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External debt and capital flight in sub-Saharan Africa: The role of institutions

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Abstract

This paper aims to study the impact of external debt on capital flight conditional on the institutional quality of host countries. Three major contributions emerge. First, the role of external debt in capital flight is clarified. Econometric results based on 26 sub-Saharan African countries over the period 1970-2015 show a positive relationship between external debt and capital flight. Second, high quality institutions weaken the link between debt and capital flight somewhat, although they do not eliminate it completely. The results suggest that improving the quality of institutions in sub-Saharan African countries could help minimise the contribution of external debt to capital flight. Third, the analysis takes into account panel data, the persistence of capital flight and the potential endogeneity of the regressors.

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1. Introduction

Prior to Covid-19, the rising level of debt in developing countries is attracting particular attention from international bodies and policymakers. Debt in itself is an alternative source of finance in the face of low savings. However, this indebtedness has not had the desired effect and has been accompanied by a massive outflow of capital. Cuddington (1986) sees external debt as a factor that accentuates capital flight and thus limits growth efforts. Capital flight for countries suffering from low savings combined with debt problems is a burden on the emergence of these countries. Resource scarcity is exacerbated by capital flight, while the resources of these countries are largely insufficient, a substantial part of the available resources is devoted to servicing external debt and repayment obligations; and to financing portfolio transfers abroad by the citizens of these countries. A significant amount of capital has left developing countries over the past three decades (Alam and Quazi, 2003).

Often less cited in capital flight episodes, sub-Saharan Africa (SSA) is as much affected by corruption, internal conflict and capital flight. Ndikumana and Boyce (2018) estimate that the stock of capital flight emanating from the continent is $1.4 trillion due to capital flight over 46 years. An amount far exceeding the outstanding debt of these countries in 2015. In our study, we focus on the relationship between external debt and capital flight. More specifically, the influence of external debt on capital flight which contributes to slowing down growth. This study contributes to the understanding of the effect of external debt on capital flight in SSA countries. Studies on the subject attest to the coexistence of external debt and capital flight in developing countries. However, empirical studies have mainly focused on the effects of external debt on growth, with little attention to the effect of external debt on capital flight. It would be almost unsustainable to draw attention to the determinants of capital flight without considering political risk and governance factors (Gibson and Tsakalotost, 1993; Schineller, 1997). Capital flight is a combination of portfolio decision, macroeconomic instability (fiscal deficit, current account deficit, exchange rate overvaluation and inflation) and political instability. Political instability and poor governance encourage capital flight and discourage investment (Hermes et al., 2002; Hermes and Lensink, 2000; Le and Zak, 2006). This paper aims to analyze the determinants of capital flight, and to draw attention to the role of external debt, political instability and governance in capital flight in developing countries, specifically in SSA.

The paper is presented in 6 sections. The next section motivates interest in the topic by highlighting the problems associated with it. Section 3 reviews the literature on capital flight, section 4 describes the data and estimation method, section 5 discusses the empirical results and section 6 concludes.

2. Brief state of the art

Capital flight is the movement of capital from one country to another in order to escape official capital control regulations. Capital flight reduces the effectiveness of governments in raising income taxes. It is more difficult to tax internally than externally because of lobbying and financial expertise (Pastor, 1990). Tax evasion[1] increases while net tax revenues decrease (base erosion). The loss of tax revenue makes budgeting difficult, as the expected tax revenues are far from reality. In the literature, the determinants of capital flight are mainly based on three variables: the investment climate, the discriminatory treatment of capital and debt.

