UNIVERSITY OF CAPE COAST

GOVERNMENT INTEGRITY, GOVERNMENT SIZE AND CAPITAL FLIGHT IN SUB-SAHARAN AFRICA

BY

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Signature……. Date……

Candidate's Name: Bismark Patrick Kubah

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

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Principal Supervisor's Name: Dr. William Gabriel Brafu-Insaidoo

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ABSTRACT

The study examines the effects of government integrity and government size on capital flight in Sub-Saharan Africa. It also examines the joint effect of government integrity and government size on capital flight, paying particular attention to how the effects differ across different income groups in Sub-Saharan Africa. The study employs three different estimation techniques namely Pooled Mean Group, Mean Group and Dynamic Fixed Effect to analyse a panel data of 20 SSA countries from 1996 to 2015. The study finds that a percentage increase in government integrity reduces capital flight by at least 0.0173 percent and 0.0153 percent in the long and short-run respectively. A percentage increase in tax burden is also found to increase capital flight by at least 0.0390 percent in the long run. The joint effect of government integrity and government spending increases capital flight by 0.0065 percent, whereas the same effect of government integrity and tax burden induces capital flight by 0.0407 percent in the long run. In upper income countries, government integrity is found to significantly reduce capital flight by 0.115 percent in the long run but the same effect is insignificant in both lower and lower middle income countries. However, tax burden increases capital flight by 0.0395 percent, 0.135 percent and 0.151 percent for the lower, lower middle and upper income groups respectively in the long run. The study recommends that governments of Sub-Saharan African countries should intensify campaigns in favour of anticorruption measures so as to help improve integrity of governments especially as countries transit from lower income status into upper income status. Tax burdens on local investors irrespective of the income groups of countries should be reduced to help minimise capital flight from the region.

KEYWORDS

Capital flight

Government integrity

Government size

Pooled Mean Group

Sub-Saharan Africa

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DEDICATION

To my family and friends.

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LIST OF ACRONYMS

ARDL	Autoregressive Distributed Lags
CF	Capital flight
CPI	Corruption Perception Index
DFE	Dynamic Fixed Effect
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GJ	Global Justice
GMM	Generalised Method of Moment
IFF	Illicit Financial Flows
MDG	Millennium Development Goal
MG	Mean Group
OECD	Organisation for Economic Cooperation and Development
PMG	Pooled Mean Group
SSA	Sub Saharan Africa
USAID	United States Agency for International Development
WB	World Bank
WDI	World Development Indicators

APPENDICES

CHAPTER ONE

INTRODUCTION

This chapter begins with the background to the study and followed by the problem statement, objectives, hypotheses, significance of the study, scope of the study as well as organisation of the chapter.

Background to the Study

The attainment of the Sustainable Development Goals (SDGs), particularly target 4 of goal 16 which aims at reducing illicit financial flows and strengthening the recovery of stolen assets by 2030 (United Nations, 2015), has been a major global concern to many nations. As a result of this, many nations are striving hard to turn economic fortunes around to benefit their citizens. Capital flight, however, remains a grave concern to many countries, especially those in Africa, particularly at the time the continent has the opportunity to focus on growth and advancement in macroeconomic stability to achieve the SDGs. Governments over the world are joining forces to fight money laundering, tax evasion and international bribery,which make up the bulk illicit financial flows (OECD, 2014).

In the development literature, there is general agreement that investment is crucial to economic growth and development (Levine, 1999). This is also true for sub-Saharan African nations (Hoeffler, 2001). The recent growth resurgence on the continent suggests that the potential for profitable investment is quite high. This suggests that capital should be attracted and maintained in Africa, not away from Africa. This amongst several other factors have triggered a much deeper attention into the issue of capital flight from the continent and the more general problem of illicit financial flows from developing nations in recent

times, as illustrated by the increasing body of technical and policy studies on these subjects (Boyce & Ndikumana, 2018).

The role of capital in an economy cannot be underestimated as far as domestic resource mobilisation, economic growth and development are concerned. Capital investment results in a more productive workforce, that is a higher per capita output and per input unit. This leads to increasing incomes and living standards directly. Capital is also the basic driver of increased productivity and the ultimate source of all human life wealth development.

Capital flight involves the outflow of assets or money out of a nation or an area. It very well may be a totally lawful procedure, as when foreign investors decide to pull back capital from a nation because of an occasion of political or monetary noteworthiness. However, it is unlawful if it is in the form of Illicit Financial Flows (IFFS). Capital flight from African nations has emerged as a key problem in the discourse on development strategy as it amounts to economic hemorrhage in a capital-starve continent that lags behind other areas in most indices of growth (Ajayi & Ndikumana, 2015). Inadequate financial resources in the face of enormous needs in public investment infrastructure and social services is considered a major contstraint to economic development in Africa (Ndikumana, Boyce, & Ndiaye, 2013). Capital flight lies at the core of this issue by denying the the state of desperately required financial resources, in that it undermines efforts to mobilse the needed resources to build public investments (Ndikumana et al., 2013). Capital flight from African nations has emerged as a key problem in the discourse on development strategy. Even though the continent receives a substantial amount of capital inflows in the form of official development assistance, external borrowing and foreign direct investment, it also

suffers a heavy financial drain through capital flight.Given that the continent lags behind in significant national development objectives there is the need to pay serious attention to the phenomen because capital flight undermines domestic investment mobilisation (Fofack & Ndikumana, 2010; Ndikumana, 2014), slows down economic growth and undermines poeverty alleviation strategies (Nkurunziza, 2015).

A report by the World Bank on the achievement of the Millennium Development Goals (MDGs) reveal that extreme poerty has declined in all rgions of the world, with the exception of Africa, where 45 percent of the Sub-Saharan Africa countries have ben substantially unable to achieve the MDG target for extreme poverty (World Bank, 2015) making Africa the only continent witnessing an increase in the number of poor people. Capital flight further undermines the mobilisation effort of national resources, domestic private investment and tax base and thus leads to decreased public investment and social facilities (Ndikumana, 2015a).

In May 2017, the Honest Account's reports 2017, published by the Global Justice (GJ) indicates that Africa is a net creditor of about $41 billion to the rest of the world each year. Recent estimates of capital flight for 30 African countries from 1970 to 2015 shows that capital flight continues to pose a serious drain on financial resource from Africa, a capital starved continent (Boyce & Ndikumana, 2018). It is noted that countries lost a combined $1.4 trillion in capital fligh over the forty-six year period compared to the $992 billion, $628 billion and $174 billion received by the continent in the form of official development assistance, net foreign direct investment and net portfolio investment respectively (Figure 1).

