CAPITAL FLIGHT AND INSTITUTIONAL GOVERNANCE IN SUB-SAHARAN AFRICA: THE ROLE OF CORRUPTION

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BY

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DECLARATION

This is to certify that this thesis is the result of research undertaken by Kingsley Osei Domfeh towards the award of a Master of Philosophy (M.Phil.) degree in Economics at the Department of Economics, University of Ghana.

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ABSTRACT

Empirical evidence indicates that macroeconomic uncertainty, political and institutional instability, less developed financial system, and higher rate of return differentials in other countries abroad induces capital flight from Sub-Saharan Africa. This research recognizes corruption as an aspect of a weak political and institutional system. However, the relationship between corruption and capital flight has received little emphasis, particularly in Sub-Saharan Africa. The study, therefore, seeks to examine capital flight and institutional governance in Sub-Saharan Africa, the role of corruption. Panel data set of thirty two (32) countries in Sub-Saharan Africa is analyzed over the period 2000-2012 employing three different estimation techniques as Generalized Method of Moments (GMM), Fixed Effect Regression and the pooled-OLS regression models. The research work is based on the portfolio choice framework.

The main variable of interest (corruption) entered all eight (8) specifications of the econometric model tested. The result of the empirical estimation established that corruption has a positive and statistically significant effect on capital flight in SSA in all the specifications. Moreover, the interaction between corruption and regime durability resulted in a negative and statistically significant coefficient implying that an increase in regime durability, which also proxy for institutional strength would reduce corruption, hence capital flight. In other words, in the midst of strong institutional governance, the potency of corruption in increasing capital flight is reduced significantly.

Moreover, the study established that all the controlled macroeconomic variables does not have any significant effect on capital flight in Sub-Saharan Africa. These variables were found to be statistically insignificant to capital flight in all the specifications they appeared.

On the basis of the empirical results, the study recommends measures to strengthen institutional governance in SSAs. Institutional governance reforms are encouraged to be undertaken in order to reduce corruption and by extension capital flight. The governments of Sub-Saharan African countries must put in place measures to improve the control of corruption in SSA. Thus, an effective mechanism aimed at tracking and prosecuting financial crime should be the utmost priority of the authorities.

DEDICATION

This thesis is dedicated to the Almighty God, my family, especially Nana Abena Ohenewaa Osei-Domfeh and my friends.

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LIST OF ABBREVIATIONS

ACF	Adjusted Capital Flight
AfDB	African Development Bank
AR	Autoregressive
CAD	Current Account Deficit
COR	Corruption
CPI	Corruption Perception Index
ED	External Debt
FE	Fixed Effects
FZ	French Zone
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GMM	Generalized Method of Moments
IACF	Inflation Adjusted Capital Flight
ICRG	International Country Risk Guide
IDS	International Debt Statistics
IEA	Independence of the Executive Authority
ITBT	Income from Tourism and Border Transaction
IMF	International Monetary Fund
INF	Inflation

LDCs	Least Developed Countries
NFDI	Net Foreign Direct Investment
OLS	Ordinary Least Squares
OR	Official Reserves
PPI	Producer Price Index
RD	Regime Durability
RE	Random Effects
RII	Reinvested Investment Income
RL	Rule of Law
SFABS	Short-term Foreign Assets of the Banking System
SSA	Sub-Saharan Africa
TI	Transparency International
TNCs	Truly Transnational Corporations
UIC	Use of IMF Credit
UNODC	United Nations Office on Drugs and Crime
UNDP	United Nations Development Programme
WB	World Bank
WDI	World Development Indicators

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Capital flight has been an important issue since early 1980s in developing countries. Although from the end of the 1980s and early 1990s the debt crisis appeared to be contained and attention to the capital flight phenomenon waned, capital flight still remains a serious problem in a number of countries. Many developing countries are concerned with the capital flight phenomenon because of its deleterious impact on economic growth and welfare, macroeconomic stability, income distribution, illegal activities and other social development matters (Zheng and Tang, 2009).

Economic Stagnation has been a feature in Sub-Saharan Africa's (SSA) economic performance in the past four decades. Consistently, the Region has suffered from balance of payments disequilibria, dwindling government finances, increasing macroeconomic and political instability and, as a consequence, a higher incidence of poverty (Artadi and Sala-I-Martin, 2003; Collier, 2006). The Region tends to exhibit a significantly higher preference for foreign assets relative to domestic assets; hence 40 percent of Africa's private capital was held abroad in the form of capital flight, the highest ratio of all developing regions, Collier (2001).

According to the most recent estimates, capital flight—the voluntary exits of private residents' capital either for a safe haven or for investments made in foreign currency—from a sample of 40 Sub Saharan Africa countries amounts to 420 billion in real US dollars over the three decades spanning 1970– 2004 (Ndikumana and Boyce, 2008). Including interest earning on past flight

capital, the cumulative amount reaches a staggering $607 billion. One – third of the total capital flight from Africa is accounted for by the West African Monetary Zone. Moreover, Ndikumana and Boyce (2010) estimated the total real capital flight from Africa in 2002 to be 18, 249.20 million dollars of which 6,276 million is linked with the countries in the West African Monetary Zone. Specifically Ghana, Nigeria, Sierra Leone and Guinea represent 34.39% of the total. A detailed description can be found in Ndikumana and Boyce (2008, 2010). Again, it is estimated that between 1970 and 2010, African countries have lost up to $1.3 trillion dollars (in 2010 constant US dollars) through capital flight. This figure represents the sum of capital flight from 35 sub-Saharan African countries and 4 North African countries, namely Algeria, Egypt, Morocco and Tunisia, Ndikumana and Boyce (2012).

The high levels of capital flight pose serious challenges for domestic resource mobilization in support of investment and growth in Africa. These challenges are even more important because the Region is confronted with an acute shortage of capital and is increasingly marginalized in the global distribution of foreign direct investment, which is skewed heavily in favor of OECD and emerging market economies (World Bank, 2006). Machlup (1942) acknowledged that capital fight leads to higher interest rates and lower prices, and possible deflationary situation in the capital exporting countries, resulting in an automatic process of transfer repatriation. As a result capital flight shows weak economic policies, among which are mis-management of exchange rates, interest rates, inflation, budget deficits, increase tax burden as well as excessive public sector borrowing requirement resulting in crowding out of the private sector. M Pastor, (1990) indicated that capital flight reduces growth potential, erode the tax base and redistributes income from the

poor to the rich. Capital flight also triggers financial crisis in emerging markets in Sub-Saharan African countries.

Theory of capital flight suggests that this phenomenon is driven both by private actors and public authorities (Boyce and Ndikumana, 2003; Ajayi, 2007; Ndiaye, 2011). These authors showed that capital flight is driven by private actors due to, political and institutional instability, less developed financial system, macroeconomic uncertainty, and higher rate of return differentials abroad. In a context of portfolio choice, these factors lead to increased risk of losses in the real value of domestic assets of private agents, forcing a shift of portfolio in favour of foreign assets (Collier et al., 2004). The consequence is that, private agents hold their savings abroad, leading to a reduction in domestic private investment and economic growth. Similarly, these resources held overseas by public authorities' leads to a decline in public resources, thereby causing public investment to fall and a decline in growth.

There are many studies on capital flight in developing countries. The study by Weeks (2012) is among the latest studies on capital flight in SSA. Most of these studies can be classified into two main strands—determinants and associations (Cerra et al., 2008). The determinants literature concentrates on identifying variables that are responsible for capital flight in a country or a cross-section of countries. Primarily, this literature identifies macroeconomic policies and non-macro variables such as political risk factors as significant determinants of capital flight. The literature on associations spotlights the significant and often contemporaneous association between capital flight and other perverse macroeconomic outcomes such as low rates of growth, increased aid inflows, high external debt among others (see Hermes et al., 2002; Cerra et al., 2008).

Recent literature places a particular attention on the role of non-economic variables, including institutional governance and political risk and their influence on capital flight from developing countries (Gibson & Tsakalotos, 1993; Schineller, 1997). In the broad spectrum of the literature, it has been noted that political instability and poor governance deters investment and induces capital flight. Public authorities contribute to capital flight under conditions of poor governance and bad institutional quality (Ajayi, 1992; WJ Awung, 1996; Loungani and Mauro, 2000; Ndikumana and Boyce, 2003; Le Q.V 2006; Cerra et al., 2008; Ndiaye, 2009a and 2011). These authors reiterate that, in such a context, corrupt public authorities take advantage of their favorable position to amass a personal fortune abroad (Boyce and Ndikumana, 2001).

However, empirical research into the role that institutional governance plays on capital flight is still limited in SSA particularly. Therefore, this study intends to contribute to the empirical literature by focusing on corruption as an important institutional governance factor and its relationship with capital flight in SSA. According to Hope (1997), corruption pandemic in Sub-Saharan Africa, has become a matter of global concern because it has reached cancerous proportions. In spite of this endemic, so many authors differ in their explanation of what corruption is made up of. For instance, Osoba (1996) defined corruption as: ... “a form of antisocial behavior by an individual or social group which confers un- just or fraudulent benefits on its perpetrators, is inconsistent with the established legal norms and prevailing moral ethos of the land and is likely to subvert or diminish the capacity of the legitimate authorities to provide fully for the material and spiritual well-being of all members of society in a just and equitable manner”.

Corruption in Sub-Saharan Africa has been identified in the literature to include bribery in the public sector where people need to pay some amount of money before a service is rendered. There is also theft of public funds by account clerks and other officials as well as misappropriation of state funds and properties. An observation by the United Nations (1990) indicated that the behavior of corrupt leaders is to use public authority, office, or official position with the deliberate intent of extracting personal/private monetary rewards or other privileges at the expense of public good and in violation of established rules and ethical considerations.

1.2 Statement of the Problem

Capital flight, in economics, occurs when assets or money rapidly flow out of a country, due to an event of economic consequence. Events such as increase in taxes on capital or the government of the country defaulting on its debt that disturbs investors and causes them to lower their valuation of the assets in that country, and losing the confidence they have on the strength of the economy.

The report, entitled "economic perspectives in Africa", was released in 2012. In the report, the African Development Bank (AfDB) asserts that capital flight deprived the continent of over US $700 billion during the preceding decade. The United Nations Development Programme (2011) now considers the scale of capital flight to be so great that it represents a major obstacle to mobilizing domestic resources for national development, and also an obstacle to long-term economic growth.

The link between capital flight and corruption discussed in the literature is limited, especially in the Sub-Saharan African region. The greatest concern, according to the Transparency

International's (TI) 2010 *Corruption Perceptions Index (CPI)*, indicated that the most corrupt region in the world is Africa. The CPI report defines corruption as the abuse of entrusted power for private gain, in public and private sectors. More so, six African countries (Angola, Burundi, Chad, Equatorial Guinea, Sudan and Somalia) were ranked among the 10 most corrupt countries of the 173 countries surveyed by the Berlin-based group. It provide scores of countries on a 10-point scale, with zero being the most corrupt. Accordingly, out of 47 African nations surveyed, 44 scored less than five on the index, showing serious levels of corruption. The report again indicated that the least corrupt African nation (Botswana) scored 5.8 indicating how severity of corruption in Africa.

The detriments of corruption and capital flight in Sub-Saharan Africa is enormous as it leads to the widening of the gap between domestic savings and investment. Agents of the economy lose trust in the social-political and macro-economic environment of the country. Empirical evidence in the literature has shown that in Sub-Saharan Africa, corruption impairs political, economic and social development and hinders administrative development and performance. (Osoba, 1996; Hope, 1997). Mauro (1995) indicated that corruption leads to a reduction in private investment, and consequently dwindling economic growth. Also, Bardhan (1997) reiterated that corruption induces the creation of inefficiencies leading to a lack of productivity and poor quality public investments and services. Corrupt practices leads to an unstable economic environment resulting in high cost of operation and a greater level of risk and expected lower returns for investors (Johnson et.al 2000).

Accordingly, research into the corruption – capital flight phenomenon in Sub-Saharan Africa is worth investigating since it has received little or no attention in particularly SSA, and in attempting to address this research gap, the study sees corruption as a domestic investment risk function.

The study therefore, uses the portfolio choice framework approach to establish the relationship between capital flight and corruption, including other objectives for a panel of 32 countries over a period of thirteen years (2000-2012).

1.3 Research Questions

Empirical literature has indeed identified institutional governance indicators, as well as macroeconomic indicators as some of the factors that determine capital flight. It is worth noting that a vast number of institutional governance variables has been outlined in the literature as having in one way or the other an influence on capital flight. The research work deem it fit to take a look at some of these important institutional variables and their relationship with capital flight focusing on corruption as the main variable of interest. In doing this, three (3) specific questions needs to be asked and answered. These are:

- What is the direction of causality between corruption and capital flight?
- What is the effect of corruption on capital flight in SSA?
- Does the other equally important institutional governance indicators influence the effects of corruption on capital flight?

1.4 Objectives

The main focus of this study is to empirically examine the effect of institutional governance on capital flight with emphasis on corruption in Sub-Saharan Africa. In doing this, the study seeks to achieve the following specific objectives:

- Examine the effects of corruption on capital flight in Sub-Sahara Africa.
- Investigate the effects of the interaction of corruption and other equally important institutional governance indicators on capital flight in Sub-Sahara Africa.
- Determine the direction of causality between corruption and capital flight.

1.5 Significance of the study

The essence of this study is as a result of the fact that Sub-Saharan African (SSA) countries, over the past decades have experienced massive outflows of private capital towards western financial centers. The private assets surpass the continent's foreign liabilities, ironically making Sub-Saharan Africa a 'net creditor' to the rest of the world (Boyce and Ndikumana, 2001). Sub-Saharan Africa shows a significantly higher preference for foreign assets relative to domestic assets when compared to otehe developing regions; hence Africa has the highest proportion of private assets held abroad (Collier, 2001). Capital flight from Sub-Saharan Africa economies constitute a serious development challenge for so many reasons. The phenomenon diverts scarce resources away from domestic investment and productive activities; and also has a substantial regressive impact on wealth distribution among others. From this background, the study is critically meant to identify and bring to light the role of corruption as an institutional governance indicator on capital flight in Sub Saharan Africa.

A review of the negative impact of capital flight in the economies of Sub-Saharan African countries, indicates the need to reduce capital flight in the region to promote healthy economic environment. Reduction of capital flight represents a crucial avenue to increase the resources available in Sub-Saharan African countries for both consumption and investment among the public and private sectors (Fofack and Ndikumana 2009).The study intends to bring to light some possible ways in this regard. This includes, capital flight repatriation to help raise the level of domestic investment through the stabilization of the macroeconomic and institutional environment. The rippling effect is a minimization of uncertainty among agents about the direction of public policies; low inflation; low taxes and among others.

Finally, this study will add to the existing body of knowledge and can serve as a reference document for institutions, students, policy makers and other professionals, as well as contribute to the empirical and theoretical debate.

1.6 Organization of the study

This study is structured into six (6) main chapters: Chapter one is made up of the introduction consisting of the background of the study, a statement of the problem, the research questions, and the objectives, significance of the study as well as the organization of the study. Chapter two is categorized into two, thus, the theoretical and empirical literature of the study. Also chapter three place emphasis on review and trend analysis of corruption and capital flight in SSA. The fourth chapter consists of the methodology used for the study with emphasis on model specification, estimation techniques, source of data, and description of the variables. The remaining Chapters

five and six are made up of discussion of empirical results and conclusions and recommendations respectively.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is aimed at reviewing the theoretical and empirical studies on capital flight and corruption. The chapter is made up of three (3) main themed areas including a review of the definition and measurement of capital flight. The second section examines the theoretical literature on capital flight. The last part is an empirical survey of some studies conducted on capital flight and institutional governance including other determinants of capital flight.

2.2 Review of definitions and measurements of Capital Flight

Capital Flight has been defined differently by different authors indicating that there is no clear cut uniformity among researchers in agreeing to a common definition**.** For instance, Cuddington (1986) defined capital flight as a short-term private capital outflow which occurs in the response "not only to political crisis but also to economic policy failure". Deppler and Williamson, 1987 also provided their own version of the definition of capital flight by indicating that it is "acquisition or retention of a claim of non-residents that is motivated by the owner's concern that the value of his asset would be subject to discrete losses or impairment if his claims continued to be held domestically". More so, Pastor (1990) defines capital flight as resident capital outflow where capital can be represented by any asset local residents have sent abroad, avoiding national regulation. According to Cooper and Hardt (2000), capital flight is the flow of financial asset from one country to another resulted from the holder's perception that capital is subject to high level of risk due to hyper-inflation, devaluation, and political turmoil….etc.

Taking a look at a couple of recent studies where capital flight has been examined, the definition still differs among researchers. For instance, Schneider (2003) defined Capital Flight as the outflow of resident capital from a country in response to economic and political risk in the domestic economy. He reiterated that linking the definition of capital flight to a notion of national welfare might not be the soundest idea.

Moreover, the differences in the definition of capital have an impact in its measurements and as such it suffers a similar defect. From empirical literature, measurement of Capital Flight varies among authors and this leads to differences in its estimates for different countries. Distinguishing these differences in the literature; Joseph Haregeuin (2012) identified three major measures widely used in the literature. These are Direct, Indirect, and Dooley measures.