[1] Undesirable redistributive consequences

2.1 The investment climate

The investment climate explains capital flight by the attractiveness of a given country's assets (Cuddington, 1986; Diwan, 1989; Dornbusch, 1985). Indeed, in a world of complete information and low transaction costs, rates of return on capital should be equal across countries and markets. Consequently, a higher return on capital abroad encourages capital flight. Thus, Cuddington (1986) shows that overvalued exchange rates, high domestic inflation and foreign loans are at the root of capital flight. Capital that was once invested is now invested abroad. The choice is between reinvesting or repatriating the income. The fall in domestic production, the fall in wages and the fall in employment can lead to a reduction in the tax base and an increase in the public deficit (reduction in growth potential). The combination of the public deficit and the decline in economic growth accentuates the phenomenon of capital flight. Currency devaluation is also a trigger for capital flight, as foreign investors flee these countries before their assets lose too much value. Ndikumana and Sarr (2019), find that the interaction between natural resource endowments and FDI stock is positively related to capital flight. Similarly, Ketkar and Ketkar (1989) use a portfolio adjustment model to show that in Brazil and Argentina, positive real interest rates, low inflation and reduced environmental uncertainties lowered capital flight. Similarly, for Kant (1996), FDI inflows are always associated with a reduction of capital flight.

2.2 The discriminatory treatment of capital

Discriminatory treatment involves the implementation of national policies favoring non-resident investment over resident investment (Kant 2002). This differential treatment grants various advantages to foreign capital, such as tax breaks, exchange-rate guarantees and priority reimbursement in the event of a financial crisis: this explains the first flow of foreign capital to the domestic country. The decline in imports can be triggered by capital flight. While foreign currency finances capital flight, it cannot be used to finance growth-enhancing imports. The foreign exchange account can be used to repay external debt. The level of goods for processing decreases over the period with the level of imports in the trade account. Capital flight results in a net loss of a country's resources for investment (Lessard and Williamson, 1987). The second flow comes from the behavior of non-residents. Since there is a national preference for foreign capital, holders of domestic capital will export their capital to other countries where they will have better guarantees.[2] For Dooley (1986), this two-way flight of capital is mainly due to discriminatory treatment.

2.3 The Debt

Debt is another important determinant, as it can both cause and contribute to capital flight.

- **Capital flight caused by foreign debt:** When countries go into debt, residents may anticipate a bad economic situation (exchange rate devaluation, tax increase, debt crisis) and therefore transfer their capital abroad (Boyce, 1992). For Beja (2006), this link between external debt and capital flight is similar to a revolving door mechanism, where the inflow of capital causes the outflow of other capital (as was the case, for example, in Mexico in the 1970s). Working on 30 SSA countries between 1970 and 1996, Boyce and Ndikumana (2003) find that external debt is positively and significantly related to capital flight.[3] Boyce and Ndikumana (2001) also show that

[2] When residents withdraw their capital, they can bring it back in the form of foreign investment, or lend it to their government abroad. This is the case, for example, with Chinese residents, whose capital often returns to their country in the form of FDI.

[3] The role of foreign debt in capital flight has also been demonstrated by Cuddington (1986), Mckinnon (1991), Ljungwall and Wang (2008).

SSA countries are net creditors of the rest of the world, and that funds borrowed abroad by these countries are re-exported in the form of private assets.

- **Capital flight fueled by domestic debt:** The government, through the national bank, can grant credits to private investors, who in turn transfer some or all of these funds abroad. Exchange controls may be sufficient to limit this capital flight. Nevertheless, Bhagwati (1964) points out that, in developing countries, exchange controls result in the falsification of commercial documents. However, any form of corruption increases capital flight (Le and Rishi, 2006).

In addition to these three main variables, there are several other determinants of capital flight in the literature. The role of political stability was highlighted by Fatehi (1994). He finds that capital flight from 17 Latin American countries can be explained by political instability. Working on a larger sample of developing countries, Hermes and Lensink (2000) confirm this result. Similarly, Alam and Quazi (2003) have shown that capital flight from Bangladesh over the period 1973-1999 is due to political instability. However, development aid is likely to reduce capital flight and even facilitate capital repatriation (Collier et al., 2004).

