

Capital Flight from North African Countries



**Léonce Ndikumana and
James K. Boyce**

Political Economy
Research Institute

University of Massachusetts,
Amherst

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INTRODUCTION

North African countries have traditionally outperformed their sister nations south of the Sahara in terms of economic growth, enabling them to reach the middle-income status and drive down poverty to much lower levels. North Africa has enjoyed relatively stable growth rates, averaging over 3 percent per annum over the 2005-2011 period. Per capita income in the region ranges from \$2780 in Egypt to about \$10,000 in Libya, compared to an average of \$1445 for Sub-Saharan Africa (SSA). The 2010 Human Development Report profiled North African countries as success stories in non-income human development, especially education and health. Rodríguez and Samman (2010) called it the ‘North African Miracle’.

Since the end of 2010, however, it has become evident that this apparently positive economic record concealed structural and institutional deficiencies that eventually brought down the strong regimes. The North African ‘economic model’ proved to be unsustainable, mainly because of pervasive inequities in the distribution of wealth and power. Revolutions ensued.

Glowing reports on economic performance also hid the problem of illicit capital outflows that fueled the accumulation of private wealth by political elites and their business associates. As their regimes collapsed, the media began to be flooded by reports of large amounts of assets held abroad by Tunisia’s Ben Ali, Libya’s Qaddafi, Egypt’s Mubarak and their families. Qaddafi’s wealth reportedly includes assets in the United States (estimated at \$37 billion), United Kingdom (£12 billion), The Netherlands (\$2.1 billion), Austria (\$1.8 billion), Sweden (\$1.6 billion), and Switzerland (\$416 million).¹ No doubt more is yet to be discovered.

North African rulers built their illicit wealth largely from the appropriation of public assets, through opaque privatization processes, erection of private monopolies in key sectors of the economy, and outright embezzlement of government funds, possibly including externally borrowed loans and overseas development assistance. Thus, it is understandable that post-revolution governments should ask questions about the legitimacy of the debts inherited from former regimes. The new Government of Tunisia is demanding an audit of the debts incurred under the regime of Zine El Abidine Ben Ali.² If this is accomplished successfully, other countries in the region may follow suit.

This report provides estimates of the total amount of capital flight from four North African countries for which we have adequate data – Algeria, Egypt, Morocco and Tunisia – from 1970 to 2010.³ Despite evidence that Libya, too, has experienced large-scale capital flight, we could not include it in our sample due to lack of data on debt. This report extends our previous work on capital flight that has focused

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¹ Stolen Asset Recovery Initiative (StAR): <http://star.worldbank.org/corruption-cases/node/18438>.

² «La Tunisie refuse les dettes héritées de la dictature.» *Le Monde* 17 July 2012.

³ There is no adequate data for 1970 and 2010 for Algeria; therefore the series covers 1971-2009.

on SSA countries (Ndikumana and Boyce 2011a, 2011b, 2010, 2003, 1998; Boyce and Ndikumana 2001), and contributes to the growing literature that documents massive illicit financial flows from developing countries in general and African continent in particular (Henry 2012; UNDP 2011, Kar and Curcio 2011; Kar 2010; Kar and Cartwright-Smith 2010).

Our results indicate that over the 40 years, the four countries together lost more than \$450 billion (in constant 2010 dollars) through capital flight. The largest amount is from Algeria (\$267 billion), followed by Morocco (\$88 billion), Egypt (\$60 billion) and Tunisia (\$39 billion). The time-series evidence shows that capital flight is not a new phenomenon, but has been a systematic problem through the successive regimes that ruled these countries. The Tunisian case is something of an exception, in that the Ben Ali regime (1987-2010) accounts for over 87 percent of the Tunisia's cumulative capital flight recorded over the four-decade period. This report underscores the economic significance of North African capital flight, and why this issue warrants urgent attention from national stakeholders and the global community.

ESTIMATING CAPITAL FLIGHT

The 'residual' measure of capital flight

Capital flight is defined here as the net unrecorded capital flows between a country and the rest of the world. The starting point for our estimates is the country's Balance of Payments (BoP) statistics, which record inflows and outflows of foreign exchange. Because the BoP data have been found often to under-report external borrowing, data on debt flows are instead taken from the World Bank's *Global Development Finance* database (www.worldbank.org). The difference between recorded inflows and the recorded uses of foreign exchange provides the baseline 'residual' measure of capital flight (Erbe 1985, World Bank 1985). It is computed as follows:

$$KF_{it} = \Delta DEBTADJ_{it} + DFI_{it} - (CA_{it} + \Delta RES_{it}) \quad (1)$$

where $\Delta DEBTADJ_{it}$ is the change in the stock of external debt outstanding (adjusted for exchange rate fluctuations),⁴ DFI is net direct foreign investment, CA is the current account deficit, and ΔRES is net additions to the stock of foreign reserves.

