CAPITAL FLIGHT AND FLOW OF FUNDS*

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Abstract

This paper specifies three asset demand equations in a flow-of-funds framework to underpin the demand for capital flight, domestic money, and foreign debt. The estimation uses data on four groups of African countries over 1970–2010: (1) the entire sample of 39 African countries; (2) South Africa, Algeria, Nigeria, and Egypt (SANE); (3) oil- and natural resource-rich countries; and (4) all countries excluding the SANE countries. The results show that across the four groups the demand for capital flight mimics habit persistence. Moreover, past external debt is positively related to current capital flight, suggesting debt-fueled capital flight and asset complementarity rather than asset substitution. The impact of factors such as inflation and growth on the demand for the three assets is unique to each country group.

Keywords: Capital flight; flow of funds; Africa

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1. Introduction

While some economic agents such as households and firms may hold their wealth in terms of domestic money (say, in cash and bank deposits), others—including governments and firms—may hold foreign debt through cross-border borrowing. Still others may engage in capital flight, stashing away their funds outside the reach of tax officials in the country of residence. It is possible that these economic agents make portfolio choices by deciding how much they would like to hold in bank accounts at home in the form of cash, how much to hold as foreign debt, and how much to hold as capital flight. Hence economic agents not only make portfolio choices by deciding what proportion of their wealth they would like to hold abroad as capital flight, but they also make asset substitution decisions by, for example, drawing upon funds held abroad to replenish domestic cash holdings.

The decision to hold a financial asset is usually influenced by risk and returns. In a standard Capital Asset Pricing Model (CAPM), the portfolio choices described above may be influenced by many other additional factors, as is typical in Arbitrage Pricing Theory (APT) (Sharpe, 1970; Ross, 1976). Economic agents may deplete their domestic cash holdings and bank balances and take their funds abroad as capital flight in case of political risk or governance problems, or in the presence of high and persistent inflation, which erodes the value of domestic money.

This paper builds upon a flow-of-funds approach to investigate capital flight behavior in a sample of 39 African countries over the period 1970–2010. We do not construct and calibrate a flow-of-funds framework; rather, we consider the main assets that may feature in a typical flow of funds matrix, namely the balances of financial assets for all the sectors. We specify a portfolio choice model in which capital flight is one of the assets in a portfolio held by economic agents in each of the 39 African countries. The model is estimated and tested

using the random effects estimation method on four different groups of African countries: (1) the full sample of 39 African countries; (2) South Africa, Algeria, Nigeria, and Egypt (SANE); (3) oil- and natural resource-rich countries; and (4) all countries excluding the SANE countries. The results show consistently that capital flight is persistent over time and that external debt fuels capital flight. High inflation is another culprit, suggesting that inflation erodes the real value of domestic assets and pushes residents to hold part of their portfolio abroad. It is also found that portfolio choices enable asset complementarity, as well as asset substitution, among capital flight, debt holdings, and domestic money.

At least three influential papers have examined capital flight as a portfolio choice (Collier et al., 2001; Lawanson, 2007, 2011). In each of these, capital flight is measured as a proportion of private wealth. This paper departs from existing research by specifying asset demand equations for three financial assets—namely, capital flight, domestic money, and foreign debt.

The remainder of the paper is organized in four sections. Section 2 presents a brief review of the relevant literature, emphasizing the flow-of-funds context and the imperative to investigate portfolio choices made by agents in African countries. Section 3 discusses the methodology used, including the model and data. Section 4 presents the estimation results. Conclusions and policy implications are discussed in Section 5.

2. Brief review of the literature

Since the early 1980s, the literature on capital flight has examined the definitions, measurement, magnitudes, and key factors that drive capital flight in African countries (Ajayi, 1997; Hermes et al., 2003; Ndikumana et al., 2014). Most papers focused on diagnosing the capital flight problem and making remedial policy prescriptions (Lensink et al., 2000; Boyce and Ndikumana, 2001). When some countries in Africa started to experience

capital flight reversal, the literature followed suit and examined the empirical underpinnings of the repatriation of capital flight back into Africa (Hermes et al., 2004).

In spite of the expansion of the literature over the last thirty years, there is no common agreement on the definition and measurement of capital flight (Hermes et al., 2003; Ndikumana and Boyce, 2010, 2011, 2012; Ndikumana et al., 2014). Differences occur in the estimates of the magnitude of capital flight, due to differences in the definition of capital flight, estimation methods, and data availability (Hermes et al., 2003; Harrigan et al., 2007; Lawanson, 2007, 2011). For example, in an early study, Cuddington (1986) looks at capital flight as short term private capital outflows involving "hot money," which may respond to political or financial crises, higher taxes, expected tightening of capital controls, or a major devaluation of the domestic currency. Morgan Guaranty Trust Company (1986) defines capital flight broadly as the reported and unreported acquisition of foreign assets by the non-bank private sector and elements of the public sector.

Portfolio considerations also feature in the earliest definitions of capital flight. For example, Khan and Ul Haque (1985) argue that the perceived risk of investment in developing countries is higher than that obtained elsewhere. Further, it is argued in Lensink et al. (2000) that domestic residents face the risk of expropriation by the government through nationalization. In addition, there is high risk of exposure to higher taxes and exchange controls, inducing domestic residents to hold their assets abroad (Le and Zak, 2006). The argument is consistent with recent evidence by Eryar (2005), which shows that foreign assets held by residents serve as a substitute for domestic assets when there is macroeconomic instability.

