | 16.79 |
| Lebanon | 52.18 | 0.12 | 0.21 | 0 | 9.23 | 0.17 | 16.56 | 2.19 | 19.3 |
| Mauritania | 39.2 | 0.05 | 0.34 | 1.35 | 3.73 | 1.29 | 14.14 | 1.55 | 38.27 |
| Morocco | 42.25 | 0.28 | 0.28 | 0.11 | 12.84 | 2.07 | 22.98 | 7.23 | 11 |
| Syria | 69.4 | 1.35 | 0.92 | 0 | 3.13 | 1.43 | 2.83 | 1.98 | 18.94 |
| Somalia | 43.7 | 0 | 0.23 | 0.68 | 15.84 | 1.3 | 2.31 | 3.03 | 32.9 |
| Sudan | 46.3 | 9.49 | 6.32 | 0.26 | 5.28 | – | 2.29 | 2.11 | 26.19 |
| Tunisia | 29.61 | 0.48 | 0.2 | 0.12 | 14.21 | 6.85 | 16.6 | 9.92 | 21.95 |
| Yemen | 31.12 | 2.28 | 2.36 | 1.57 | 1.97 | 2.69 | 0.82 | 3.69 | 53.47 |

Source: Author's Computations from Global Development Finance 2002 (CD-ROM Edition). Note*:* Averages for the period 1970–2002 are weighted by total long-term debt. Countries without data are not reported.

## Table B2: External Debt, Annual Average in Millions of Current USD (1970–2000)

| Country | Long-term Debt | Short-term Debt | IMF Credits | Total External Debt Stock | Total change in debt adjusted for exchange rate fluctuations | Total external debt adjusted for exchange rate fluctuation (DebtAdj) | DebtAdj (% of GDP) |
|---|---|---|---|---|---|---|---|
| **Resource-based** | | | | | | | |
| Algeria | 17,542 | 1,033.5 | 512 | 19,086 | 257.3 | 18,822.9 | 36.2 |
| Iran | 3,733 | 3,750.8 | – | 7,484 | 582 | 10,170.6 | 10.49 |
| Oman | 2,124 | 436.4 | – | 2,560 | 0.5 | 2,647.9 | 26.8 |
| **Nonresource-based** | | | | | | | |
| Comoros | 110 | 7.1 | 0.73 | 118 | (112.3) | 117.9 | 82.77 |
| Djibouti | 115 | 14.3 | 1.4 | 130 | (11.4) | 146.1 | 53.6 |
| Egypt | 20,502 | 3,523.3 | 171 | 24,196 | 336.3 | 24,605.7 | 69.2 |
| Jordan | 3,779 | 548.7 | 108 | 4,436 | 121.9 | 4,457.7 | 83.04 |
| Lebanon | 1,037 | 742.6 | – | 1,780 | (465) | 1,728 | 41 |
| Mauritania | 1,209 | 123.4 | 55 | 1,387 | 12 | 1,421.9 | 158.3 |
| Morocco | 12,703 | 457.2 | 406 | 13,566 | 140.6 | 13,844.9 | 64.5 |
| Somalia | 1,189 | 207 | 94 | 1,490 | 7.6 | 1,529 | 122.9 |
| Sudan | 6,002 | 2,569 | 575 | 9,146 | 80 | 9,358.4 | 100.03 |
| Syria | 9,100 | 1,562 | 2 | 11,052 | 428.4 | 10,983 | 85.6 |
| Tunisia | 5,044 | 489 | 108 | 5,642 | 116.6 | 5,693.2 | 52.06 |
| Yemen | 3,072 | 446 | 65 | 3,585 | 24.9 | 3,559.7 | 114.8 |

Source: Authors Computations from Global Development Finance 2002 (CD-ROM Edition) and World Development Indicators 2003 (CD-ROM Edition). Note: Negative figures appear in parentheses. Countries without data are not reported.

## Table B3: Annual Capital Flight (1970–1992) Adjusted for Exchange Rate Fluctuations and Trade Misinvoicing for Resource-based States (millions of 1995 USD)

| Country | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Algeria | – | – | – | – | – | – | – | (1,312.3) | (2,739.5) | (1,227.7) | (3,925.8) | 2,779.4 |
| Bahrain | – | – | – | – | – | (794.4) | (1,034.4) | (752.5) | (618.6) | (318.3) | (854.5) | (469.2) |
| Iran | – | – | – | – | – | – | 10,708.9 | 1,396.9 | 1,461.2 | 14,110 | 12,430.8 | (3,623.8) |
| Kuwait | – | – | – | – | – | 11,794.8 | 13,412.9 | 6,857.6 | 11,557.0 | 21,966.6 | 15,372.8 | 15,698 |
| Libya | – | – | – | – | – | – | – | (51) | 1,139.3 | 1,494 | (3,217) | (9,231.2) |
| Oman | – | – | – | – | 179.0 | 336.8 | 291.6 | 685.5 | 87.7 | 653.7 | 53.5 | (590.6) |
| S. Arabia | – | 613.5 | 3,345 | 2,707.5 | 20,776 | 15,361 | 20,890 | 19,380.1 | 8,998.7 | 13,796.1 | 29,628.0 | 38,179.9 |

| Country | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Algeria | 3803.9 | 617.7 | 2506.8 | 4191.3 | 3126.9 | 687.1 | (38.2) | 2108.8 | 4309.7 | 2746.9 | 3006.8 |
| Bahrain | 202.1 | 107.7 | 132.8 | (208.6) | (120.4) | (199.2) | 1330.7 | 501.1 | (1131.5) | (460.9) | (91.2) |
| Iran | 2740.63 | 1735.97 | 4624.9 | (1601.1) | (5348.1) | (3070.6) | (5171.1) | (5478.7) | (6070.7) | 64.99 | 619.65 |
| Kuwait | 461.4 | 829.5 | 5030.8 | 2634.8 | 6404.3 | 7873.5 | 7833.8 | 8656.6 | 5115.4 | (30676.9) | (2380.2) |
| Libya | 3549.6 | 4693.6 | 3486 | 3830.3 | (2290) | (2911) | (548) | (4785.9) | (1650.6) | (1848) | (134) |
| Oman | (233.7) | 57.7 | (182.1) | (541.3) | 1617.6 | 3002.2 | 2043.1 | 2500.4 | 5339.7 | (970.9) | (1146.4) |
| S. Arabia | 33076.6 | 6770.8 | (6400.6) | (13625.7) | (2862.9) | (16274.5) | (6914.4) | (7921.7) | 4423.4 | (27400.9) | (14276.2) |

| Country | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Total KF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Algeria | 2740 | 1,481.6 | 3,850.8 | 5,133.2 | 436.3 | 474.3 | (1,122) | 747.7 | 377.7 | 597.8 | 35,359.3 |
| Bahrain | (567.5) | 502 | 1,953.7 | 3,599.5 | 142.7 | (978.3) | 215.81 | 880.5 | (94.7) | – | 1,978.8 |
| Iran | 4484.1 | (345.9) | 2,616.7 | (41.5) | 2,571.9 | (415.5) | 1,548.1 | (36.9) | 2,0817.7 | 0 | 50,728.5 |
| Kuwait | 3498.6 | 4,482.4 | 17,435 | 4,287.7 | 8,254.9 | 3,462.1 | 4,372.6 | 11,956.4 | 4,923.4 | – | 171,115.9 |
| Libya | 927.7 | (384.3) | (204.9) | (187) | (371.5) | 1,472.6 | 1,008 | – | – | – | (6,197) |
| Oman | (342.3) | (524.2) | (1,232.2) | (419.2) | (698.6) | (1,999.2) | (1,278.3) | 934.8 | 946.9 | 0.0 | 8,571.2 |
| S. Arabia | 21,274.4 | (17,964) | (13,626) | (20,516) | (9,749.7) | (18,964.) | (12,909.) | 2,739.2 | 15,275.8 | – | 11,880 |
| **Total** | | | | | | | | | | | **273,436** |

Source*:* Author's computations from Global Development Finance 2002 (CD-ROM Edition); World Development Indicators 2003 (CD-ROM Edition); International Financial Statistics 2003 (CD- ROM Edition); Direction of Trade Statistics 2003 (CD-ROM Edition). Note: Negative figures appear in parentheses. Countries without data are not reported.