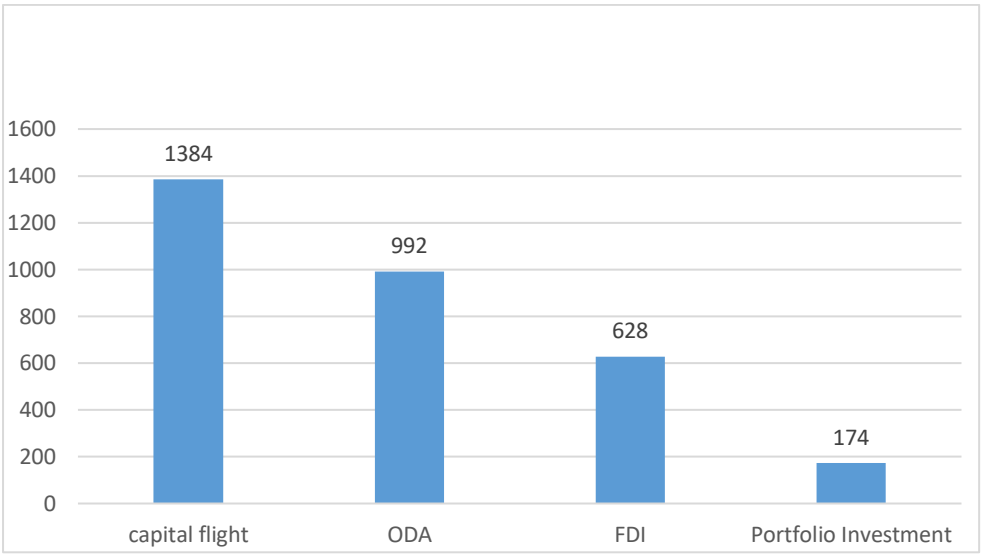

Figure 1: Capital flight, ODA and FDI: cumulative flows (billion Dollars, constant 2015)

Source: Boyce and Ndikumana (2018)

Moroever, capital flight is evaluated to be 10 times the yearly inflow of foreign aid and twice the amount of debt obligation being reimbursed by the developing nations every year (Fröberg & Waris, 2011). According to Christensen (2011) and Gankou, Bendoma and Sow (2016), capital flight is a consequence of offshore shore financial economy which can be primarily traced to poor governance. This has aroused increasing attention to governance issues like government integrity and corruption in recent times. This shift in attention is the result of growing perception of what constitutes sound economic policy. In attaining economic freedom, Miller and Kim (2013) note that lack of government integrity caused by bribery, graft, embezzlement and extortion reduces economic progress by channeling resources into unproductive ventures which undermines domestic resource mobilisation and a decline in economic performance.

According to Osei-Assibey, Domfeh and Danquah (2018), corruption has a significant positive relationship with capital flight from sub-Saharan Africa. Systemic corruption incidence and low levels of confidence and integrity continue to widen and deepen societal fissures, exacerbate inequality and impede the effectiveness of both government and private investment (World Economic Forum, 2018).

The 2018 report on corruption perception index reveals that very little or no a significant improvement has been seen over the years in an attempt to ending endemic corruption. The report indicates that over two-thirds of nations score below 50, while the average score stands at 43. Sub-Saharan Africa has been highlighted as the worst performing region with the average score of 32. For this reason, it is imperative to reduce corruption and bribery in all forms through anti corruption strategies like improving integrity of government so as to curb the capital flight scourge (United Nations, 2015). Acoording to 2018 economic freedom report, government spending (a proxy for government size) has been identified as the only factor in which sub-Saharan Africa scores above the world average. However, the region is characterised with a weak rule of law, inadequate protection of property rights, cronyism and endemic corruption. The increasing proportion of government spending in the region highlights the role of governments in SSA. According to Miller and Kim (2013), every government spending that must be finally financed by higher taxation, however, involves an opportunity cost equivalent to the worth of the investment that would have accrued had resources involved been left in the private sector.

Statement of the problem

The alarming proportion of IFFs, specifically, in the form of capital flight is a serious issue for the SSA continent. Interestingly, this issue has gained serious attention at the time when there are calls on African governments and also efforts to improve government integrity, reduce corruption and design fiscal regimes that can support productive public investment and growth (Gaspar & Hagan, 2016). The common belief is that curbing corruption to improve intergrity and governance outlook could engender efficient government spending, productive tax burdens which could together provide a disincentive for capital flight. Although studies on capital flight in Africa abound, little attention has been paid to the how and to what extent government intergrity, government spending and tax burden could independently and jointly affect capital flight. Specifically, Ndikumana (2016) focused on lessons learned from case studies on the causes and effects of capital flight. Muchai and Muchai (2016) also examined the relationship between capital flight and fiscal policy, Kwaramba, Mahonye and Mandishara (2016) on trade misinvoicing and capital flight in Zimbabwe, Ayamena, Matseyem and Epo (2016) concentrated on the links between capital flight and natural resources in Cameroon.

Although Osei-Assibey, Domfeh and Danquah (2018) examined some aspects of corruption , institutions and capital flight in sub-Saharan Africa, its measure of governance is narrowly limited to public perception on corruption. This study fills the gap by not only employing a well constructed government integrity index that better reflects a broad spectrum of governance but also examines how this measure interact with important factors such as government

size to affect capital flight, paying particular attention to how these effects differ among different income group of countries.

Another gap this study fills is that even though studies on capital flight abound for instance, Raheem (2015) and Anetor (2019) both focus on the determinants of capital flight from sub-saharan Africa, they failed to deal with the issue of endogeneity that arises from the fact that the previous values of capital flight might influence the current values which static panel have no control over. For this reason, this study seeks to employ a panel heterogenous models specifically Pooled Mean Group, Mean Group and Dynamic Fixed Effects estimators which address the issues of endogeneity so as to ensure robust estimates of the parameters.

Finally, this study extends the determinants of capital flight to include a well constructed indexes of government size measures such as government spending and tax burden. Even though studies by Muchai and Muchai (2016) examined the relationship between fiscal policy and capital flight in Kenya, this studies argues that lumping tax revenue and government spending to arrive at fiscal policy might not bring to the fore the clear impact of the individual component on capital flight. It is against this backdrop that the current study uses the tax burden which bothers on all forms of direct and indirect taxes as a proxy for government size to determine capital flight. In similar vein, government spending, another measure of government size captures the burden imposed by government expenditures, which includes consumption by the state and all transfer payments related to various entitlement programs.