Because of the lack of consensus on the definition of capital flight, there is no single, widely accepted approach to measuring capital flight. Rather, over the years, different

approaches have been used. Following Hermes et al. (2003), we summarize the key approaches below.

The residual method estimates capital flight as:

$$KF_r = \Delta ED + FI - CAD - \Delta FR \quad (1)$$

where KF_r is capital flight; Δ denotes change; ED is the stock of gross external debt; FI is the net foreign investment inflows; CAD is the current account deficit; and FR is the stock of official foreign reserves.

The Morgan Guaranty (1986) version of the residual method incorporates the change in short-term foreign assets of the domestic banking system (B):

$$KF_r = \Delta ED + FI - CAD - \Delta FR - \Delta B \quad (2)$$

In the Dooley (1988) method, the amount of capital flight is calculated as:

$$TKO = FB + FI - CAD - \Delta FR - EO - \Delta WBIMF \quad (3)$$

where TKO is total capital outflows; FB is foreign borrowing (as in the BOP statistics); EO is net errors and omissions; $WBIMF$ is the difference between the change in the stock of external debt reported by the World Bank and foreign borrowing reported in the BOP statistics by the International Monetary Fund (IMF).

Therefore, the stock of external assets corresponding to reported interest earnings is:

$$ES = (1 + r_{us})^* INTEAR \quad (4)$$

where ES is external assets; r_{us} is the US deposit rate (a proxy for the international market interest rate); and $INTEAR$ is reported interest earnings. Hence, capital flight according to the Dooley method is estimated as follows.

$$KF_d = TKO - ES \quad (5)$$

By contrast, in the "hot money" approach, capital flight is measured by adding up net errors and omissions and non-bank private short-term capital outflows (Cuddington, 1986, 1987; Ketkar and Ketkar, 1989; Gibson and Tsakalotos, 1993). The focus is on short-term flows and excludes medium- and long-term outflows. Hence, capital flight (KF_h), according to the hot money method, is estimated thus:

$$KF_h = SKO + EO \qquad (6)$$

where *SKO* is the total amount of short-term capital outflows.

Finally, the asset method is a short cut measure of capital flight that takes the change in total stock of assets of non-bank residents held at foreign banks as a measure of capital flight (Hermes and Lensink, 1992). Data on such bank assets are obtained directly from IMF statistics. In this approach, the measure represents the minimum amount of assets held abroad by residents, because these residents may hold their assets in other forms, such as foreign equity.

Some of the studies cited above begin with a theoretical model for an optimization problem that mimics portfolio decisions, where capital flight is related to the behavior of risk-averse agents who diversify their wealth in order to maximize returns (Le and Zak, 2006). The decision to hold assets abroad is motivated by portfolio diversification (Cuddington, 1986; Gibson and Tsakalotos, 1993; Lensink *et al*., 1998), and hence by differences in risk-adjusted rates of return between domestic and foreign asset holdings, the amount of wealth, and a host of other factors (Hermes, et al., 2003). However, the portfolio choices offered in these models are seen in light of a broader framework than the CAPM version of risk and return. Much broader asset pricing models offer the scope required for investigating capital flight as a portfolio choice. For example, Arbitrage Pricing Theory (APT) offers scope for investigating macroeconomic factors that play important roles in explaining capital flight in African economies. In addition, asset demand equations, specified from a flow-of-funds

framework, offer a useful vehicle for investigating asset substitution in the portfolio as well as pinning down the factors that determine the magnitude of each asset in portfolio.

The determinants of capital flight that have been explored in the literature fall into six main categories. The first is the interest rate differential (differential between the domestic deposit interest rate and the foreign deposit rate). This factor is not always statistically significant, perhaps suggesting that domestic bank balances and capital flight are not substitutes (Cuddington, 1986, 1987; Lensink et al., 1998; Harrigan et al., 2007). Second, macroeconomic instability is expected to increase incentives for capital flight. It is typically proxied by government debt, the current account deficit, the real exchange rate (which captures exchange rate overvaluation), and inflation (Ketkar and Ketkar, 1989; Hermes and Lensink, 1992; Lensink et al., 1998). Third, political risk is expected to induce capital flight (Lensink et al., 2000; Le and Zak, 2006). Fourth, capital inflows create their own momentum. For example, long-term debt, aid, and remittances are potential determinants of capital flight (Khan and Ul Haque, 1985; Boyce and Ndikumana, 2001). Fifth, past capital flight may induce further capital flight (Hermes and Lensink, 1992; Collier et al., 2001). Finally, external debt has a high propensity to fuel capital flight (Ajayi, 1997; Ndikumana and Boyce, 2003, 2011).