Direct Measures involve the use of direct data for Balance of Payment, where the emphasis is on short-term outflows ("Hot Money"). Cuddington (1986) established Capital Flight to be the acquisition of short-term foreign assets by the non-banking private sector. He reiterated that Capital Flight is the addition of errors and omissions and other short term capital. Capital flight in this instance is measured by adding up net errors and omissions and non-bank private short term capital outflows. This measure reflects the view that capital flight goes unrecorded, as a result of the illegal nature of capital movements. There is the notion that the unrecorded capital movements appear in the net errors and omissions. More so, by placing emphasis on short-term flows, however medium and long-term outflows are excluded, which, the author indicated are more normal in character (Gibson, 1993). C. Kant (1996), emphasized on some criticisms of the direct method of measurement, among which are the errors and omissions (unrecorded capital flows, measurement

and rounding errors), registration delays, and unreported imports. Measuring capital flight in this way is called short-term movements of capital.(Chunchachinda and Sirodom, 2013).

Another measure of capital flight is referred to as indirect measures (also noted as residual method) and it has been the most widely used measures in the available literature. Among its usage notably include the World Bank (1985), Morgan Guaranty (1986). The method looks at measurement under the assumption that capital inflows will be used as a basis of capital outflows. Therefore, the residual of both types of capital inflows is regarded as the amount of capital flight in the respective country. Stated in other words, capital flight is measured indirectly from balance of payments statistics by comparing the sources of capital inflows (Net increases in external debt and the net inflow of foreign investment) with the use of these inflows (the current account deficit and additions to foreign reserves). The differences that arise when the sources exceed the uses of capital inflows, is called capital flight.

The World Bank (1985) suggested the use of indirect measures provided that the increase in External Debt (ED) and the Net Foreign Direct Investment (NFDI) show the amount of capital inflows and also the Current Account Deficit (CAD) and the Increase in Official Reserves (OR) show the amount of capital outflows. Furthermore, the difference between Sources of Funds and Uses of Funds refers to the increase in Net Foreign Claims by the private sector and is regarded as the Capital Flight (CF): CFwb = ED + NFDI – CAD – OR. The World Bank used the World Debt Table data for External Debt increases rather than that of the balance of payment.

On the other hand, Morgan Guaranty Trust (1986) adjusts the World Bank's measurement of capital flight (CF_{wb}) by omitting Short-term Foreign Assets of the Banking System *(SFABS)* and only regarding foreign assets of the non-banking private sector as the Capital Flight *(CF): CF* = CF_{wb}*–SFABS*. Morgan Guaranty Trust (1986) was unable to show or prove the difference between the motivations from external claims by the banking system and that of the external claims by firms and individuals which happens to be the main reason for adjusting the definition of capital flight introduced by the World Bank.

Furthermore, the way Morgan Guaranty Trust measured capital flight was readjusted by omitting the Reinvested Investment Income (RII) and the Income from Tourism and Border Transaction (ITBT) from the current account before measuring the capital flight by Cline (1987). The argument in this case was that incomes from external assets which do not return to the country should not be used in capital flight calculations and that the Income from Tourism and Border Transaction involves transactions in the free market, which is beyond state control. Accordingly, Capital Flight (CF), can be measured by: CF_c*= CFMG - RII – ITBT, Cline* (1987).

More so, The IMF working paper (2005) also used the residual measurement approach developed by various scholars in the World Bank. They explained that the residual approach extracts the best measured components of the BOP identity (the current account balance, the change in external debt, net foreign direct investment, and the change in official reserves). The residual measure approach is constructed as: KF = ΔDebt + DFI + CAS + CHOR; where ΔDebt is the change in total external debt outstanding, DFI is net foreign direct investment, CAS is a current account surplus, and CHOR is the net reduction in the stock of the foreign reserves. Using Boyce and

Ndikumana (2001) methodology, they adjust the change in the long-term debt stock for fluctuations in the exchange rate of the dollar against other currencies.

The last measure of capital flight is called the Dooley method. This method / approach of capital flight measurement was developed by M.P Dooley (1986). Conceptually, the method is different from the residual approach. Dooley estimated capital flight as: CFdo = TCO −ΔES. Where TCO = FB + FDI + CAS + FR − EO –ΔED. Where TCO, FDI, CAS, FR, FB, EO and ED implies the total amount of capital outflows, foreign direct investment, current account surplus, a change in foreign reserves, change in external debt (World Bank data), errors and omissions as well as foreign borrowing as reported in balance of payments statistics respectively. The next is to calculate the stock of external assets corresponding to reported interest earnings: ES = IE/rus.

According to Dooley, the approach is a hybrid measure of both direct and indirect methods – thus defining Capital Flight as the total amount of externally held assets of a private sector that do not generate income recorded in the Balance Of Payment statistics of a country. He made three adjustments to capture unrecorded capital flows: Firstly, errors and omissions were added; Secondly, the difference between the stock of external debt reported in the World Bank data and those reported in the balance of payments statistics add to the estimate of the increase in private sector foreign assets. Lastly, Calculation of the stock of external assets needed to give the observed amount of investment income in the balance of payments at international market rates (eg. US Treasury bill rate).

2.3 Review of Corruption in Sub-Saharan Africa

2.3.1 Introduction

Corruption is basically a phenomenon that is difficult to observe, but easy to have opinions about. It is a complex issue with a vast array of determinants and effects that are often context and country specific. It is an indisputable fact that corruption has become one of the most persistent and progressively worsening social problems afflicting virtually all sub-Saharan African countries today. The practice has indeed found its way into all institutions, both public and private, governmental and non-governmental. Having reached endemic proportions, corruption has become not only a way of life, but also a principal method for the accumulation of private property (Mulinge and Gwen, 1998). Corruption is one of the greatest inhibiting forces to equitable development and to the combating of poverty and it constitutes the difference between life and death' - World Bank President James Wolfensohn (2003).

2.3.2 Definition and Causes of Corruption in Sub-Saharan Africa

Corrupt behavior incorporates acts such as the use of public authority, office, or official position with the deliberate intent of extracting personal or private monetary rewards or other privileges at the expense of public good and in violation of established rules and ethical considerations (Hope 1987; United Nations 1990). Corruption is a form of antisocial behavior by an individual or social group which confers unjust or fraudulent benefits on its perpetrators, is inconsistent with the established legal norms and prevailing moral ethos of the land and is likely to subvert or diminish the capacity of the legitimate authorities to provide fully for the material and spiritual well-being of all members of society in a just and equitable manner (Osoba, 1996). The Asian Development Bank (ADB, 2010) also defines corruption as a behavior on the part of officials in public and

private sectors, in which they improperly and unlawfully enrich themselves and or those close to them or induce others to do so, by misusing the position in which they are placed.

Accordingly, the World Bank defined political corruption as the abuse of public power for private benefit (Bardhan 1997, and Tanzi 1998). The commonly known examples of political corruption are bribery and embezzlement. This involves the extraction of bribes by Public servants to provide services they are supposed to offer to citizens. Those with control over spending often abuses that power by embezzling funds. Buying of votes during elections by political parties and bribery and favoritism by officials responsible for employment in the public sector are other instances of political corruption. On the other hand, Jain (2001) defined corruption as "… acts in which public power is used for personal gains in a manner that contravenes the rules of the game". In the broad spectrum of empirical literature, the phenomenon has been established to having a detrimental impact on domestic investment climate and economic growth.

Empirical literature has indeed established several causes or genesis of corruption in Sub-Saharan Africa. The literature details the role played by African bureaucracies, private businesses and individuals, International Actors as well as the historical perspective, thus colonialism. The industrial revolution of the nineteenth century appears to have been the very initial historical basis for emergence of corruption. Accordingly, the financial growth which accompanied this historical event is said to have been directly responsible for the birth of white collar crime of which corruption is a part (Robb, 1992).

Three ways have been established by empirical literature as linking colonialism to corruption in Sub-Saharan Africa. The first link is found in Robb's (1992) argument that the new economic order resulting from the industrial revolution was responsible for the initial emergence of white collar crime of which corruption is a part. The argument here is that the new economies, led by the colonial governments, did not establish the structural groundwork for the origins and sustenance of corrupt practices. Secondly, the introduction of compulsory cash taxation in the forms of hut tax and, later, poll tax and the manner in which the tax was collected (by African leaders especially Chiefs) led to the origin of corrupt practices. The arriving colonialists found no meaningful monetary economies in the newly acquired territories. Therefore, most colonial governments, and particularly those of British origin, introduced compulsory taxation payable in cash only with the objectives of meeting the cost of administration or acquiring a cheap African labour necessary for the establishment of productive economic activities (Stichter, 1982; Tlou and Campbell, 1984 and Collier and Lai, 1986;).

The third link between colonialism and corrupt practices arose from the technique of divide and rule adopted especially by colonies of British descent. Thus, the technique of breaking united front among the various tribes and indigenes, favoring one tribe over others resulting in the creation of different groups and paramount's. In British Uganda and Nigeria, for example, the Baganda and Ibo, respectively, enjoyed supremacy over other tribes (Roberts, 1962; Hunt and Walker, 1974). As such, the technique really created immense regional variations in the levels of educational attainment and economic opportunities and even of independence, those groups favored by the colonial administration had an edge over those not favored (Leonard, 1991).

International Actors as a cause of corruption in Sub-Saharan Africa is very crucial and worthy to note. Globalization has been accompanied by the emergence of uncontrollable market forces and truly transnational corporations (TNCs) that dominate the basic dynamics of the world global economy, and by a worldwide spread of manufacturing and sales (Hirst and Thompson, 1996). According to Johnston (1998), increasing inter- dependence of economies and markets makes it possible for corrupt agents to extend their dealings across borders. For instance, it allows for the shifting of illicit profits out of poor countries into numbered bank accounts elsewhere. Governments, international development organizations, and aid agencies often attach certain conditions to loans and grants availed to developing countries. Some of these conditions approximate corrupt practices (Mulinge and Lesetedi, 1999). For instance, the aid or grant may arrive without considering the technical capacity of the recipient country. There are even situations where aid organizations and donor agencies provide overpriced, but unqualified, incompetent and inexperienced technical personnel as part of an aid package to developing countries (Mulinge and Lesetedi, 1999).

The Structural Adjustment Programs (SAPs) have been established in the literature as a participatory cause of corruption in sub-Saharan Africa. Where operational, such policies have been associated with declining social services for the mass of the African population and the stagnation of wages (Thompson, 1992; Vandermoortele, 1994 ;). As Hope (1997) states, in a situation of declining incomes, public servants "disavow any sense of civic virtue and attempt to supplement their incomes by engaging in corrupt acts."

2.3.3 Measures of corruption

Three measures of corruption have been identified in the empirical literature, namely; internal, external and the hybrid measures of corruption. The internal measures of corruption captures the perceptions of firms that operate within a country. It involves a research survey of the perception of firms about corrupt practices in the country using questionnaires, interviews, among other approaches. What makes the internal measure an important one is that it help inform firms about the effect of corruption on the investment climate of a country since firm's takes investment decisions on the economic situation of a country. However, internal measures of corruption are faced with some limitations worth noting. Firstly, firms operate in different countries with different policy and economic environments. The effect is that the point of reference of these firms is likely to be different and thus the data may not be easily comparable across countries. For example, firms that operate in countries where corruption is prevalent may be accustomed to corruption and therefore have less stringent standards for judging corrupt practices (Cameron et al., 2005).

The second point is the characteristics of firms. For instance, the large firms may have their corruption ratings different from small firms suggesting that countries with the same level of corruption, but different composition of firms with may have different internal corruption ratings as a result the data may not be easily comparable across countries. The last limitation, but not the least indicates that corruption may be under-reported, as respondents may feel reluctant to provide sensitive and accurate answers to questions asked by the survey (Azfar and Murrell, 2005)

The external measure of corruption involves the assessment of corruption undertaken by risk analysts who typically reside outside a country. Generally, private risk rating agencies provide the

corruption data to a targeted recipient, especially foreign investors. Since various countries are analyzed and rated by the same entity in this case the risk analyst, outcomes are generally more consistent and less devoid of measurement errors as compared to the internal measure of corruption. The drawbacks of this measure of corruption include the analysis and estimates of the risk analyst which at many times based on media reports and not necessarily personal experience. This anomaly, often than not affect the levels of corruption reported by these "experts" and it may not accurately reflect the levels of corruption that prevail in a country. Accordingly, the empirical results of Haque et al. (2000) found that commercial risk-rating agencies often rate African countries as riskier than warranted by the fundamentals. This empirical view is also consistent with the study by Ferri (2004) who found that risk assessments by private rating agencies tend to be biased against poor countries or smaller countries.

The third corruption measure called the hybrid, actually takes into account a combination of corrupt data from different sources into a composite index. The combination of all types of corruption data (including internal and external measures of corruption), helps in the combating of the problems associated with the other two measures of corruption explained above. However, one disadvantage of the hybrid measure is that they do not indicate clear distinction among various forms of corruption, such as bribery, embezzlement of public funds or nepotism. A problem may arise if different types of corruption have different effects on investment.

Following the available corruption measures analyzed, this thesis employs the hybrid corruption measure for the empirical analysis. The most widely available hybrid measures of corruption are the Corruption Perception Index (CPI) compiled by Transparency International.

2.3.4 Effects of corruption in Sub-Saharan Africa

In recent years, the problem of corruption has gained much attention primarily as a result of the high level of corruption cases in many countries, an increasing awareness of the cost of corruption throughout as well as the practical and economic changes in many countries are undergoing. However, corruption is an issue of development. Staats (1972) noted that corruption is a social problem found in various "degrees and forms in all but the most primitive societies".

The representative of United Nations Office on Drugs and Crime (UNODC) Southern Africa by name Jonathan Lucas in 2009, labeled corruption as "a crime against development, democracy, education, prosperity, public health and justice, - what many would consider the pillars of social well-being." Transparency International's (TI) 2010 *Corruption Perceptions Index (CPI)*, released in October 2010, identified Sub-Saharan Africa is also one of the most underdeveloped regions on earth and Africa as the most corrupt region in the world. In the broad spectrum of empirical literature, the phenomenon remains a major obstacle to achieving much needed progress and has a detrimental impact on domestic investment climate and economic growth. Even though corruption happens to be a world-wide phenomenon, it has been established in the literature to be costing Africa so much and restricting its development.

The consequences and effects are also on the increasing side. Shleifer and Visny (1993) acknowledged that corruption precipitates monopolies, and prevent market- based competition and innovation. Corruption lowers private investment, thereby reducing economic growth, Mauro (1995). Mauro (1998), concluded that the bulk of the effects of corruption on economic growth, which operate through private investment accounts for about one third of the total growth effects.

Rahman et al (1999) in the study of the effects of corruption on economic growth and gross domestic investment in Bangladesh did establish that corruption is negatively significant to cross-country differences in economic growth and gross domestic investment (both public and private). Wei, (2000a) argues that corruption is likely to produce certain compositions of capital flows that makes a country more vulnerable to shifts in international investors' sentiments and expectations. He also indicated that other consequences of corruption may possibly include loss of tax revenues because corruption may encourage people to evade taxes. In addition, by reducing tax revenues and increasing public expenditure, corruption may lead to adverse budgetary consequences. Corruption imposes additional costs on growth process as it diverts scarce resources away from viable investment. It increases the degree of uncertainty and risk associated with investment and drives away new investment see Fabayo J. et al (2011).

Accordingly, corruption has become a major impediment to political, economic and social development. It impairs economic efficiency (Gould and Amaro-Reyes 1983). The phenomenon has indeed led to an increase in poverty and economic growth. This is not to argue that corruption, however, is peculiar to sub-Saharan Africa. On the contrary, it is a global phenomenon which "manifests itself with significant similarities and differences in different societies, depending on the peculiar systems of power distribution and the legal and moral norms operating therein" (Osoba 1996). It also hinders administrative development and performance as well as stifles local initiative and enterprise (Hope 1997) and intensifies other social problems such as crime, ethnicity and ethnic conflicts, and family-related problems.

In conclusion, however, recent empirical literature on capital flight has placed particular emphasis on the role of non-economic variables (political risk and governance/institutional factors) and their relationship with capital flight from developing countries (Gibson and Tsakalotos, 1993; Schineller, 1997). It is understood in the literature that political instability, poor governance and weaker institutions discourages domestic investment and induces capital flight. The literature has indeed identified corruption as one of the key measures for evaluating the quality of governance/institutions along with transparency, the rule of law, among others.

According to Transparency International's Corruption Perception Index, six of the world's ten countries most burdened by corruption are located in the continent. Furthermore, an econometric analysis suggests that, holding other determinants of capital flight constant, corruption does have a positive and a significant impact on capital flight. Capital flight and corruption are some of the main causes of the poverty in Sub-Saharan Africa. (Capital Flight and Corruption Treaty NGO Alternative Treaties at the 1992 Global Forum). In addition, Le and Rishi, (2008), in the their study on the role of corruption in impelling capital flight established that corruption is one of the dimensions of poor governance and has significant positive effect on capital flight. The result indeed concluded that advocating good governance by combating corruption makes a great deal of sense for countries aiming to staunch capital flight. The result is consistent with the study of Lawanson (2006) and Ndiaye (2009). Their findings also established a positive and significant effect of corruption on capital flight using the system GMM at the 5 % level of significance. The above empirical evidence certainly showcases that there exist a relationship between corruption and capital flight.