3. Methodology and data source

The data on capital flight over the period 1970-2015 covers 26 African countries using an algorithm updated by Ndikumana and Boyce (2018). Capital flight represents the outflow of capital not included in official government statistics. Appendix D shows the trend in the annual average of capital flight and the trend of normal capital flows relative to GDP for our sample. In general, except for FDI, capital flows are quite volatile, with capital flight at the forefront. This appendix shows a similarity in the trend of capital flight and external debt between 1980 and 1990. However, the high volatility of capital flight suggests that external debt is one of the determinants of capital flight, but not the only one in SSA countries. Three sub-periods emerge, guided by economic conditions. Over the periods 1970-2001 and 2009-2015, there was an increase in capital flight, while the period 2001-2009 was marked by the opposite trend. Capital flight is at odds with FDI and FDI as a result of the Heavily Indebted Poor Countries (HIPC) and Multilateral Debt Relief (MDRI) initiatives. The 2008 crisis is also thought to be at the origin of the last sub-period. These findings call for further analysis to understand the mechanisms associated with the phenomenon of capital flight in SSA countries.

Compared to previous studies, several revisions have been allowed in the estimation of capital flight. They are inspired precisely by the criticisms of alternative measures of capital flight encountered in the literature. In order to facilitate understanding and justify the relevance of this new measure, we will discuss these criticisms.

Cuddington (1987) considers that the balance-of-payments approach is limited to the outflow of short-term private capital and ignores billing errors and smuggling. Lack of interest in the long run leads to an underestimation of capital flight, while the omission of billing errors and smuggling leads to an underestimation of a current account surplus or an overestimation of a deficit. The World Bank's direct measure (1989), although having a clear and narrow definition, may have a clear bias leading to an underestimation of capital flight due to misreporting of capital holdings. As far as indirect measurement (1985) is concerned, it is difficult to distinguish itself from normal capital flows and suffers from external debt statistics or exchange rate fluctuations and billing problems. The residual method proposed by Dooley (1988) distinguishes between "official" and "unofficial" capital holdings abroad. The accuracy of the measure depends on the accuracy of the balance of payments data on investment income. In addition, errors and omissions in balance of payments statistics are

supposed to capture capital movements exclusively.

From all these criticisms follows the proposal of Ndikumana and Boyce (2018) which defines capital flight as a residue of the Balance of Payments consisting of discrepancies between recorded foreign exchange inflows and recorded uses of these inflows. Other sources of foreign exchange inflows are considered to be portfolio and other investments, in addition to external borrowing and foreign direct investment. In particular, it tracks the outflows of a country's financial resources over a given period that are not recorded in the government's official statistics. Similarly, the calculation of overall trade malfeasance was refined by increasing the discrepancies between the export and import data reported by African countries and the corresponding values reported by their trading partners in the group of advanced or industrialized countries, in order to obtain an overall figure. The most important element in this new measure is the inclusion of debt cancellations through the change in adjusted debt, thus reducing the debt service overstatement bias.

The first specification attempts to meet the objective of examining the determinants of capital flight, specifically to examine the relationship between external debt and capital flight, and the role played by non-economic variables such as political risk and governance factors in developing countries (Gibson and Tsakalotost, 1993; Schineller, 1997). We include the variables listed in the literature as determinants of capital flight in line with the work and model of Ajayi and Ndikumana (2015). We then test the role of political risk and governance factors in the link between capital flight and external debt. The list of countries is given in appendix A. More details and statistics on the data are also provided in appendix B et C.

The empirical equation for capital flight is therefore specified as follows:

$$\boldsymbol{KF_{it} = \alpha_0 + \alpha_1 KF_{it-1} + X_{it}\tau + U_i + V_i + \varepsilon_{it}} \quad (1)$$

with KF_{it} denotes capital flight,[4] X_{it} represents the determinants of capital flight U_i is the country specific effect, V_i is the time specific effect and ε_{it} is the random error term. The vector X_{it} includes the following determinants:

- The interest rate differential that reflects the difference in the rate of return that is expected to be associated with capital flight. It is estimated as the domestic real interest rate minus the US risk-free rate. The starting point is the analysis of Le and Zak (2006) which states that the higher domestic rate of return than the foreign rate of return would lead to a capital inversion. Thus, the sign expected by the coefficient of this variable is positive in line with the theory of investment climate.
- Retarded capital flight to capture the persistence of the phenomenon. The coefficient of retarded capital flight should have a positive sign reflecting a habit and/or contagion effect in accordance with Boyce and Ndikumana (2008).
- The stock of external debt which captures the effect of massive indebtedness and over-indebtedness. We therefore assume that there is a positive relationship between external debt and capital flight. The expected sign is then positive, validating the fact that external debt finances capital flight.
- Debt changes to capture the revolving door opportunity. The expected coefficient is positive, indicating that an increase in external borrowing can lead to capital flight.
- GDP growth represents the expected return of domestic investment associated with overall economic performance, and is expected to be negatively related to capital flight.

[4] We use the method of Ndikumana and Boyce (2018) to minimize potential biases in narrower measures (see Le and Rishi, 2006).

- The measure of institutional quality and Political Stability using the ICRG database.[5] A negative coefficient is expected as good institutions are expected to curb capital flight.
- Foreign direct investment (FDI), with a view to seeing its role in capital flight. The expected sign of the FDI coefficient is negative because FDI inflow is associated with a reduction in capital flight.
- Official development assistance (ODA) with a negative coefficient because it is likely to reduce capital flight.
- Inflation measured by its percentage change in the consumer price index. A positive relationship between inflation and capital flight is expected, as high inflation would lead to a deterioration in the value of domestic assets relative to foreign assets.
- Credit to the private sector is an indicator of the cost and availability of capital. The expected sign of the coefficient is ambiguous because borrowers can choose to invest locally thus reducing capital flight or investing abroad and amplifying the phenomenon of capital flight.
- Education through secondary enrolment takes into account the ability to arbitrate performance and risk. We expect a positive sign of this variable that positively influences the rational behavior of the economic agent.

The dynamic panel equation for capital flight will be estimated using the Blundell and Bond (1998) method of generalized moments for all countries. This method will allow us to control for country-specific effects and the likely endogeneity of the variables in our model. Furthermore, standard econometric techniques do not offer solutions to the problems of simultaneity bias, reverse causality and omitted variables. We also use the generalized moment method to account for contemporary changes that may give rise to an endogeneity problem. Indeed, there may remain a contemporaneous bidirectional causality described by Boyce (1992) as the phenomena de "revolving door" between foreign debt and capital flight. To meet our objectives, we first estimate the link between capital flight and its main determinants. The results are presented in table 1. We then simultaneously estimate external debt, institutional quality and their interaction in tables 2 and 3.

4. Results

This section presents the results of the analysis of the determinants of capital flight in SSA countries over the period 1970-2015. The lagged capital flight across our regressions is positive and insignificant. This implies that the pattern of persistent leakage over time is less clear. Past capital flight does not necessarily lead to more capital flight. The persistence of capital flight is not the basis of the capital flight trap in SSA countries. This result does not reflect a contagion effect that will extend beyond the private actors of the flight to government authorities, let alone combine with a habit-forming effect. Capital flight has no lingering effect due to weak official capital control regulations and the banking system. The movement of capital from one country to another for economic reasons is blurring to cope with quotas and tariffs. This is particularly the case of capital acquired illegally by civil servants and politicians through bank transfers or trade. The existence of such a system, around rigged documents, makes capital flight anti-persistent. Thus, fraudsters export their capital on an ad hoc basis and can keep their capital within the country.

The estimates corroborate the hypothesis on the link between external debt and capital flight. An increase in the level of external debt coincides with an outflow of capital from residents and domestic firms (Ndikumana and Boyce, 2003). The coefficient on external debt is

[5] International Country Risk Guide Methodology

positive and significant at the 5% level. External debt is a driver of capital flight. SSA countries see their external borrowing financing capital flight. Beja (2001) states that external borrowing benefits the borrowing countries less and ends up enriching a few individuals. Residents, with an increase in the level of external debt, fear a debt crisis as well as an anticipated devaluation of the exchange rate (Fry, 1993) but also a decline in the returns on domestic assets.