3. Econometric analysis: estimation model and data

3.1 Specification of a portfolio choice model from a flow-of-funds framework

While several approaches have been used to model capital flight problems in Africa, only three options are feasible in the context of a flow-of-funds framework. The first option is to specify asset demand equations from a flow-of-funds identity that links domestic capital flows to external capital flows, thus emphasizing the sources and uses of funds. The approach requires highly disaggregated data, which are available only for a small group of African

countries. The second approach is to look at the aggregation of domestic versus foreign capital holdings of households, à la Collier et al. (2001), and examine capital flight in relation to all other assets. The high level of aggregation conceals some important asset classes, while the focus on households sidesteps the role of the corporate sector. The third approach is to specify asset demand equations for only the predominant financial flows. The latter is our preferred choice, in view of data availability and the relevance of this method to the research problem at hand.

Generally, asset demand equations follow a flow-of-funds framework which, among other functions, reveals the sources and uses of funds that are needed for growth and development (Klein, 2000). Using this approach calls for the linearization of identities so as to generate behavioral asset demand equations for estimating the portfolio behavior of economic agents (Moore et al., 2005).

Hence, we specify three equations that underpin the demand for three main financial assets: capital flight, domestic money (currency and bank deposits), and foreign debt. The regression analysis uses annual panel data on 39 African countries organized in four groups: SANE, oil- and resource-rich, all countries excluding SANE, and the sample as a whole.

Capital flight equation:

$$(Real\ capital\ flight/GDP)_{it} = \beta_0 + \beta_1(Interest\ rate\ differential)_{it} + \beta_2(Polity)_{it} + \beta_3(Real\ capital\ flight/GDP)_{it-1} + \beta_4(Broad\ money/GDP)_{it} + \beta_5(Total\ debt/GDP)_{it-1} + \beta_6(Change\ in\ total\ debt/GDP)_{it} + \beta_7(RER)_{it} + \beta_8(GDP\ growth)_{it-1} + \beta_9(Inflation\ rate)_{it} + e_{it} \quad (7)$$

Broad money equation:

$$(Broad\ money/GDP)_{it} = \alpha_0 + \alpha_1(Domestic\ interest\ rate)_{it} + \alpha_2(Polity)_{it} + \alpha_3(Real\ capital\ flight/GDP)_{it} + \alpha_4(Real\ capital\ flight/GDP)_{it-1} + \alpha_5(Total\ debt/GDP)_{it-1} + \alpha_6(Change\ in\ total\ debt/GDP)_{it} + \alpha_7(RER)_{it} + \alpha_8(GDP\ growth)_{it-1} + u_{it} \quad (8)$$

Total debt equation:

$$(Total\ debt/GDP)_{it} = \pi_0 + \pi_1(Foreign\ interest\ rate)_{it} + \pi_2(Polity)_{it} + \pi_3(Real\ capital\ flight/GDP)_{it} + \pi_4(Real\ capital\ flight/GDP)_{it-1} + \pi_5(Change\ in\ total\ debt/GDP)_{it} + \pi_6(Broad\ money/GDP)_{it} + \pi_7(RER)_{it} + \pi_8(GDP\ growth)_{it-1} + \pi_9(Inflation\ rate)_{it} + \omega_{it} \quad (9)$$

The regression variables are described below.

GDP growth is the growth rate of real GDP. It is constructed from GDP per capita, (PPP, current US dollars) from the World Bank's World Development Indicators. The expected relationship with capital flight is negative because higher GDP growth is a sign of economic progress and indicates high returns to domestic investment. Therefore, private investors will be interested in investing in the domestic economy because of the expected higher return, and this would reduce capital flight.

Inflation is the annual change in consumer prices. Consumer price data are from the World Development Indicators. The expected relationship with capital flight is positive**.** High inflation reduces the real value of the domestic assets, inducing residents to hold part of their portfolio outside the country. Further, inflation can be perceived as a signal of how much the government has resorted to taxing domestic financial assets through money creation (inflation tax), which would increase capital flight.

The interest rate differential is defined as the foreign interest rate (US Treasury bill) minus the domestic interest rate. The data are from the IMF's International Financial Statistics. The relationship between the interest rate differential and capital flight is expected to be positive. Relatively low domestic real interest rates may be a reflection of domestic financial repression, which stimulates outflows and thus raises capital flight.

Broad money (M2 as a percentage of GDP) is the sum of currency outside banks, demand deposits other than those of the central government, time savings deposits, and foreign currency deposits of resident agents other than the central government. The data are from the World Development Indicators. The expected sign is indeterminate. On the one hand, an increase in broad money holdings in the domestic economy reduces the portfolio of financial assets held abroad. On the other hand, it may well be the case that as domestic money increases, residents diversify and increase their portfolio abroad.

Total debt is total external public debt outstanding. The data are from the World Development Indicators. The expected relationship with capital flight is positive. Foreign borrowing induces capital flight by contributing to an increased likelihood of a debt crisis, worsening macroeconomic conditions and the general investment climate.

The real exchange rate is the nominal exchange rate adjusted by the ratio of the US price level to the domestic price level. It is constructed using data from IMF's International Financial Statistics. The expected relationship with capital flight is positive. Overvaluation is expected to be positively correlated with capital flight because it makes it cheaper to buy foreign currency. Moreover, exchange rate instability induces capital flight.