Purpose of the Study

The general purpose of the study is to empirically examine the effects of government integrity and government size on capital flight with emphasis on government integrity in sub-Saharan Africa.

Objectives of the study

The study seeks to accomplish the following objectives:

1. Examine the individual effects of government integrity and government size (tax burden and government spending) on capital flight in sub-Sahara Africa.
2. Investigate the effects of the interaction of government integrity and government size (tax burden and government spending) on capital flight in sub-Sahara Africa.
3. Compare the long run and short run effects of government integrity, government spending and tax burden on capital flight across lower, middle lower and upper income countries.

Hypotheses of the Study

The study tests the following hypotheses:

1. $H_{0:}$ Government integrity has no significant effect on capital flight in sub-Saharan Africa.

   $H_{1:}$ Government integrity has a significant effect on capital flight in sub-Saharan Africa.
2. $H_{0:}$ Tax burden has no significant effect on capital flight in sub-Saharan Africa.

$H_{1:}$ Tax burden has a significant effect on capital flight in sub-Saharan Africa

3. $H_{0:}$ Government spending has no significant effect on capital flight in sub-Saharan Africa.

   $H_{1:}$ Government spending has a significant effect on capital flight in sub-Saharan Africa

4. H_0: The interaction between government integrity and government spending has no effect on capital flight.

   $H_{1:}$ The interaction between government integrity and government spending has a significant effect on capital flight.

5. H_0:The interaction between government integrity and tax burden has no effect on capital flight in SSA.

   $H_{1:}$ The interaction between government integrity and tax burden has a significant effect on capital flight in SSA

6. H_0: The effects of government integrity, government spending and tax burden on capital flight are the same across lower, middle lower and upper income countries.

   $H_{1:}$The effects of government spending and tax burden on capital flight are the same across the income groups.

Significance of the Study

This research broadens our knowledge on capital flight and its determinants in sub-Saharan African countries. The essence of this study is as a result of the fact that countries in sub-Saharan Africa have witnessed huge outflows of private capital to western economic centres over the previous few centuries.

The private assets exceed the overseas liabilities of the continent, making ironically sub-Saharan Africa a net lender to the rest of the world (Boyce & Ndikumana, 2015). Sub-Saharan Africa has a considerably greater preference for foreign investments over national assets compared to other developing regions; therefore, Africa has the largest share of private assets held overseas (Collier et al., 2001).

Lastly, this research adds to the current knowledge based on capital flight problems and can serve as a reference document for organisations, students, policymakers and other experts as well as contribute to the empirical and theoretical discussion.

Delimitation of the Study

The scope of this study is limited to the area of capital flight and its determinants. Furthermore, the study focused only on 20 selected sub-Sahara Africa countries spanning from the period 1996-2015 due to data availability. The study used secondary data drawn from the Political Economy Research Institute website, Heritage Foundation (Economic Freedom database) website, International Financial Statistics and the World Development Indicators.

Organisation of the Study

This study is organised into five main chapters. The first chapter is made up of the introduction consisting of the background of the study, the statement of the problem, the objectives and the research hypotheses, significance of the study as well as the organisation of the study. The rest of the chapters is organised as follows. Chapter two captures a review of literature related to the study. Both theoretical and empirical literatures are reviewed. Next is chapter three

which discusses the methodology of the study. It gives a detailed description of the scope of the study, theories which provide theoretical antecedents to the study, the variables used for the study, and the econometric model used for the study. Results obtained from the study are presented and discussed in Chapter Four. Finally, the study is concluded in Chapter Five. It also captures the summary of findings and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This section presents a review of relevant literature regarding determinants of capital flight. It focuses on theoretical issues and empirical literature that explained capital flight.

Definitional Issues

By and large, there is no single definition for capital flight, despite the fact that its exercises have been recognised for periods going back to the late 1980s. The definitions related with the idea of capital flight are numerous with various implications inferred.

From a wider perspective, capital flight has been characterised to incorporate every private capital outflow from developing countries (Khan, 1989), while, from a narrow perspective, it encapsulates only unlawful capital exports (Lessard & Williamson, 1987). The broad extreme considers all private capital outflows from a developing economy. Based on this definition, every private capital outflow from developing countries, either long-term or short-term, portfolio or equity investments, could be described as capital flight. The reason is that developing countries, generally, are seen to be capital starved hence should be net borrowers in the development process, augmenting domestic savings with external finance. In keeping with the difficulties in defining capital flight, Walter (1987) defined capital flight as all capital that “flees” regardless of the motive. Also, according to Cuddington (1986), the term "capital flight" typically relates to short-term speculative capital outflows and in-

volves ' hot money ' that reacts to political or financial crises, heavier taxes,

potential tightening of capital controls or significant national currency devaluation, or real or incipient hyperinflation.

According to Onodugo et al. (2014), capital flight differs from the export of capital consisting of the transfer of assets in complete compliance with the law. While capital export is a standard financial phenomenon, which does not put the economy at risk; capital flight poses a risk and contributes to financial impoverishment, worsening investment opportunities and opportunities for further economic development. Alternatively, capital flight can be seen as the change in the private sector's net foreign assets (Chang & Cumby, 1991; Company, 1986; Erbe, 1985, World Bank, 1985).

This definitions mentioned above justify the fact that there is no standard capital flight definition. This research however, describes capital flight as part of domestic saving sent overseas.

Trends of capital flight in Africa

Capital flight reflects outflows of a country's financial resources that are not recorded in formal public statistics in a specified era. Capital flows are illegal if they involve funds that have been illegally obtained or moved overseas and kept there without full disclosure to domestic officials or both (Ndikumana, 2015b). This is evidenced in capital flight declined in the 1990s, but then exploded since in the 2000s with oil producing countries seeing the highest trends (Figure 2).