**Table B4: Annual Capital Flight (1992–2002) Adjusted for Exchange Rate Fluctuations and Trade Misinvoicing for Nonresource-based States (millions of 1995 USD)**

| Country | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Comoros | – | – | – | – | – | – | – | – | – | – | (8.3) | (14.0) |
| Djibouti | – | – | – | – | – | – | – | – | – | – | – | 0.1 |
| Egypt | – | – | – | – | (3,176.4) | (3,308.6) | (247.4) | 4,262.1 | (2,582.6) | 75.4 | (4,793.6) | (3,900.8) |
| Jordan | – | – | 28.8 | (64.1) | (6.6) | (179.8) | 43.3 | (327.5) | (838.7) | (419.0) | (663.7) | (1,388.1) |
| Lebanon | – | – | – | – | – | – | – | – | – | – | – | 2.34 |
| Mauritania | – | – | – | – | – | (0.2) | (0.1) | (0.1) | (0.1) | (0.1) | (0.1) | (0.2) |
| Morocco | – | – | – | – | – | (34.0) | (2,220.4) | (3,193.6) | (1,558.4) | (2,042) | (1,417.7) | (2,341.2) |
| Somalia | – | – | – | – | – | – | – | (272.3) | (187.9) | (49.8) | (309.3) | (110.9) |
| Sudan | – | – | – | – | – | – | – | (244.4) | (109.7) | 90.8 | (183.8) | (1,135) |
| Syria | – | – | – | – | – | – | – | (522.4) | 90.4 | 1135.9 | (701.7) | (1229.7) |
| Tunisia | – | – | – | – | – | – | – | (867.7) | (356.5) | (484.5) | (1320.2) | (2088.4) |

| Country | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Comoros | (14.2) | (11.3) | (22.2) | (14.3) | (13.9) | (20.2) | 12.2 | (27.3) | (6.5) | (7.3) | (16.0) |
| Djibouti | 0.1 | (44.2) | (44.5) | 0.2 | (91.8) | (85.0) | (84.8) | (85.0) | (128.3) | (180.7) | (76.9) |
| Egypt | (3570.4) | (2987.8) | (3924.3) | (7419.5) | (5577.1) | 466.2 | (2568.8) | (2048.1) | (154.5) | (1930.2) | (2676.4) |
| Jordan | (2688.7) | (1737.2) | (67.3) | 33.3 | (284.4) | (1579.5) | (1261.0) | (268.5) | 52.5 | (1519.6) | (812.7) |
| Lebanon | 0.3 | 1.5 | 0.5 | 0.1 | (0.1) | 8.6 | (44.1) | 436.8 | 459.2 | (1624.5) | (1899.3) |
| Mauritania | (0.3) | (0.3) | (0.2) | (0.1) | (0.2) | (0.6) | (0.1) | (0.1) | (0.1) | (0.7) | (0.1) |
| Morocco | (1904.4) | (1042.5) | (1121.2) | (1011.4) | (1168.7) | (492.5) | (209.9) | (1451.0) | (2167.3) | (1774) | (1124.3) |
| Somalia | (380.3) | 35.4 | (221.5) | (134.3) | (340.1) | (139.9) | (87.8) | (14.1.5) | (1268.6) | 0.8 | 0.3 |
| Sudan | (1338) | (3.9) | 47.6 | 752.6 | (521.6) | (437.6) | (835.8) | (41.6) | (424.2) | (1032.2) | (484.9) |
| Syria | (1189.8) | 366.9 | (1016.6) | (433.2) | (804.9) | (361.2) | 201.6 | 997.8 | 1232.0 | 778.6 | (154.5) |
| Tunisia | (1895.9) | (118.9) | (2534) | (1322.8) | (1089.3) | (838.5) | (427.3) | (1149.3) | (1933.5) | (1982.4) | (3123.10 |

| Country | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | Total KF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Comoros | 81.6 | (27.4) | (17.5) | (116.2) | (122.2) | 0.1 | 0 | (0.1) | 0 | (331) | (696.2) |
| Djibouti | (27.1) | (56.7) | (25.2) | (168.9) | (1.8) | (1.1) | 0.7 | 0.3 | 0.1 | 0 | (1,100.7) |
| Egypt | (5144.6) | (3,788) | (3,929.3) | (4,089.4) | (7,944.4) | (7,077.5) | (4,483.7) | 3,062 | (6,148) | (223.1) | (85,829.1) |
| Jordan | (137.9) | (338.9) | (274.9) | (76.4) | 264.4 | 635.2 | (336.2) | (82.4) | (414.2) | (1,044.6) | (15,754.1) |
| Lebanon | (1044.8) | (2,635.7) | (2,016.1) | (2,632.1) | (1,024.4) | (2,275.3) | (2,062.5) | (102.2) | 0 | 0 | (16,452) |
| Mauritania | (0.1) | 0.8. | 0.1 | 0.8 | 0.3 | 0.14 | (1.6) | 0 | 0 | 0 | (4,820.7) |
| Morocco | (977) | (1,565.9) | (1,053.1) | (383.2) | (261.2) | (276.5) | (1,879.4) | (481.2) | (2,498) | (730.2) | (36,379.9) |
| Somalia | 0.1 | (4.7) | 0.3 | 0.3 | 0.5 | (0.3) | (5.4) | (0.2) | 0.1 | 0.7 | (3,616.6) |
| Sudan | 10.3 | (3.1) | 0.8 | (16.7) | (1.2) | (0.0) | (231.3) | (303.6) | 0.0 | 0.1 | (6,446.5) |
| Syria | 201.6 | (786.2) | (371.8) | (356.5) | 221.1 | (87.0) | 326.3 | 2,154.4 | (0.0) | 0.0 | (308.7) |
| Tunisia | (3303.2) | (2,443.6) | (3,216.2) | (3,272.4) | (1,387.9) | (2,071.5) | (566.0) | (2,408.6) | (1,442) | (1,432) | (44,145) |
| **Total** | | | | | | | | | | | **(215,550)** |

## Table B5: Total Capital Flight (%) of GDP with Imputed Interest Earnings (millions of 1995 USD)

| Country | Total Nominal KF Adjusted for Exchange Rate Fluctuations & Trade Misinvoicing (KFAdj) | Total Real KFAdj | Total Nominal KFAdj with accumulated Interest Earnings | Annual Average Real KF Adj | Annual Average KFAdj (% GDP) | Annual Average Per Capita Real KF Adj (Units of USD) |
|---|---|---|---|---|---|---|
| **Resource-based** | | | | | | |
| Algeria | 34,576.89 | 35,359.3 | 52,303.5 | 1,359.9 | 2.41 | 51.4 |
| Bahrain | 3,982.5 | 1,978.8 | (5,630.1) | 73.29 | 9.33 | – |
| Iran | 39,355.9 | 50,728.5 | 132,068.7 | 1,878.84 | 2 | 43.7 |
| Kuwait | 130,605 | 171,115.9 | 418,085.8 | 6,338 | 63 | 5,595 |
| Libya | (5,467) | (6,197) | (12,775) | (269) | – | (71) |
| Oman | 6,321.1 | 8,571.2 | 19,659.5 | 295.5 | 4.2 | 219 |
| Saudi Arabia | (50,133) | 11,880.0 | 332,190.1 | 383 | 0.1 | 389 |
| **Nonresource-based** | | | | | | |
| Djibouti | (1,006.6) | (1,100.7) | (1,844.1) | (50) | (12.1) | (105.8) |
| Egypt | (73,753) | (85,829.1) | (162,415) | (2,959.6) | (6.8) | (54.8) |
| Comoros | (347.8) | (696.2) | (406.4) | (30.2) | (9) | (47.8) |
| Jordan | (13,007.9) | (15,754.1) | (35,729.6) | (508.2) | (8.5) | (185.3) |
| Lebanon | (16,258.1) | (16,452) | (22,088) | (747.8) | (10.2) | (237.1) |
| Mauritania | (4,000) | (4,820.7) | (10,116) | (172.1) | (18.2) | (90) |
| Morocco | (29,774.3) | (36,379.9) | (80,388.8) | (1,299.2) | (5.5) | (58.4) |
| Somalia | (2,939.7) | (3,616.6) | (8,171.3) | (139.1) | (25.8) | – |
| Sudan | (5,483.) | (6,446.5) | (11,067.4) | (247.9) | (2.1) | (10.8) |
| Syria | 478.2 | (308.7) | (22,990.9) | (11.8) | (0.1) | (5.7) |
| Tunisia | (40,528.3) | (44,145) | (54,986.2) | (1,697.8) | (200.9) | (208.9) |

Source*:* Author's computations from Global Development Finance 2002 (CD-ROM Edition); World Development Indicators 2003 (CD-ROM Edition); International Financial Statistics 2003 (CD-ROM Edition); Direction of Trade Statistics 2003 (CD-ROM Edition). Note*:* In the case of Bahrain, Kuwait, Libya and Saudi Arabia, the adjustment on capital flight entails correcting for trade misinvoicing only since they do not have data on external debt. Negative figures appear in parentheses. Countries without data are not reported.