2.4 Theoretical literature on capital flight and corruption

Generally, the concept of the causes and determinants of capital flight has been linked to four main hypotheses by many scholars. The first is the portfolio choice framework that takes into consideration rate of return and risk differential as the drivers of capital flight (Ajayi, 1992). The second is the debt-driven flight thesis. This thesis place emphasis on the heavy external debt burden as the cause of capital flight. Thus, capital flight leads to borrowing in order to promote growth and further borrowing increases the debt ratio, promoting capital flight and accordingly leads to poor economic growth. The third is the investment diversion thesis which focuses on diversion of capital towards a more stable economy due to uncertainties in both the political and macroeconomic situation of the domestic economy. Lastly, the tax – depressing thesis describes a situation where domestic government do not have access to funds or wealth held abroad for taxation purposes and this situation leads to a potential loss of government revenue and consequently a negative effect on economic growth and development. That is, the direct result of capital flight is the reduction in the revenue generating capacity of government. (Ajayi, 1992).

Capital movement/ flows have been identified in the literature as having a number of systemic explanations. However, in the theoretival literature, many researchers have used the portfolio choice methodology /framework to explain capital flight phenomenon. The theory describe how capital moves across countries in response to rate of return and risk differentials. Here, emphasis is placed on the assessment of domestic investment risk and uncertainty that lead individuals to choose to hold assets abroad instead of investing domestically.

The original idea of portfolio theory of capital movement can be linked to Williams, (1938). The principal idea was interest rate differentials as the cause of capital flows. It took MacDougal type models (determinants of capital flows framed in inter-temporal optimization context), to place particular attention on risk and not only return differential (see J Tobin, 1958). The literature on capital flight has built on these earlier theories. Notable among these authors' included Khan and Hague (1987) who indicated that capital flows can arise in an instance of where investors face an asymmetric risk of expropriation. In this instance, investors in the domestic economy will send their funds abroad when facing a higher risk.

Also, Dooley (1988) placed emphasis on the notion of asymmetric risk by expanding the focus to a wide range of implicit taxes resulting from either a rise in inflation or exchange rate depreciation. This led the authorities to depend more on the inflation tax, resultion in the erosion of the value of financial assets in the domestic economy, hence, capital flown to acquire foreign assets. Alesina and Tabellini (1989), also reiterated a situation where different governmental regimes with different ideologies alternate in office, resulting in uncertainty about future policy direction can lead simultaneously to capital flight, low domestic investment and high external debts.

Accordingly, Ndikumana and Boyce, (2003) viewed capital flight movement as resulting from investors who in their bid to maximize profits allocate funds between domestic and foreign investment based on the relative risk-adjusted rate of return at home and abroad. It indicated that in developing countries with riskier investment environment, will result in lower net risk-adjusted returns. This phenomenon has invariably been able to explain why capital continues to flow out to

foreign lands. In addition, foreign investors can be discouraged to invest in the domestic economy if the situation of risky environment discourages domestic investment.

However, in undertaking a critical look at the link between capital flight and corruption, this thesis follows tune to the use of Portfolio Choice framework based on Collier et al (2001, 2004); Le and Zak (2006) and Ali and Walters (2011) to explain how corruption affects capital flight in SSA.

By viewing corruption as a contributor to domestic investment risk, this thesis consider an economy, say a country in Sub-Saharan Africa with a vast number of infinitely-lived identical agents. The economic agents optimize their consumption patterns between investment in the domestic economy or foreign country. This study assume that there exists only one investment in each country such that agents' consumption from the return on wealth is allocated to one period investment in the domestic country or to a single foreign country. Excluding labour and considering the population as constant, the wealth *(W)* is is also normalized to unity and the assumption of a single homogenous commodity produced in both countries.

Investment in the domestic economy is denoted by I_t at time *t*. This investment earns a rate of return RR_t. It is assumed that, in the domestic economy, investment is risky due to poor governance (e.g in this case is corruption) whiles that of the foreign investment earn a risk-free rate of return RR^f when agents invest I_t^f in say, a US Treasury bill.

With these options, the problem is on the representative Sub-Saharan African agent to choose an investment portfolio that maximizes utility of his wealth by solving:

$$\underset{w_t}{Max}\, E \sum_{t=0}^{\infty} \beta^t \, U(W_t) \qquad (1)$$

Subject to $W_t = (1 + RR_t)\, I_t + (1 + RR^f)\, I_t^f - I_t + 1 - I_{t+1}^f,$ (2)

The necessary and sufficient conditions below depicts the optimal allocation of the portfolio where $U(w)$ is strictly increasing, continuous and strictly concave.

$$I_{t+1}^* = \frac{E(RR_{t+1} - RR^f)}{\theta VAR(RR_{t+1})} \quad (3)$$

The $\theta VAR(RR_{t+1})$ represents the variance of the return on investment in the domestic economy, whereas the risk aversion is $\theta \equiv -E[U''(w_{t+1})]/E[U'(w_{t+1})]$.

Assuming the presence of a related problem the individual agents are solving in other countries, the net capital flight is given by $N_{t+1}^f = I_{t+1}^{fo} + I_{t+1}^{f*}$ Where I_{t+1}^{fo} *and* I_{t+1}^{f*} are capital outflows and inflows respectively. Then the average capital invested in the domestic economy from time *t* to time *t+1* is given by $V_{t+1} = I_{t+1}^* + N_{t+1}^f$ (4)

The fourth equation indicates a equilibrium of the capital stock which is made up of domestic investment and net foreign investment. An arrangement of the equation four however, will produce the equilibrium capital flight as below:

$$N_{t+1}^f = V_{t+1} - \frac{E(RR_{t+1} - RR^f)}{\theta VAR(RR_{t+1})} \quad (5)$$

Equation five (5) indicates that a high capital flight is associated with low expected returns on domestic investment (domestic investment risk is high). So, to obtain capital flight as a ratio of physical capital stock, equation 5 is divided by V_t, as below:

$$\frac{N_t^f}{V_t} = 1 - \frac{E(RR_t - RR^f)}{\theta V_t VAR(RR_t)} \quad (6)$$

Following the focus of this study as identifying corruption, as an indicator of weaker institutions and poor governance, and as a contributing factor to domestic investment risk, there is the need to decompose the variance of domestic investment returns.

From the above theoretical analysis of portfolio choice theory, a higher capital flight occurs when expected returns domestically are low and domestic investment is high. That is, corruption-driven funds moves from a country because corrupt governments are feared with the notion that they will not provide a stable and conducive environment for investment. This corruption-driven money explains the earlier statement that corruption is a contributing factor to domestic investment climate through risk and uncertainty. The approach has been used by some authors in their empirical works of corruption and investment decisions because of its importance in being able to explain capital flows from developing countries. Some of these authors are Wedman (1997); Tanzi and Davoodi, (1997). These authors reiterated that corruption can lead to lowering of the quality of investment in an economy and also destroy the quality of domestic investment climate through uncertainty and insecurity.

2.5 Empirical Literature Review

2.5.1 Determinants of capital flight

The empirical literature on the determinants of capital flight has revealed a vast array of factors. This can be linked to the different definitions, measurements, and the econometric model used. The most widely mentioned and consistent factors include the macroeconomic factors, capital inflows, governance and institutional quality, financial development, fiscal policy and rate of return differentials.

- **Institutional and Governance Indicators**

Six institutional variables that capture various types of political institutions that the literature has identified as important drivers of capital flight are political competitiveness as proxied by the level

of democracy, institutional and political constraints on executive; an index of political accountability, government fractionalization, and political stability. The six indicators of governance include the World Bank's estimates of regulatory quality; the rule of law; government effectiveness; political risk; corruption; and the World Banks "Ease of Doing Business" rankings.

Quality institutions are generally believed to be a crucial catalyst for domestic investment climate. Empirical literature has shown a positive relationship between poor governance and institutions. North, (1990), established that taking a decision to invest in the domestic economy, depends on whether property rights and other investment-promoting institutions are in place and that well developed institutions indirectly increase the potential for higher rates of return within the domestic economy by lowering transaction costs.

Acemoglu et al, (2001, 2003) in their contribution to the literature indicated that institutions directly influence whether economic agents engage in productive investments or not. Similarly, strong institutions enhances the domestic investment climate by reducing the likelihood of distortionary macroeconomic policies. Weak institutions including weak democracy and political freedom aggravates an illegal outflow of capital from poor countries, diverting scarce resource from injecting the development pipeline (Lensink et al., 2000). Studies by Hermes and Lensink (2002) acknowledged that perceived ill institutional variables in any economy may give rise to capital flight because citizens lose confidence in the domestic economy thereby holding their funds in abroad. The lack of strong institutional system and good governance expose elites to corrupt the capital market at the cost of the national interest (Ndikumana and Boyce, 2003).

Also, effective institutional constraints on executive power, affects capital flight independently. This result is from a study of testing whether unsound macroeconomic policies or weak institutions lead to capital flight, using panel data for a large set of developing, emerging market and transition countries. The results of the research indicated capital flight as a mechanism by which institutional quality influences volatility, (Cerra; Rishi, and Saxena, 2005).

A study by TB. Pepinsky, (2008), examining the political bases of portfolio investment using a unique cross-national dataset on net portfolio flows did establish that countries with "better institution" were no less vulnerable to portfolio outflows than countries with "worse institutions." It indicated that Governance quality is the strongest predictor of portfolio capital flows, while political institutions perform poorly. The existing empirical literature is consistent with the findings that a good institutional development is associated with a lower incidence of capital flight (see, for example, Le and Zak, 2006; Cerra, 2008). Ndikumana; Boyce and Ndiaye, (2014), in using the GMM regressions in their bid to describe the nature of capital flight, the methodologies used to measure it, and its drivers, they relied on 39 African countries for the period 1970-2010 and found that capital flight is lower in better governed regimes, but that it increases with regime duration. Their work also indicated that the coefficients are not statistically significant when omitted country-specific fixed effects are accounted.

Indeed, capital flight can affect economic growth through corruption. According to Transparency International's Corruption Perception Index, six of the world's ten countries most burdened by corruption are located in the continent. Furthermore, an econometric analysis suggests that, holding other determinants of capital flight constant, corruption does have a positive and a

significant impact on capital flight. (Capital Flight and Corruption Treaty NGO Alternative Treaties at the 1992 Global Forum).

High capital flight is symptomatic of an environment characterized by corruption. This can hurt economic performance by reducing private investment through adversely affecting the quantity and quality of public infrastructures, by lowering tax revenues and by declining human capital accumulation (Ndikumana, 2006, 2011). Baek and Yang (2008), examined the determinants of capital flight using panel data for 53 developing and 23 developed countries over the period of 1984-2004. Their empirical results showed that political risk and the financial incentive for capital flows have a statistical robust relationship to capital flight. The results also indicated that corruption, government stability and law-and-order are common factors affecting Capital flight**.**

Moreover, Le and Rishi (2008), considered the role of corruption in impelling capital flight in developed and developing countries using a panel data analysis, they reiterated a positive and significant effect of corruption on capital flight. In addition, a Dynamic Panel Data Analysis on the Determinants of capital flight in the Common Market for Eastern and Southern Africa member countries by Haregewoin (2012), showed a negative but statistically insignificant effect of political stability and absence of violence on capital flight. This result indeed supports that of Lawanson (2006), and Ndiaye (2009). Their findings also established a positive and significant effect of corruption on capital flight using the system GMM at the 5 % level of significance, meaning the main actors of capital flight from COMESA member countries are corrupted government officials.

- **Macroeconomic Indicators**

Variables including external debt, foreign borrowing, the rate of inflation, domestic investment, budget deficit, real exchange rate, and real GDP, among others, are what the literature has indicated to be crucial determinants of capital flight.

The government budget is crucial to capital movements. Larger budget deficits motivate domestic investors to move capital abroad to escape higher future taxation risk through expectations of higher future inflation (Boyce, 1992, Schineller, 1996, Loungani and Mauro, 2000). Lensink and Hermes (2000) found positive and significant effect of budget deficit uncertainty on capital flight. In contrast to the above findings, Ndikumana and Boyce (2003) found that budget deficit and capital flight from 30 Sub-Saharan African are negatively related. Expectations of domestic economic agents regarding future tax increases to meet the government debt repayment obligations, results in capital flight and increased budget deficit (Ndikumana and Boyce (2003).

Also, the degree of currency over-valuation is an indicator that affects the rate of returns for both domestic and overseas investors. In a study for their African sample indicated that currency over-valuation helps to explain the occurrence of capital fight in Africa in all specifications. The coefficient of this variable was found to be positive and highly significant, implying that, on average, African economies with misaligned exchange rates tend to experience more capital flight, perhaps reflecting expectations Collier et al. (2001). Similarly, poor exchange rate management, such as an overvalued currency or a black market premium, may contribute to economic uncertainty, as they generate incorrect signals to economic agents, Edwards (1989). The existing evidence suggests that currency overvaluation, in particular, can be harmful since it may result in

lower economic growth, a higher probability of speculative attacks, increased current account deficits, shortages of foreign exchange, balance of payments crises and corruption (Frait et al., 2006; Rodrik, 2008).

Moreover, domestic inflation reduces real returns on domestic capital. More capital tends to flee abroad to the extent that the government depends on taxing domestic financial assets through money creation (Dooley, 1988, Pastor, 1990, Loungani and Mauro, 2000). According to Fischer (1993), high inflation makes domestic asset holders react to the erosion of the real value of their assets by moving their assets abroad. Also, since inflation is often regarded as an indicator of the government's overall ability to manage the economy, a rising inflation rate tends to undermine that ability. Contrary to the above findings, Lensink and Hermes (2000) found an insignificant effect of the uncertainty relating to inflation on capital flight. Again Capital flight can result in inflation if domestic sources of revenue generation are eroded and the government resort to printing money to finance its development activities (Boyce and Ndikumana, 2003).

Accordingly, Capital inflows/Foreign Direct Investment influences capital flight, thus increase in capital inflows provides more resources, thus leading to more capital flight. Ajayi (1995) in his analysis argued that the simultaneous occurrence of capital inflows and capital outflow are a major cause of capital flight. Foreign aid is still one of the most important sources of finance for most African Countries available. Even though the impact of some types of private capital flows such as FDI on capital flight is ambiguous. In contrast, Kant (1996), in his study suggests that FDI reduces capital flight through its beneficial effect on the domestic investment climate. In addition, Lensink et al (2000) in their study of 84 developing countries found an insignificant effect of

foreign direct investment on capital flight. However, studies by Harrigan et al. (2002) and Cerra et al. (2008) confirm this empirically. Also, Knack, (2001) argued that aid may be detrimental to the investment climate of recipient countries as it tends to encourage corruption and rent-seeking.

Moreover, capital flight and the external debt and capital flight causality has many outcomes, though capital flight is caused by all the possible relationships. Ajayi (1995) and Boyce (1992) as cited in Sheet (2005) distinguish four possible linkages between the two, (i) debt-driven capital flight; (ii) debt fueled capital flight; (iii) flight-driven external borrowing; and (iv) flight fuelled external borrowing. Thus, external borrowings are transformed – sometimes instantaneously from capital inflow to capital flight, ultimately ending up abroad, usually in a private foreign account. High indebtedness measured by total debt/GDP can be interpreted as a signal for higher future taxation, increasing capital flight (Collier et al., 2001, 2003). Empirically, evidence has shown that capital flight increases significantly the needs for external debt and foreign aid (Boyce, 1992; Chipalkatti and Rishi, 2001; Cerra, Rishi and Saxena, 2008).

Accordingly, Ndikumana (2009), indicated that capital flight forces the government to increase its borrowing from abroad, which further increases the debt burden and worsens the fiscal balance. More so, Ndiaye (2009) finds evidence that short term debt fuels capital fight in his sample of African countries. Also, Ali and Walters, (2011) in their study, found that higher levels of indebtedness are associated with increased capital flight; this may reflect the relative riskiness of African countries.

Moreover, Capital Flight and the Tax base: Pastor, 1990 did acknowledge that one of the negative consequences of capital flight importantly, is the tax base erosion channel. More so, capital flight is noted by Ajayi (1992 and 2007), that it results in the erosion of the tax base, leading to a fall in government revenue and, consequently, a decline in public investment. This, in turn, can lower private investment and growth. Accordingly, Cervena, (2006) confirmed the above by reiterating that the erosion of the tax base occurs by capital flight. On the Otherhand, Lensink and Hermes (2000) found an insignificant effect of tax payments on capital flight. Ndikumana and Boyce (2011a) have shown empirically that countries with higher capital flight tend to have lower tax revenues.

Also, there has been significant interest with regards to the extent to which capital flight has a detrimental impact on economic development. Collier et atal (2001) in their bid to add to the debate indicated that private agents hold their savings abroad, which reduces private investment and consequently a reduction in economic growth due to such factors as macroeconomic uncertainty, political and institutional instability among others. Cervena (2006) on his part finds that capital flight has detrimental effects on long-term economic growth for African countries, Latin American countries, Asian countries and East European countries. An empirical study of Lan (2009) did find out that capital flight plays a crucial role in influencing economic growth in the Association of Southeast Asian Nations (ASEAN). In examining the effect of capital flight on economic growth in the Franc Zone (FZ) for the period 1970 to 2010, the econometric analysis shows that capital flight significantly reduces economic growth in the FZ. Capital flight, thus poses a huge threat to high and sustainable economic growth in the FZ. Ndiaye, (2011).