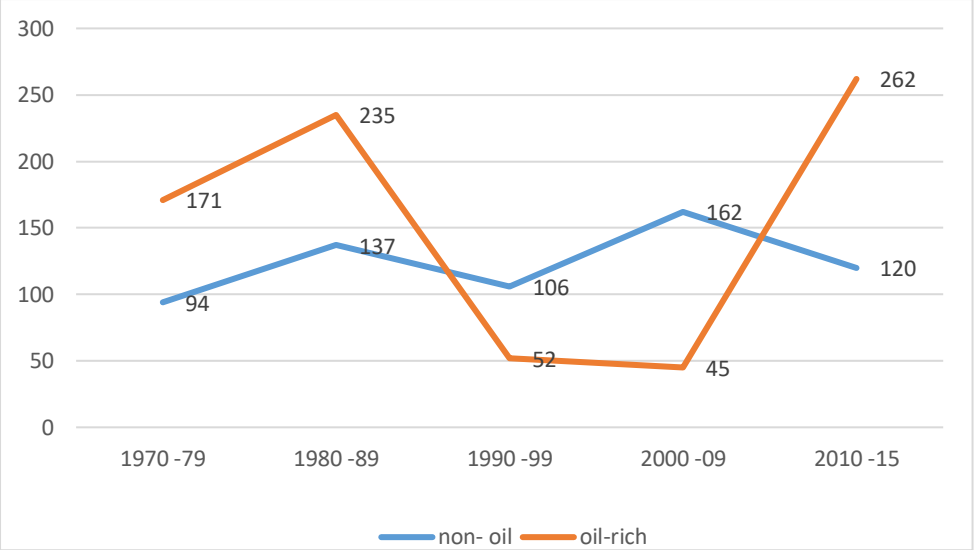

Figure 2: Estimates of capital flight for 30 countries, 1970-2015(billion, constant 2015$)

Source: Ndikumana (2018)

Explanations of Capital Flight from Africa

What causes capital flight from sub-Saharan African countries is a key empirical question that needs to be interrogated. This is crucial because it helps to understand the causes of capital flight in order to design suitable policies to curb it. The most common opinion is that capital flight is the result of a deliberate behavior by reasonable African savers or investors in pursuit of greater yields or securit .

In particular, some argue that capital flight faces finanacial risk owing to currency depreciation, devaluation, inflation and economic instability Dornbusch (as cited in Ndikumana, 2014) or political risk such as expropriation risk (Kant, 2002; Khan & Haque, 1985) or risk owing to future tax policy uncertainty. Specifically, prospective tax or bad economic governance undermines debtors' right Eaton (as cited in Ndikumana, 2014). This line of reasoning

indicates that risk-adjusted return rates on investment are the primary determinants of capital flight. However, with this explanation of capital flight based on the theory of portfolio choice, there are serious empirical and conceptual issues due to the reasons below.

First, risk and return on investment factors are expected to guide choices about honestly gained assets where owners decide to domiciliate their assets to maximise anticipated risk-adjusted yields. These factors, however, are secondary to the need to hide the property and avoid prosecution for stolen cash and other illicit capital. In reality, owners of stolen property may be prepared to accept small and even negative yields on their investments in return for the security provided by by jurisdictions of banking secrecy and tax havens (Ndikumana & Boyce, 2018).

Secondly, there is very little empirical proof to support the portfolio selection motive of capital flight as advanced in some studies (Collier, Hoeffler, & Pattillo, 2004). Studies that used econometric analysis to reveal a link between capital flight and risk adjusted returns to investment on account of African countries yielded inconclusive proof in support of the portfolio selection motive (Ndikumana & Boyce, 2011). This leads to the suspicion that the flight of capital is mainly motivated by unlawful reasons. In this way, it cannot be solved solely via relying on regulations geared towards increasing Afica's domestic investment returns.

Theoretical Literature on Capital Flight

Five main theories on capital flight emerge from the literature. These are the portfolio choice framework, the debt-driven flight thesis, the investment diversion theory, the tax – depressing thesis and the political risk theory.

Debt-Driven Flight Thesis

This theory emphasises that capital flight lowers the motivation to save and invest. What is assumed here is that with large external debt, there are the expectations of exchange rate devaluation, fiscal crisis and the propensity of the crowding out of domestic capital and expropriation of assets to service the debt.The debt driven thesis and investment driven thesis suggest interdependence between capital flight, growth and external debt with the linkages being mutually reinforcing. Capital flight leads to poor growth, which warrant the necessity to borrow in order to enhance growth. As a result, additional borrowing raises the debt ratio which induces capital flight, which in turns brings about bad economic growth (Collier et al., 2001).

Investment Diversion Theory

This theory assumes that the existence of macroeconomic and political uncertainty in developing country and the concurrent existence of better opportunities for investment in developed countries such as increased foreign interest rate, wide range of financial instruments, political and economic stability, appealing tax environment and bank account secrecy, some corrupt leaders and bureaucrats siphon scarce resources from their countries to developed countries. These funds are therefore, not available for investment at home leading to decline in aggregate investment, low economic growth, hence decline in employment, increase in dependency ratio and high death rate. These negative macroeconomic effects on these countries sometimes motivates the necessity to borrow from abroad to reactivate the domestic economy, which is sometimes further siphon thereby perpetrating external dependency and indebtedness. The li-

quidity constraint may result to depreciation of the domestic currency if the authorities are operating a floating exchange rate system (Ajayi & Khan, 2000). An attempt to protect the exchange rate at this time leads to loss of international reserves. The investment diversion thesis provides one of the well- known negative consequences of capital flight in the countries involved. However, it provides only partial explanation of the consequences of capital flight on the economy.

Tax – Depressing Thesis

This theory stipulates that capital flight leads to a possible loss in revenue owing to the fact that assets held overseas are not within the control of the national government and hence cannot be taxed. An expected rate of tax might decrease the net expected gains to domestic investment and the volatility of the tax rates might increase the risk associated with investment, thereby leading to lower risk-adjusted returns to domestic investment (Ndikumana and Boyce, 2002). The decline in government revenue undermine growth and development. That is, the direct result of capital flight is a decrease in government revenue-generating ability (Ajayi, 1992). The result of this is the decline in debt servicing capacity of the government. This in turns raises the debt burden, which hinder economic growth and development.

Political Risk Theory

This theory hypothesises that capital flight is principally a reaction to the apparent political risk related with a given nation. In that capacity, nations encountering war or different types of political insecurity record elevated amounts of capital flight. In order to ensure their value and property, residents

fly out capital. Consequently, the dimension of capital flight recorded for a nation is an element of political risk.

Portfolio Choice Framework

The portfolio choice theory argues that capital flight occurs due to unstable macroeconomic and political environment in developing countries and the concurrent existence of better investment opportunities in advanced countries, like high foreign interest rates (Dim & Ezenekwe, 2014). It takes into account the rate of exchange and interest rate differentials as drivers of capital flight. Under this theory an investor chooses among portfolios that maximise his utility. However, in a situation where there is full information and transaction cost is negligible, the rate of returns on capital is expected to equalise across countries and markets. In this scenario, capital outflows should imply that return on capital is higher abroad than at home. Following the law of diminishing returns, the rate of returns is anticipated to be higher in capital-scare countries and capital should therefore flow into these countries. In sum, portfolio theory explains how risk-averse investors build their portfolio so as to maximise expected returns given the level of associated risk. The portfolio choice theory is however criticised. According to the the Behavavioural economists, the assumptions of investors' rationality, return expectation and the idea that investors do not need to pay any taxes or transaction costs do not hold true.