Only a fraction of the 'leakages' revealed by this calculation can be attributed to statistical errors (Lane and Milesi-Ferretti 2007). Much of the unrecorded flows results from illicit transactions, pursued for a variety of motives including money laundering, tax evasion and tax avoidance. These have been accompanied and in some cases exacerbated by the increasing complexity of financial transactions resulting from globalization, the increasing sophistication of operations of multinational corporations with multiple domiciles across the globe, and the expansion of the "offshore interface between illicit and licit economies" (Christiansen 2009; also see Shaxson 2011, Henry 2012, Baker 2005).

⁴ See Ndikumana and Boyce (2010) for a detailed algorithm used to calculate the exchange rate adjustment.

Trade misinvoicing and unrecorded remittances

Data on external borrowing are not the only numbers that frequently are systematically misreported in official BoP statistics. Trade misinvoicing can substantially distort official measures of exports and imports, and remittance receipts from overseas workers can bypass official recording. Using alternative data sources, we can adjust the simple residual estimate of capital flight to correct for these errors.

Trade misinvoicing

Misinvoicing of international trade transactions occurs for several reasons. On the export side, operators may underinvoice exports (by understating their quantity, price, or both) so as to conceal their actual earnings and keep the difference in foreign accounts. This can be an important conduit for capital flight, as our results will illustrate. On the import side, businesses may overinvoice their import bills in order to obtain extra foreign currency from banking authorities, again stashing the difference abroad in private accounts or other assets – another mechanism of capital flight. On the other hand, imports may be under-invoiced or not recorded at all so as to circumvent customs duties, phenomena known as ‘technical smuggling’ and ‘pure smuggling,’ respectively. Imports must be paid for regardless of whether they are reported in full to the authorities or not. Payments for smuggled imports can be considered another type of illicit financial flow, distinct from capital flight.⁵

The amount of trade misinvoicing is estimated by comparing a country’s declared imports and exports statistics to those of its trading partners. For example, exports by Tunisia to France, as reported in Tunisia’s official trade statistics, are compared to France’s imports from Tunisia as declared in France’s official trade statistics (after adding the cost of freight and insurance to the value declared by Tunisia). Tunisia’s imports from France are compared to France’s exports to Tunisia in a similar fashion. The data used for these comparisons are compiled in the IMF’s *Direction of Trade Statistics*.

Assuming trade statistics reported by advanced economies to be more reliable, we calculate trade misinvoicing of North African countries relative to this group, and use this as a benchmark to compute overall trade misinvoicing.⁶ Export misinvoicing typically shows a net outflow – and hence results in an addition to the residual measure of capital flight. The net effect of import misinvoicing can go either way, adding to capital flight when overinvoicing dominates smuggling, and subtracting from it when the reverse is true.

Total trade misinvoicing is obtained as follows:

⁵ While export misinvoicing and import misinvoicing can be estimated separately from the IMF *Direction of Trade Statistics*, we cannot use these aggregate data to separate out import overinvoicing and import underinvoicing. Only their net effect can be calculated, which is what matters in estimating total capital flight.

⁶ For details, see Ndikumana and Boyce (2010).

$$\text{MISINV}_{it} = \text{DX}_{it} + \text{DM}_{it} \quad (2)$$

where MISINV is total trade misinvoicing, DX is export misinvoicing, and DM is import misinvoicing, with positive signs indicating net underinvoicing in the case of exports and net overinvoicing in the case of imports.

Unrecorded worker remittances

Worker remittances are often under-reported in the official BoP statistics of developing countries. This has the same effect as underreporting of exports. We estimate unrecorded remittances by comparing the country's officially recorded remittances as reported in the BoP to survey-based estimates compiled by the International Fund for Agricultural Development (IFAD).⁷ In comparing these measures, we consider only the IFAD estimates of remittances flows from industrialized countries, as they are likely to be more reliable. In principle, the BoP value should be larger because it includes remittances from the entire world, not only from the industrialized countries. When the IFAD estimate exceeds the BoP value, we take this as evidence of underreporting and calculate the discrepancy. It turns out that this is the case for Algeria, but not for the other three countries. We then extrapolate the discrepancy based on IFAD's data for the year 2006 to estimate discrepancies for earlier and subsequent years, based on the trend in overall African remittance inflows reported in the BoP statistics. The formula is as follows:

$$\text{RID}_{it} = (\text{ARI}_{i,2006} - \text{BPRI}_{i,2006}) * \text{BPRI}_t / \text{BPRI}_{2006} \quad (3)$$

where RID_{it} is the remittance inflow discrepancy in country i in year t ; $\text{ARI}_{i,2006}$ and $\text{BPRI}_{i,2006}$ are the alternative and BoP measures, respectively, of remittance inflows in country i in the year 2006; and BPRI_t and BPRI_{2006} are the BoP measures of remittance inflows to all African countries in years t and 2006, respectively.