Table 1 : Determinants of capital flight

	Base	Inflation	Credit to the private sector	Interest rates	FDI	ODA	Education
Initial capital flight	0.0617	0.0804	0.0444	0.0975	0.0735	0.0473	0.0249
	(0.0713)	(0.0598)	(0.0736)	(0.0845)	(0.0701)	(0.0624)	(0.0458)
Change in debt	4.872**	4.592**	6.524**	3.365	6.580**	4.084*	6.981*
	(2.43)	(2.43)	(2.43)	(1.24)	(2.72)	(2.03)	(3.41)
External debt stock	0.194***	0.172***	0.194***	0.354	0.165***	0.186***	0.121***
	(3.65)	(5.12)	(3.02)	(1.50)	(5.63)	(2.99)	(0.03)
GDP growth	-0.129***	-0.107***	-0.145***	-0.112***	-0.0529**	-0.115***	-0.04**
	(5.68)	(6.13)	(3.80)	(4.36)	(2.11)	(4.00)	(0.016)
Control variable		-0.000870**	-0.00406	-0.0236	-0.0601*	-0.0319*	-0.0038
		(2.69)	(0.94)	(0.45)	(1.71)	(1.94)	(0.0059)
Constant	0.468***	0.422***	0.626***	0.432**	0.332***	0.769***	0.310*
	(3.94)	(3.97)	(3.08)	(2.17)	(3.75)	(3.33)	(0.16)
Number of observations	182	169	177	153	175	177	151
Number of countries	25	25	25	25	25	25	25
Number of instruments	18	22	17	15	19	22	22
Hansen test (p-value)	0.156	0.290	0.344	0.450	0.111	0.234	0.124
AR1 (p-value)	0.0408	0.0518	0.0740	0.0932	0.166	0.0474	0.125
AR2 (p-value)	0.350	0.995	0.426	0.846	0.845	0.491	0.423

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The revolving door hypothesis using our results is confirmed. We find a consistently positive and significant impact of the change in total debt on capital flight (Ndikumana and Boyce, 2003, 2011). This relationship may indicate that increased external borrowing may trigger flight if residents fear the likelihood of a debt crisis and/or potential nationalization of debt repayments (Eaton, 1987). The change in the level of debt also provides evidence of a source of financing for flight. It is a substitute for national savings. These results also highlight the issue of the legitimacy of debt fuelling capital flight (odious debt).

The GDP growth rate negatively influences capital flight. Better economic performance leads to a reduction of the phenomenon. Countries that are able to improve their economic growth and have sound macroeconomic policies are more likely to reduce capital flight (Boyce, 1992; Chipalkatti and Rishi, 2001; Quazi, 2004 and Beja E.J., 2006). A difficult economic situation would be more easily accompanied by a more acute capital flight.

The results suggest a negative relationship between foreign direct investment (FDI) flows and capital flight. FDI inflows show a negative and significant coefficient. FDI as a source of external finance does not fuel capital flight but rather reduces it. FDI is difficult to repatriate as is portfolio investment. It seems wise for SSA countries to pay more attention to FDI, which is much more beneficial to their economies. Unlike debt, FDI and aid reduce capital flight. They do not disrupt previous findings on capital flight. The amplification of aid encourages residents to keep their property at home. Private sector credit and interest rate differential do not have a significant impact on capital flight. Inflation variability has a negative but small influence on capital outflows.

SSA does not benefit from the benefits of human capital. This situation is explained by the quality of education, which is not sufficient to significantly impact capital flight. The rational behaviour of economic agents may be ineffective when education is still in primary stages.