Capital flows have been identified in the literature as having a number of systemic explanations. However, in the theoretical literature, many researchers have used the portfolio choice framework to explain capital flight phenomenon. The theory explains how capital moves crosswise over nations because of rate of return and risk differentials. Here, focus is set on the appraisal of the risk

on domestic investment and vulnerability that lead people to hold resources abroad as opposed to investing locally.

The first thought of portfolio hypothesis of capital movement can be connected to Williams (1938) The principal idea was interest rate differentials as the cause of capital flows. MacDougal type models of determinants of capital flows within the framework of inter-temporal optimisation, placed emphasis on risk and not only return differential (Tobin, 1958). The writings on capital flight has based on these previous hypotheses. Prominent among these authors included Khan and Hague (1987) who demonstrated that capital streams can emerge in an instance of where financial specialists face an asymmetric danger of appropriation. In this occasion, financial specialists in the domestic economy will send their assets to another country when faced with a higher risk.

Aditionally, Dooley (1988) put emphasis on the idea of uneven risk by extending the concentration to a wide scope of understood assessments coming about because of either an increase in inflation or the depreciation of the exchange rate. 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 caused the authorities to rely more on inflation tax leading to the erosion of the national economy's value of economic resources, hence capital flew to obtain overseas assets.

Alesina and Tabellini (1989) 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 national investment and an increased external debt.

Ndikumana and Boyce (2003) regarded the flight of capital as the result of investors who allocate resources between national and foreign investment based on the comparative risk adjusted rate of exchange at home and overseas in their bid to maximise earnings.

It showed that there will be reduced net risk-adjusted returns in developing nations with a more risky investment setting. This phenomenon has explained why capital keeps on streaming out to outside terrains. Foreign investors can be disheartened to put resources into the local economy if the circumstance of unsafe condition like lack of government integrity demoralises domestic investment.

In understanding the link between government integrity, government size and capital flight, this study adopts the Portfolio Choice framework to analyse the phenomenon.

The link between government intergrity and capital flight

The issue with integrity is that the scope of its definitions are excessively wide; there is a restricted hypothesis base, and intensified with a couple of observational investigations being conducted (Palanski &Yammarino, 2007).

Trevinyo-Rodriguez (2007) gave the definition of integrity as the bridge between character and conduct or behaviour. Other scholars defined integrity as the quality of acting in accordance with generally accepted moral values and norms to further public interest (Six & Huberts, 2008). Integrity and leadership are inseparable concepts that have been the preference subjects of researchers in their studies (Duggar, 2009; Leigh, 2009; Morrison, 2001; Onodugo et al., 2014; Palanski & Yammarino, 2007; Petrick & Scherer, 2003; Poon, 2013; Thoms, 2008). Integrity is a mirror of good governance and culture and also

important indicators of a country's position among others. This is proved by a study that suggests corporate governance values also include lawfulness, integrity, democracy, and effectiveness and efficiency (Bovens, Ten Hart, & Van Twist, 2007).

Morrison (2001) mentions that integrity plays a critical role in global leadership. Without integrity, managers will never secure the goodwill and trust of the organisation. For supervisors to gain the trust of employees, Poon (2013) suggests that the leaders must have benevolence, integrity, and ability. Lee (2005) also agrees that integrity, whether in business or public service may lead to economic efficiency.

Camerer (2006) indicates that the essence of the Public Integrity Index established by Global Integrity is to help control or reduce current corruption, prevent abuses of power, and promote more effective governance. This can be measured through the existence of related laws, the effectiveness in practice of institutions, and practices in a participating country.

The link between government integrity and capital flight is embedded within the social contract theory which points out that as a country is created by people forming a contract with a government, the people are the true masters of state power (Rousseau, 1762). The government as an agent and executor of power, exerts public power in the name of the people, to protect their wealth (Rousseau, 1762). When the government exercises power as an agent of the people, it makes promises to serve the public, to protect the interests of the people and to satisfy the public's expectations through a variety of means.

In the process of exercising power, the government has the duty to honour its promises to the people. Therefore, the relationship between the people

and the government is actually a political principal-agent relationship (Ni, 2002; Ying & Yang, 2004). Obviously, the public is the principal and the government is the agent of the power. This principal-agent relationship is based on the public's trust in the government; the public is willing to entrust administrative power to the government because they believe and expect the government will promote their interests, through public products such as the maintenance of peace and security, property protection, laws and regulations, and the supply of public facilities (Ma & Chen, 2005). In this way, shielding the interests of the general population is the dedication that government makes.

Government integrity means that the government must fulfill its commitment to the public, and keep its word as an agent in the political principal-agent relationship (Zhang, 2015). These actions make a solidarity between government's words and deeds. An investor's primary aim is to make and maximise profit. Following the definition of government integrity, if a government cannot protect the profits that investors gain or may gain from investments possibly through such ways as creating the congenial investment environment aimed at protecting investors' interests, the investors will believe that the government has not fulfilled its commitment, and thus lacks integrity. For example, if the government makes erratic changes in policies or newly appointed government officials ignore the arrangements made by their predecessors, it may be difficult for enterprises to achieve the expected return from their investments. Enterprises experience low investment efficiency and are likely to perceive the government as dishonest, because it has not protected their interests.

In this circumstance, there is an expectation of huge outflows of capital fleeing such an economy towards economies deemed to be yielding much

greater returns and protection of the investors' interest. In addition, to attract more investment from enterprises, local governments may ''open the door to greet, and then close the door to hit." That is, a government may make many commitments and issue a variety of preferential policies to attract more corporate investment but once the investment project is in operation, the government may then act according to its private interests, and may practice bribery or extortion. Many promises are greatly discounted or even forgotten. Enterprises find themselves in the situation where they have been tricked into believing they were closing a good deal, but are in fact trapped in a non-profitable deal that allows the government to extract personal benefits through bribery or other means. Thus, their return on investment is low (Du, Li, Lin & Wang, 2018). In this scenario, the government has no integrity because it has failed to fulfill the commitments it made to the enterprises, and thus the enterprises cannot get optimal investment returns. In addition, domestic investment may be discouraged and hence part of domestic saving is sent abroad owing to the fear that government is not trustworthy as far as its investment policies are concerned.