The total magnitude of capital flight in a given year t for a country i is obtained by summing the above components as follows:

$$\text{ADJKF}_{it} = \Delta \text{DEBTADJ}_{it} + \text{DFI}_{it} - (\text{CA}_{it} + \text{CRES}_{it}) + \text{MISINV}_{it} + \text{RID}_{it} \quad (4)$$

where ADJKF is the residual measure adjusted for trade misinvoicing and underreporting of remittances.

A detailed list of the variables used in these computations is provided in Appendix Table A.1.⁸

Real capital flight and stock of capital flight

To facilitate analysis of capital flight over time, we express our results in constant 2010 dollars, using the US GDP deflator to convert nominal to real values. We also

⁷ See N&B 2010 for details.

⁸ Data for Algeria on the current account, foreign direct investment, and change in reserves are missing in the BoP for 1992-2004. These years were filled using data from various editions of the IMF Staff Country Reports (<http://www.imf.org/external/country/DZA/index.htm>) and Banque Centrale de l'Algerie (2006) *Bulletin Statistique de la Banque de l'Algerie: Series Rétrospectives*, Hors Séries (Juin 2006).

calculate the accumulated stock of capital flight by imputing interest earnings using the United States short-term Treasury bill rate. Of course, not all the capital flight from North African countries was invested at this rate of return. Some was squandered on extravagant consumption, some may have earned lower returns, and some may have earned higher returns than the rather conservative T-bill benchmark. Regardless, our estimated stock of capital flight provides a measure of opportunity costs to the source country; that is, the benefits foregone by virtue of the loss of capital that could have been invested in infrastructure, health, education, or other productive uses. The estimated stock of capital flight suggests the magnitude of these losses to the country.

RESULTS

Volume of capital flight from the region

The four North African countries as a group experienced capital flight to the tune of \$453.6 billion (in constant 2010 dollars) over the period 1970-2010 (see Table 1). This is equivalent to 87.9 percent of their combined GDP in 2010. With a combined population of 159 million, this translates into a capital loss of \$2851 per capita.

TABLE 1: CAPITAL FLIGHT: REAL VALUES AND WITH IMPUTED INTEREST, 1970-2010

Country	Total capital flight (constant 2010 \$, billion)	Capital flight with interest (billion \$)	Debt stock 2010 (billion \$)	Net external assets ⁽¹⁾ (billion \$)	Total ODA 1970-2010 (constant 2010 \$, billion)	Total capital flight / 2010 GDP (percentage)	Total capital flight per capita (dollars)
Algeria	267.2	355.3	5.3	350.1	15.2	165.0	7533.4
Egypt	59.7	110.1	34.8	75.3	132.2	27.3	736.0
Morocco	87.7	108.6	25.4	83.2	42.0	96.6	2744.9
Tunisia	38.9	45.2	21.6	23.6	18.0	88.1	3695.7
Total and average	453.6	619.2	87.1	532.1	207.4		
Weighted average						87.9	2851.2

⁽¹⁾ Note: "net external assets" = capital flight with interest minus debt stock in 2010.

If we assume that flight capital flight earned, or could have earned, a modest rate or return equal to the United States Treasury bill rate, the compounded loss stands at \$619.2 billion over the four decades. This vastly exceeds the four countries' total external liabilities of \$87.1 billion in 2010. In this sense, rather than being indebted to the rest of the world, the four countries in fact are 'net creditors' to the rest of the world to the tune of more than \$500 billion. The key difference between external debt and capital flight is that the former is a liability of the people as a whole through their governments, while the assets belong to private individuals who surreptitiously transferred them abroad. Each of these countries would be debt-free if they could recoup only a fraction of their assets that were illicitly transferred abroad.

Total capital flight also exceeds the cumulative official development aid received by these countries over the same period, which amounted to a combined \$207.4 billion. At the country level, Egypt is an exception, since total aid (\$132.2 billion) exceeded total capital flight (\$59.7 billion). Apart from this exceptional case, the results are consistent with the belief that many African countries would not need aid if they were able to keep their resources onshore.

Trade misinvoicing appears to have been an important mechanism for capital flight in North African countries, as it in SSA and many other developing countries. For the four countries as a group, export underinvoicing accounted for \$441.6 billion. This was partly offset by net import underinvoicing (smuggling) to the tune of \$345.2 billion, resulting in net unrecorded outflows through trade misinvoicing of \$96.4 billion over the four decades (see Table 2). We find net import overinvoicing in Algeria and Tunisia, and net import underinvoicing in Egypt and Morocco.