## Table B6: Total Trade Misinvoicing for Resource-based States: 1980–2002 (millions of 1995 USD)

| Country | Total Trade Misinvoicing | Total Export Under-invoicing | Total Import Over-invoicing | Annual Average |
|---|---|---|---|---|
| Algeria | 35,504.2 | 38,191 | (2,686.8) | 1,543.7 |
| Bahrain | 2,909.7 | 2,235 | 674.7 | 126.5 |
| Iran | (4,599.2) | (37,727.5) | 30,499.5 | (199.9) |
| Iraq | 108.29 | 371 | (262.7) | 4.7 |
| Kuwait | (9,837.1) | (2,858.7) | (6,978.3) | (427.7) |
| Libya | (6,748.9) | 8,697.4 | (15,446.4) | (293.4) |
| Oman | 5,847.9 | 14,407.8 | (8,559.9) | 254.2 |
| Qatar | (5,082.1) | 16.9 | (5,099.1) | (220.9) |
| Saudi Arabia | (71,578.8) | 46,390.3 | (117,969.1) | (3,112.1) |
| UAE | (23,835.6) | 25,550.7 | (49,386.4) | (1,036.3) |
| **Total** | **(77, 311)** | **95,274** | **(175,215)** | **(3,361)** |

Source*:* Author's computations from: Direction of Trade Statistics, 2003 and World Development Indicators, 2003 (CD-ROM Editions). Note*:* Negative figures appear in parentheses.

## Table B7: Total Trade Misinvoicing for Nonresource-based States: 1980–2002 (millions of 1995 USD)

| Country | Total Trade Misinvoicing | Total Export Misinvoicing | Total Import Misinvoicing | Annual Average |
|---|---|---|---|---|
| Comoros | (163.90) | 15.28 | (179.1) | (7.13) |
| Djibouti | (748.6) | (1.58) | (747.1) | (32.55) |
| Egypt | (77,661.6) | 58,944.2 | (136,605.8) | (3,376.5) |
| Jordan | (7,735.1) | 11,918.2 | (19,653.3) | (336.3) |
| Lebanon | 2,314.7 | 1,094.2 | 1,220.5 | 100.6 |
| Mauritania | (928.5) | 830.1 | (1,758.6) | (40.3) |
| Morocco | (16,629.1) | 26,480.5 | (43,109.6) | (723) |
| Somalia | (742.1) | 183.2 | (925.4) | (32.2) |
| Sudan | (4,171.2) | 1,148.4 | (5,319.6) | (181.3) |
| Syria | (11,675.8) | (4,699.4) | (6,976.3) | (507.6) |
| Tunisia | (29,816.5) | (7,809.6) | (22,006.9) | (1,296.3) |
| Yemen | (2,701.65) | (131.5) | (2,569.9) | (675.3) |
| **Total** | **(150,659)** | **87972** | **(238,631)** | **(7,107.8)** |

Source*:* Author's computations from: Direction of Trade Statistics, 2003 and World Development Indicators, 2003 (CD-ROM Editions). Note*:* Negative figures appear in parentheses.

# Determinants and Impact of Capital Flight Tables

### Table B8: Fixed Effects Estimation for Resource-based States

Dependent Variable: Capital Flight % GDP

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
|---|---|---|---|---|---|---|
| Intercept | -39.50***[19] | -46.329*** | -40.129*** | -034.48** | -34.35*** | 35.289*** |
| | (0.000) | (0.000) | (0.000) | (0.020) | (0.000) | (0.000) |
| CA_GDP | 1.007 *** | 0.763*** | 0.881*** | | 0.607*** | 0.621*** |
| | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) |
| GDPPC | 0.006 *** | 0.007*** | 0.007*** | 0.011*** | 0.007*** | 0.007*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Budget_GDP | 0.082*** | | | | | |
| | (0.738) | | | | | |
| GCF_GDP | | -0.045 | | | | |
| | | (0.882) | | | | |
| X_GDP | | | -0.140 | | | |
| | | | (0.460) | | | |
| Growth | | | | -1.01*** | | |
| | | | | (0.000) | | |
| Inflation | | | | 0.219 | | |
| | | | | (0.441) | | |
| Trade_GDP | | | | -0.001 | | |
| | | | | (0.994) | | |
| Fuel X | | | | -0.394** | | |
| | | | | (0.007) | | |
| Law | | | | | -3.46*** | |
| | | | | | (0.000) | |
| BureaQ | | | | | | -3.100* |
| | | | | | | (0.068) |
| $R^2$ | 0.57 | 0.52 | 0.53 | 0.47 | 0.58 | 0.57 |
| No. of Obs. | 82 | 121 | 132 | 100 | 109 | 109 |
| F-test | 27.6 | 51.31 | 53.4 | 24.81 | 56.3 | 55.85 |

[19] Notes: P-values are in parentheses. The symbols ***, **and *denote significance at 1%, 5% and 10% levels respectively. This applies throughout the paper.

**Table B8 (cont.): Fixed Effects Estimation for Resource-based States**

| Variable | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|
| Intercept | -34.42 | -17.16 | -44.36 | 47.19* | -85.40*** | -48.782 |
| | (0.000) | (0.814) | (0.000) | (0.017) | (0.000) | (0.000) |
| CA_GDP | 0.606 | | 0.716 | 0.741 | 0.774 | 0.782 |
| | (0.000) | | (0.000) | (0.000) | (0.000) | (0.000) |
| GDPPC | 0.007*** | 0.006*** | 0.007*** | 0.007*** | 0.008*** | 0.008 |
| | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) |
| X_GDP | | 2.33*** | | | | |
| | | (0.000) | | | | |
| Growth | | -0.737* | | -0.654** | -0.782*** | -0.680 |
| | | (0.042) | | (0.002) | (0.001) | (0.787) |
| Inflation | | -0.354 | | | -0.311 | -0.281 |
| | | (0.759) | | | (0.223) | (0.285) |
| Trade_GDP | | -1.309* | | 0.017 | 0.028 | -0.033 |
| | | (0.032) | | (0.902) | (0.816) | (0.787) |
| Taxes GDP | | 3.775 | | | | |
| | | (0.262) | | | | |
| Fuel X | | -0.222 | | | | |
| | | (0.204) | | | | |
| Private | | | | 0.006 | | |
| Credit_GDP | | | | (0.941) | | |
| Corruption | | 5.327 | -0.498 | | | |
| Control | | (0.805) | (0.848) | | | |
| Law | -4.463 | | | | | |
| | (0.470) | | | | | |
| BureaQ | 0.997 | | | | | |
| | (0.866) | | | | | |
| Political | | | | | 6.011** | |
| Rights | | | | | (0.016) | |
| Civil | | | | | 0.499 | |
| Liberties | | | | | (0.859) | |
| $R^2$ | 0.58 | 0.68 | 0.54 | 0.52 | 0.512 | 0.54 |
| No. of Obs. | 109 | 39 | 110 | 130 | 113 | 113 |
| F-test | 41.82 | 6.83 | 53.42 | 33.72 | 30.07 | 27.46 |

**Table B8 (cont.): Fixed Effects Estimation for Resource-based States**

| Variable | (13) | (14) | (15) | (16) | (17) | (18) |
|---|---|---|---|---|---|---|
| Intercept | -42.881*** | -44.25*** | -39.57*** | -48.55*** | -45.22*** | -39.26*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| CA_GDP | 0.775*** | 0.751*** | 1.047*** | 0.755*** | 0.740*** | 1.09*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| GDPPC | 0.075*** | 0.007*** | 0.007*** | 0.008*** | 0.007*** | 0.006*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Growth | -0.558*** | -0.626*** | -0.3500 | -0.657*** | -0.630*** | -0.420* |
| | (0.004) | (0.002) | (0.163) | (0.002) | (0.002) | (0.047) |
| GCF_GDP | | | | | | |
| X_GDP | | -0.015 | | | | |
| | | (0.935) | | | | |
| Budget_GDP | | | 0.019 | | | |
| | | | (0.939) | | | |
| Inflation | | | | -0.271 | | |
| | | | | (0.277) | | |
| Trade_GDP | | | | | 0.004 | |
| | | | | | (0.967) | |
| Taxes_GDP | | | | | | 0.550 |
| | | | | | | (0.532) |
| Fuel X | | | | | | |
| Private Credit_GDP | | | | | | |
| Corruption Control | | | | | | |
| Law | | | | | | |
| $R^2$ | 0.53 | 0.53 | 0.58 | 0.53 | 0.53 | 0.58 |
| No. of Obs. | 138 | 131 | 82 | 120 | 131 | 87 |
| F-test | 55.83 | 42.62 | 21.47 | 44.49 | 42.61 | 22.13 |
| DW | | | | | | 1.64 |