Past capital flight is lagged capital flight, sourced from Ndikumana et al. (2014). The expected relationship with capital flight is positive. Capital flight tends to persist over time because of habit formation as private actors gain experience in capital flight operations. Also, capital flight corrodes the legitimacy of capital controls. Overall, therefore, it is predicted that capital flight begets capital flight.

Political stability is a proxy of governance, measured by the Polity2 index (Revised Combined Polity Score) from the Polity IV Project database. The Polity2 score is computed by subtracting the "institutionalized autocracy" score from the "institutionalized democracy" score. The resulting combined polity scale ranges from +10 (strongly democratic) to –10

(strongly autocratic). The polity2 variable is expected to be negatively correlated with capital flight. The relationship can run both ways. Political stability reduces capital flight. Conversely, political instability increases capital flight.

The story line of the three asset demand equations is that at the aggregate level, the demand for capital flight is a portfolio decision that is influenced by three criteria. The first is the expected returns abroad relative to the expected domestic returns on financial assets. But, this alone is not enough. The second is the desire to shield asset holdings from political risk as well as the macroeconomic risk associated with high inflation, exchange rate depreciation, or low growth prospects. This motive is reinforced by habit persistence, such that gradually capital flight begets capital flight. The third is a diversification strategy that calls for substitution among the three financial assets, namely, capital flight, domestic money, and foreign debt. However, not all African countries behave in similar fashion. Thus we consider four main groups of African countries whose economic agents may exhibit differences in portfolio behavior.

3.2 Data and stylized facts

Using a panel data set including 39 African countries for the period 1970–2010, the sample trend of capital flight is depicted in Figure 1. Capital flight from Africa peaked during 1976–1980 and 1984–1990, and rose substantially during 2000–2008.

[Insert Figure 1 about here]

We divide the countries into four main regions: All 39 African countries in the sample; SANE countries (South Africa, Algeria, Nigeria and Egypt); oil- and natural resource-rich countries (Algeria, Angola, Botswana, Cameroon, Chad, The Democratic Republic of Congo, Republic of Congo, Ghana, Nigeria, Sierra Leone, South Africa, and

Sudan); and finally, Africa without SANE countries. Table 1 presents summary statistics for the regression variables for the four groups of countries.

[Insert Table 1 about here]

Africa has lost $1.3 trillion (constant 2010 $) through capital flight between 1970 and 2010 (Ndikumana et al., 2014), representing about $885.8 million annually per country. Natural resource-rich countries account for a lion's share of the outflows, especially oil exporters such as Nigeria, Angola, Côte d'Ivoire, Gabon, and the Republic of Congo (Ndikumana et al., 2014).

GDP growth for the sample from 1970 through 2010 was 3.9%. The growth rate is high for SANE countries as well as oil- and natural resource-rich countries. Compared to SANE countries, oil- and resource-rich countries experienced extremely high inflation (125.1%, compared to 12.7% for SANE countries). The oil- and natural resource-rich countries had the lowest real interest rate differential with the United States (-5.7%).

In addition to high capital flight, the groups of oil- and natural resource-rich countries and the SANE countries are characterized not only by higher shares of fuel in total exports, but also relatively higher resource inflows in the form of FDI. The natural resource-rich countries also exhibited higher average inflation volatility, although the average level of inflation was actually lower than non-resource-rich countries.

[Insert Table 2 about here]

Table 2 presents the correlation coefficients of the regression variables. In all country groups, capital flight is positively correlated with past capital flight, the stock of debt, the

change in debt, and inflation. It is negatively correlated with the Polity2 index. The correlation between capital flight and growth is positive, but insignificant in all groups except for the SANE countries, where it is negative and statistically significant. These relationships are explored further in the econometric analysis presented in Section 4.

4. Estimation Results

Initially, we estimated the three equations using two types of model specification for controlling the country-specific effects: (1) the fixed-effects model, which takes into account the fact that there may be omitted individual country effects that are possibly correlated with the factors explicitly included in the equation and treats these omitted factors as constant; and (2) the random-effects model, which assumes that any potentially omitted country-specific factors are uncorrelated with those included in the model. The Hausman test was used to choose between the two models. The null hypothesis is that the coefficients obtained from the efficient random effects estimator are not different from the ones estimated by the consistent fixed effects estimator. If they are (insignificant p-value, prob>chi2 larger than 0.05), then it is safe to use random effects. From the test results, we confirm the appropriateness of the random effects model for the three equations across the four groups of countries.

[Insert Tables 3, 4 and 5 about here]

The results reported in Table 3 show that as domestic deposit rates go up, agents increase their demand for domestic money across all four groups except for the oil- and natural resource-rich countries. Domestic money holdings increase with political stability in most of the cases. The results suggest that agents may not be inclined towards asset substitution by moving out of domestic money into foreign debt and capital flight if the domestic financial, macroeconomic, and political conditions are stable.

The results reported in Table 4 emphasize the persistence of capital flight, the idea that capital flight behavior is self-reinforcing (or capital flight begets capital flight). For the SANE countries, there is evidence of asset substitution between domestic money and capital flight. Asset complementarity between foreign debt and capital flight is found for all country groups.

Table 5 reports the results relating to the demand for foreign debt relative to domestic money and capital flight. While the expected return plays an important role across all groups, the main driver of agents' portfolio decisions is risk—both political risk and macroeconomic risk associated with high inflation, exchange rate depreciation, or low growth prospects.