In situations where policies are dark and murky, or government officials make policies arbitrarily, property may be disputed. Corporate interests are encroached upon by the government if the government fails to fulfill its commitment to create a stable environment. A government without integrity will create many difficulties for enterprises trying to form stable and accurate expectations about the future investment environment. Enterprises cannot make accurate judgments about expected returns on investments in unstable situations. For example, when policies are changed frequently, so that what is legal today is not

legal tomorrow, and things you own today are not yours tomorrow, investors lack stable expectations and the confidence to invest in the future (Zhang, 2015).

In this environment, the optimal investment decision made by enterprises in the current investment environment will not be optimal in the future and so every rational investor will send capital oversea where policies are transparent and government integrity is not compromised. Investment efficiency is not likely to achieve the optimal level. However, we need to note that the local government's integrity is relatively stable over short periods. Enterprises can reasonably expect potential over-investment due to low government integrity. Therefore, enterprises are very cautious to invest in advance, or may even reduce their investment when government integrity is low, which will result in low investment leading to a reduction in economic growth. In brief, enterprises tend to underinvest in the domestic economy due to their rational expectations when government integrity is low. However, these same rational expectations will help enterprises to avoid overinvestment in the future. Therefore, government integrity should have a significant effect on capital flight.

It is important for the government to keep its word, because foreign investors and citizens will choose to invest in local areas only if they believe in the government's policies and regard the government as trustworthy (Zhang, 2015). A government with integrity contributes to a good investment environment, which is essential for local economic development. Lack of integrity disintegrate economic liberty by bringing instability and intimidation into economic relations. Of most noteworthy concern is systemic corruption of government institutions and decision-making by such practices as bribery, extortion,

nepotism, cronyism, patronage, embezzlement, and graft. The lack of government integrity caused by such practices reduces economic vitality by increasing costs and shifting resources into unproductive lobbying activities (Miller & Kim, 2013).

Corrupt governments are characterised by economic instability (Mauro, 1995) and following portfolio diversification hypothesis, wealth holders will be skeptical about the future values of their wealth and will decide to invest in economies with stable policies, hence, capital flows to economies where future value and high rate of return on their investment is ascertained (Raheem, 2015).

Government integrity can significantly boost inclusive growth and sustainable development by assuring fair and efficient resource allocation, stimulating competition and investment, and fostering innovation. Curbing bribery of public officials and promoting responsible business conduct is important to create a level playing field for companies and to create equitable market conditions and an investment climate that provides fertile ground for business development, competition and innovation. For the public interest to prevail in policy making, accountability and integrity in revenue collection, public finance management and service delivery are crucial and encourage equality and prosperity of societies (OECD, 2017).

The link between Government size and capital flight

Government size as defined by Heritage foundation can either be measured using tax burden or government spending as proxies (Miller & Kim, 2013). Tax burden is a composite measure that reflects marginal tax rates on both personal and corporate income and the overall level of taxation as a percentage of

gross domestic product (GDP). All governments impose fiscal burdens on economic activity through taxation and borrowing. Higher tax rates reduce the ability of individuals and firms to pursue their goals in the marketplace and thereby lower the level of overall private-sector activity. In the Index of Economic Freedom, the burden of these taxes is captured by measuring the overall tax burden from all forms of taxation as a percentage of total gross domestic product.

Government spending on the other hand, comes in many forms, not all of which are equally harmful to economic freedom. Some government spending (for example, to provide infrastructure, fund research, or improve human capital) may be considered investment. Government also spends on public goods, the benefits of which accrue broadly to society in ways that markets cannot price appropriately. All government spending, however, must eventually be financed by higher taxation and entails an opportunity cost (Miller & Kim, 2013).

The link between government size (tax burden or government spending) and capital flight can be viewed from the perceptive of the impact of government size and economic growth. According to the literature on government size, there are varied views on the impact of government size and economic growth. Theoretically, one point of view suggests that a larger government size is likely to be detrimental to efficiency and economic growth because, for instance, (i) government operations are often conducted inefficiently, (ii) the regulatory process imposes excessive burdens and costs on the economic system, and (iii) many of government's fiscal and monetary policies tend to distort economic incentives and lower the productivity of the system (Ram, 1986).

At the other extreme, one can identify some points of view that assign to the government a critical role in the process of economic development, and

could argue that a larger government size is likely to be a more powerful engine of economic development. There are several arguments on which the latter point of view is based. These include, besides others, (i) role of the government in harmonizing conflicts between private and social interests, (ii) prevention of exploitation of the country by foreigners, and (iii) securing an increase in productive investment and providing a socially optimal direction for growth and development (Ram, 1986).

Theoretically, the Laffer and Rahn curves can explain the negative impact of government's size on the economy and private investment, because government's size of the majority of countries have reached the point where government's size growth could slow down the economic growth. According to the neoclassical growth theory, the increasing government size, especially if it is financed by debt, causes private investment crowding out effect which may eventually trigger capital flight (Sineviciene & Railiene, 2015). Furceri and Sousa (2011) supported the idea that the decline in government size could lead in growth of capital investment and economic growth in the long-run.

Mo (2008) found that government size has a negative effect oeconomic growth. Larger government size decreases productivity growth which which in turn reduces economic growth through the eduction of private investment. As economic growth is reduced, investors may send capital abroad as reduction in economic growth signifies low returns on investment. Cooray (2008) states that the increase in the size of the government can impede growth due to the negative effects of taxes on incentives, increased rent-seeking and the crowding out effect of private investment

There is a general view in the emprical literature that the decrease in taxes leads to the increase in savings and economic growth because the private sector uses resources more productively than the public sector. If government spending is productive, the larger government size may increase economic growth, and, at the same time, private investment growth. According to Kremmidas (2010), properly used tax policies could create the conditions for stronger economic growth, higher incomes for citizens and higher returns for businesses.

A higher tax burden means that the values of assets will be eroded as firms will be made to pay higher amount of their returns on domestic assets as tax to the government. By way of avoiding these tax burdens firms will prefer transferring assets abroad. Bergh and Henrekson (2011) give some explanations why some countries with high taxes reach high average economic growth: first of all, countries with higher social trust levels are able to develop larger government sectors without negative effect on economy, and, second, countries with large government sector compensate for high taxes and spending by implementing market-friendly policies in other areas. Oto-Peralias and Romero-Avila (2013), Berggren, Bjørnskov and Lipka (2015) also confirm a negative growth effect of government size.

Empirical Evidence on the Determinants of Capital Flight

A number of empirical studies have identified various factors responsible for outflows of capital in developing countries. This can be linked to 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, exchange rate misalignment, fiscal

deficit, increasing external debt, accelerating inflation, slowing economic growth rate, rising taxes, weak financial sector, political instability, weak property right and poor governance.