**Table B8 (cont.): Fixed Effects Estimation for Resource-based States**

| Variable | (19) | (20) | (21) | (22) | (23) | (24) |
|---|---|---|---|---|---|---|
| Intercept | -40.35*** | -46.88*** | -41.56*** | -36.24*** | -36.80*** | -81.65*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.004) |
| CA_GDP | 0.806*** | 0.805*** | 0.636*** | 0.558*** | 0.567*** | 0.778*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| GDPPC | 0.007*** | 0.007*** | 0.008*** | 0.008*** | 0.008*** | 0.007*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Growth | -0.654*** | -0.553*** | -0.693*** | -0.641*** | -0.648*** | -0.681*** |
| | (0.004) | (0.007) | (0.000) | (0.001) | (0.001) | (0.001) |
| GCF_GDP | | | | | | |
| Fuel X | -0.072 | | | | | |
| | (0.378) | | | | | |
| Private Credit_GDP | | 0.047 | | | | |
| | | (0.706) | | | | |
| Corruption Control | | | -0.963 | | | |
| | | | (0.691) | | | |
| Law | | | | -2.392 | | |
| | | | | (0.154) | | |
| BureaQ | | | | | -2.166 | |
| | | | | | (0.177) | |
| Political Rights | | | | | | 6.557*** |
| | | | | | | (0.014) |
| $R^2$ | 0.56 | 0.53 | 0.57 | 0.59 | 0.59 | 0.73[20] |
| No. of Obs. | 112 | 137 | 109 | 108 | 108 | 137 |
| F-test | 35.26 | 41.48 | 45.74 | 46.80 | 46.65 | 45.91 |

[20] For this benchmark regression, I report Adjusted R-squared. For all other regressions, I report "overall R-squared" that combines both "within R-squared" and "between R-squared" provided by the fixed effects estimation in STATA.

**Table B9: Fixed Effects Estimations for Nonresource-based States**

Dependent Variable: Capital Flight % GDP

| **Variable** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
|---|---|---|---|---|---|---|
| Intercept | 0.203 | -0.872 | -0.294 | 5.682 | -1.70 | 10.80** |
| | (0.970) | (0.874) | (0.959) | (0.150) | (0.812) | (0.023) |
| GDPPC | -0.008 | -0.004 | -0.006 | -0.008*** | -0.009*** | -0.016*** |
| | (0.114) | (0.332) | (0.313) | (0.007) | (1.010) | (0.000) |
| Growth | -0.062 | 0.004 | | | | |
| | (0.691) | (0.974) | | | | |
| CA_GDP | | 0.361*** | 0.338*** | 0.533*** | 0.568*** | 0.553*** |
| | | (0.005) | (0.012) | (0.000) | (0.000) | (0.000) |
| FDI_GDP | | | 0.512 | | | |
| | | | (0.243) | | | |
| Tx_GDP | | | | -0.004 | 0.464* | 0.003 |
| | | | | (0.874) | (0.049) | (0.909) |
| Budget | | | | | 0.072 | |
| | | | | | (0.640) | |
| Corruption | | | | | | 0.778 |
| Control | | | | | | (0.380) |
| $R^2$ | 0.01 | 0.05 | 0.04 | 0.32 | 0.25 | 0.38 |
| No. of Obs. | 230 | 214 | 192 | 163 | 135 | 120 |
| F-test | 1.38 | 3.22 | 3.25 | 10.11 | 7.96 | 8.28 |

**Table B9 (cont.): Fixed Effects Estimations for Nonresource-based States**

| Variable | (7) | (8) | (9) | (10) | (11) | (12) |
|---|---|---|---|---|---|---|
| Intercept | 22.50*** | 18.97*** | 27.90*** | 22.75*** | 25.04*** | 21.03*** |
| | (0.002) | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) |
| GDPPC | -0.015*** | -0.010*** | -0.013*** | -0.012*** | 0.014*** | 0.012*** |
| | (0.001) | (0.006) | (0.000) | (0.001) | (0.000) | (0.001) |
| CA_GDP | 0.537*** | 0.499*** | 0.441*** | 0.495*** | 0.445*** | 0.475*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| M_Duties | -0.266*** | -0.320*** | -0.282*** | | | |
| | (0.018) | (0.000) | (0.000) | | | |
| Corruption Control | -0.359 | | | | | |
| | (0.740) | | | | | |
| Remittances | | -1.46 | | | | |
| | | (0.322) | | | | |
| Trade | | | -0.102* | -0.091 | | |
| | | | (0.064) | (0.108) | | |
| Tx_Trade | | | | -0.209 | -0.139 | |
| | | | | (0.027) | (0.165) | |
| GCF_GDP | | | | | -0.356*** | -0.456*** |
| | | | | | (0.015) | (0.001) |
| X_Duties | | | | | | 0.122 |
| | | | | | | (0.639) |
| $R^2$ | 0.38 | 0.33 | 0.30 | 0.31 | 0.35 | 0.32 |
| No. of Obs. | 97 | 130 | 134 | 141 | 136 | 129 |
| F-test | 8.51 | 11.96 | 12.32 | 9.17 | 11.19 | 10.60 |

**Table B9 (cont.): Fixed Effects Estimations for Nonresource-based States**

| Variable | (13) | (14) | (15) | (16) | (17) | (18) |
|---|---|---|---|---|---|---|
| Intercept | 35.66*** (0.000) | 32.97*** (0.000) | 31.23*** (0.000) | 34.66*** (0.000) | 28.23*** (0.000) | 17.93*** (0.009) |
| GDPPC | -0.022*** (0.000) | -0.021*** (0.000) | -0.018*** (0.001) | -0.021*** (0.000) | -0.011*** (0.004) | -0.013*** (0.007) |
| CA_GDP | 0.601*** (0.000) | 0.625*** (0.000) | 0.674*** (0.000) | 0.542*** (0.000) | 0.489*** (0.000) | 0.412*** (0.000) |
| M_GDP | -0.366*** (0.001) | -0.361*** (0.004) | -0.355*** (0.001) | -0.413*** (0.001) | -0.199** (0.044) | -0.174 (0.121) |
| Budget | 0.016 (0.934) | | | | | |
| Law | 1.183 (0.162) | 1.173 (0.143) | 1.347* (0.049) | | | |
| X_GDP | | 0.021 (0.882) | | | | |
| Remittances | | | -1.33 (0.393) | | -1.87 (0.203) | |
| Corruption Control | | | | 0.916 (0.350) | | |
| Tx_Trade | | | | 0.115 (0.412) | | |
| M_Duties | | | | | -0.272*** (0.001) | -0.236*** (0.005) |
| $R^2$ | 0.35 | 0.35 | .037 | .035 | 0.31 | 0.45[21] |
| No. of Obs. | 96 | 101 | 101 | 101 | 129 | 134 |
| F-test | 9.47 | 9.76 | 9.98 | 8.90 | 10.95 | 11.09 |
| DW | | | | | | 2.11 |

[21] For the benchmark regression, I report Adjusted R–squared. For all other regressions, I report overall R–squared that combines both within R-squared and between R-squared provided by the fixed effects estimation in STATA.

**Table B10: Fixed Effects Estimation for Resource and Nonresource-based States with Lagged Dependent Variable (Capital Flight % GDP)**

Dependent Variable: Capital Flight % GDP

| Variable | Resource-based | Nonresource-based |
|---|---|---|
| Intercept | -39.23*** | 51.14*** |
| | (0.003) | (0.000) |
| Lag KF_GDP | 0.230*** | 0.139* |
| | (0.001) | (0.097) |
| GDPPC | 0.004*** | -0.011*** |
| | (0.000) | (0.001) |
| CA_GDP | 0.632*** | 0.362*** |
| | (0.000) | (0.002) |
| Growth | -0.297 | |
| | (0.115) | |
| Pr | 6.050*** | |
| | (0.005) | |
| M_GDP | | -0.181** |
| | | (0.047) |
| M_Duties | | -0.213*** |
| | | (0.006) |
| Adjusted $R^2$ | 0.74 | 0.46 |
| F-test | 39.06 | 10.38 |
| No. of Obs. | 131 | 130 |
| Breisch-Godfrey Serial Correlation LM Test | 0.76 | 1.17 |
| | (0.4699) | (0.3123) |

**Table B11: Descriptive Statistics for Benchmark Capital Flight Regressions' Variables for Resource and Nonresource-based States**

| Variable | Observations | | Mean | | Standard. Deviation | | Minimum | | Maximum | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Res. | Non. | Res. | Non. | Res. | Non. | Res. | Non. | Res. | Non. |
| KF_GDP | 163 | 251 | 9.42 | -9.36 | 32.59 | 16.74 | -159.99 | -168.9 | 192.17 | 27.99 |
| CA_GDP | 167 | 237 | 4.3 | -6.16 | 24.45 | 9.11 | -240.49 | -41.25 | 58.55 | 14.31 |
| Growth | 190 | | 3.47 | | 8.21 | | -20.61 | | 33.99 | |
| P. Rights | 217 | | 5.94 | | 0.81 | | 4 | | 7 | |
| M_GDP | | 227 | | 45.37 | | 18.68 | | 18.75 | | 99.91 |
| Tx_Trade | | 179 | | 25.08 | | 14.46 | | 0.02 | | 76.5 |
| M Duties | | 159 | | 28.94 | | 15.3 | | 0 | | 70.86 |
| GDPPC | 175 | 270 | 6935 | 1002 | 6031 | 647.7 | 1098 | 192.6 | 30989 | 2942 |