From the estimation results in Tables 3, 4 and 5, six main findings arise. First, capital flight appears to be persistent; past capital flight leads to higher capital flight. Second, we find a consistently positive and significant impact of the change in total debt on capital flight, suggesting that external borrowing may fuel capital flight. This finding is consistent with the literature (Ndikumana and Boyce, 2011, 2003). Third, the results show no statistically significant relationship between broad money and capital flight, with the exception of the SANE countries, where this relationship appears to be negative. For the latter group, there appears to be substitution between broad money and capital flight. Fourth, the domestic interest rate is positively related to broad money, except for the group of oil- and natural resource-rich countries, where the relationship is negative. The negative impact of total debt on broad money in all country groups suggests portfolio substitution. Fifth, inflation is positively and significantly related to capital flight in the full sample and in the sample excluding SANE countries. The results suggest that high inflation erodes the real value of domestic assets, which induces residents to hold assets outside the continent. High inflation may also signal future exchange rate depreciation, which also increases capital flight. However, the results show no direct effect of the exchange rate on capital flight. Finally,

GDP growth has a statistically significant relationship with capital flight only in the sample of SANE countries where the relationship is positive. Countries in this group top off the list in terms of the magnitude of capital flight. The group also includes the most resource-endowed countries in the continent. This result is consistent with the observed correlation between capital flight and natural resource booms.

5. Conclusion and policy implications

We specified three asset demand equations that underpin the demand for three main financial assets, namely, capital flight, domestic money (currency and bank deposits), and foreign debt. We estimated the model on four sub-groups of a sample of 39 African countries over the period 1970–2010.

One main finding is that portfolio choices, in which capital flight is the most favored asset, have the following pecking order: oil- and natural resource-rich countries followed by SANE, the full sample of 39 African countries, and African countries without SANE. It is also found that, in terms of portfolio choices, the SANE countries offer the highest potential for asset substitution between capital flight and domestic money. Slightly weaker substitution is found for the oil- and natural resource-rich countries.

Another interesting observation is that capital flight begets capital flight. Capital flight from both oil-rich and SANE countries is more than four times that of other countries. In general, capital flight is a complex portfolio decision problem: the oil- and natural resource-rich countries and the SANE countries, which are both driving growth in Africa, also experience the highest levels of capital flight. For oil- and natural resource-rich countries, capital flight represents a portfolio choice that is related to the fact that they are exposed to

high political as well as high macroeconomic risk. The SANE countries exhibit the largest real interest rate differential (hence lower expected return in the domestic market).

On the question of how portfolio choices work, two findings stand out from our analysis of the full sample. First, the demand for capital flight is driven by lagged capital flight, exhibiting an autoregressive behavior; we argue that the portfolio choice of capital flight is driven by habit persistence. Second, we establish that capital flight is driven by the change in debt, suggesting that it is not a matter of asset substitution but rather the complementary demand for assets, such that, the change in foreign debt holdings determines significantly capital flight over the same period of time. This holds for all of the four samples.

The results in this paper have important implications for policies aimed at addressing the problem of capital flight in African countries. In particular, the finding of habit persistence suggests that regulators, namely tax authorities, can use past information to deter capital flight malpractices today. Likewise, the finding that past debt fuels capital flight implies the same. Transparent management of external borrowing is an important element of strategies to reduce and prevent capital flight. This calls for accountability in the management of all borrowed debts, and for strengthening debt management systems in African countries.