On the otherhand, Ajayi (1992), in his study on the econometrics analysis of capital flight from Nigeria found that low economic growth cause capital flight. A study by Ndikumana and Boyce (2007), showed a negative relationship between the growth rate and capital flight from sub-Saharan African countries. This, they explained is as a result of high growth performance which investors interprete as a sign of high overall returns to capital in the country. Moreover, Ndiaye (2009) in his study involving Franco zone African countries and France found a negative relationship between the economic growth differential and capital flight, even though the influence was insignificant. Contrary to these findings, other studies of capital flight from Nigeria, Six Sub-Saharan African countries including Ajayi (1992), Lensink and Hermes (1992), found the relationship between economic growth and capital flight insignificant. The differences in the results is as a result of the different methodologies used, the period of the study and also the countries involved.

Moreover, using newly available data set, consisting of 139 countries for the period of 2002-2006, indicated that capital flight has a negative impact on GDP growth. However, its significance is ambiguous. The results are not robust to specifications, which account for region or year effects, Valeriia Gusarova (2009). Accordingly, capital flight aggravates resource constraints and contributes to undermining long-term economic growth (UNDP, 2011).

- **Structural features**

Structural features are believed to be a catalyst for particular economic shocks which may adversely affect a country economic performance. An important factor in this case is the availability of natural resource in a country. Empirical evidence suggests that most African

countries that are rich in oil and minerals have experienced relatively high levels of capital flight (Boyce and Ndikumana, 2012). The phenomenon is as a result of poor governance and inadequate management capabilities.

- **Risk and Rate of Return Differentials**

Investors are always keen on achieving higher returns on their investment and as such interest rate differentials between domestic countries and the world market has been a major factor in their investment decision making. A situation where there is a large differential implies that domestic agents, in an attempt to maximize their portfolios, may substitute into foreign assets where the yield on short-term instruments is higher. In this case, capital flight may occur simply because the returns on assets are higher abroad as compared to assets held domestically.

Numerous studies confirm that capital flight may take place in response to poor returns to domestic investments. For example, Fedderke and Liu (2002) indicated that the domestic and foreign rates of return play a crucial role in explaining capital outflows from South Africa. Also, Boyce and Ndikumana (2002) indicated that the level of risk associated with investment in a country also has an impact on the level of investment. They reiterated that it determines the level of domestic and foreign investment that investors allocate after taking into account risk adjusted returns. Collier et al, (2004) report that returns to capital abroad and domestic economy as well as political conditions determine capital flight in their sample of countries.

A crucial source to the relative riskiness of developing countries is indebtedness. A high level of indebtedness increases the country's vulnerability to external shocks, which heightens uncertainty

over expected future returns to investments. There is overwhelming evidence in support of the hypothesis that indebtedness increases risk and thus causes capital flight in LDCs (Lensink et al.,2000, Collier et al., 2001; Ndikumana and Boyce, 2003; Cerra et al., 2008;). Another source of increased riskiness in developing countries is the likelihood of economic crises. Some studies confirm empirically that risk indicators such as low levels of official reserves and weak government budget positions encourage capital flight (Hermes and Lensink, 2001; Cerra et al., 2008).

- **Financial development**

Generally, empirical studies have examined the relationship between financial development and capital flight. The relationship between capital flight and financial development have been shown empirically as sensitive to the choice of variable used as a measure of financial development. For instance, Ndikumana and Boyce (2003) used credit to the private sector as a measure of financial development and indicated a negative and statistically significant effect on capital flight from Sub-Saharan Africa. The findings suggest that an increase in the amount of credit for the private sector is not enough to facilitate investors to invest in the domestic economy, hence a fall in the illegal outflow of capital from SSA. In contrast however, Ndiaye (2009), established a negative and significant impact of ratio of deposit to GDP on capital flight. Accordingly, he explained that a rise in domestic savings will encourage and increase in financing domestic investment, thereby reducing capital flight.

CHAPTER THREE

OVERVIEW OF CAPITAL FLIGHT AND CORRUPTION IN SSA

3.1 Introduction

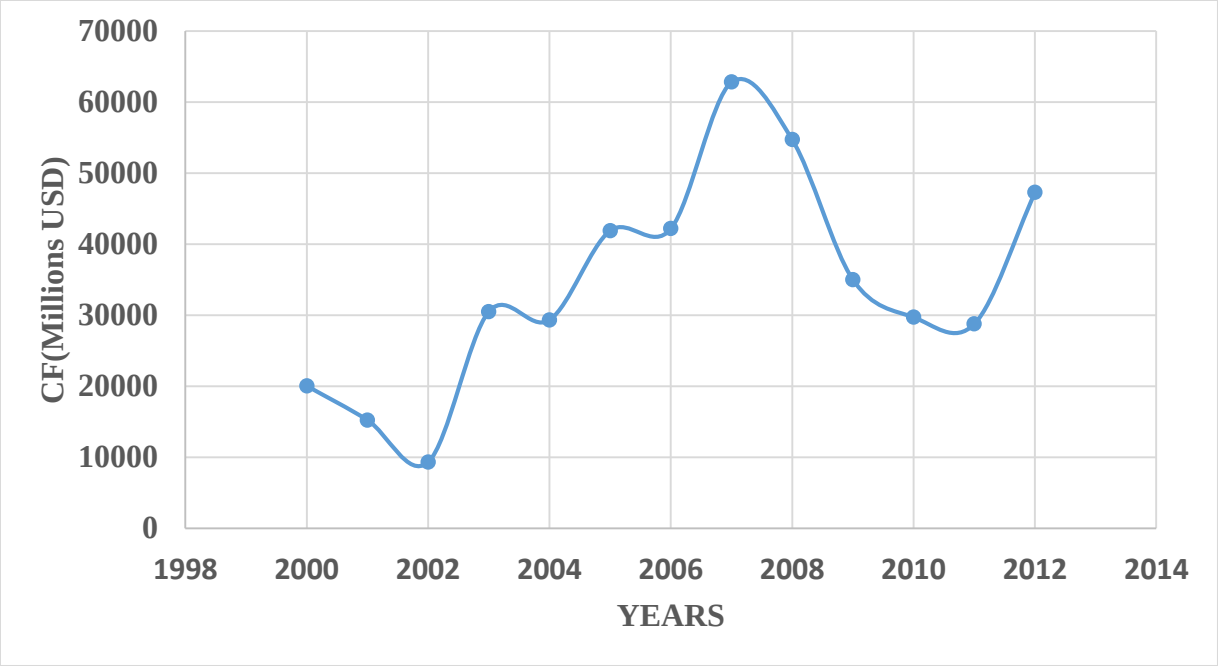
In order to appreciate the state of capital flight and corruption in the Sub-Saharan region, this chapter provides a trend analysis of the estimates of capital flight and corruption for the period under consideration. Trend analysis on the average corruption as well as capital flight estimates for individual Sub-Saharan African country under consideration is also reported.

3.2 Trend analysis of capital flight in Sub-Saharan Africa

The analyses focus on 32 countries in the region for the period 2000-2012. Capital flight is measured in millions of constant US dollars.

From Figure 3.1 below, capital flight from Sub-Saharan Africa has shown both upward and downward trend. However, capital flight in the 2000-2012 period increases more than it falls. Specifically, in the year 2000 it was high, and declined in 2002 but regains its rising mood from 2003 reaching its highest in 2007 and then declined again through to 2011 and upward again in 2012. Total real capital flight in the combined Sub-Saharan African Countries were highest in the year 2007. This may be due to the productive nature of countries in the Sub region, which have abundant oil and other natural resources, poor governance and weak institutions, and poor macroeconomic environment.

Figure 3.1 Sub–Saharan Africa: Trends in Capital Flight (2000-2012)



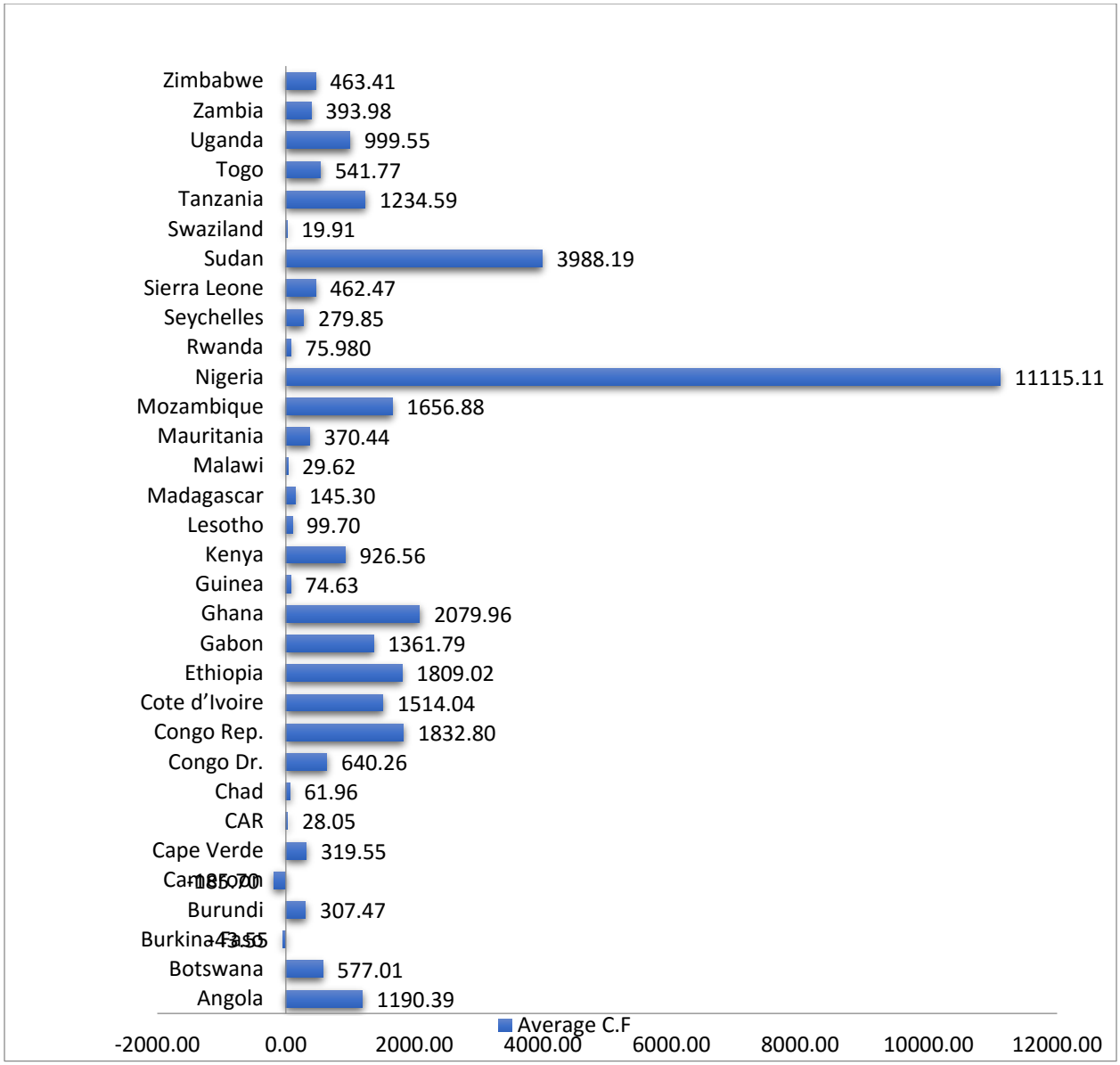
Source: Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF.

On the other hand, the lowest capital flight figure is recorded in the year 2002 resulting from the healthy macroeconomic environment, good governance and quality institutions. Between 2002 and 2003, capital flight in Sub-Saharan Africa recorded the highest percentage change, thus it grew by 227 percent in 2003 followed by a 64 percent increase between 2011 and 2012. This informs us that capital flight is still an issue that needs particular attention in the Sub-region.

3.3 Trend analysis of average capital flight for Sub-Saharan African countries

Figure 3.2 also shows us an average capital flight for Sub-Saharan African countries in the period 2000-2012. It indicates differences in capital outflows across the countries.

Figure 3.2 Average Capital Flight Estimates for Sub-Saharan African Countries (2000-2012)



Source: Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF.

Capital flight in the Region is positive across all the countries with the exception of Cameroun. This means that countries in the Region are experiencing net capital outflow. Nigeria, among these countries has the largest amount and the worse capital flight occurrence among the Sub-Saharan

African Countries. This represent 32 percent of the entire Regions capital outflow. Sudan follows with a 12 percentage point of the entire Regions capital flight for the period under consideration.

However, Cameroun recorded a negative figure which is the lowest average capital flight from the Region indicating that the country experienced net capital inflows. This is as a result of healthy institutional governance. Apart from Nigeria and Sudan, five (5) other countries in the Region contribute substantially to capital flight. Ghana leads with a remarkable average figure of $2,079.96 million, followed by Republic of Congo ($1,832.80 million), Ethiopia ($1,809.02 million), Mozambique (($1,656.88 million), and Cote d'voire ($1,514.04) million.

This analysis and findings provide us an insight into where the concentration of capital flight in the sub-region is positioned and as such the need for the entire Region to help draw policies and procedures to help curtail the phenomenon in the concentrated area in this case Nigeria and Sudan especially. This approach will help to reduce the phenomenon of capital flight in the sub-region.

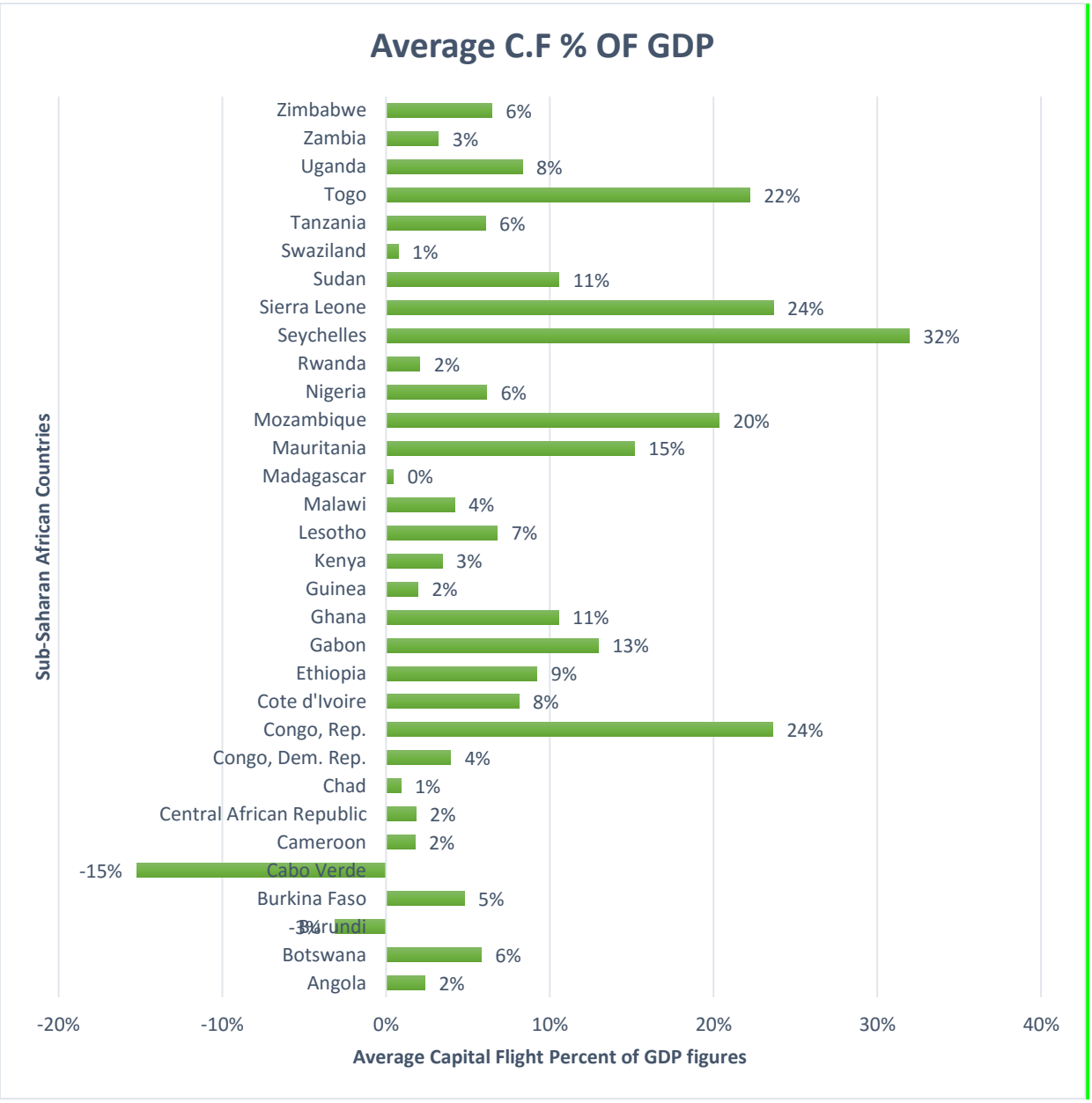
3.4 Average capital flight to GDP in SSA (2000-2012)

Figure 3.3 reviews the ratio of average capital flight to GDP for Sub-Saharan African countries in the period 2000-2012. It indicates differences in the percentages that each value of capital flight contributes to GDP across the countries.