**Table B12: Welfare Implications of Capital Flight in the Resource-based Countries**

Dependent Variable: Growth Rate of GDP in 1995 USD

| Variable | Random Effects (GLS) | Fixed Effects |
|---|---|---|
| Intercept | -11.375* | -23.87** |
| | (0.059) | (0.025) |
| KF | -0.111** | -0.192** |
| | (0.029 | (0.015) |
| Trade | -0.221** | 0.023 |
| | (0.019) | 0.840 |
| GDPPC | 0.001*** | 0.003*** |
| | (0.002) | (0.003) |
| Inflation | -0.057 | 0.171 |
| | (0.677) | (0.204) |
| GCF_GDP | 0.682*** | 0.444 |
| | (0.002) | (0.141) |
| FDI_GDP | -11.862** | -14.66*** |
| | (0.015) | (0.004) |
| Law | 1.769 | 1.470 |
| | (0.102) | (0.149) |
| $R^2$ [22] | 0.34 | 0.461 |
| F-test | | 5.14 |
| Wald Test | 22.5 | |
| Obs. | 52 | 52 |
| DW | 2.21 | 2.21 |

[22] For the random effects model, I report overall R-squared. For the fixed effects model, I report within estimators R-squared.

**Table B13: Welfare Implications of Capital Flight in the Nonresource-based Countries**

Dependent Variable: Growth Rate of GDP in 1995 USD

| Variable | Random Effects (GLS) | Fixed Effects |
|---|---|---|
| Intercept | -17.531*** | 6.6584 |
| | (0.007) | (0.556) |
| KF_GDP | -0.0331 | 0.046 |
| | 0.814 | (0.701) |
| FDI_GDP | -1.087 | 0.014 |
| | 0.288 | (0.988) |
| Trade | 0.025*** | -0.154 |
| | (0.700) | (0.198) |
| GCF_GDP | 0.532 | 0.070 |
| | (0.011) | (0.769) |
| Inflation | 0.085 | 0.175 |
| | (0.528) | (0.167) |
| Law | 1.959 | -0.627 |
| | (0.103) | (0.661) |
| Corruption | 0.289 | 2.207 |
| Control | (0.830) | (0.146) |
| | | |
| $R^2$ | 0.21 | 0.22 |
| F-test | | 2.23 |
| Wald Test | 16.1 | |
| Obs. | 68 | 68 |
| DW | 2.30 | 2.30 |

**Table B14: Definition of Variables and Sources**

| Variable | Definition | Source |
|---|---|---|
| ***Dependent Variable*** | | |
| *KF* | Ratio of KF to GDP in 1995 USD | Tables B3 & B4 and WDI (2003) |
| ***Independent Variables*** | | |
| **I. Macroeconomic Environment** | | |
| *GDPPC* | GDP per capita in 1995 USD | WDI (2003) |
| *Growth* | Growth rate of GDP in 1995 USD | WDI (2003) |
| *GCF* | Gross capital formation as % of GDP | WDI (2003) |
| *Inflation* | Growth rate of the CPI | WDI (2003) |
| *Trade* | Exports plus imports relative to GDP | WDI (2003) |
| *CA* | Current account balance as % of GDP | WDI (2003) |
| *M_GDP* | Imports as a % of GDP | WDI (2003) |
| **II. Fiscal Policy** | | |
| *Budget* | Budget balance as a % of GDP | WDI (2003) |
| *Taxes* | Tax revenues as a % of GDP | WDI (2003) |
| *M_Duties* | Import duties as a % of total tax revenues | WDI (2003) |
| *Tx_Trade* | Taxes on international trade as % of current revenues | WDI (2003) |
| **III. Capital Inflows** | | |
| *FDI* | Net flows of foreign direct investments as % of GDP | WDI (2003) |
| *Remittances* | Workers remittances in millions of 1995 USD | WDI (2003) |
| *Fuel X* | Exports of fuel as a % of total merchandise exports | WDI (2003) |
| *X* | Exports as a % of GDP | WDI (2003) |
| **IV. Financial Developemnt** | | |
| *Private Credit* | Credit to private as % of GDP | WDI (2003) |
| **V. Political and Institutional Environment** | | |
| *Law* | Rule of Law | Political Risk Services (2000) |
| *BureaQ* | Bureaucratic Quality | Political Risk Services (2000) |
| *Corruption Control* | The extent to which corruption is controlled | Political Risk Services (2000) |
| *Political Rights* | The extent of political rights | Political Risk Services (2000) |
| *Civil Liberties* | The extent of civil liberties | Political Risk Services (2000) |