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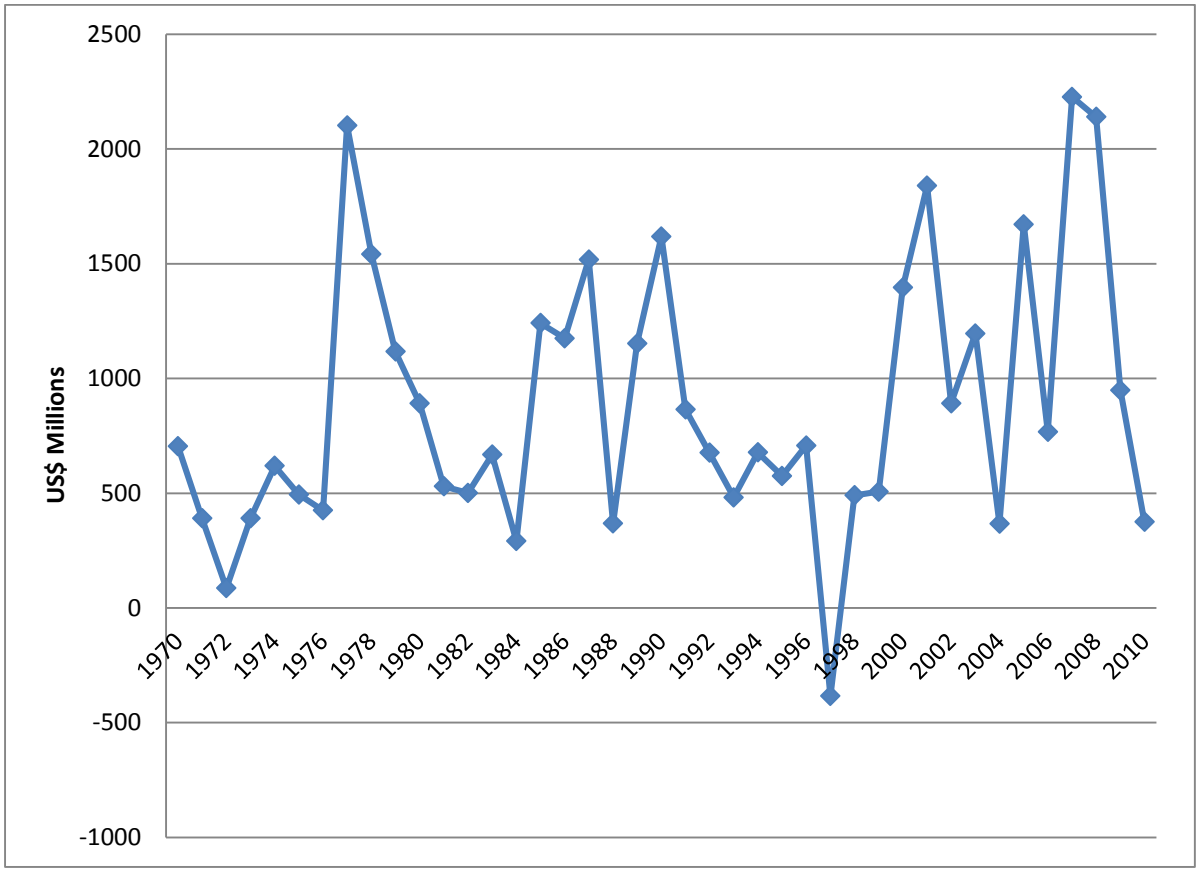
Figure 1: Real Capital Flight in Africa (US$ Millions)



Source: Ndikumana et al. (2013).

Table 1: Panel Data Summary Statistics

	All African Countries			All countries without SANE			Oil and Resource Rich Countries			SANE Countries		
Variable	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**	**Mean**	**SD**	**N**
Real Capital Flight (US$ million)	885.8	3328.9	1438	458.4	1356.6	1279	1861.7	5229.7	454	4324.0	8516.2	159
Real Exchange Rate (2010=100)	127.5	125.5	1370	126.0	130.8	1206	153.0	169.9	434	138.7	74.9	164
GDP Growth (%)	3.9	6.2	1466	3.9	6.4	1302	4.0	6.6	476	4.0	4.6	164
FDI (% of GDP)	0.0	0.0	1407	0.0	0.1	1244	0.0	0.1	462	0.0	0.0	163
FDI (US$ million)	265.2	908.9	1472	143.2	420.6	1309	462.4	1185.5	476	1244.7	2233.2	163
US Treasury Bill (%)	5.6	3.0	1599	5.6	3.0	1435	5.6	3.0	492	5.6	3.0	164
Inflation Variability	83.2	348.6	1280	89.8	371.3	1124	67.5	135.7	411	35.6	34.8	156
Inflation (%)	69.1	958.7	1319	76.9	1022.6	1159	125.1	1205.4	423	12.7	10.9	160
Interest Differential (% points)	-4.7	12.1	1115	-4.8	12.8	974	5.7	13.3	319	-3.7	5.6	141
Interest Deposit (%)	10.0	11.6	1115	10.1	12.3	974	11.0	12.7	319	9.2	4.5	141
Broad Money (% of GDP)	49.0	368.7	1411	48.4	392.1	1247	26.2	17.3	461	53.8	23.2	164
Discount Rate (%)	14.2	38.1	1215	14.9	40.8	1055	14.0	20.6	358	9.8	4.9	162
Bank Credit to Private Sector (% of GDP)	19.2	20.0	1392	16.0	12.7	1228	19.7	28.6	461	43.8	38.6	164
Total Debt (% of GDP)	0.7	0.7	1466	0.8	0.7	1304	0.6	0.6	475	0.4	0.4	160
Fuel Exports (% of total exports)	19.8	32.8	1288	14.2	27.7	1430	44.9	41.6	402	59.9	38.2	158
Real Capital (% of GDP)	0.1	0.4	1386	0.1	0.4	1227	0.1	0.2	454	0.1	0.2	159
Gross Capital Formation (% of GDP)	21.3	10.4	1407	20.9	10.6	1253	20.8	10.4	435	24.4	8.6	154
Gross Domestic Savings (% of GDP)	12.2	18.1	1427	10.7	18.2	1273	19.4	14.5	451	24.5	10.9	154

Source: Authors' calculations

Notes: For each variable in the All African Countries sample, we have approximately 1599 observations, which include 41 time periods (1970–2010) and 39 countries. For All African Countries without SANE, there are 35 countries with approximately 1176 observations. SANE countries, comprising of four main countries, have approximately 164 0bservations. Finally, for the Oil and Resource-Rich Countries, 12 in number, we have approximately 492 observations.