Analysis of figure 3.2 and 3.3 reveals that average capital flight to GDP ratio in countries experiencing high average capital flight estimates in absolute terms differs. For instance, average

capital flight estimate in Nigeria for the period 2000-2012 was the highest among the samples, whereas her capital flight for the same period accounted for an average of about 6.0% of the GDP putting Nigeria 11th position among the samples.

Figure 3.3 Capital Flight Estimates to GDP ratio for Sub-Saharan African Countries (2000-2012)



Source: Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF.

The same analysis can be made of Sudan and Ghana whose position is 2nd and 3rd respectively in terms of average capital flight estimates in absolute terms among the samples. With respect to capital flight to GDP ratio for this two countries, an average of about 11% is recorded for each country putting them at 7th position among the samples.

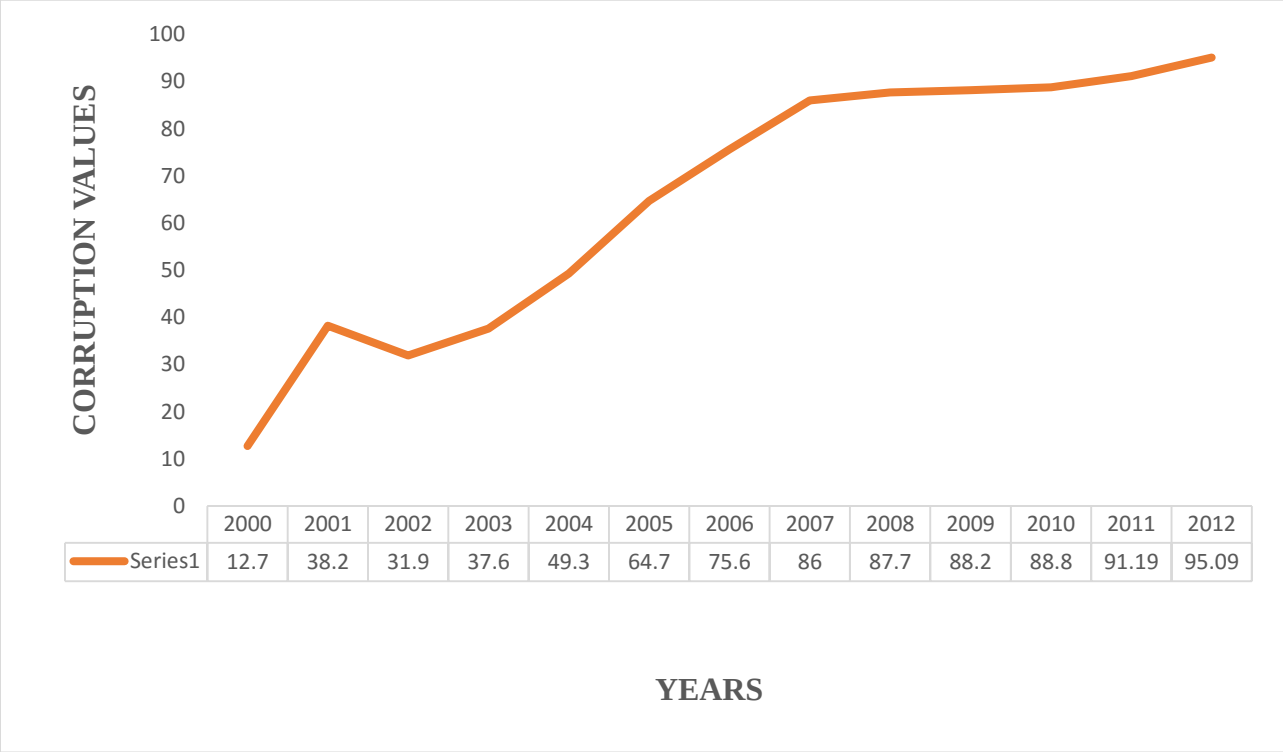
Figure 3.3 above shows that Seychelles is experiencing the highest capital flight to GDP ratio from the sample of Sub-Saharan African countries. For the period 2000-2012, Seychelles capital flight estimate on average accounted for 32% of her GDP, probably as a result of the poor demand to the main driver of growth which is Tourism as well as slow down of the manufacturing sector. Seychelles is followed by Congo Republic and Sierra Leone which represents an average of 24% for each country, whereas Togo and Mozambigue's capital flight on average represents 22% and 20% of GDP respectively.

Moreover, for the period 2000-2012, 15 countries out of the sample of 32 Sub-Saharan African countries under study recorded on average below 5% of capital flight to GDP. Cape Verde and Burundi among these countries recorded a negative figure, thus, on average -15% and -3% of capital flight to GDP respectively. Therefore the lowest capital flight to GDP ratio on average is attained by Cape Verde probably due to an increase in the tourism related foreign investment. Other Sub-Saharan African countries in the sample with capital flight to GDP ratio below 5% include Swaziland (1%); Chad (1%); Angola (2%); Camoroon (2%); Guinea (2%); Rwanda (2%); Central African Republic (2%); Kenya (3%); Zambia (3%), and among others as showed on figure 3.3 above.

3.5 Trend analysis of Corruption in SSA (2000-2012)

The period (2000-2012) under review depicts an upward trend in the perception of corruption in Sub-Saharan Africa. The region began the period with a corruption perception score of 12.7 in 2000. Subsequently, the figure shot to 38.2 in 2001 and later fell to 31.9 in 2002. Since then, corruption perception in SSA has remained on an increasing trend recording the highest score of 95.10 in 2012.

Figure 3.4 Trend of Corruption in Sub-Saharan Africa (2000-2012)

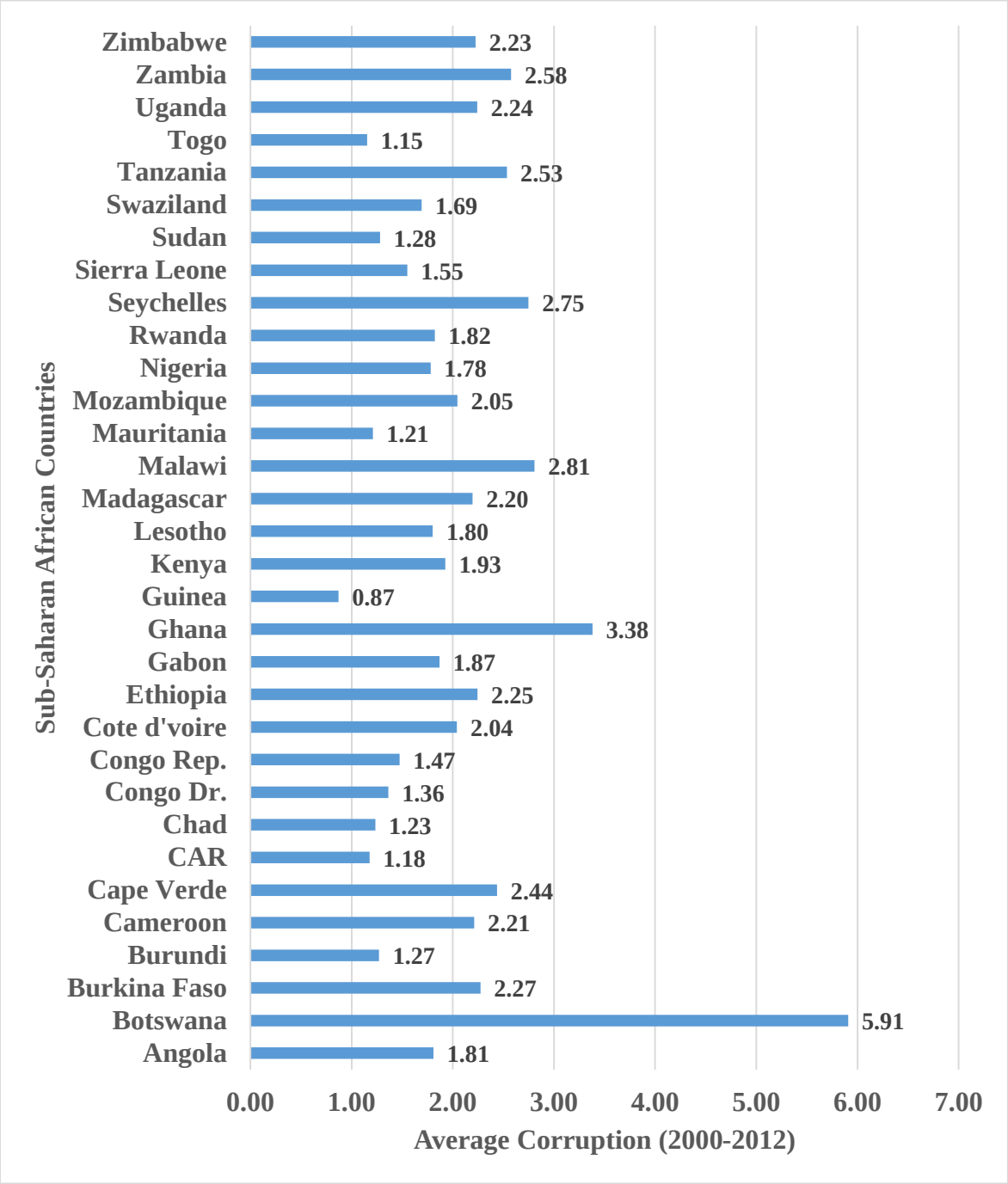


Source: Corruption Perception Index, Transparency International

The increasing rise in corruption in the region is as a result of bribery and embezzlement of funds, especially by public officials who amass wealth using their official positions. Empirical evidence has shown that corruption discourages domestic investment thereby leading to increase poverty and reduction in economic growth.

3.6 Average Corruption Estimates for Individual SSA country (2000-2012)

Figure 3.5 Average corruption estimates in Sub-Saharan Africa (2000-2012)



Source: Corruption Perception Index, Transparency International

Figure 3.5 above depicts average corruption perception among the various SSA countries under consideration. The perception of corruption in these countries increases across with differential magnitudes. For instance, Botswana among the other countries under consideration is regarded as the most perceived corrupt country as it recorded the highest average score of 5.9. This may be attributed to poor governance and weak institutions that provide avenues for corrupt individuals in government and public office to syphon monies from public confers for their own selfish interest.

Accordingly, Ghana happens to be the next perceived corrupt country in the sub-region recording a 3.38 average score. In addition, Malawi, Seychelles, Zambia, Tanzania, Zimbabwe, Cape Verde, Burkina Faso, Cameroon, Madagascar, Ethiopia, Cote D'voire and Uganda scored marks between 2.0 and 3.0 whiles the rest of the country scored marks below 2.0. However, Guinea is recording the lowest perceived corruption score of below 1.0 thus 0.87 specifically in SSA. This is as a result of prudent macroeconomic policies and strong institutions.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

The chapter deals with the model for the empirical estimation, an a priori expectation, estimation techniques, diagnostic tests, data sources and definitions of the variables.

4.2 Theoretical framework for estimating capital flight

This study estimates capital flight employing the methodology outlined by Boyce and Ndikumana (2001) which is a variant of the World Bank (1985) residual method. The method calculates capital flight as the residual difference between capital inflows and recorded foreign-exchange outflows. Adjustments made include; trade mis-invoicing, under-reporting of remittances, inflation and exchange rate. Capital flight is estimated for country $\boldsymbol{i}$ in year $\boldsymbol{t}$ using the following equation:

$$CF_{it}=\Delta DebtAdjt_{it}+DFI_{it}-(CA_{it}+\Delta RES_{it})+MISINV_{it}) \quad (4.1)$$

where:

CF_{it} is Capital Flight

$\Delta DebtAdjt_{it}$ is the change in the country's stock of external debt adjusted for exchange rate fluctuations

DFI_{it} is net direct foreign investment;

CA_{it} is the current account deficit

ΔRES_{it} is the change in the net stock of foreign reserves

$MISINV_{it}$ is net trade mis-invoicing.

4.2.1 Adjustment for Exchange Rate Fluctuations

The adjustment is made to the change in the long-term debt stock for fluctuations in the exchange rate of the dollar against other currencies. This is meant to correct for potential discrepancies. The estimate for country ***i***, the US dollar value of the beginning-of-year stock of debt at the end-of-year exchange rate is obtained as follows:

$$NEWDEBT_{i,t-1}=\sum_{j=1}^{7}(\beta_{ij,t-1} * LTDEBT_{i,t-1})/(EX_{jt}/EX_{j,t-1}) +$$

$$IMFCR_{i,t-1}/(EX_{SDR,t}/EX_{SDR,t-1}) + LTOTHER_{i,t-1} + LTMULT_{i,t-1} + LTUSD_{i,t-1} + STDEBT_{i,t-1}$$

where*:*

LTDEBT is the total long-term debt

β_{ij} is the proportion of long-term debt held in currency j, for each of the seven non-US currencies

EX is the end-of-year exchange rate of the currency of denomination against the dollar (expressed as units of currency per US dollar)

IMFCR is the use of IMF credit

LTOTHER is long-term debt denominated in other unspecified currencies

LTMULT is long-term debt denominated in multiple currencies

LTUSD is long-term debt denominated in US dollars

STDEBT is short-term debt

DEBT is the total debt stock as reported by the World Bank.

The exchange rate adjustment is given as: $ERADJ_t=NEWDEBT_{t-1}-DEBT_{t-1}$ (4.2)

Finally, the adjusted change in debt is given as: $\Delta DebtAdjt_t = DEBT_t - NEWDEBT_{t-1}$ (4.3)

4.2.2 Estimating Trade Misinvoicing

Trade mis-invoicing is calculated by comparing a country's declared import and export statistics to those of its trading partners considering the addition of the cost of freight and insurance. The assumption is that trade data from advanced countries are deemed to be accurate as compared to that of the African country, hence, a measure of the discrepancy between them. For instance, for the purpose of this study, the researcher calculates trade mis-invoicing of Sub Saharan African countries relative to that of Advanced/Industrialized countries, and use this as a benchmark to compute overall trade mis-invoicing.

The method for calculating trade mis-invoicing is as follows:

$$KXIC_{it} = IMAC_{it} - (EXAC_{it} * CIF_t) \quad (4.4)$$

$$KMIC_{it} = MIC_{it} - (EXIC_{it} * CIF_t) \quad (4.5)$$

where:

$KXIC_{it}$ is the SSA Country $\boldsymbol{i}$ in time $\boldsymbol{t}$ export discrepancies with industrialized countries

$IMAC_{it}$ is the value of imports from the African country as reported by the industrialized trading partners

$EXAC_{it}$ is the African country's exports to industrialized countries as reported by the African country

$KMIC_{it}$ is the SSA Country $\boldsymbol{i}$ in time $\boldsymbol{t}$ import discrepancies with industrialized countries

MIC_{it} is the African country's imports from industrialized countries as reported by the African country

$EXIC_{it}$ is the industrialized countries' exports to the African country as reported by the industrialized trading partners.

CIF is the c.i.f/f.o.b factor, representing the costs of freight and insurance.

TTM = Total trade mis-invoicing

TEX = Country's total exports

TIM = Country's total imports

Therefore, Total trade mis-invoicing (TTM) is the sum of mis-invoicing of exports and mis-invoicing of imports. A positive sign on export mis-invoicing indicates a net outflow (export under-invoicing) – increasing net capital flight, whiles a negative sign indicates a net inflow (export over-invoicing) – reducing net capital flight.

Thus, $TTM_{it} = \frac{KXIC_{it}}{TEX_i} + \frac{KMIC_{it}}{TIM_i}$ (4.6)

4.2.3 Adjustment of Underreporting of Remittances

Sub-Saharan African countries receive enormous inflows of remittances from their citizens working outside the region and these inflows are under-reported in the official BOP statistics. According to the World Bank (2006, p. 92), under-reporting in the BOP statistics is the largest in Africa accounting for more than half of total remittance flows. These under-reporting of remittance have an effect on capital flight estimates because the quantum of foreign exchange that enters African countries is greater than that captured in the BOP statistics. So omitting these inflows from the residual – based estimates of capital flight would lead to underestimation of its true magnitude.

Accordingly, we estimate the quantum of unreported remittances comparing estimated inflows from industrialized countries to the total inflows recorded in the official BOP statistics. The

discrepancy would be calculated based on 2006 data (the year for which the alternative estimates are available), and extrapolate from this to estimate discrepancies for earlier years;

RID_{it} = (ARI_i, 2006 - $BPRI_i$, 2006)* $BPRI_t$ / $BPRI$ 2006

Where:

RID_{it} is the remittance inflow discrepancy in country $\boldsymbol{i}$ in year $\boldsymbol{t}$;

ARI_i, 2006 is the alternative measure of remittance inflows to African countries as a whole in years t and 2006

$BPRI_i$, 2006 is the BOP measure of remittance inflows in country i in year 2006

$BPRI_t$ and $BPRI$ 2006 are the BOP measures of remittance inflows to African countries as a whole in years t and 2006, respectively.

4.2.4 Inflation Adjustment

Inflation is adjusted so as to make annual capital flight comparable over an extended period of time. The US producer price index with base year of 2010 is employed to convert nominal flows to constant dollars. Empirically, other studies have used this approach and notable among them are Boyce (1992), Ajayi (1997) and also Chipalkitti and Rishi (2001). The method for calculating inflation adjusted real capital flight is calculated as $IACF = ACF/PPI$

Where, *IACF* is the inflation adjusted capital flight; *ACF* is the adjusted capital flight; and *PPI* is the US producer price index.