# APPENDIX C: Figures

## Determinants and Impact of Capital Flight Figures

**Figure C1: Normality of the Residuals for Resource-based States (regression 24)**

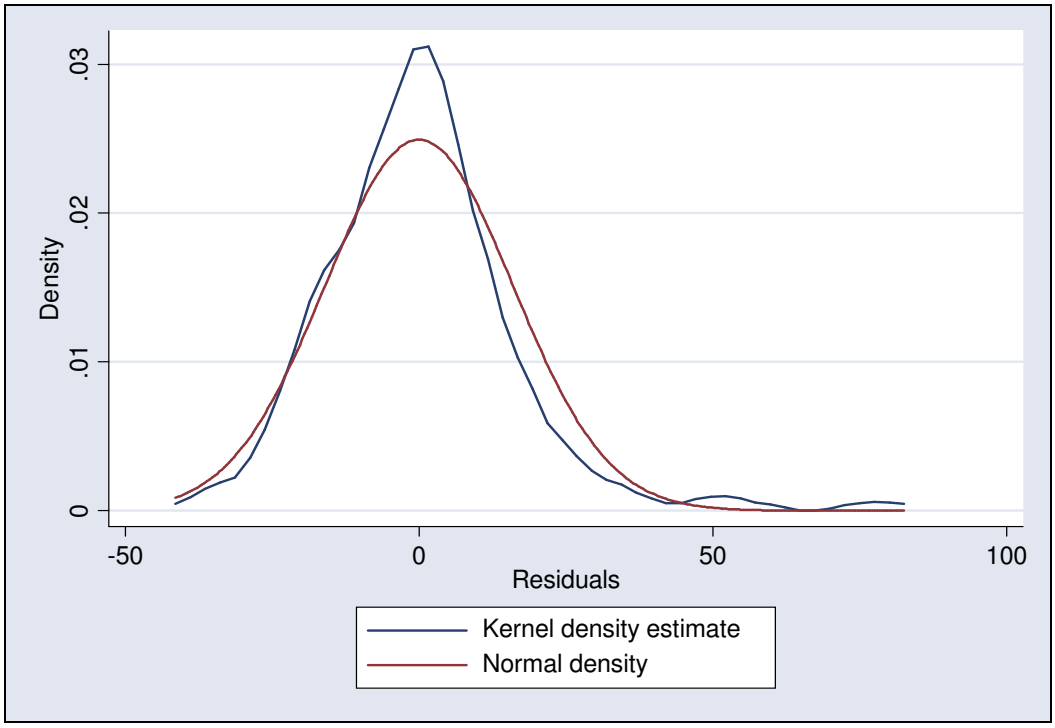


**Figure C2: Testing for Outliers in Resource-based States Benchmark Model**

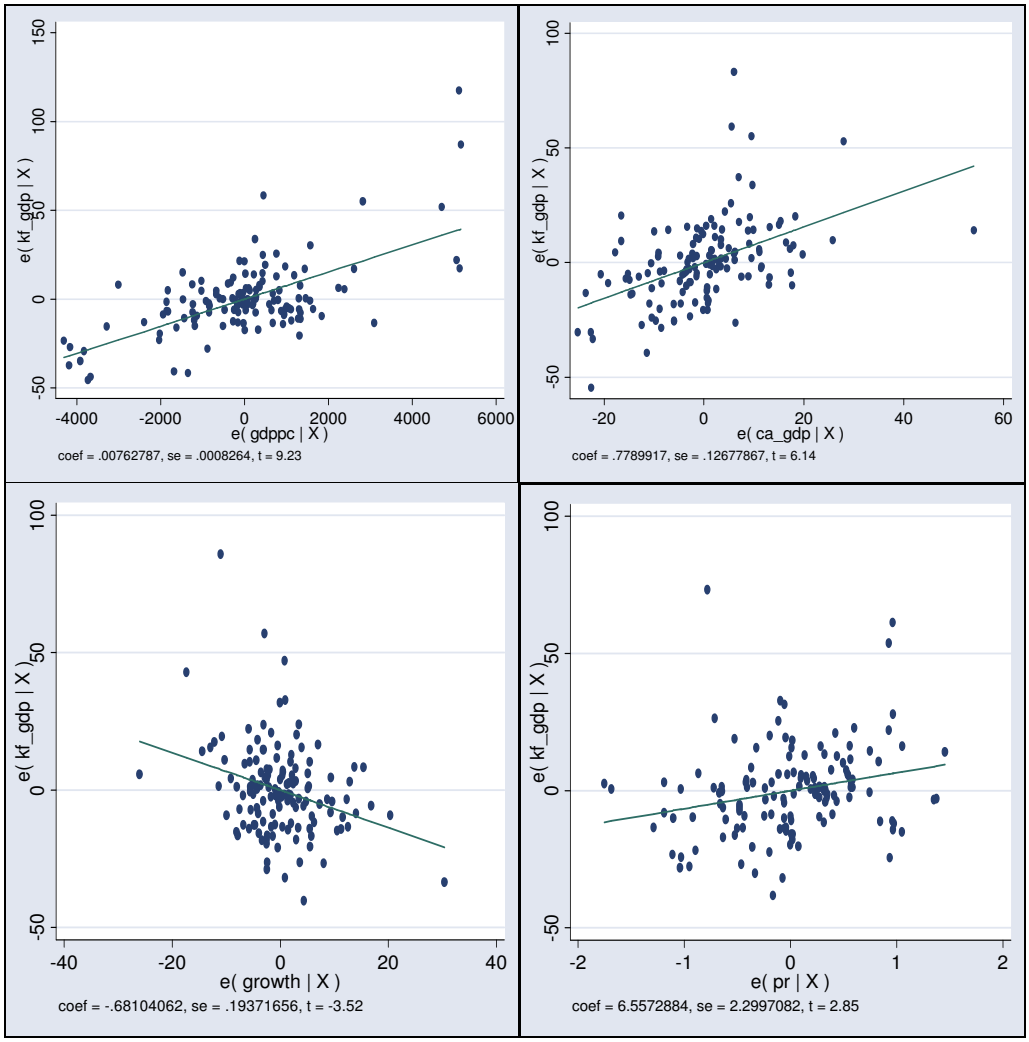


**Figure C3: Normality of the Residuals for Nonresource-based States Benchmark Model (regression 18)**

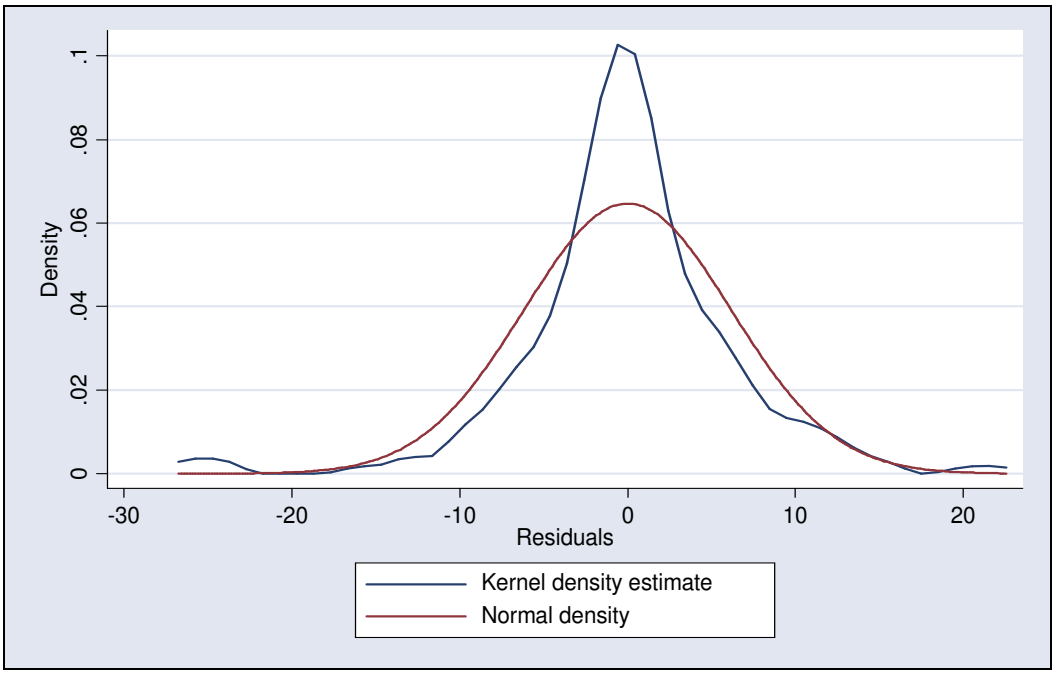


**Figure C4: Testing for Outliers in Nonresource-based States**

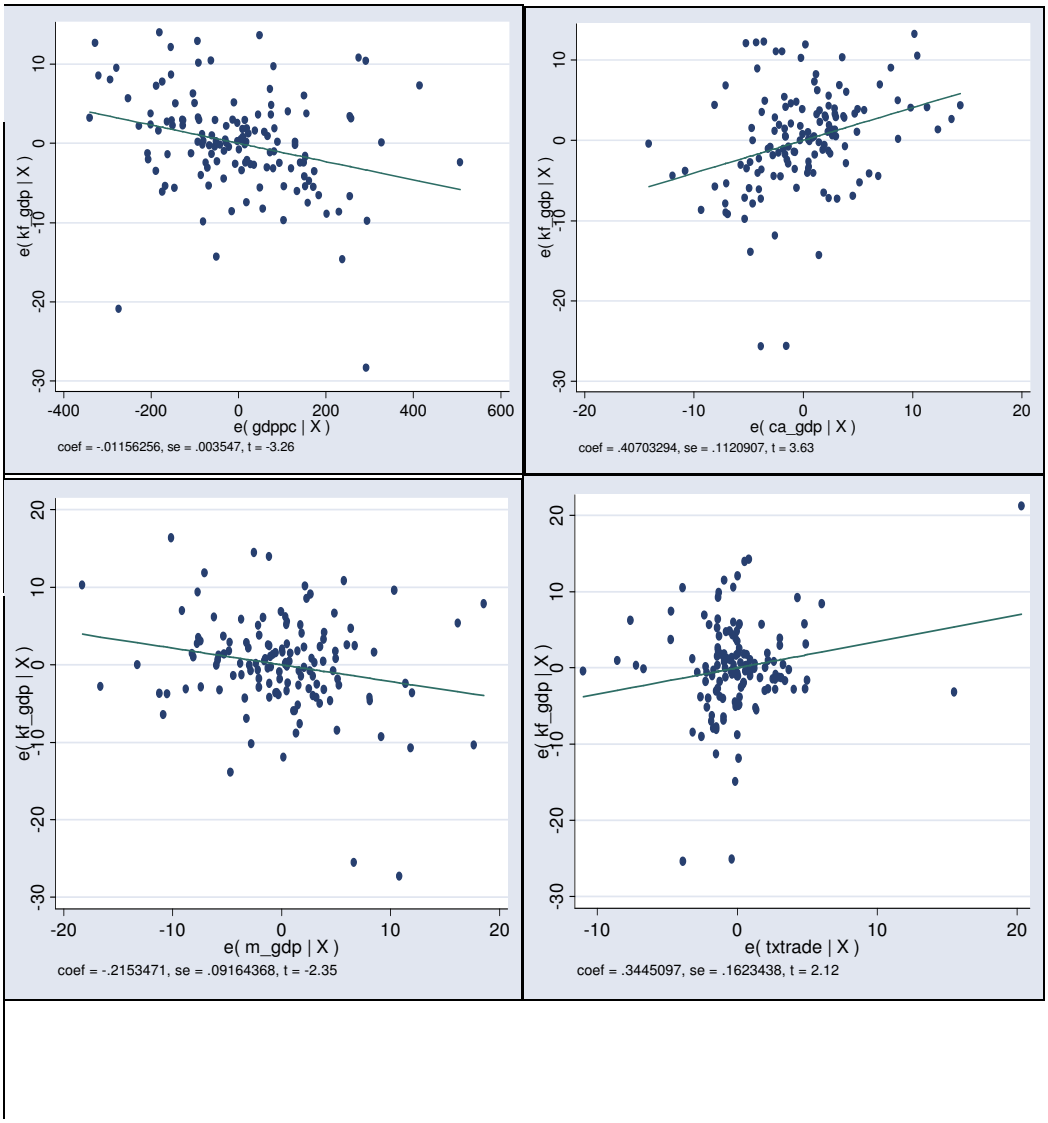


**Figure C5: Goodness of Fit and Normality of Residuals for the Resource-based Countries Capital Flight Benchmark Regression**