Table 2: Correlation Matrices

Panel A, Correlation of the main variables for all African countries

Variable	Real Capital Flight	GDP Growth	Inflation	Interest Differential Rate	Past Real Capital Flight	Broad Money	Real Exchange Rate	Total Debt/GDP	Change in Total Debt	Polity2	Inflation Variability
Real Capital Flight	1.000										
GDP Growth	-0.002	1.000									
Inflation	0.129***	0.020	1.000								
Interest Differential Rate	-0.082**	0.061*	-0.638***	1.000							
Past Real Capital Flight	0.494***	0.055*	0.028	0.011	1.000						
Broad Money	0.006	-0.040	-0.002	0.024	-0.010	1.000					
Real Exchange Rate	0.017	-0.129***	-0.019	0.135***	0.032	-0.022	1.000				
Total Debt/GDP	0.130***	-0.155***	0.103***	-0.209***	0.114***	-0.045	-0.116***	1.000			
Change in Total Debt	0.084**	-0.271***	-0.150***	0.058*	-0.077**	0.018	0.052	0.052	1.000		
Polity2	-0.107***	0.083**	-0.014	-0.117***	-0.109***	0.040	-0.134***	0.013	-0.082***	1.000	
Inflation Variability	-0.006	0.005	0.002	0.005	-0.021	-0.005	-0.005	-0.031	0.019	0.015	1.000

Panel B, Correlation of the main variables for all African countries without SANE

Variable	Real Capital Flight	GDP Growth	Inflation	Interest Differential Rate	Past Real Capital Flight	Broad Money	Real Exchange Rate	Total Debt/GDP	Change in Total Debt	Polity2	Inflation Variability
Real Capital Flight	1.000										
GDP Growth	-0.014	1.000									
Inflation	0.133***	0.021	1.000								
Interest Differential Rate	-0.091**	0.065*	-0.646***	1.000							
Past Real Capital Flight	0.501***	0.052	0.028	0.005	1.000						
Broad Money	0.009	-0.041	-0.001	0.022	-0.008	1.000					
Real Exchange Rate	0.011	-0.117***	-0.018	0.108***	0.026	-0.023	1.000				
Total Debt/GDP	0.128***	-0.178***	0.099***	-0.205***	0.109***	-0.042	-0.111***	1.000			
Change in Total Debt	0.072**	-0.280***	-0.153***	0.056	-0.089**	0.017	0.044	0.051	1.000		
Polity2	-0.098***	0.117***	-0.010	-0.112***	-0.097***	0.044	-0.124***	0.082**	-0.090**	1.000	
Inflation Variability	-0.006	0.004	0.000	0.008	-0.022	-0.003	-0.001	-0.045	0.022	0.024	1.000

Panel C, Correlation of the main variables for oil- and natural resource-rich countries

Variable	Real Capital Flight	GDP Growth	Inflation	Interest Differential Rate	Past Real Capital Flight	Broad Money	Real Exchange Rate	Total Debt/GDP	Change in Total Debt	Polity2	Inflation Variability
Real Capital Flight	1.000										
GDP Growth	-0.105*	1.000									
Inflation	0.271***	0.087	1.000								
Interest Differential Rate	-0.270***	-0.053	-0.797***	1.000							
Past Real Capital Flight	0.299***	-0.054	0.065	-0.100*	1.000						
Broad Money	-0.125**	-0.092	-0.002	0.051	-0.132**	1.000					
Real Exchange Rate	-0.016	-0.215***	-0.031	0.163***	0.000	-0.011	1.000				
Total Debt/GDP	0.272***	-0.141**	0.181***	-0.302***	0.241***	-0.397***	-0.133**	1.000			

Change in Total Debt	0.002	-0.234***	-0.305***	0.199***	-0.072	0.064	0.066	0.078	1.000		
Polity2	-0.296***	0.142**	-0.039	-0.065	-0.303***	0.326***	-0.178***	-0.296***	-0.055	1.000	
Inflation Variability	0.003	-0.014	0.062	-0.001	-0.049	-0.234***	-0.014	0.146**	0.079	-0.208***	1.000

Panel D, Correlation of the main variables for SANE countries

Variable	Real Capital Flight	GDP Growth	Inflation	Interest Differential Rate	Past Real Capital Flight	Broad Money	Real Exchange Rate	Total Debt/GDP	Change in Total Debt	Polity2	Inflation Variability
Real Capital Flight	1.000										
GDP Growth	0.180**	1.000									
Inflation	0.118	-0.114	1.000								
Interest Differential Rate	0.105	-0.001	-0.220***	1.000							
Past Real Capital Flight	0.392***	0.094	0.133	0.150*	1.000						
Broad Money	-0.255***	0.066	-0.329***	0.083	-0.226***	1.000					
Real Exchange Rate	0.104	-0.274***	0.053	0.643***	0.108	-0.128	1.000				
Total Debt/GDP	0.202**	0.106	0.524***	-0.216**	0.238***	-0.057	-0.038	1.000			
Change in Total Debt	0.283***	-0.122	0.067	0.071	0.130	0.007	0.148*	0.174**	1.000		
Polity2	-0.200**	-0.176**	-0.246***	-0.267***	-0.230***	-0.127	-0.269***	-0.543***	-0.041	1.000	
Inflation Variability	0.016	-0.002	0.293***	-0.047	-0.024	-0.147*	-0.055	0.218**	-0.063	-0.207**	1.000

Notes: ***, **, * indicate significance at the 1, 5 and 10 percent levels, respectively.