4.3 Model for Empirical Estimation

This study employs different estimation techniques including the Pooled OLS regression, Static panel model of fixed effects and random effect and the Dynamic panel regression to analyze the

effect of corruption on capital flight in Sub-Saharan Africa. The Pooled OLS regression involves running a simple Ordinary Least Squares (OLS) on the whole panel data to assess the effects of the explanatory variables on the dependent variable without taking cognizance of the panel structure of the data. The Random Effect model is used when the variations across countries is assumed to be random and uncorrelated with the explanatory variables; On the other hand, the Fixed Effect models are used to assume that countries possess certain individual characteristics which are unique to them and are time-invariant. The Dynamic Panel regression model is seen to be more appropriate for the empirical study as it allows the inclusion of lagged dependent variables as explanatory variables in the model to capture its effects on the dependent variable.

The dynamic panel model is specified as: $\boldsymbol{CF_{it} = X_{it}\beta + \varepsilon_{it}}$ (4.7)

Where CF_{it} represents capital flight measured in millions of constant US dollars for each country at time *t*; X_{it} is the matrix of all explanatory variables; and ε_{it} is the error term which is made up of two components, thus unobserved country-specific effects μ_i and the idiosyncratic error term v_{it}, thus; $\varepsilon_{it} = \mu_{i+}v_{it}$. Where ***i*** represent each country under study, *t* denotes the number of years under consideration.

Along the lines of the theoretical framework of capital flight equation postulated in equation (6) above and using the Dynamic Panel model in equation (4.7), the actual econometric model to be estimated is written as: $CF_{it}=\beta_0+\beta_1 COR_{it}+\beta_2 RL_{it}+\beta_3 RD_{it}+\beta_4 IEA_{it}+\beta_5 X_{it} + \varepsilon_{it}$ (4.8)

$$CF_{it}=\beta_0+\beta_1 COR_{it}+\beta_2 RL_{it}+\beta_3 RD_{it}+\beta_4 IEA_{it}+\beta_5 X_{it}+\beta_6 COR_{it} * RD_{it}+\varepsilon_{it} \quad (4.9)$$

$$CF_{it}=\beta_0+\beta_1 COR_{it}+\beta_2 RL_{it}+\beta_3 RD_{it}+\beta_4 IEA_{it}+\beta_5 X_{it}+\beta_6 COR_{it} * RL_{it}+\varepsilon_{it} \quad (4.10)$$

$$CF_{it}=\beta_0+\beta_1 COR_{it}+\beta_2 RL_{it}+\beta_3 RD_{it}+\beta_4 IEA_{it}+\beta_5 X_{it}+\beta_6 COR_{it} * IEA_{it}+\varepsilon_{it} \quad (4.11)$$

However, equation (4.8) above is estimated to test the first objective of this study whereas equations (4.9), (4.10), and (4.11) is estimated to test the second objective of the study.

Where;

CF_{it} = Capital Flight for each country at time *t*

COR_{it} = Corruption for each country at time *t*

RL_{it} = Rule of Law for each country at time *t*

RD_{it} = Regime Durability for each country at time *t*

IEA_{it} = Independence of the Executive Authority for each country at time *t*

$COR_{it} * RD_{it}$ = Interaction between corruption and regime durability for each country at time *t*

$COR_{it} * RL_{it}$ = Interaction between corruption and rule of law for each country at time *t*

$COR_{it} * IEA_{it}$= Interaction between corruption and independence of executive authority for each country at time *t*

X_{it} = Control Variables for each country at time *t*

ε_{it} = Error term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ represent the parameters to be estimated. Independence of the Executive Authority is proxied by executive constraints. Control variables capture the macroeconomic environment proxied by; GDP growth, Inflation and use of IMF credit as a financial development variable.

4.4 A priori Expectation

The table 4.1 indicates independent variables and their expected sign. A brief empirical link for their expected sign is reported. A vivid description and source of variables are captured in section 4.7 below.

Table 4.1 Independent variable and expected sign

Independent Variable	Variable Description	Expected sign	Data Source
Corruption	Defined as the perceived levels of public sector corruption	Positive (+)	CPI of Transparency International
Rule of Law	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society	Negative (-)	ICRG & World Bank data base
Regime Durability	End of transition period defined by the lack of stable political institutions	Positve (+) / Negative(-)	Polity IV database
Independence Of Executive Authority	Indicates the extent to which the chief executive takes into account preferences of others when making decisions	Negative (-)	Polity IV database
Use of IMF credit	Denotes member's drawings on the IMF other than amounts drawn against the country's tranche position	Negative (-)	World Bank, IDS
Inflation (CPI)	Reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services	Positive (+)	World Bank, WDI
GDP growth	At purchaser's price is the sum of gross value added by all resident producers in the economy	Negative (-)	World Bank, national accounts data

Source: Author's Computation, 2015

- The coefficient of corruption is expected to be consistent with the findings of Le and Rishi (2008), thus positively related to capital flight. This implies that a rise in the perception of corruption among public authorities as in bribery, kickbacks in public procurement, embezzlement of public funds and among others facilitates an increase in illegal outflow of capital from Sub-Saharan Africa. Hence, ($\beta_1 > 0$).

- The variable rule of law is used as a measure of good governance and institutional quality. Consistent with existing empirical evidence that a good institutional development is associated with a lower incidence of capital flight (see, for example, Lensink et al., 2000; Collier et al., 2004; Le and Zak, 2006; Cerra et al., 2008). The study expects rule of law to be negatively related to capital flight. Thus, ($\beta_2 < 0$).

- Regime durability has been established in the empirical literature as having varied outcomes. Regime durability (i.e. less frequent regime changes) may reduce capital flight since it is a source of political stability (Collier et al. 2004). On the other hand, Ali and Walters, (2011) found that regime durability is associated with higher capital flight since it may be linked to weaker governance, high corruption, and poorer domestic investment climate. Hence, the research expects a positive/negative relationship between capital flight and corruption. i.e ($\beta_3 > or\ < 0$).

- Independence of the Executive Authority is proxied by executive constraints. Empirical literature indicates a negative relationship to capital flight, (Cerra et al 2005).The results suggest that strong constraints on the executive power lead to an exacerbation of capital flight.

This research work expects a negative relationship between the independence of executive authority and capital flight. Thus, ($\beta_4 < 0$)

- GDP growth is one of the variables used as an indicator of the macroeconomic environment. Empirical literature has established that the quality of macroeconomic environment is associated with lower capital flight. Higher economic growth is a signal of higher expected returns on domestic investment, which induces further domestic investment and thus reduces capital flight (Ndikumana and Boyce 2008). This research work expects a negative relationship between GDP growth and Capital flight.

- Inflation is also an indicator of the macroeconomic situation of an economy. Capital flight can result in inflation if domestic sources of revenue generation are eroded and the government resort to printing money to finance its development activities (Boyce and Ndikumana, 2002). According to Fischer (1993), high inflation make domestic asset holders react to the erosion of the real value of their assets by moving their assets abroad and also reiterated that since inflation is often regarded as an indicator of the government overall ability to manage the economy, a rising inflation rate tends to undermine that ability. A positive relationship between inflation and capital flight is expected.

- Use of IMF credit is used as a factor of financial development. Financial development has been shown in the literature as one of the determinants of capital flight and sensitive to the choice of variable used as a measure. A rise in domestic savings resulting from an increase in the ratio of deposits to GDP will encourage and increase in financing domestic investment,

thereby reducing capital flight (Ndiaye, 2009). This thesis expects a negative relationship between the use of IMF credit and capital flight because these credits are expected to be efficiently invested in the local economy.

4.5 The Estimation Technique

The study employs three different panel data approaches to ensure robustness of the results across various econometric techniques. The initial technique used is the pooled-OLS technique. The pooled OLS estimation is often used as starting point in applied analyses despite its potential biases resulting from the presence of individual heterogeneity and endogeneity problems. The connection of potential endogeneity with the model for empirical estimation renders estimates using the Ordinary Least Squares (OLS) biased and inconsistent. Due to the presence of heterogeneity and endogeneity, this thesis adopts two other approaches, namely the Static panel model of fixed effects/random effects and the System-Generalised Method of Moments (Arellano and Bover, 1995; Blundell and Bond, 1998) to find out the effects of corruption on capital flight in SSA.

Two assumptions pertaining in the econometric literature pertaining to correlation between the time –invariant error term (μ_i) and the explanatory variables account for the Fixed Effects (FE) and the Random Effects (RE) models. The random effect model assumes that the unobserved country-specific, time-invariant effects are uncorrelated with the regressors. The model is used when the variations across countries is assumed to be random and uncorrelated with the explanatory variables; Thus, $(\mu_i X_{it}) = 0$. In contrast to the random effects, the fixed effects (FE) model assumes that the country-specific, time-invariant effects correlate with the explanatory variables, and thus controls for them in the model. The FE models are therefore used to assume

that countries possess certain individual characteristics which are unique to them and are time-invariant. The presence of these country- specific, time-invariant effects lead to the problem of endogeneity and subsequently biases the estimates. The FE model eliminates the time-invariant effects from the estimation. Both the fixed effect and random effect estimator are models that handle the specific structure of longitudinal or panel data. That is, unobservable individual heterogeneity is taken into account by both models. The Hausman test is used in choosing between the RE and FE.

However, the System GMM estimation technique would yield more reliable estimates when the data fit for fixed effect. Then, because of the more reliable estimates the GMM estimation technique produces due to its ability to estimate the Equation in the presence of the endogeneity, this thesis adopts the GMM estimation approach. The GMM procedure is best because it resolves the Dynamic panel bias problem resulting from the endogeneity associated with such models. The GMM technique is more preferable as it uses the lags of the endogenous variables as instruments; in which case, the endogenous variables are predetermined and therefore not correlated with the stochastic error term. The use of GMM allows correcting for insufficiencies related to problems of simultaneity bias, inverse causality and omitted variables (Kpodar, 2005).

The literature, however establishes two (2) types of GMM estimation procedures. The difference GMM introduced by Arellano and Bond (1991) and the System GMM introduced by Arellano and Bover (1995) and Blundell and Bond (1998). The difference GMM estimator procedure resolves the inconsistency problem resulting from the endogeneity associated with of some of the regressors in equation (4.8). This procedure eliminates sources of the inconsistency in the estimation by

applying the first difference operator to the estimation. After differencing, the equation is subsequently estimated by the difference GMM by including the lags as regressors. The process eliminates the unobserved country–fixed effects by taking the first difference of the equation and in the process deal with the inconsistency and biases resulting from endogeneity of the explanatory variable by using lagged values of the endogenous explanatory variables as instruments. The difference GMM estimator is based on the momentary condition under the assumption that the regressor is weakly exogenous and not serially correlated. The standard GMM estimation which eliminates the unobserved country-specific effects have been found to produce unsatisfactory results because the process may pose serious biases when the dependent variable is highly persistent, and there is a weak correlation between the instruments and the endogenous variable. The weak instruments actually increase the variance of the coefficients and bias the coefficients in the small sample.

The System GMM estimator designed by Arellano and Bover (1995) and Blundell and Bond (1998) rectifies this problem of weak instruments associated with the differenced GMM estimator by a system of two equations namely the level equation and the difference equation. The System GMM has been shown to perform much better (less bias and more precision) especially when the dependent variable is persistent. Hence, the system GMM estimator is preferred to the differenced GMM when the dependent variable is persistent.

4.6 Description of variables and data sources

4.6.1 The Dependent variable: Capital flight

Capital flight is expressed in millions of constant US dollars. The data of capital flight are taken from the database of Ndikumana & Boyce (2012). The capital flight data is updated (see procedure outlined in chapter four, subsection 4.2 above) by the researcher using data obtained from World Development Indicators of the World Bank. Three different methods have been identified as a measure of capital flight. These are the direct measures, indirect measures, and the Dooley measure.

This study employs the indirect method which is also called the residual method, the most widely used measures in the available literature. It is considered to be the broadest estimate of capital flight in order to minimize potential biases in narrower measures. The method looks at measurement under the assumption that capital inflows will be used as a basis of capital outflows. In other words, capital flight is measured indirectly from balance of payments statistics by comparing the sources of capital inflows (Net increases in external debt and the net inflow of foreign investment) with the use of these inflows (the current account deficit and additions to foreign reserves). See Chapter two for a vivid approach to the measurement of capital flight.

4.6.2 Explanatory Variables

- **Corruption**

Corruption the main variable of interest is defined as the perceived levels of public sector corruption. It captures bribery of public officials, kickbacks in public procurement, embezzlement of public funds, and questions that probe the strength and effectiveness of public-sector anti-corruption efforts. Due to the difficulty in measuring corruption, the researcher employed the Corruption Perceptions Index (CPI) developed by Transparency International as the basic measure of corruption. The CPI ranks countries by the degree to which corruption is perceived to exist among public officials and politicians. The scores range between 10 (highly clean) and 0 (highly corrupt).

Corruption is, thus, a threat to foreign investment because it distorts the environment in both economics and finance; it also leads to a reduction in the efficiency of government and business as well as introducing an inherent instability in the political process. Corruption poses a particularly serious challenge in Sub-Saharan Africa. According to Transparency International's Corruption Perception Index, six of the world's ten countries most burdened by corruption are located in the Sub Saharan Africa.

- **Rule of Law**

Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging

from approximately -2.5 to 2.5 (International Country Risk Group). The data are taken from the International Country Risk Guide published by the Political Risk Services (PRS) Group.

The phenomenon requires the government to exercise its power in line with established and clearly written rules, regulations, and legal principles. It primarily refers to the influence and authority of law within society, particularly as a constraint upon behavior, including behavior of government officials. For the UN, the Secretary-General defines the rule of law as "a principle of governance in which all persons, institutions and entities, public and private, including the State itself, are accountable to laws that are publicly promulgated, equally enforced and independently adjudicated, and which are consistent with international human rights norms and standards. It requires, as well, measures to ensure adherence to the principles of supremacy of law, equality before the law, accountability to the law, fairness in the application of the law, separation of powers, participation in decision-making, legal certainty, avoidance of arbitrariness and procedural and legal transparency." (Report of the Secretary-General; the rule of law and transitional justice in conflict and post-conflict societies" (2004).

- **Regime Durability**

Regime Durability talks about the number of years since the most recent regime change (defined by a three point change in the Polity score over a period of three years or less) or the end of the transition period defined by the lack of stable political institutions (denoted by a standardized authority score). In calculating the *durable value*, the first year during which a new (post-change) polity is established is coded as the baseline "year zero" (value = 0) and each subsequent year adds

one to the value of the *durable* variable consecutively until a new regime change or transition period occurs(Polity IV Database). The data are obtained from the Polity IV data base.

- **Independence of the Executive Authority**

This is proxied by Executive Constraints (Decision Rules). It indicates the extent to which the chief executive takes into account the preferences of others when making decisions. The polity IV dataset considers the extent to which decision rules constrain the executive actions. A seven category scale is used. Thus, these constraints take values ranging from 1 – strongest constraints, then the worst institutional quality to 7 – smallest constraints, then the best institutional quality. The data set is obtained from the Polity IV data base.

- **GDP Growth**

GDP growth (annual percent) at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. The dataset is obtained from the World Bank (WDI). The variable is used as an indicator of the macroeconomic environment. Capital flight aggravates resource constraints and contributes to undermining long-term economic growth (UNDP, 2011).

- **Inflation**

Inflation (annual %) as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The dataset is derived from World

development indicators (2014) of the World Bank. The variable inflation is also used as a measure of the macroeconomic environment. Inflation is often regarded as an indicator of the government's overall ability to manage the economy, a rising inflation rate tends to undermine that ability.

- **Use of IMF credit**

Use of IMF credit denotes members' drawings on the IMF, other than amounts drawn against the country's reserve tranche position. Use of IMF credit includes purchases and drawings under Stand-By, Extended, Structural Adjustment, Enhanced Structural Adjustment, and Systemic Transformation Facility Arrangements as well as Trust Fund loans. SDR allocations are also included in this category. Data are measured in current U.S. dollars and it is obtained from the World Bank, International Debt Statistics (2014). IMF loans/credits are meant to help member countries tackle balance of payments problems, stabilize their economies, and restore sustainable economic growth. The IMF however, provides consultation and advice to all countries that draw upon their credit.

CHAPTER FIVE

ESTIMATION RESULTS AND DISCUSSION

5.1 Introduction

Focusing on the idea of static panel data model with different estimation methods, this chapter presents the main parts of the empirical results such as the descriptive analysis and econometric analysis.

5.2 Descriptive Statistics and Analysis

Table 5.1 below provides a summary descriptive statistics relating to thirty two (32) countries in SSA for the period 2000-2012. The table indicates the summary descriptive statistics of central tendency and measure of variability. The mean values indicate the average value of the variables used in the overall model. The standard deviation also captures the distribution of data around the average value. It also shows the closeness of data to the mean value over the period under consideration.

More so, the spread of the data is indicated by the range and this is measured by the maximum and minimum values in each different model. The range is an indicator of the level of variations in the variables. The larger the range values, the higher the level of variations in a variable and vice versa. The mean of capital flight of the sample is 1.086 and ranges in value between 37.99 and -25.67.