Macroeconomic factors

Key amongst the indicators of the macroeconomic environment that have been used most frequently in empirical studies of capital flight are external debt, foreign borrowing, the rate of inflation, domestic investment, budget deficit, real exchange rate, and real GDP.

Raheem (2015) used a dataset for 28 countries in SSA between the periods 1996 -2010 to re-examine the determinants of capital flight. Employing static panel technique (OLS, fixed and random effects), he found that GDP has a positive and significant effect on capital flight but the square of GDP showed a negative and a significant effect on capital flight. This implies that as the standard of living of people improves, capital flight will also increase until it reaches a stage where it begins to fall, that is, the relationship between capital flight and GDP has an inverted "U" shape.

This contradicts the finding of Ndikumana and Boyce (2003) who found that economic growth using GDP growth as a proxy, has a negative and significant effect on capital flight. His argument is that higher economic growth is a signal of higher expected returns on domestic investment, which are expected to provide a disincentive for capital flight. Morever, using M2/GDP as aproxy of financial development, Raheem (2015) found a negative and significant coefficient. This can be explained that improvement in financial development reduces capital flight.

Ndiaye (2011) 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 financing domestic investment, thereby reducing capital flight. This confirms study of Hermes, Lensink and Murinde (1998). Howerver, this is in contrast with the studies of Collier et al. (2001) and Ndikumana and Boyce (2003) who used M2/GDP and M3/GDP respectively as proxy to financial development and found that financial development is insignificant in determining capital flight in sub-Sahara Africa. Therefore, they concluded that the influence of financial development on capital flight depends on the choice of the measure of financial development employed.

Anetor (2019), in his analysis of macroeconomic determinants of capital flight in sub Saharan Africa using the ARDL technique found that GDP growth rate has a negative and significant effect on capital flight. The result also revealed that trade openness has a negative and insignificmacroeant relation with capital flight whereas inflation was found to be positive but insignificant in the long-run.

Employing the ARDL model, Forson, Obeng and Brafu-Insaidoo (2017) investigated the long-run and short-run determinants of capital flight in the Ghanaian economy between the periods 1986-2015. The outcome of the study showed that higher domestic real interest rate in relation to foreign interest rate, good governance, financial development, real GDP growth rate, and strong property right have a significant influence in reducing capital flight in both the long-run and short-run. Their finding further reveal that the ratio of external debt to GDP resulted in an increase in capital flight. In addition, the study noted

that lagged external debt to GDP and financial development had a negative and a positive impact on capital flight, respectively, in the short-run.

Muchai and Muchai (2016) in their study of fiscal policy and capital flight in Kenya using the ARDL model for the period of 1970 to 2010, revealed that taxes and external debt had significant influences on capital flight in Kenya. The positive and significant influence of the external debt on capital flight validates the revolving door phenomenon.

Al-basheer, Al-Fawwaz and lawneh (2016) employed the OLS technique to investigate the economic causes of capital flight in the Jordanian economy over the period 2000-2013. The study noted that external public debt, economic openness, taxes, and the previous capital flight significantly determined capital flight from Jordan. The study suggested that the reduction of the level of external debt and the collaboration with the international institution will go a long way in reducing the phenomenon of capital flight in Jordan.

Liew, Mansor and Puah (2016) conducted an empirical inquiry on the period 1980-2010 into the macroeconomic causes of capital flight in the Malaysian economy. Using the model of autoregressive distributed lag (ARDL), it was discovered that in the long run, political risk and financial crisis had a positive and significant impact on capital flight.

An econometric analysis of the determinants of capital flight in Bangladesh between 1973 and 2013 was carried out by Uddin, Yousuf and Islam (2017). They used OLS and observed that foreign direct investment flows, internal debt, interest rate differentials, foreign reserves, and present account surplus are the main causes of capital flight.

The determinants of capital flight from Trinidad and Tobago between 1971 and 2011 were examined by (Salandy & Henry, 2018). Using the estimation methods of OLS and the Generalised Moments Method (GMM), the research observed that the main causes of capital flight include lagged external debt, lagged capital flight, external debt, GDP development, interest rate differential and surplus liquidity.

Obidike, Uma, Odionye and Ogwuru (2015) discovered Nigeria's economic growth and development to have a substantial adverse effect on capital flight. Researchers like Alijore (2010), Ndikumana and Boyce (2011), Olugbenga and Alamu (2013) corroborate this finding.

Empirically Ndikumana and Boyce (2011) discover no statistically significant impact on capital flight from Africa from the interest rate differential. They conclude that conventional portfolio choice theory can not properly explain capital flight from African nations. There is therefore a increasing need for further explanations.

Kar (2011) finds clear proof that there is a vibrant interaction between illegal outflows and the underground economy driving each other. Kar (2012) also believes that macroeconomic instability such as large fiscal deficits inflation and external debt can result in loss of confidence in the economy causing exchange rate depreciation.

Ndikumana and Boyce (2011) found a statistically significant and economically large effect of external borrowing on capital flight. Their finding revealed that up to 67 cents out of each dollar borrowed abroad between 1970 and 2004 have illicitly left sub-Saharan African countries. They also noted that the causal relationships between capital flight and external debt can run both ways.

This confirms the finding of Collier, Hoeffler and Pattillo (2004) report a very similar result with a one-dollar increase in the stock of debt leading to 3.2 cents of capital flight.

Ndikumana et al. (2013) 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. Al-Fayoumi, Alzoubi and Abuzayed (2012) examined the detrminants of capital flight in seven Middle East and North Africa using OLS Fixed effect Random effect and Seemingly Unrelated Regression found that previous year capital flight have spillover effect. This implies that amount of capital flight in previous year influence capital flight in the current years. This confirms the study of Ndikumana and Boyce (2003).

In terms of rate of return differentials capital flight may occur simply because the returns on assets are higher abroad as compared to assets held domestically. Most studies on the determinants of capital flight take this into account by adding a variable that measures the (after tax) real interest rate differential. It is computed as the domestic real interest rate minus the average US Government bond rate. The linkage between capital flight and interest rate differentials should be negative. This is because a higher domestic interest rate as against foreign rate will imply capital flight reversal.