TABLE 2: COMPONENTS OF CAPITAL FLIGHT, TOTAL 1970-2010 (CONSTANT 2010 \$, BILLION)

Country	Total capital flight	BoP 'residual'	Export misinvoicing	Import misinvoicing	Total trade misinvoicing	Unreported remittances
Algeria	267.2	56.1	103.0	38.2	141.2	69.9
Egypt	59.7	174.5	237.9	-352.8	-114.8	0
Morocco	87.7	47.8	86.2	-46.3	39.8	0
Tunisia	38.9	8.8	14.5	15.7	30.1	0
Total	453.6	287.3	441.6	-345.2	96.4	69.9

Highlights by country

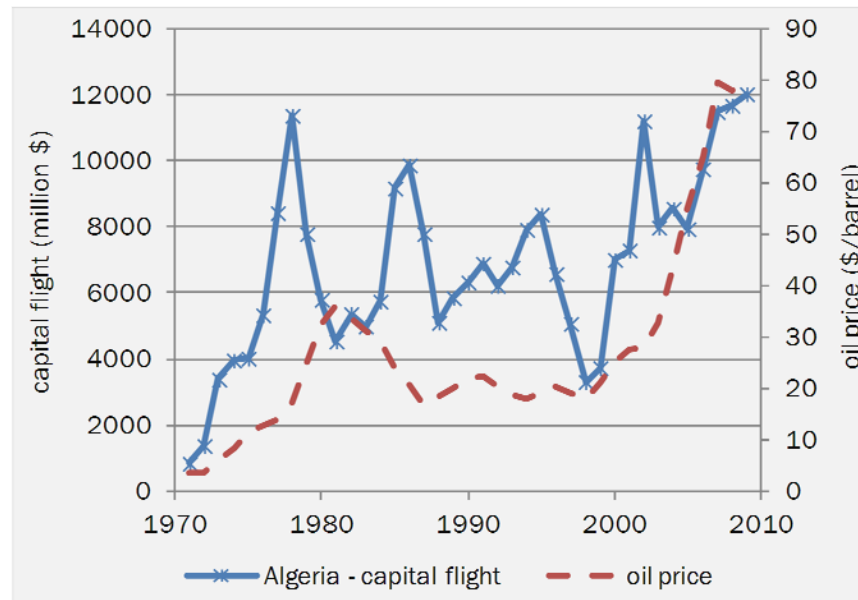
There are substantial variations in the time trends of capital flight across the four North African countries. In all these countries, however, it is clear that capital flight is not a new phenomenon. The time series for capital flight by country are provided in Appendix Table A.2.

Algeria

Capital flight from Algeria totaled \$267 billion (in 2010 dollars), the largest of the four countries in per capita terms as well as in absolute magnitude. It has followed a generally increasing trend over time (see Figure 1). On average, the country lost \$6.8 billion per year during the period 1971 to 2009. This amount is equivalent to 8.5 percent of GDP and 25.1 percent of annual gross capital formation. There has been a steep rise in capital flight since 1999, a period that also saw oil prices increase from \$14 per barrel 1998 to \$79 per barrel in 2010. The coefficient of correlation between capital flight and oil prices is 0.66 for the 1971-2009 period as a whole, and 0.76 for the 1999-2009 period. Oil, gas and associated fuel products account for 97 percent of Algeria's total merchandise exports, and the sector is likely to be a

prominent source of flight capital. Our estimates indicate that export misinvoicing alone accounted for roughly 40 percent of Algerian capital flight. The strong correlation between oil prices and capital flight suggests that oil revenues that did enter the country (rather than being retained abroad through underinvoicing) also were a source of capital flight.

FIGURE 1: CAPITAL FLIGHT FROM ALGERIA FROM 1970-2010, 3-YEAR MOVING AVERAGE (CONSTANT 2010 \$, MILLION)

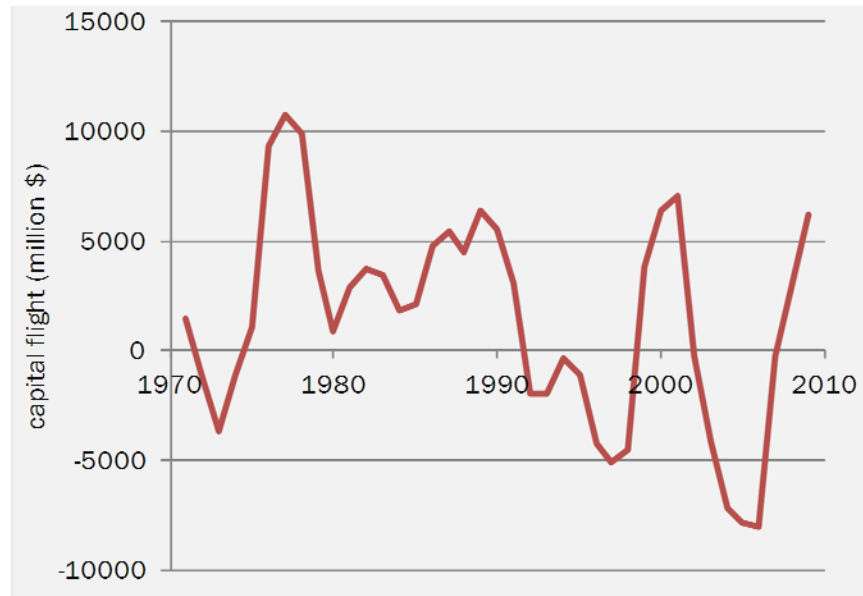


Source: Oil price series are from the US Federal Reserve Bank database (online: <http://research.stlouisfed.org/fred2/data/OILPRICE.txt>).