Table 2 : Determinants of capital flight and institutions

	Religious Tensions	Government stability	Investment profile	Internal conflicts	External conflicts	Democracy
Initial capital flight	0.084	0.020	0.049	0.188	0.110	0.051
	(0.138)	(14.51)	(0.124)	(0.125)	(11.66)	(12.40)
Change in debt	12.59**	4.418*	8.856***	7.896**	5.405***	6.131**
	(2.36)	(1.99)	(3.72)	(2.26)	(3.05)	(2.69)
External debt stock	0.899	0.937*	0.497	-0.0556	0.0651	0.0727
	(1.23)	(1.81)	(1.09)	(0.86)	(0.56)	(0.71)
GDP growth	-0.0891*	-0.103***	-0.0844**	-0.0989**	-0.0925***	-0.0541
	(1.92)	(2.92)	(2.81)	(2.70)	(3.69)	(1.44)
Quality of institutions	0.431	0.0333	-0.109	-0.213**	-0.120*	-0.387**
	(0.75)	(0.58)	(1.13)	(2.24)	(1.99)	(2.50)
Constant	-1.888	-0.108	0.869	1.909***	1.434***	1.386***
	(0.67)	(0.25)	(1.40)	(3.01)	(2.95)	(3.66)
Number of observations	143	143	143	143	143	143
Number of countries	22	22	22	22	22	22
Number of instruments	12	21	12	14	19	15
Hansen test (p-value)	0.463	0.413	0.257	0.375	0.272	0.311
AR1 (p-value)	0.0725	0.0532	0.0147	0.0184	0.0555	0.0573
AR2 (p-value)	0.950	0.768	0.178	0.127	0.513	0.208

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The quality of institutions plays an important role in the determinants of capital flight. To better account for this in the study, we use indicators of political stability. Table 2 shows that internal conflict, external conflict and democratic accountability significantly affect capital flight in SSA countries. One of the institutional variables that has not been widely discussed in the literature on capital flight is conflict in general. It is central to capital flight from SSA countries. The multiple conflicts on the continent seem to justify its negative and significant coefficient in our equation. The external environment through foreign action also plays an important role in the institution-capital flight relationship. External conflicts, for example, can have many negative consequences on foreign firms: restrictions on operations, trade and investment sanctions, distortions in the allocation of economic resources, and radical changes in the structure of society. Theoretically, we argue that the existence of good institutions inhibits capital flight, because good institutions reassure capital owners.

Democratic Accountability assesses how the government interacts with its people, taking into account free elections and a fair judicial system. It appears with a negative and significant sign. An undemocratic or authoritarian regime would favour the phenomenon of capital flight. It is an environment conducive to personal enrichment followed by capital outflow. This is particularly the case in several SSA countries that are prone to capital flight and are much more likely to go down the path of odious debt.

Government stability and Religious Tensions have a positive and insignificant impact. The investment profile also has a non-significant but positive impact. Political stability curbs capital flight and promotes economic growth.

We also examine the role of institutions in the relationship between capital flight and external debt. Political stability emerges as a key financing factor for both capital flight and external debt. Countries prone to political stability are likely to reduce the supply of capital flight through external debt. We add interaction terms between external debt and institutional quality. The interaction of external debt with institutional variables is significant and negative for government stability, internal conflict, external conflict and Religious Tensions. The positive effect of external debt is much less pronounced for countries with better institutions. A dozen conflicts have broken out across the African continent (the Democratic Republic of Congo, Côte d'Ivoire, Somalia, Eritrea and Ethiopia, etc.), undermining development efforts and fostering insecurity and capital flight. The significance of the political stability variables

is easy to understand when one considers that conflicts are the result of a combination of cultural, social, political, military and geopolitical factors. One of the preconditions for economic development is government stability, which reassures investors about the future. The combined effect of government stability and external debt negatively influences capital flight. In an environment guided by government stability, foreign debt does not encourage capital flight. Guarantees of property rights are unfavourable to the phenomenon of capital flight. The case of technology transfers encourages firms with new technologies.