Table 5.1: Summary Statistics of Panel data of Sub-Saharan Africa

Variables		Mean	Std. Dev.	Min	Max	Obs.
Capital Flight	Overall	1.085903	4.575747	-25.67407	37.991	N=410
	Between		2.032335	-0.1856977	11.11511	
	Within		4.108826	-35.70327	27.9618	
Corruption	Overall	2.897595	2.135918	1	37	N=330
	Between		1.261311	1.782274	7.372722	
	Within		1.780682	-1.975126	32.52487	
Regime Durability	Overall	9.562189	9.623193	0	46	N=402
	Between		8.382298	0.1538462	40	
	Within		4.936809	-6.283965	35.71604	
Rule of Law	Overall	-0.77926	0.6008635	-1.94745	0.66833	N=384
	Between		0.5905893	-1.705126	0.6198181	
	Within		0.1491942	-6.283965	-0.3209315	
Ind. Of Exec. Authority	Overall	0.7385445	12.43596	-91	95	N=371
	Between		2.165533	-0.1666667	7.916667	
	Within		12.25118	-90.51146	94.48854	
Use of IMF Credit	Overall	2.568045	17.05824	-54.4619	238.4408	N=384
	Between		4.265024	-0.8407249	19.75132	
	Within		16.53226	-52.81894	221.2575	
Inflation	Overall	12.35024	36.94877	-9.616154	513.9069	N=393
	Between		16.42681	1.938055	78.90683	
	Within		33.0274	-63.75658	447.3503	
GDP growth	Overall	4.866867	5.071729	-17.66895	33.73578	N=416
	Between		2.569378	-1.844626	9.806402	
	Within		4.394499	-10.95745	30.4258	

Source: Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF; CPI of TI, WB-IDS, ICRG, and Polity IV data.

Over the period 2000-2012, the average capital flight for the thirty two (32) SSA countries under study averaged 1.086 million constant US dollars ranging from a maximum score of 37.99 and -25.67 showing high level of variations. The range of the corruption values (the main value of

interest) indicates that between countries observations in the region attain as low as 1.78 and as high as 7.37 scores within the period under consideration, whereas within countries observation shows a wider variation (low = -1.97 and high= 32.52). The corruption index averaged 2.89.

Empirical studies on capital flight in SSA, is determined by the value of the corruption perception index. From the table (5.1) above, the maximum value of this variable observed is 37 with minimum of 1.

5.3 Results of Unit root test for stationarity

Although the Unit root test is usually regarded as a time series problem, conducting unit root tests in panel datasets could also be appropriate in order to ensure that the variables under study are stationary. Gujarati (2003 pp. 713) stated that, " a stochastic process is said to be stationary if its Mean, and Variance are constant over time and the value of Covariance between two time periods depends only on the distance between the two time periods and not on the actual time at which the Covariance is reported".

The research carried out the panel unit-root test before proceeding to the estimation. This is intended to prevent any distortions in estimated regression relations as well as spurious regression due to time-series process (Greene, 2012). The researcher used the Augmented Dickey-Fuller (ADF) test for unit-root on all the variables. The unit-root test is actually undertaken on the Null Hypothesis, which states that all panels contain unit-root (meaning all panels are non-stationary).

Table 5.2: Augmented Dickey-Fuller tests (System GMM)

Variable	Statistic		Probability Value
	Lag Structure	Value	
Capital Flight	Level	7.6549	0.0000
Corruption	First Diff	12.5794	0.0000
Rule of Law	Level	9.9873	0.0000
Regime Durability	Level	3.4162	0.0003
Ind. of Exec. Auth.	Level	9.7493	0.0000
GDP Growth	Level	17.89	0.0000
Inflation	Level	58.2851	0.0000
Use of IMF Credit	First Diff.	2.0148	0.0220

NB: Statistical values reported are based on the Modified inv. chi-squared Pm
Source: Author's Computation 2015

The results of the Unit root test shown in table 5.2 depicts the results of the Augmented Dickey-Fuller (ADF) test for unit-root, which indicates that we reject the null hypothesis for tests in all the variables implying that all variables were found stationary.

5.4 Results of Granger Causality Test between capital flight and corruption

The basic concept of Granger causality can be traced back to Wiener. Granger proposed the idea in his 1969 paper to describe the 'causal relationships' between variables in econometric models. The idea of Granger – causality is that a variable X Granger-causes variable Y if variable Y can be better predicted using the histories of both X and Y than it can be predicted using the history of Y alone. Thus, in line with most of the literature in Econometrics, one variable is said to Granger-

cause the other if it helps to make a more accurate prediction of the other variable than had we only used the past of the latter as a predictor.

Another element to define is that of the feedback effect. This occurs if variable X Granger-causes variable Y, and Y Granger-causes X, denoted X↔Y. In testing, we indicate the null hypothesis that Xt does not Granger-cause Yt and Yt does not Granger-cause Xt**.** In each case, a rejection of the null hypothesis implies there is Granger causality between the variables. All variables in the model have been tested for stationarity.

Table 5.3 Pairwise Granger Causality Tests on Capital flight and Corruption

Sample: 1416
Lags: 2

Null Hypothesis:	**Observations**	**F-Statistic**	**Probability**
Corruption does not Granger Cause Capital flight	106	3.1263	0.0482
Capital flight does not Granger Cause Corruption		2.80521	0.0652

Source: Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI, and GDF; CPI of TI

The table 5.3 depicts the results of the Granger Causality tests conducted to understand the interrelationships between the respective variables under consideration. The results indicate a uni - directional causal relationship running from corruption to capital flight at the 5% significance level.

5.5 Empirical estimation and discussions

This section presents the estimation results of the explanatory variables using the Pooled Ordinary Least Squares regression, Fixed Effects – GLS regression and the System GMM estimation. Tables (5.4), (5.5), and (5.6) display the regression results for the OLS, FE, and GMM respectively. Diagnostic test results are also reported. Eight (8) specifications of the econometric model were tested. The main variable of interest in this case corruption entered the model in specification (1) and it is included in all the other specifications. Specification (2) captures corruption and regime durability and their interaction. Also, specification (3) captures corruption and rule of law and their interactions whereas specification (4) is made up of corruption and the independence of the executive authority and their interaction.

Moreover, specifications (5), includes the full model and the interaction between corruption and regime durability. Specification (6) on the other hand, comprises the full model (thus, all the explanatory variables) and the interaction between corruption and rule of law whereas specification (7) involves the interactions between corruption and independence of the executive authority and the full model. Finally, the last column indicates specification (8) which consists of the full model that includes all the variables with the exception of the interactive variables to determine their combined significance.

5.6 Pooled – OLS Estimation Results

Estimated results reported in table 5.4 indicate that, although the main variable of interest, thus, corruption is statistically significant to capital flight in most of the specifications it appeared, it did not retain the expected sign in the first two specifications.

Table 5.4 Pooled – OLS Regression Results (2000-2012)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
COR	-0.1794*	-0.376*	0.385**	-0.0973	0.532*	0.827***	0.853***	0.837***
	(0.1048)	*(0.206)*	*(0.201)*	*(0.1151)*	*(0.311)*	*(0.242)*	*(0.243)*	*(0.2393)*
RL			-1.498***		-1.46***	-1.72**	-1.62***	-1.59***
			(0.525)		(0.385)	*(0.5612)*	*(0.386)*	*(0.3777)*
COR*RL			0.126			*0.066*		
			(0.174)			*(0.1975)*		
RD		-.0805**			-0.703*	-0.0202	-0.1899	-0.0183
		(0.364)			*(0.374)*	*(0.1688)*	*(0.1595)*	*(0.0158)*
COR*RD		0.0191**			0.138			
		(0.0086)			*(0.009)*			
I.E.A				0.0252	-0.033	-0.0024	-0.0374	-0.002
				(0.0911)	*(0.009)*	*(0.092)*	*(0.088)*	*(0.0091)*
COR*IEA				-0.1062			0.0153	
				(0.396)			*(0.038)*	
UIC					0.012**	0.0109*	0.011*	0.0107*
					(0.057)	*(0.0573)*	*(0.057)*	*(0.0057)*
Inflation					0.5933*	0.673*	0.6996**	0.699**
					(0.3375)	*(0.3411)*	*(0.332)*	*(0.3315)*
GDP growth					0.0422*	0.0385	0.0374	0.0386
					(0.253)	*(0.0253)*	*(0.0255)*	*(0.0252)*

Note: The dependent variable is capital flight; the figures in parenthesis are the Standard Errors of the estimates, where ***, **, * represent the statistical significance of the estimates at 1%, 5% and 10% level of observations.

Source:Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF; CPI of TI, WB-IDS, ICRG, and Polity IV data.

The research can confidently say that, corruption and capital flight are related positively.

One significant feature worth noting in the above results is that an important institutional variable, thus rule of law is shown to be negative and statistically significant at the 1 % level of significance of capital flight in all the specifications it is included. This implies that in a context of institutional/governance parameters, good governance and strong institutions facilitate a fall in capital flight in Sub-Saharan Africa.

Accordingly, independence of the executive authority and regime durability did retain their expected sign, but the former is statistically insignificant to capital flight in all the specifications it occurred. Also, the interaction between corruption and regime durability is positive and statistically significant at the 5 % level, implying that an increase in regime durability will necessitate a fall in corruption and a repelling effect to declining capital flight in SSA.The reason is that regime durability is identified in the literature as a source of institutional quality. However, the interaction between corruption and the rule of law, as well as between corruption and the independence of the executive authority is statistically insignificant in all specifications they occurred.

Finally. The macroeconomic indicators, controlled in this thesis did not retain their expected signs with the exception of inflation, which is positive and statistically significant to capital flight in all the specifications it appeared. The study employed the fixed effects model due to the fact that the pooled-OLS model is believed not to be efficient in doing panel data analysis.

5.7 Fixed Effects Estimation Results

The table 5.5 depicts the fixed effects regression results. Three specifications of the econometric model are tested using the fixed-effects model to control for the country-specific characteristics. The appropriateness of the fixed-effects model for all regression specifications is confirmed by the Hausman test after running it on the null hypothesis that the preferred model is Random Effect to the alternative the Fixed Effects. The test is to find out whether the unique errors are correlated with the regressors, the null hypothesis is they are not. The results of the Hausman test are displayed in Appendix C. In addition, the study finds that heteroscedasticity and autocorrelation are a severe problem associated with the panel model, hence; the study employs the robust model. This approach has been used by Eshete (2005) and Daniel Hoechle (2007).

Results from the fixed effect model suggest that, in all the specifications, the variable of interest, in this case corruption, was found to be explaining the occurrence of capital flight in Sub-Saharan Africa. The coefficient is positive and statistically significant at predominantly 1% level of significance, indicating that economies in Sub-Saharan Africa region with high corruption tend to experience more capital flight. The result conforms to empirical findings reported by Le and Rishi (2008), who considered the role of corruption in impelling capital flight in developed and developing countries using a panel data analysis, they reiterated a positive and significant effect of corruption on capital flight.

However, the empirical results show a statistically insignificant interactions between corruption and rule of law, between corruption and regime durability, and between corruption and the independence of the executive authority.

Table 5.5 Fixed Effects – GLS Regression Results (2000-2012)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
COR	1.2662**	1.194***	1.158***	1.369***	1.619***	1.245***	1.485***	1.466**
	(0.2221)	*(0.2535)*	*(0.3303)*	*(0.213)*	*(0.233)*	*(0.2192)*	*(0.202)*	*(0.2454)*
RL			0.672		-0.8395	0.113	-0.8265	-0.8236
			(1.185)		(1.015)	*(1.0412)*	*(1.0314)*	*(0.7339)*
COR*RL			-0.434			*-0.388*		
			(0.397)			*(0.3684)*		
RD		0.481			0.979	0.644*	0.0599	0.0614*
		(0.069)			*(0.064)*	*(0.361)*	*(0.3699)*	*(0.0274)*
COR*RD		0.0035			-0.1234			
		(0.0165)			*(0.1455)*			
I.E.A				-0.045	0.0047	0.0048	-0.4324	0.0045
				(0.3176)	*(0.0055)*	*(0.0057)*	*0.0299*	*(0.0063)*
COR*IEA				0.0212			0.207*	
				(0.0125)			*(0.012)*	
UIC					-0.0036	-0.004	-0.0032	-0.0033
					(0.003)	*(0.003)*	*(0.0028)*	*(0.0041)*
Inflation					0.1927	0.217	0.178	0.1711
					(0.2465)	*(0.236)*	*(0.2557)*	*(0.3113)*
GDP growth					-0.0156	-0.0134	-0.158	-0.0147
					(0.0223)	*(0.21)*	*(0.218)*	*(0.0200)*
No. of Observations:	223	215	215	204	189	189	189	189
Number of Groups:	32	31	32	31	31	31	31	31
R-squared	0.1317	0.1794	0.1733	0.1596	0.2671	0.2690	0.2677	0.2648
Hausman Spec. Test	0.0000	0.0000	0.0032	0.0000	0.0000	0.0000	0.0000	0.0000

Note: The figures in parenthesis are the Robust Standard Errors of the estimates, whereas ***, **, * represent the statistical significance of the estimates at 1%, 5% and 10% levels of observations.

Source:Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF; CPI of TI, WB-IDS, ICRG, and Polity IV data.

This implies that institutional and governance interactions do not play any crucial role in explaining the influence of corruption on capital flight using the fixed effect model.

Moreover, the controlled macroeconomic variables of inflation, GDP growth and use of IMF credit showed a statistically insignificant effect in all the specifications they were included. This result indeed explains that the macroeconomic indicators used in this analysis play no important role in explaining capital flight from SSA. Due to the presence of potential endogeneity, the thesis work did replicate the above econometric exercise using the System GMM as presented in table 5.6.

5.8 System GMM Estimation Results

Following the empirical estimation and discussion of the pooled-OLS and the fixed effect regression results, the study suspected the presence of autocorrelation, heteroscedasticity and the potential endogeneity problem. As part of the robustness check, the system GMM is used to undertake these diagnostic tests to ensure that the data fits the model and that the results from the system GMM estimation are valid and reliable.

The test for autocorrelation for this study is carried out using the Arellano-Bond test for autocorrelation in the first difference errors. The test fails to reject the null hypothesis of no autocorrelation in the second order AR (2) for all the regressions indicating that the error terms are not correlated with each other i.e. MA (1) process. For this condition of no autocorrelation, employing the System GMM estimation is satisfied. The test results are reported together with the estimation results in a table (5.6)

Table 5.6 System GMM dynamic panel estimation result (2000-2012)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
COR	0.7543**	1.561***	0.992***	1.207***	2.9083**	0.8663**	0.9687***	0.9007**
	(-0.3666)	*(0.509)*	*(0.278)*	*(0.194)*	*(1.344)*	*(0.4284)*	*(0.371)*	*(-0.3879)*
RL			-0.362		-6.083**	-1.273	-1.645**	-1.514**
			(0.890)		(2.704)	*(1.027)*	*(0.6825)*	*(-0.6373)*
COR*RL			0.127			*-0.3026*		
			(0.195)			*(0.422)*		
RD		0.410			0.3393**	-0.0125	-0.0864**	-0.0452
		(0.961)			*(0.1666)*	*(0.498)*	*(0.0479)*	*(-0.0499)*
COR*RD		-0.0248			-0.098**			
		(0.338)			*(0.046)*			
I.E.A				0.327	-0.012	0.0123**	-0.8789	0.0127*
				(0.2006)	*(0.0077)*	*(0.0062)*	*0.8062*	*(-0.0072)*
COR*IEA				-0.136			0.3922	
				(0.888))			*(0.355)*	
UIC					-0.0009	-0.0008	-0.0013	-0.0013
					(0.0024)	*(0.0014)*	*(0.001)*	*(-0.0012)*
Inflation					0.1531	-0.673	-0.7466	-0.70**
					(0.73)	*(0.419)*	*(0.4199)*	*(-0.3537)*
GDP growth					0.0065	-0.014	-0.0157	-0.0092
					(0.0169)	*(0.0109)*	*(0.0124)*	*(-0.0106)*
No. of Observations:	100	97	96	97	72	138	138	138
Number of Groups:	25	24	25	24	18	31	31	31
No. of Instruments:	64	25	65	65	62	80	80	79
AR1	0.3455	0.0193	0.0547	0.0085		0.0201	0.0287	0.0244
AR2	0.1415	0.2686	0.1174	0.1465		0.1687	0.1133	0.1438
Sargan	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Note: The dependent variable is capital flight; the figures in parenthesis are the Standard Errors of the estimates, whereas ***, **, * represent the statistical significance of the estimates at 1%, 5% and 10% levels of significance. ***Source:****Ndikumana and Boyce (2012), and data sample expanded using data from IMF, IFS, DOTS, WDI and GDF; CPI of TI, WB-IDS, ICRG, and Polity IV data.*

Accordingly, the System GMM estimation technique requires that the instruments used must be valid in order to obtain consistent and efficient estimates. As a result, the Sargan test of the over-identifying restrictions, which tests the null hypothesis that the over-identifying restrictions are valid is employed. The test as reported in Table 5.6 fails to reject the null hypothesis and this provides strong evidence that the instruments are valid for the regression model.

Table 5.6 reports the results of the system GMM on the relationship between capital flight and corruption. The research found that corruption is positively related to capital flight and statistically significant across all the specifications from Sub-Saharan African countries. This actually means that a higher perception of corruption among public authorities as in bribery of public officials, kickbacks in public procurement, embezzlement of public funds and among others facilitates an increase in illegal outflow of capital from Sub-Saharan African countries.