Egypt

Capital flight from Egypt exhibited large fluctuations over the past four decades (see Figure 2). The country lost an average of \$1.5 billion (in 2010 dollars) annually, equivalent to 2.9 percent of GDP and 7.6 percent of gross capital formation. Throughout the period from 1975 to 1992 there were net capital outflows, averaging \$4.4 billion per year. Thereafter there were substantial reversals in the late 1990s and mid-2000s. The negative flows reflect large-scale import smuggling in these years. While import smuggling does not represent a loss of capital to the rest of the world, the phenomenon deserves serious attention. Evasion of customs duties means revenue losses for the government. Rampant smuggling also can be a symptom of broader dysfunctionality of the regulatory system.

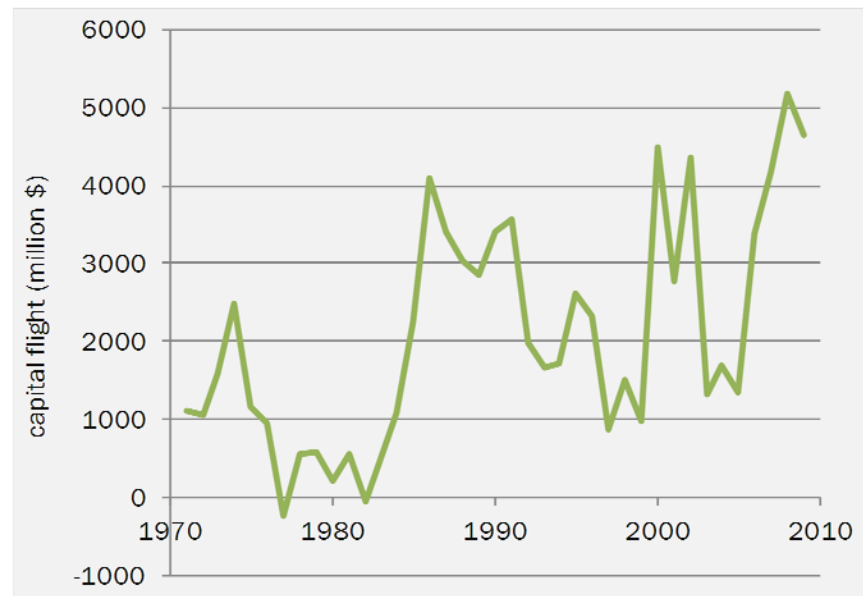
FIGURE 2: CAPITAL FLIGHT FROM EGYPT FROM 1970-2010, 3-YEAR MOVING AVERAGE (CONSTANT 2010 \$, MILLION)



Morocco

Morocco has experienced net unrecorded capital outflows consistently since 1983 (see Figure 3). Over the 1970-2010 period, the country lost \$2.1 billion (in 2010 dollars) annually through capital flight, equivalent to 5 percent of GDP and 21.5 percent of gross capital formation. There was a steep rise in capital flight in the mid-1980s and it has been on the rise again since 2005. Trade misinvoicing represents a serious problem in Morocco, too. Export underinvoicing amounted to over \$86 billion in the period, while misinvoicing of imports resulted in net smuggling of \$46 billion.

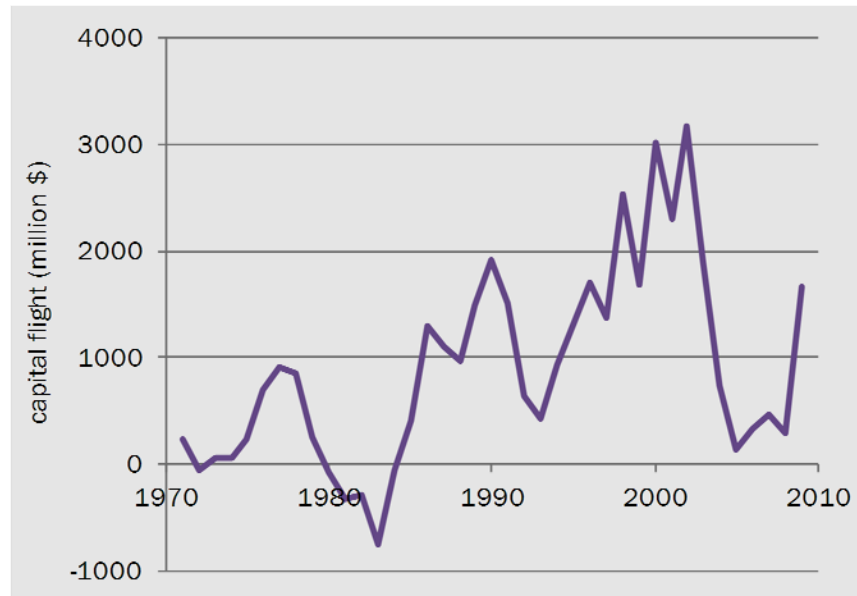
FIGURE 3: CAPITAL FLIGHT FROM MOROCCO FROM 1970-2010, 3-YEAR MOVING AVERAGE (CONSTANT 2010 \$, MILLION)