Table 3: Determinants of capital flight, institutions and interactions

	Religious Tensions	Government stability	Investment profile	Internal conflicts	External conflicts	Democracy
Initial capital flight	0.155	0.276	0.012	0.328**	0.174	0.166
	(0.144)	(0.162)	(0.124)	(15.6)	(14.97)	(0.163)
Change in debt	6.495*	5.679	6.500**	7.066*	3.415	7.303**
	(1.94)	(1.65)	(2.26)	(2.06)	(1.39)	(2.63)
External debt stock	0.812	1.455*	-0.786	0.785**	2.579*	1.778
	(1.21)	(1.84)	(1.35)	(2.27)	(1.80)	(1.14)
GDP growth	-0.141***	-0.141***	-0.0816**	-0.118**	-0.117***	-0.106***
	(3.99)	(4.16)	(2.78)	(2.50)	(3.31)	(2.93)
Quality of institutions	0.0913	0.0452	-0.195*	-0.129	0.149	0.126
	(0.42)	(0.41)	(2.06)	(1.37)	(1.15)	(0.36)
Debt *Quality of institutions	-0.433*	-0.469**	0.238	-0.346*	-0.460**	-1.010
	(1.80)	(2.60)	(1.30)	(2.02)	(2.09)	(1.33)
Constant	0.319	0.435	1.551***	1.571**	-0.778	0.0694
	(0.36)	(0.65)	(3.21)	(2.81)	(0.65)	(0.07)
Number of observations	143	143	143	143	143	143
Number of countries	22	22	22	22	22	22
Number of instruments	15	15	18	15	18	12
Hansen test (p-value)	0.125	0.0780	0.256	0.838	0.357	0.193
AR1 (p-value)	0.0412	0.0234	0.0259	0.0200	0.581	0.0187
AR2 (p-value)	0.522	0.995	0.301	0.991	0.868	0.745

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The consistency of the generalized moments estimator depends on the validity of the instruments. Two tests have been suggested by Arellano and Bover (1995) and Blundell and Bond (1998) to ensure this. The first test is Hansen's test of over-identifying restrictions which allows instruments to be validated by analysing the conditions of the estimation process. In our case, we cannot reject the null hypothesis that the orthogonality conditions are valid for all our samples. The (Arrelano-Bond) test on autocorrelation allows us to reject the null hypothesis that there is no second order serial correlation in the first difference error terms. The institutional environment as well as external debt plays an important role in SSA countries. Indeed, political instability constitutes a transmission channel through which external debt amplifies capital flight.

5. Conclusion

This article explored the determinants of capital flight in SSA countries. Capital flight threatens to undermine development efforts in SSA countries. The amounts leaving the continent exceeded the inflow of capital over the period 1980-2009, putting it in a creditor position vis-à-vis the rest of the world (African Development Bank/Global Financial Integrity, 2013).

The literature suggests a number of determinants, but we have placed particular emphasis on external debt and institutional quality. This paper provides empirical evidence that capital flight is accentuated in a certain institutional environment. The formalization of the interaction of external debt and institutional quality is a substantial contribution to the literature on capital flight. In this study, we find that the magnitude of capital flight is mainly due to debt change with negative consequences on budgeting and domestic investment. The

quality of institutions, on the other hand, is driving the slowdown in capital flight. Thus, even if external debt fuels the phenomenon, its interaction with better institutions is the main brake on capital flight. Thus, African countries should work towards political stability, which would help to increase long-term direct investment. This would strengthen the preference for domestic capital as a result of lower uncertainty. The results also suggest the importance of good macroeconomic management to attract foreign capital and thus maintain domestic capital. For example, high inflation is usually accompanied by high variability in the rate of inflation, which can also be a major cause of capital flight due to the uncertainty it associates with the return on domestic assets.

The role of FDI, aid and inflation variability is also examined. The results of the generalized method of moments estimation reveal that external debt encourages capital flight. Interestingly, in our sample of African countries, political stability influences the relationship between external debt and capital flight differently. The positive effect of external debt is much less pronounced for countries with better institutions. There is also evidence that debt relief initiatives and foreign aid could help reduce capital flight. However, political stability is a key factor in capital flight and its relationship between external debt. The positive effect of external debt on capital flight is accentuated in an environment marked by political instability. In light of our results, governments would benefit from improving their public financial management. This requires strengthening the quality of the institutional environment and stabilising the economic and political environment in order to combat capital flight.