Table 3: Estimation results for the broad money equation (Random Effects)

Independent variable	**All African Countries**	**All African Countries without SANE**	**Oil- and natural resource-rich**	**SANE Countries**
Constant	75.382 (0.001)***	78.481 (0.005)**	30.356 (0.000)***	87.590 (0.000)***
Domestic interest rate	1.950 (0.016)**	2.958 (0.009)**	-0.104 (0.036)**	1.096 (0.026)**
Real Capital Flight	24.819 (0.516)	27.910 (0.517)	-0.999 (0.715)	-36.307 (0.006)**
Past Capital Flight	-7.203 (0.847)	-5.836 (0.890)	-0.752 (0.769)	-30.022 (0.016)**
Change in total debt/GDP	8.432747 (0.852)	10.210 (0.840)	6.878 (0.008)**	27.289 (0.131)
Total debt/GDP	-8.92 (0.678)	-12.104 (0.621)	-4.792 (0.000)***	-5.051 (0.481)
Real exchange rate	-0.000 (0.843)	-0.022 0.833	-0.001 (0.800)	-0.124 (0.001)***
GDP growth	-2.154 (0.184)	-2.332 (0.201)	-0.058 (0.497)	0.019 (0.947)
Polity	4.027 (0.057)*	4.658 (0.058)*	0.250 (0.040)**	-1.350 (0.002)**
No. of observations	914	776	293	138

Notes: The dependent variable is Broad Money as a ratio of GDP. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Each cell contains the regression coefficient and the P-values in parentheses.

Table 4: Estimation results for the capital flight equation (random effects)

Independent variable	**All African Countries**	**All African Countries without SANE**	**Natural Resource and Oil rich Countries**	**SANE Countries**
Constant	0.040 (0.057)*	0.040 (0.094)*	0.145 (0.006)**	0.132 (0.070)**
Interest Rate Differential	-0.002 (0.001)***	-0.002 (0.001)***	-0.004 (0.017)**	0.001 (0.758)
Broad money/GDP	1.960E-05 (0.418)	2.050E-05 (0.517)	-7.145E-04 (0.593)	-0.002 (0.007)**
Past Capital Flight	0.425 (0.000)***	0.431 (0.000)***	0.077 (0.173)	0.246 (0.002)**
Change in total debt/GDP	0.173 (0.000)***	0.18067 (0.000)***	0.121 (0.042)**	0.384 (0.001)***
Total debt/GDP	-0.006 (0.746)	-0.008 (0.720)	-0.076 (0.012)**	0.010 (0.844)
Real exchange rate	-1.390E-05 (0.741)	-1.760E-05 (0.843)	-3.550E-05 (0.630)	9.70E-06 (0.970)
GDP growth	0.002 (0.232)	0.001 (0.514)	-0.001 (0.772)	0.008 (0.032)***
Inflation	1.921E-04 (0.001)***	1.888E-04 (0.003)***	9.540E-05 (0.157)	-2.530E-04 (0.858)
Polity	-0.005 (0.015)**	-0.005 (0.023)**	-0.008 (0.002)**	-0.003 (0.285)
No. of observations	914	776	293	138

Notes: The dependent variable is Capital Flight as a ratio of GDP. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Each cell contains the regression coefficient and the P-values in parentheses.

Table 5: Estimation results for the total debt equation (random effects)

Independent variable	**All African Countries**	**All African Countries without SANE**	**Natural Resource and Oil rich Countries**	**SANE Countries**
Constant	0.825 (0.000)***	0.880 (0.000)***	0.824 (0.000)***	0.200 (0.174)
Foreign Interest Rate	-0.009 (0.000)***	-0.008 (0.000)***	-0.021 (0.000)***	-0.020 (0.000)***
Broad money/GDP	-2.690E-05 (0.620)	-3.270E-05 (0.563)	-0.011 (0.000)***	0.001 (0.589)
Past Capital Flight	0.113 (0.058)*	0.107 (0.100)*	0.341 (0.026)**	0.233 (0.104)*
Change in total debt/GDP	0.468 (0.000)***	0.459 (0.000)***	0.574 (0.000)***	0.472 (0.021)**
Real Capital Flight	-0.014 (0.814)	-0.011 (0.868)	0.172 (0.281)	0.0305 (0.844)
Real exchange rate	-0.001 (0.000)***	-0.001 (0.000)***	-0.001 (0.002)**	-3.010E-05 (0.947)
GDP growth	-0.007 (0.011)**	-0.007 (0.009)**	-0.016 (0.001)***	0.006 (0.401)
Inflation	7.850E-05 (0.469)	8.840E-05 (0.438)	-1.524E-04 (0.167)	0.010 (0.000)***
Polity	-0.007 (0.026)**	-0.003 (0.478)	-0.016 (0.005)**	-0.030 (0.000)
No. of observations	914	776	293	138

Notes: The dependent variable is total debt as a ratio of GDP. ***, **, and * indicate significance at the 1, 5, and 10 percent levels, respectively. Each cell contains the regression coefficient and the P-values in parentheses.