Tunisia

During the four decades from 1970 to 2010, Tunisia lost \$905 million (in 2010 dollars) annually on average, equivalent to 3.9 percent of GDP and 15.9 percent of gross capital formation. Capital flight really took off in 1984, with an upward trend that extended through 2003. During the Ben Ali regime (1987-2010), the country lost \$33.9 billion through capital flight, and capital flight averaged \$1.5 billion per year, compared to \$278 million over the 1970-87 period under the Bourguiba regime. This finding lends support to the new government's call for an audit of debts inherited from the Ben Ali regime. Evidence from Sub-Saharan African countries indicates that a large fraction of external borrowing leaks out as capital flight. A Tunisian debt audit could shed light on this important issue to the benefit of the country and its legitimate creditors.

FIGURE 4: CAPITAL FLIGHT FROM TUNISIA FROM 1970-2010, 3-YEAR MOVING AVERAGE (CONSTANT 2010 \$, MILLION)



IMPLICATIONS OF CAPITAL FLIGHT FROM NORTH AFRICAN COUNTRIES: WHY WE SHOULD CARE

The large volume of capital flight from North African countries has important implications for economic development, social equity, and political dynamics in the region.

The illicit nature of unrecorded flows

Capital flight consists of unrecorded capital flows. While some may argue that capital flight is motivated mainly by normal portfolio management decisions aimed at

maximizing risk-adjusted returns to investments, there is little evidence to back this claim (Ndikumana and Boyce 2003). Capital flight is illicit insofar as it breaks the law at one or more of three stages:

(1) *Acquisition of capital*: This is the case for capital acquired through corruption (e.g., kickbacks and false pricing on government projects), embezzlement of national resources (e.g., revenue of national oil companies and public export agencies), trade in illicit goods and services (e.g., drugs and human trafficking), and money laundering.

(2) *Transfer of the capital abroad*: Capital transfers are illicit if they are not recorded with national authorities. In this respect, all of the capital flight measures here is illicit. Unrecorded transfers are generally motivated by tax avoidance, tax evasion, and the desire to avoid scrutiny on the origin of illicitly acquired funds.

(3) *Secret holdings of foreign assets*: Failure to report foreign asset holdings again is likely to be motivated by avoidance of scrutiny on the origin and mode of transfer of the funds, as well as tax evasion and tax avoidance.

The illicit nature of capital flight should make it a matter of concern to all stakeholders nationally and internationally.

Social costs

Capital flight carries high opportunity costs for the source country and its people. It represents a net reduction in national savings, and thus implies forgone investment opportunities. Domestic capital accumulation is lower than its potential level, resulting in sub-optimal growth over time. Capital flight also reduces the tax base, which in turns means less government revenue for investments in public infrastructure and social services such as education and health.

Insofar as some of the capital flight was fueled by external debt, countries incur later costs arising from debt service. When some of the borrowed funds are siphoned out as capital flight, one might argue that at least the country gets to use the remaining fraction of the loans for development purposes. The problem is that the country eventually must repay all the debt, with interest, including the fraction that fueled capital flight. Although North African countries are not severely indebted by conventional measures, their debt burdens have increased over time despite debt restructuring initiatives. For example, Tunisia's 2010 external debt service amounted to 5.2 percent of GDP (down from 8.8 percent in 2000). This was equivalent to 93 percent of the government's spending on public health. There are therefore compelling economic grounds for closely scrutinizing the legitimacy of inherited external debt.

Equity and political economy implications

In analyzing inequality within and across countries, the economic literature has typically focused on income, and to a lesser extent on access to services. One important factor that often is overlooked is the distributional impact of asset accumulation via illicit financial flows. Insofar as these flows primarily serve the political and economic elites, the accumulation of illicit wealth abroad widens the income and asset gap between the rich and the poor. The loss in government revenue and the resultant adverse impact on social service delivery causes further deprivation for the poor who are least able to afford private services. The middle class also suffers the negative effects of inadequate provision of social services, as they cannot afford to procure these services abroad. The elites who can obtain services abroad are insulated from the effects of shortages and inefficiencies at home, and this creates a perverse incentive structure that helps to perpetuate underfunding of social services, further exacerbating social inequity and poverty. Capital flight also can help the ruling elite to consolidate power by providing a source of financing for its security apparatus. Ultimately, capital flight weakens the mechanisms of control, erodes the quality of institutions, and undermines individual freedoms and political liberty.