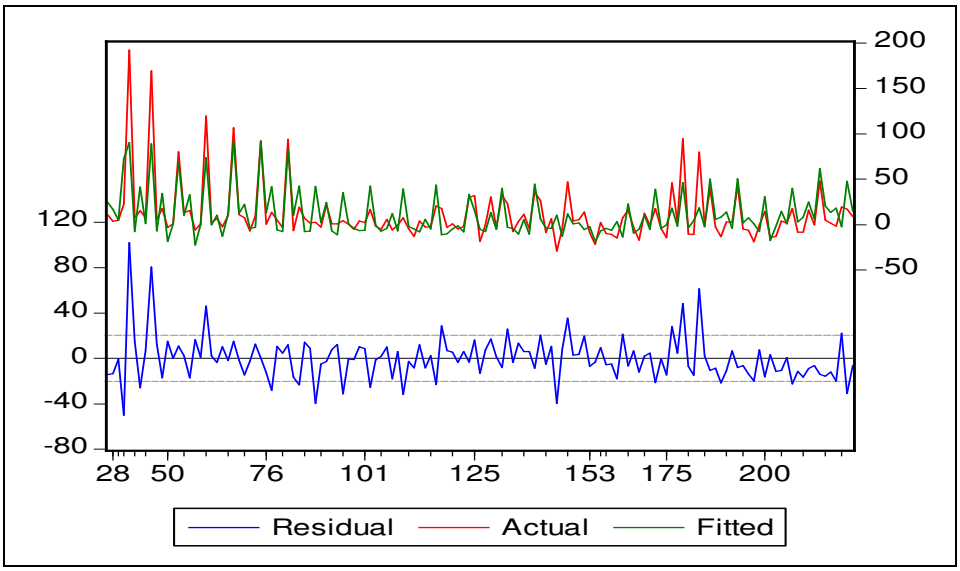



**Figure C6: Goodness of Fit and Normality of Residuals for the Nonresource-based Countries Capital Flight Benchmark Regression**

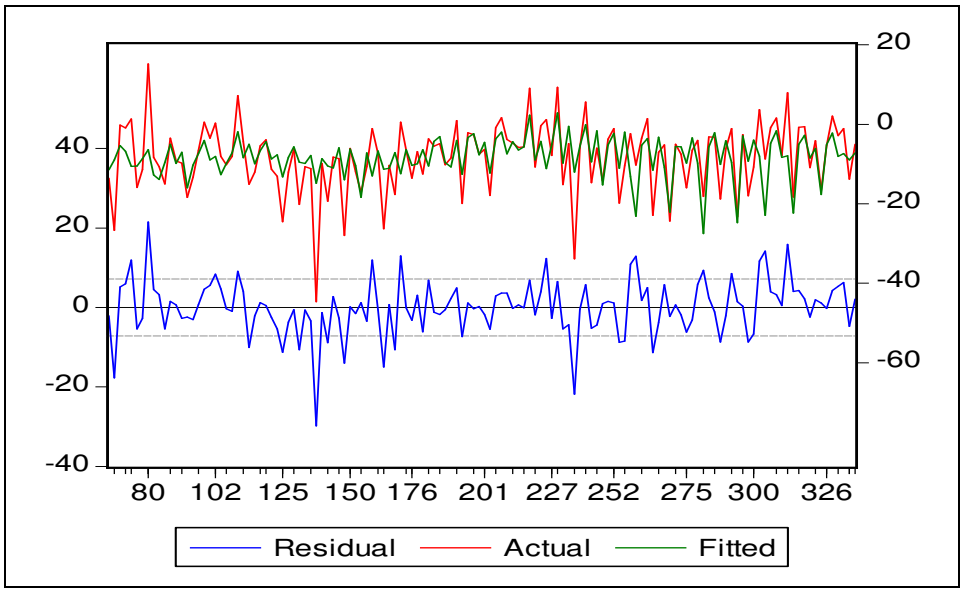


**Figure C7: Normality of the Residuals for Resource-based States Impact on Growth Benchmark Random Effects Model**

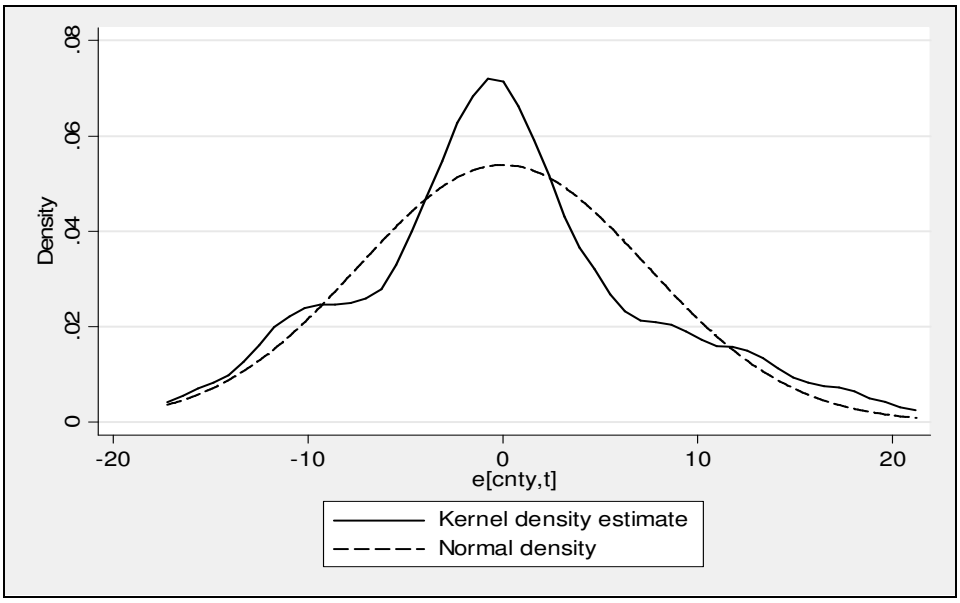



**Figure C8: Normality of the Residuals for Nonresource-based States Impact on Growth Benchmark Fixed Effects Model**

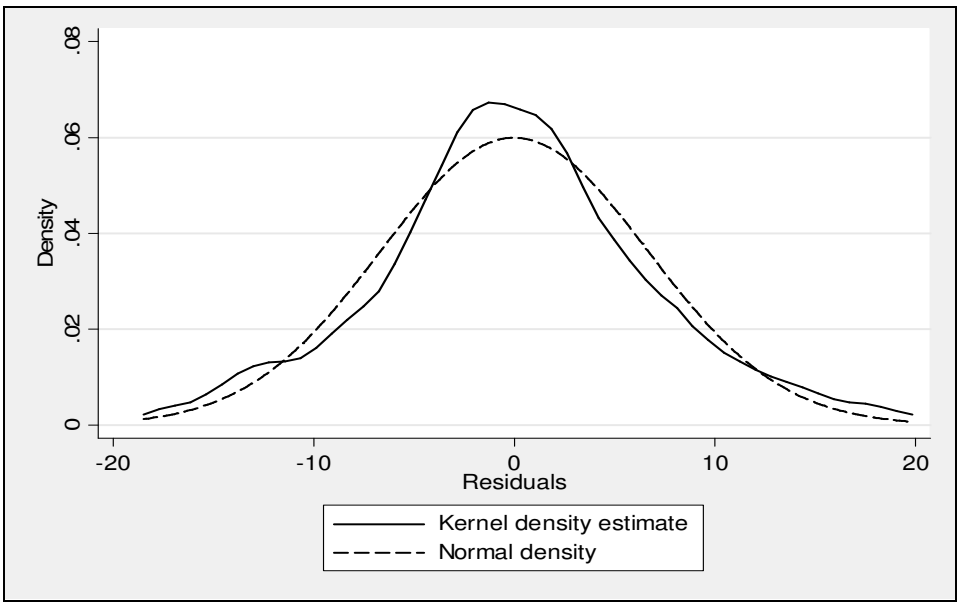


**Figure C9: Goodness of Fit and Normality of Residuals for the Resource-based Countries Impact on Growth Random Effects Model**