The results confirm that of Le and Rishi (2008); and Ndiaye (2009), who reported a positive and significant effect of corruption on capital flight. The coefficient of corruption in specification (8) thus, the full model in particular implies that a rise in corruption by one standard deviation is associated with a rise in capital flight in Sub-Saharan Africa by 0.9007 million of constant US dollars. This result indicates that the threat corruption poses to capital flight is very huge and severe in SSA.

Moreover, the results indicated that the interaction between corruption and regime durability in specification (5) depicts a negative and statistically significant coefficient. This result shows that

a reduction in the number of years since the most recent regime change or the end of a transition period, will lead to a decline in corruption and subsequently a decline in capital flight. This is consistent with the empirical results of Ali and Walters, (2011) who in their study of the causes of capital flight in SSA using a panel data set of 37 countries between 1980 and 2005, found that regime durability is associated with higher capital flight since it may be linked to weaker governance, high corruption, and poorer domestic investment climate. It is therefore evident that regime durability is crucial in explaining the effect of corruption on capital flight. However, the interaction between corruption and the rule of law and between corruption and the independence of the executive authority in the various specifications they appeared revealed a statistically insignificant effect.

In addition, the other equally institutional variables (regime durability, independence of the executive authority) especially the rule of law in most of the specifications it appeared indicate a negative and statistically significant coefficient at 5% level of significance. This is consistent with existing empirical evidence that good institutional development is associated with a lower incidence of capital flight (see, for example, Lensink et al., 2000; Collier et al., 2004). On the other hand, the controlled macroeconomic variables in all the specifications they were included depicted statistically insignificant effect on capital flight with the exception of inflation but even that it failed to retain the expected positive coefficient. This result tells us that the macroeconomic environment does not have any significant impact on capital flight in Sub-Saharan Africa.

5.9 Synthesis of the Results

In order to appreciate better the idea of the various techniques used to estimate the model on the effects of corruption on capital flight, this section compares the results of the system GMM and the results of the fixed effects-GLS and the Pooled-OLS. The results from these three estimation techniques shows both similarities and differentials in all the specifications produced. An important feature worth noting is that the results from the system GMM and that of the fixed effects regression shows that corruption, which happens to be the main variable of interest was positive and predominantly statistically significant at the 1 % level of significance in all the specifications it appeared. Even in the pooled-OLS regression, corruption depicted a positive, statistically significant effect on capital flight in most of the specifications it occurred. As already indicated this results tell us that corruption plays an essential role in explaining the phenomenon of capital flight in SSA.

Another similarity is that, all the controlled macroeconomic indicators except inflation (use of IMF credit, and GDP growth) used in this study did not retain their expected signs and was also statistically insignificant especially in the system GMM model and fixed effect – GLS regression approach. However, inflation is statistically significant and positively related to capital flight in the pooled-OLS regression. This is the case because inflation leads to the lowering of the returns to non-indexed assets and increases the opportunity cost of holding money. This is consistent with the Portfolio-choice theory which suggests that capital flight is driven by relative risk-adjusted expected return.

Accordingly, the various interactions between corruption and the other equally important institutional and governance variables used in the study reveals some similarities among the estimation techniques used in the estimation. Specifically, the interaction between regime durability and corruption showed statistically significant results in both the system GMM and the Pooled OLS. Again, the interaction between corruption and the rule of law is found to be statistically insignificant in all the estimation techniques used and across all specifications of the models. More so, the interaction between corruption and the independence of the executive authority indicated an insignificant statistical result in both the system GMM and the pooled-OLS estimation techniques.

However, even though the similarities of the results seem to be predominant across all the three estimation techniques, the system GMM estimator is preferred to the other two techniques since it allows correcting for insufficiencies related to problems of simultaneity bias, inverse causality and omitted variables (Kpodar, 2005).

CHAPTER SIX

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The chapter provides a summary of the study. Based on the findings of the study, this chapter also draws conclusions and make recommendations for policy analysis. The study aimed at finding the effect of institutional governance on capital flight in Sub-Saharan Africa, focusing on the role of corruption. Panel data set of thirty two (32) countries in Sub-Saharan Africa is analyzed over the period 2000-2012. The portfolio choice frame work is used for the theoretical model. Also, three different estimation techniques as Generalized Method of Moments (GMM), Fixed Effect Regression and the pooled-OLS regression models are used.

6.2 Summary and Conclusion

Sub-Saharan Africa is home to a young and growing population, which is experiencing the fastest population growth in the world and the region as a whole is expected to be the second fastest-growing globally (behind Asia Pacific) achieving its fastest rate of growth since 2010. However, the region has experienced massive outflows of private capital towards western financial centers. These private assets surpass the continent's foreign liabilities, ironically making Sub-Saharan Africa a 'net creditor' to the rest of the world (Boyce and Ndikumana, 2001). For instance, the report, entitled "economic perspectives in Africa", was released in 2012. In it, the African Development Bank (AfDB) asserts that capital flight deprived the continent of over US $700 billion during the preceding decade. The high levels of capital flight pose serious challenges for domestic resource mobilization in support of investment and growth in Africa.

Most studies on capital flight as observed in the empirical literature is skewed towards the cause and determinants with limited studies emphasizing on corruption as a key factor particularly in Sub-Saharan Africa. Hence, the main objective of this study is to establish the relationship between capital flight and corruption in Sub-Saharan Africa. The study was based on the Portfolio Choice framework and engaged three different estimation techniques, thus, the system GMM, fixed effects regression, and the pooled-OLS regression based on data of thirty two (32) Sub-Saharan African Countries for the period 2000 – 2012. The GMM estimation technique is employed in the empirical estimation procedure in order to achieve the set objectives of the study. The technique is preferred to other techniques (pooled - OLS and Fixed Effect regression) used because it is perfect for a Dynamic model that exhibit a number of sensitive characteristics such as endogeneity, fixed effects, heteroscedasticity, serial correlation and other data challenges.

An estimation of capital flight on corruption as well as other controlled macroeconomic and equally important institutional variables of the model was undertaken. Accordingly, the variable of interest, thus corruption regressed on capital flight retain its expected positive sign and statistically significant across all specifications of the model. The relationship remains robust even when macroeconomic variables and equally other institutional variables that have been used in empirical literature and significantly affect capital flight are taken into account. The result was consistent with empirical evidence. However, most controlled macroeconomic variables entered the model insignificantly. This provides us enough evidence to conclude that poor governance and weak institutions, in this case an increase in corruption strongly leads to a rise in capital flight in Sub-Saharan Africa.

Moreover, interactive variables regressed also revealed interesting results, including a statistically significant positive coefficient between corruption and regime durability indicating that regime durability is an important institutional variable that play a critical role in explaining the effect of corruption on capital flight in SSA. However, the interaction between corruption and the rule of law, as well as corruption and independence of the executive authority show statistically insignificant result across all the specifications in the model. Finally, from aforementioned discussions, this research work has enough evidence to conclude that corruption has a positive effect on capital flight. Also, this thesis indicate that there is the need for stronger institutions and good governance to help reduce capital flight in SSA.

6.3 Recommendations and Policy Implications

With regards to the estimation results of the study, the following measures are recommended.

- Institutional and macroeconomic reforms are encouraged to be undertaken in order to reduce corruption and by extension capital flight. The governments of Sub-Saharan African countries must put in place measures to improve the control of corruption in SSA. Thus, an effective mechanism aimed at tracking and prosecuting financial crime should be the utmost priority of the authorities.

- Also, leaders in Sub-Saharan Africa should establish better political environments that will make them desist from an oppressive apparatus that suppressed demand for political opening. They should create a democratic environment linked to stronger governance, decline in corruption and better domestic investment climate.

- Last but not the least, a common development agenda needs to be instituted among member countries to streamline accountability and development projects. This will help reduce the level of corruption in the economy and its effect on capital flight.

6.4 Limitation of the study and areas of further research

This research is conducted to identify the effects of corruption on capital flight in Sub Saharan Africa for the period 2000-2012.

As a matter of fact, this study cannot exhaust all the issues pertaining to the topic under study, as no single study is exhaustive enough. Notwithstanding this, however, it will be enough for the academic purpose for which it is being carried out. The number of Sub-Saharan African Countries considered were 32 due to the problem of data availability. Time constraints are a limiting factor during the study since the researcher has a short period at his disposal because the study is also carried out alongside other equally important academic commitment.

Future research should be geared towards the use of other estimation techniques, for instance the Structural Vector Autoregressive model to test for the effects of institutions and governance parameters on capital flight in SSA.

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Appendices

Appendix A: Real Capital Flight for 32 Sub-Saharan African Countries (millions of 2010 US $)

COUNTRY	2000	2001	2002	2003	2004	2005
Angola	1329.6	1342.3	1342	2502	3442	2519
Botswana	286.7	1571.8	-3756.8	1397.9	1290	765.1
Burkina Faso	-98.8	-49.2	-126.2	461	-201.3	-310.8
Burundi	181.4	238.5	372.2	367.9	196.4	404.3
Cameroon	-26.3	6088.6	-762	-216	-1488	-2620
Cape Verde	39.5	138.3	130.5	63.3	249.2	195.3
CAR	-27.9	-25.3	288.9	-15.6	77.1	-62.2
Chad	-62.6	88.6	213	797	-206	3
Congo Dr.	2952.5	-897.8	805.5	1659.6	392.4	-80.7
Congo Rep.	3549.2	914.6	-49	2120	5319	1215
Cote d'Ivoire	3629.7	-680.2	1342.2	3271.5	-63.2	3280
Ethiopia	406.2	2518	3073.4	1598.4	1400.8	-319.9
Gabon	2939.5	-78.3	144	1039	1437	2198
Ghana	209.6	199.5	1041	397.8	499.2	-908
Guinea	-56.3	-232.9	54.2	-49.6	-325.4	-725.5
Kenya	62.7	518.3	1826.4	1735.9	1087.6	-929.3
Lesotho	-84	-134	303.8	220.6	244.2	-87.2
Madagascar	-72.9	-1010.4	78.6	45.6	21.4	-117.1
Malawi	-63.5	19.5	-63.5	19.5	45.9	61.5
Mauritania	-33.8	332.6	312.2	218.7	-30	-15.5
Mozambique	-45.2	1305.2	384.6	-1564.1	-15.5	-657.9
Nigeria	518	3357	2723	13107	9812	29263
Rwanda	-37.9	-121	21.3	17.3	-141.9	-161.5
Seychelles	-12	141.9	46.7	84	-33.6	399.2
Sierra Leone	102.2	-74.7	291.7	183.4	348.1	264.9
Sudan	1061	-370	-1811	2031	6414	5898
Swaziland	16.8	-69.7	285.6	227.1	151.5	-193.9
Tanzania	545.8	-319.8	758	624.2	1020.4	332.5
Togo	669.6	118.2	-412.6	-699.1	-716.5	-227.2
Uganda	190.1	515	563.6	1047	-2488.9	263
Zambia	475.1	-156.1	-32.4	183.9	1543.8	2077.2
Zimbabwe	1512.2	60.7	-65.4	-2375	48.2	186.8

COUNTRY	2006	2007	2008	2009	2010	2011	2012
Angola	5763	4205	10164	7155	2149	-13943	-12495
Botswana	1200	1010.6	631.8	1205.9	358.8	-482.59	2022.37
Burkina Faso	-324.5	-52.8	151.3	181.7	-196.5	705.04	959.71
Burundi	464.6	318.4	169.5	839	-6.4	281.64	169.62
Cameroon	-939	-669	-660	-458	-730	3012.67	2829.59
Cape Verde	234.2	220.9	238.7	247.7	846.16	846.16	704.18
CAR	74.2	-8.6	-36.4	-91	59.9	26.9	104.67
Chad	-139	-199	-521	0	0	395.97	435.57
Congo Dr.	784.7	3012.2	1715.3	-411.6	1813.6	-6913.6	3491.29
Congo Rep.	2133	535	2283			3091.6	2714.95
Cote d'Ivoire	491.8	979.3	-1123	-1995.6	101.5	7343.46	3105.01
Ethiopia	104	1696.6	-263.8	1875.1	3407.7	3284.95	4735.83
Gabon	2146	927	2191	699	1433	1361.42	1266.68
Ghana	748.3	733.2	1445	678	1184	9667.27	11144.6
Guinea	-10.9	-127.2	26.6	-538	-154.2	1825.5	1283.86
Kenya	-973.5	-303.4	-1370	-1952.8	-2219	8906.37	5656.16
Lesotho	-59.4	-46.3	-0.8	140.1	-64.5	433.21	430.35
Madagascar	321.2	415.3	-440.2			1308.68	1338.73
Malawi	53.3	-762.3	-192.7	-707.9	-311	1303.16	983.05
Mauritania	226.1	-170.4	197.7	-245.9	284.4	931.55	2808.13
Mozambique	1803	241.8	72	132	733.6	7058.38	12091.5
Nigeria	24307	26908	37991	29029	18455	25300	25674
Rwanda	-130.1	50.9	-192.3	-274.3	-317.7	713.08	1561.86
Seychelles	323.5	4.1	137.1	-160.4	1002.1	1002.09	703.34
Sierra Leone	-23.8	121.2	298.6	484.2	369	2591.52	1055.74
Sudan	-5628	21061	1966	346	3298	6548	11032.5
Swaziland	45	335.7	-381	-299.1	181.5	312.35	-353.06
Tanzania	-329.6	-505.7	-1063	-216.7	-151.2	7904.57	7449.84
Togo	47.9	1155.7	2636.1	3081.3	1508	-358.7	240.35
Uganda	4123	980.4	913.9	141.4	-163	3731.99	3176.71
Zambia	2203	135.3	-1780	-2185.8	-2359	2213.9	2803.14
Zimbabwe	3145	601.5	-495.9	-1696.4	-801.7	2652.99	3251.13

Source: *Ndikumana and Boyce (2012), and sample expanded using data from: IMF, International Financial Statistics, IMF, Balance of Payments Statistics, IMF, Direction of Trade Statistics, World Bank, Global Development Finance*

Appendix B: Pairwise correlation coefficients of regression model

VARIABLES	C.F	COR	RD	RL	IEA	UIC	INF	GDP
C.F	1.0000							
COR	-0.1144	1.0000						
RD	-0.0912	0.4323	1.0000					
RL	-0.2345	0.4159	0.4543	1.0000				
IEA	0.0009	-0.026	-0.0647	-0.0259	1.0000			
UIC	0.147	-0.0219	-0.0096	-0.0577	0.0216	1.000		
INF	0.1384	-0.0314	-0.1031	-0.0974	0.0692	0.024	1.0000	
GDP	0.1369	-0.0425	-0.0257	0.056	0.0692	-0.004	-0.0748	1.0000

Appendix B above report pairwise correlation of the variables under consideration. The correlation coefficients of these series are found to be less than 5 percent which ruled out the issue of multicollinearity in the estimations.

Appendix C: Hausman Test

Capital Flight	(b) fixed	(B) random	(b-B) Difference	Sqrt (diag(V_b-V_B)) S.E
Corruption	1.466	1.2369	0.2291	0.0797
Rule of Law	-0.8236	-1.9507	1.1271	0.5679
Regime Durability	0.0614	0.0112	0.5021	0.1619
Ind. Of Exec. Authority	0.0045	0.0032	0.0013	
Use of IMF credit	-0.0033	0.0003	-0.0036	
Inflation	0.1711	0.2721	-0.101	0.0371
GDP growth	-0.0147	-0.0073	-0.0074	

b = consistent under HO and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(7) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 39.80

Prob>chi2 = 0.0000

(V_b-V_B is not positive definite)

Source: Hausman Test Result

Appendix D: Variables used in the computation of Capital Flight and data sources

VARIABLE	DEFINITION	SOURCE
DEBT	Total external debt stock	World Debt Tables
CA	Current account balance	Balance of Payment Statistics, WDI
DFI	Direct foreign investment	Balance of Payment Statistics, WDI
RES	Change in reserves & related items	Balance of Payment Statistics, WDI
TEX	Total exports to the world	Direction of Trade Statistics
EXAC	Exports to industrialized countries as reported by the African country	Direction of Trade Statistics
TIM	Total imports from the world	Direction of Trade Statistics
MIC	African country's imports from industrialized countries reported by the African country	Direction of Trade Statistics
IMAC	The African country's imports from industrialized countries as reported by industrialized countries	Direction of Trade Statistics
EXIC	Exports to industrialized countries as reported by industrialized countries	Direction of Trade Statistics
CIF/FOB	CIF/FOB factor	Assumed to be 1.10

NB: Exchange rates of the French franc, Deutsche mark, Swiss franc, Pound sterling, Yen, and SDR against the dollar: SOURCE; International Financial Statistics

Appendix E: Variables used in the estimation and data sources

VARIABLES	DEFINITION	SOURCE
CF	Capital Flight (millions 2010 US$)	Ndikumana & Boyce (2012), World Bank Data (WDI)
RD	Regime Durability	Polity IV database
I.E.A	Independence of the Executive Authority	Polity IV database
COR	Corruption	Corruption perception index, Transparency International.
RL	Rule of Law	International Country Risk Guide, and World Bank data base
GDP	GDP growth (annual %)	World Bank national accounts data
UIC	Use of IMF Credit (current US$)	World Bank, International Debt Statistics.
INF	Inflation (CPI annual %)	World Bank (WDI)