CONCLUDING REMARKS

This report clearly shows that capital flight is a serious economic, social and political-economy problem in North African countries. While these countries have achieved high levels of development relative to their sister nations south of the Sahara, they too have suffered from financial hemorrhages through capital flight. The burden on their economies is substantial in terms of lost investment and foregone government revenue, with adverse effects on economic growth and social service delivery.

These unrecorded outflows are illicit, in that the funds were not only transferred abroad illegally, but also often acquired illegally and remain hidden out of the sight of national authorities of the source countries. Capital flight therefore represents not only an economic problem, but also a political concern that must be addressed as such. It is a source of social inequity that is likely to feature prominently on the policy agenda of the North African governments in the post-revolution era.

TABLE A.1: VARIABLES USED IN THE COMPUTATION OF CAPITAL FLIGHT AND DATA SOURCES

<i>DA</i>	Total external public debt outstanding Printed source: <i>World Debt Tables</i> Electronic source: Balance of Payments (BOP) CDROM; International Financial Statistics (IFS) CDROM; World Development Indicators/Global Development Finance (WDI/GFI) Online
<i>CA</i>	Current account deficits Printed source: <i>Balance of Payment Statistics Yearbook</i> , Table 1 Electronic source: BOP CDROM; IFS CDROM; WDI/GFI Online
<i>DFI</i>	Direct foreign investment Printed source: <i>Balance of Payment Statistics Yearbook</i> , Table 1 Electronic source: BOP CDROM; IFS CDROM; WDI/GFI Online
<i>CRES</i>	Change in reserves and related items Printed source: <i>Balance of Payment Statistics Yearbook</i> , Table 1 Electronic source: BOP CDROM; IFS CDROM; WDI/GFI Online
<i>XTOT</i>	Total exports to the world Printed source: <i>Direction of Trade Statistics Yearbook</i> , part B Electronic source: DOTS CDROM
<i>XIC</i>	Exports to industrialized countries as reported by the African country Printed source: <i>Direction of Trade Statistics Yearbook</i> , part B Electronic source: DOTS CDROM
<i>MTOT</i>	Total imports from the world Printed source: <i>Direction of Trade Statistics Yearbook</i> , part B Electronic source: DOTS CDROM
<i>MIC</i>	The LDC's imports from industrialized countries as reported by the African country Printed source: <i>Direction of Trade Statistics Yearbook</i> , part B Electronic source: DOTS CDROM
<i>PMIC</i>	The LDC's imports from industrialized countries as reported by industrialized countries Printed source: <i>Direction of Trade Statistics Yearbook</i> , part A Electronic source: DOTS CDROM
<i>PXIC</i>	The LDC's exports to industrialized countries as reported by industrialized countries Printed source: <i>Direction of Trade Statistics Yearbook</i> , part A Electronic source: DOTS CDROM
<i>CIF_FOB</i>	CIF/FOB factor Either calculated using import data (DOT) or assumed to be 1.10
<i>USGDPD</i>	US GDP deflator Printed source: <i>International Financial Statistics Yearbook</i> Electronic source: IFS CDROM
<i>TBILL</i>	US Treasury Bill rate Printed source: <i>International Financial Statistics Yearbook</i> Electronic source: IFS CDROM
	Exchange rates of the French franc, Deutsche mark, Swiss franc, Pound sterling, Yen, and SDR against the dollar: Printed source: <i>International Financial Statistics Yearbook</i> Electronic source: IFS CDROM

TABLE A.2: CAPITAL FLIGHT BY COUNTRY, 1970-2010 (CONSTANT 2010 \$, MILLION)

Year	Algeria	Egypt	Morocco	Tunisia
1970	n.a.	3361.6	1820.6	305.4
1971	837.7	3214.5	687.8	262.8
1972	843.6	-2132.4	822.0	153.3
1973	2446.8	-4810.1	1632.5	-580.8
1974	6862.6	-3960.5	2342.5	574.8
1975	2583.5	5311.9	3472.4	176.6
1976	2612.5	1830.0	-2299.7	-64.8
1977	10797.5	20908.4	1707.5	1978.7
1978	11858.4	9409.6	-113.8	783.1
1979	11446.4	-564.4	118.2	-202.4
1980	66.7	2159.2	1777.9	200.3
1981	5892.3	932.8	-1231.1	-223.0
1982	7658.9	5507.0	1120.2	-988.2
1983	2554.0	4595.6	-46.7	345.2
1984	4766.9	298.4	381.5	-1595.0
1985	9913.2	683.1	2951.9	1082.1
1986	12822.5	5371.5	3380.2	1748.3
1987	6865.3	8311.6	5985.6	1050.3
1988	3683.2	2573.4	890.5	530.6
1989	4764.0	2448.6	2244.2	1335.5
1990	9099.5	14020.9	5449.1	2601.9
1991	5110.8	169.4	2556.0	1796.6
1992	6464.0	-4913.4	2722.6	136.0
1993	7094.3	-1193.8	643.9	-7.1
1994	6777.6	133.9	1664.6	1161.5
1995	9877.0	-75.8	2808.8	1632.6
1996	8476.0	-3501.0	3394.7	1161.2
1997	1389.3	-9118.4	772.8	2305.7
1998	5356.3	-2546.2	-1513.3	660.5
1999	3194.9	-1958.7	5232.8	4647.0
2000	2653.9	15952.0	-801.9	-271.8
2001	15173.9	5240.2	9050.9	4672.4
2002	4052.7	62.1	41.3	2513.0
2003	14381.5	-6101.4	3949.5	2335.8
2004	5519.4	-6333.1	-29.7	824.1
2005	5761.1	-9046.7	1138.1	-981.3
2006	12530.0	-8037.1	2958.1	579.6
2007	10965.2	-6928.8	6063.7	1358.9
2008	10945.1	14296.6	3463.5	-572.0
2009	13097.2	1383.1	5988.0	109.8
2010	n.a.	2752.0	4505.8	5449.6