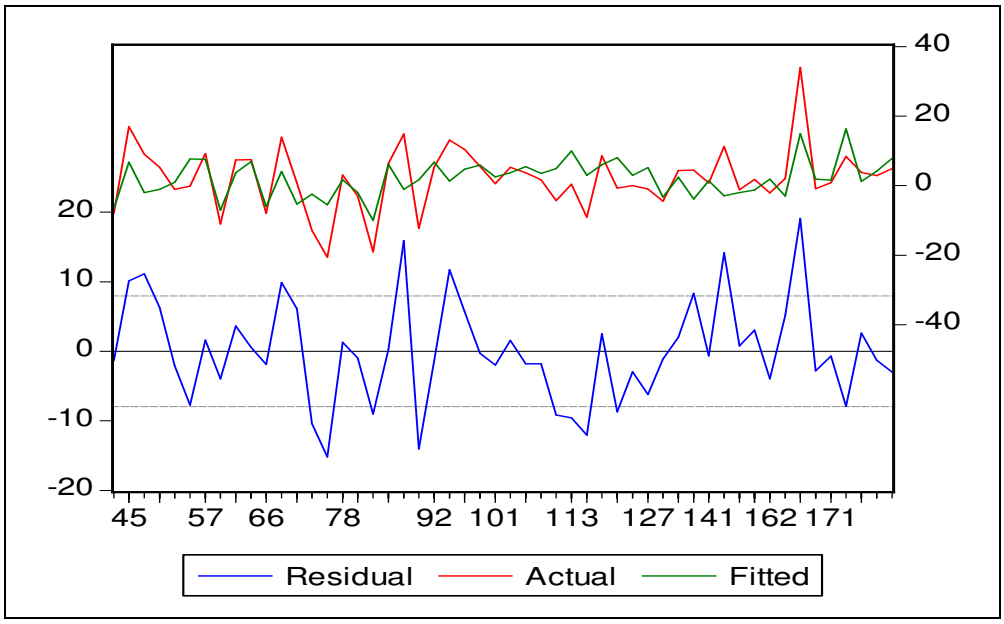
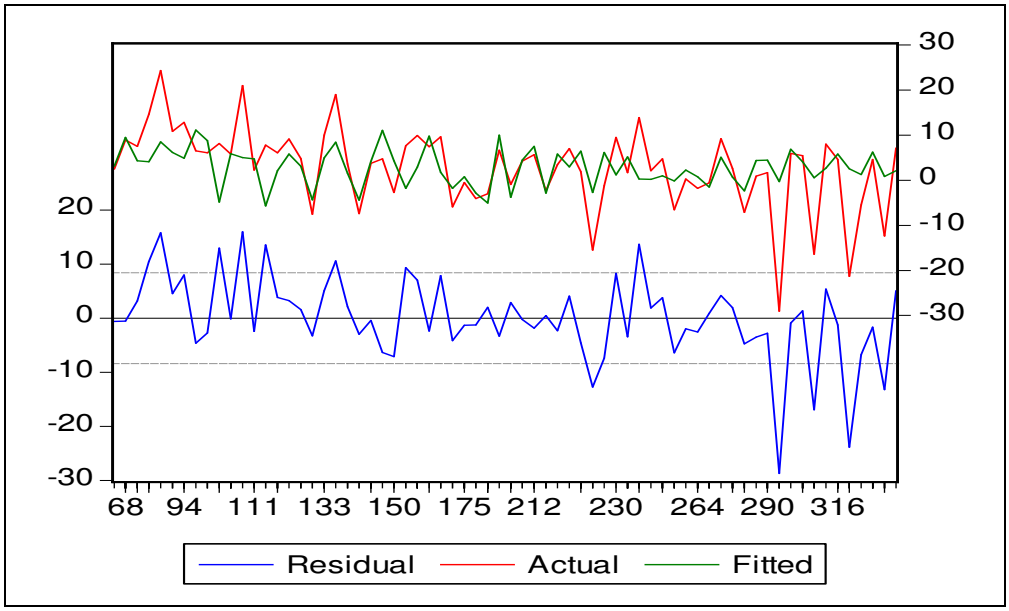



**Figure C10: Goodness of Fit and Normality of Residuals for the Nonresource-based Countries Impact on Growth Fixed Effects Model**



## References

Abed, George and Hamid R. Davoodi (2003) Challenges of Growth and Globalization in the Middle East and North Africa. International Monetary Fund.

Abootalebi, Ali (1999) Middle Eastern Economies: A Survey of Current Problems and Issues. *Middle East Review of International Affairs*, Volume 3, No. (3).

Ajayi, Ibi (1997) An Analysis of External Debt and Capital Flight in the Severely Indebted Low Income Countries in Sub-Saharan Africa. International Monetary Fund.

Almounsor, Abdullah (2003) The Economies of the MENA Region: Diagnosis and Prospects. University of Massachusetts-Amherst (Unpublished paper).

——— (2005) A Development Comparative Approach to Capital Flight: The Case of the Middle East and North Africa, *Capital Flight and Capital Controls in Developing Countries*. Edited by Gerald Epstein, Northampton: Edward Elgar Press, 234–261.

Baker, Dean, Gerald Epstein and Robert Pollin (2000) *Globalization and Progressive Economic Policy*. Cambridge University Press.

Bardhan, Pranab (2005) *Scarcity, Conflicts and Cooperation: Essays in the Political and Institutional Economics of Development*. Massachusetts Institute of Technology Press.

Beja, Edsel (2005) Capital Flight: Meanings and Measures, *Capital Flight and Capital Controls in Developing Countries*. Editor Gerald Epstein, Edward Elgar Press.

Bhagawati, Jagdish (1964) On the Underinvoicing of Imports. *Bulletin of Oxford University Institute of Economics and Statistics*, Vol. 26, 389–397.

Boyce, James and Leonce Ndikumana (2000) Is Africa a Net Creditor? New Estimates of Capital Flight from Severely Indebted Sub-Saharan African Countries 1970–1996, *Journal of Development Studies*, 38 (2), 27–56.

——— and ——— (2002) Public Debts and Private Assets: Explaining Capital Flight from Sub-Saharan African Countries. University of Massachusetts, Department of Economics and Political Economy Research Institute, Working Paper 32, (www.umass.edu/peri/pdfs/WP32.pdf).

Collier, Paul, Anke Hoeffler and Catherine Pattillo (2001) Flight Capital as a Portfolio Choice. *The World Bank Economic Review*, Vol. 15, No. I, 55–80.

Cuddington, John (1986) Capital Flight: Estimates, Issues and Explanations. *Princeton Studies in International Finance* No. 58.

Dooley, Michael (1986) Country Specific Risk Premiums, Capital Flight and Net Investment Income Payments in Selected Developing Countries. International Monetary Fund.

——— (1988) Capital Flight: A Response to Differential Financial Risks. International Monetary Fund Staff Papers, Vol. 35, No. 3, 422–436.

Epstein, Gerald (2005) *Capital Flight and Capital Controls in Developing Countries.* Edward Elgar Publishing, UK.

Field, Michael (1994) *Inside the Arab World*. John Murray Publishers Ltd., UK.

FitzGerald, Valpy and Alex Cobham (2000). Capital Flight: Causes, Effects, Magnitude and Implications For Development. University of Oxford.

Freedom House (2003). *Freedom in the World County ratings (1972–2003),* Freedom House.

Griffiths, William, Carter Hill and George Judge (1993). *Learning and Practicing Econometrics.* Wiley & Sons Inc, Chap. 12.

Hermes, N., R. Lensink and V. Murinde (2002) Flight Capital and its Reversal for Development Financing. World Institute for Development Economics Research, United Nations University.

International Monetary Fund (2003). *International Financial Statistics* (CD-ROM Edition).

——— (2003). *Direction of Trade Statistics* (CD-ROM Edition).

Karam, Philippe D. (2002) Exchange Rate Policies in Arab Countries: Assessment and Recommendations. Economic Policy Institute and Arab Monetary Fund, UAE.

Kaufmann, Daniel, Aart Kraay and Massimo Mastruzzi (2003) Governance Matters III: Governance Indicators for 1996–2002. The World Bank.

Morgan Guaranty Trust Company (March 1986) LDC Capital Flight. *World Financial Markets,* 13–15.

Onwioduokit, E. (2001) Capital Flight from Nigeria: An Empirical Re-examination. Accra. West African Monetary Institute, Ghana.

Owen, Roger and Sevket Paumuk (1998) *A History of Middle East Economies in the Twentieth Century*. Cambridge, MA: Harvard University Press.

Page, John (2003) Structural Reforms in the Middle East and North Africa. *Arab World Competitiveness Report*, 2002–2003, World Economic Forum 2003.

Pastor, Manuel, Jr. (1990) Capital Flight and the Latin American Debt Crisis. Economic Policy Institute, Washington D.C.

Puri, Shivani and Tineke Ritzema (1999) Migrant Worker Remittances, Micro-finance and the Informal Economy; Prospects and Issues. Working Paper No. 21, International Labor Organization.

Richards, Alan and John Waterbury (1990) *A Political Economy of the Middle East: States, Class and Economic Development*. Westview Press.

Schneider, Benu (2003) Measuring Capital Flight: Estimates and Interpretations. Oversees Development Institute, UK.

Stock, James and Mark Watson (2003). *Introduction to Econometrics*. Addison Wesley, Chap. 6 and 8.

Todaro, Michael and Stephen Smith (2006) *Economic Development*. 9th Edition, Addison Wesley.

Wei, Shang-Jin (2000) Local Corruption and Global Capital Flows. Brookings Papers on Economic Activities.

World Bank (2003), *World Development Indicators*, (CD-ROM Edition).

——— (2002), *World Development Report*, Washington D.C.

——— (2002), *Global Development Finance*, (CD-ROM Edition).

——— (2003) Trade, Investment, and Development in the Middle East and North Africa. World Bank, Washington D.C.