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Appendix A. List of countries

Sub-Saharan Africa: Angola, Botswana, Burkina Faso, Burundi, Cameroon, Democratic Republic of Congo, Congo, Cote d'Ivoire, Ethiopia, Gabon, Ghana, Kenya, Madagascar, Malawi, Mauritania, Mozambique, Nigeria, Rwanda, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

Appendix B. Definitions and data sources

Variable	Definition	Source
Foreign direct investment flows (%GDP)	Foreign direct investment is the net investment inflow to acquire a sustainable management stake (10% or more of voting shares) in a company operating in an economy other than that of the investor.	WDI, 2015
Credit to the private sector (%GDP)	Refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of listed securities and trade credits and other receivables, which establish a demand for reimbursement.	WDI, 2015
Change in external debt (%GDP)	The total change in debt stocks shows the change in the stock of debt between two consecutive years.	WDI, 2015
External debt stock (%GDP)	Total external debt is debt owed to non-residents repayable in foreign currency, goods or services. It is the sum of long-term, long-term guaranteed and long-term unsecured public debt, short-term debt and use of IMF credit.	WDI, 2015
GDP growth	Growth rate of GDP per capita.	WDI, 2015
Inflation variability	Measures the consumer price index reflects changes in the cost of a basket of goods and services by the average consumer. It makes it possible to capture the effect of price stability and therefore of monetary policy on growth.	Author
The interest rate	Differential in the rate of return that should be related to capital flight. It is estimated as the domestic real interest rate minus the risk-free US rate. We start from the analysis of Le and Zak (2006) who state that the domestic rate of return higher than the foreign rate of return would lead to a reversal of capital.	Author
Official Development Assistance (%GNI)	Net Official Development Assistance refers to aid flows (net of repayments) from official donors.	WDI, 2015
Government stability	Assesses the government's ability to carry out its declared programs and to stay in office. The risk rating assigned is the sum of 3 subcomponents: Government unity, Legislative strength and Popular support.	ICRG
Investment profile	Assesses factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The rating assigned is the sum of 3 subcomponents: Contract viability/expropriation, Profits repatriation, Payment delays.	ICRG
Internal conflicts	Assesses political violence in the country and its actual or potential impact on governance. The rating assigned is the sum of 3 subcomponents: Civil war/coup threat, Terrorism/Political violence, Civil disorder.	ICRG
External conflicts	Assesses the risk to the incumbent government from foreign action, ranging from non-violent external pressure to violent external pressure. The rating assigned is the sum of 3 subcomponents: War, Cross-border conflict, Foreign pressures.	ICRG
Democratic accountability	Assesses how responsive government is to its people, assuming that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one.	ICRG

Religious tensions	Religious tensions may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; the desire of a religious group to express its own identity, separate from the country as a whole	ICRG

Appendix C. Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Foreign direct investment flows (%GDP)	213	2.51	3.97	-5.28	30.07
Credit to the private sector (%GDP)	216	16.95	20.31	0.74	148.31
Change in external debt (%GDP)	225	0.01	0.02	-0.09	0.10
Capital flight (%GDP)	221	1.18	1.26	-0.30	6.22
External debt stock (%GDP)	226	0.86	2.36	0.00	28.69
GDP growth rate	222	4.01	4.09	-11.48	19.88
inflation variability	187	50.40	240.20	0, 06	2538.12
interest rate differential	183	3.96	2.95	-4.86	21.24
Official development assistance (%GNI)	220	9.55	8.25	0.03	49.26
Religious tensions	147	4, 33	1.33	0.15	6.00
Government Stability	147	7.16	2.04	2.00	10.99
Internal conflicts	147	7.38	2.32	1.67	12.00
External conflicts	147	8.93	1.97	3 .38	12.00
Investment Profile	147	6.28	1.93	1.15	11.26
Democratic Accountability	147	2.90	1.09	1.00	5.33

Appendix D. Trend of capital flight and normal capital flows