n.a. = not available

Source: Authors' computations (see text for algorithm and Table A.1 for data sources).

REFERENCES

- Banque Centrale de l'Algerie (2006) *Bulletin Statistique de la Banque de l'Algerie: Series Rétrospectives*. Hors Séries (Juin 2006).
- Boyce, J. K. and L. Ndikumana (2001) "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.
- Christiansen, J.E. (2009) "Africa's Bane: Tax Havens, Capital Flight and the Corruption Interface." Real Instituto Encarno, Working paper 1/2009 - 8/1/2009
- Henry, J.S. (2012). *The Price of Offshore Revisited*. Tax Justice Network, London, (July).
- Kar, D. (2010). "The Drivers and Dynamics of Illicit Financial Flows from India: 1948-2008." *Global Financial Integrity* (November).
- Kar, D. and K. Curcio (2011) "Illicit financial flows from developing countries: 2000-2009. Update with a focus on Asia." *Global Financial Integrity* (January).
- Kar, D. & D. Cartwright-Smith (2010) "Illicit Financial Flows from Africa: Hidden Resource for Development." *Global Financial Integrity* (March).
- Lane, P.R. and G.M. Milesi-Ferretti (2007) "The external wealth of nation mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004." *Journal of International Economics* 73: 223-250.
- Ndikumana, L. and J.K. Boyce (2011a) *Africa's Odious Debts: How Foreign Loans and Capital Flight Bled a Continent*. London: Zed Books.
- Ndikumana, L. and J.K. Boyce (2011b) "Capital flight from sub-Saharan African countries: linkages with external borrowing and policy options." *International Review of Applied Economics* 25(2): 149–70.
- Ndikumana, L. and J.K. Boyce (2010) "Measurement of capital flight: methodology and results for sub-Saharan African countries." *African Development Review* 22(4): 471–81.
- Ndikumana, L. and J. K. Boyce (2003) "Public Debts and Private Assets: Explaining Capital Flight from Sub-Saharan African Countries." *World Development* 31(1): 107-130.
- Ndikumana, L. and J. K. Boyce (1998) "Congo's Odious Debt: External Borrowing and Capital Flight in Zaire." *Development and Change* 29(2): 195-217.
- Rodríguez, F.R. and E. Samman (2010) "The North African miracle." *Let's Talk Human Development (blog)* <http://hdr.undp.org/en/humandev/lets-talk-hd/2010-11b/>
- Shaxson, N. (2011) *Treasure Islands: Tax Havens and the Men Who Stole the World*. London: Bodley Head.
- UNDP (2011) *Illicit Financial Flows from the Least Developed Countries: 1990–2008*. Discussion Paper (May 2011)

ABOUT THE AUTHORS Léonce Ndikumana is Andrew Glyn Professor of economics at the University of Massachusetts. He is also Director of the African Policy Program at the Political Economy Research Institute. He is co-author (with James Boyce) of *Africa's Odi-ous Debt: How Foreign Loans and Capital Flight Bled a Continent*, in addition to sev-eral dozens of academic articles and book chapters on African development and Macroeconomics. He is a graduate of the University of Burundi and received his doctorate from Washington University in St. Louis, Missouri.

James K. Boyce is professor of economics at the University of Massachusetts, Amherst, where he directs the program on development, peacebuilding, and the envi-ronment at the Political Economy Research Institute. He received his PhD in economics from Oxford University. His is the co-author (with of Léonce Ndikumana) of *Africa's Odi-ous Debts: How Foreign Loans and Capital Flight Bled a Continent* (Zed, 2011), and author of *Investing in Peace: Aid and Conditionality Af-ter Civil Wars* (Oxford University Press, 2002) and *The Philippines: The Political Economy of Growth and Impoverishment in the Marcos Era* (Macmillan, 1993).

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