Low rates of return to capital would push or repel capital to locations where the rates of return are relatively higher and vice versa. Two measures of rates of return to capital have been used in the literature. The first is a simple differential rate of return that may either be inter-country differences in nominal

returns (Cuddington, 1987; Harrigan & Yusop, 2002) or real returns (Boyce, 1992; Demir, 2004). The second is the differential rate of return plus some foreign exchange adjustment (Pastor, 1990; Hermes & Lensink 1992; Vos, 1992). For either specification the empirical evidence is rather mixed. Arguably the second version is the more accurate indicator as the first version may not capture the open-economy effects.

Pastor (1990) and Vos (1992) found no statistically significant association between taxes and capital flight. Hermes and Lensink (1992) obtained a positive linkage between the uncertainty of tax policy (i.e. tax variability) and capital flight. Ndikumana and Boyce (2003) contended that it may be problematic to characterise government performance using a single indicator such as government budget deficit or taxation. But the more important problem is that data quality for taxes is often suspect so empirical analysis would not reveal the true relationship between the indicator and capital flight. None of the revolving door papers uses taxes or uncertainty of tax policy as an indicator.

Fofack and Ndikumana (2014) found no impact of interest rate differential on capital flight using a panel of 39 countries from Africa from the period 1970 to 2010.

Political Governance and Institutional factors

Political risk and other governance variables is widely believed to play a significant role in the capital hemorrhage experienced by sub-Saharan African countries over the past decades.

Osei-Assibey et al. (2018) examined the effect of corruption and institutional governance on capital employing Fixed, Random and GMM estimations they found that corruption has positive and significant effect on capital from from subsahran Africa between the period 2000 and 2012.

Using a panel vector error correction model on determining illicit financial flows from sixty developing countries, Rahman and Turpin (2019) showed that political stability reduces illicit financial outflows. This confirms the studies of Fedderke and Liu (2002) and Collier, Hoeffler and Pattillo (2004) who found that political stability is associated with lower capital flight.

Ali and Walters (2011) show that capital flight from Sub-Saharan Africa is explained by institutional factors. Controlling for structural features, they show that private capital outflows from Sub-Saharan Africa were explained by factors beyond macroeconomic policy distortions. indicators and capital flight

Le and Zak (2006) presented a portfolio choice model that relates capital flight to return differentials risk aversion and three types of risk: economic risk political instability and policy variability. In their estimation of the equilibrium capital flight equation for a panel of forty-five developing countries over sixteen years all three types of risk had a statistically significant impact on capital flight. Quantitatively political instability was the most important factor associated with capital flight. Cerra, Rishi and Saxena (2008) also provide empirical evidence to affirm the notion that macroeconomic policy distortions alone cannot fully explain capital flight from developing countries. Orkoh, Claassen and Blaauw (2017) using fixed and random effects on a balanced panel data on sub-Saharan

Africa indicated that an increase in corruption control and political stability reduces illicit financial flows accounted for by trade misinvoicing by an average of US$ 44.3 million and US$ 20.5 resoectively.

UNODC (2011) argues that a reputation for integrity is one of the most valued assets by investors and receiving illicit funds can undermine investors' trust in receiving countries thereby weakening the financial system. In a similar study Heggstad and Fjeldstad (2010) argued that banks should not be regarded as passive players when analysing capital flight as they play an active role in facilitating it.

Haken (2011) indicates that cross-border passage of criminal money is facilitated by the global shadow financial system enabling the movement of other illicit proceeds from corruption and commercial tax evasion. He stressed that if illicit outflow of funds had not taken place GDP per capita in Africa would have been roughly 16 per cent higher Collier et al. (2001). Ndiaye (2011) employing an econometric analysis indicated that in the context of poor governance and bad institutional quality external debt aid and natural resources revenues are used in part to finance 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 Du and Wang (2018), Lawanson (2006) and Ndiaye (2009).

Corruption has also been identified as an important factor in capital flight from sub-Saharan Africa. Corruption facilitates both the illegal acquisition and the illegal transfer of private assets. Moreover, in an environment characterised by weak accountability and governance private agents cannot fully internalise the costs of corruption and may choose to hold assets abroad as a means of hedging against uncertainty. High capital flight is symptomatic of an environment characterised 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 & Boyce, 2011). 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 corrupt government officials.

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 &Ndikumana, 2012). The phenomenon is as a result of poor governance and inadequate management capabilities.

Synthesis of the literature and the existing gap

Following the discussion in the literature, a number of studies concentrated on the determinants and measurements of capital flight. The literature reviewed so far shows that determinants of capital flight are innumerable and

their impacts and significance are variable and region specific. However, amongst the list of determinants of capital flight this current study identifies a loophole and therefore attempts to fill this gap left in literature by exploring the roles of government integrity and government size both of which have not received attention in the literature as far as capital flight is concerned.

From theoretical perspective it could be seen that lack of government integrity contributes to a domestic environment that deters investment and induces capital flight. Unfortunately empirical research on the role of government integrity on capital flight is rather missing. Even though the literature has broadly discussed the issue of integrity and a few studies including a study by Du et al. (2018) which looks at Government integrity and corporate investment efficiency the link between government integrity and capital flight has not been explored in the extant literature.

Also on the determinant of capital flight studies such as Le and Rishi (2006) and Osei-Assibey et al. (2018) examine the link between corruption and capital flight in sub-Saharan Africa. The findings from their studies corroborate the fact that corruption has a significant effect on capital flight. However, this current study views corruption only as a minute component of a broader concept. Government integrity rather needs to be considered so as to provide a broader perspective on the issues of capital flight as far as issues of corruption are concerned in sub-Saharan Africa. A broader scope rather than a smaller spectrum of corruption is warranted because focus on the moral dimension of individuals organisations and even countries by definition begs for a broad framework (de Graaf, Huberts & Strüwer, 2018).

Albeit, it is certainly worthwhile to know more about the amount of bribery and favoritism in government and administration, it is also important to discover more about such issues as public trust in politicians irregular payments and bribes, transparency of government policy - making, absence of corruption, perception of corruption and government and civil service transparency as used by Heritage foundation in measuring government integrity which is one of the main thrusts of this study. In lieu of the above, this current study seeks to fill in the lacuna created in literature by examining the effect of government integrity on capital flight in sub-Saharan Africa.

From the literature reviewed so far, even though several studies as stated above looked at the impact of government size and economic growth there is no study that link government size and capital flight and so this current study attempts to fill that gap. This is because investors respond to any changes in growth so that an increased growth signifies a potential higher returns and vice versa all things being equal. This will have a toll on whether or not domestic capital flee.

Also few studies including studies such as Enyi (2014) concludes that tax rates has positive impact on capital flight. In other words increase in tax rates have positive impact on capital flight (Pastor Jr, 1990) and (Vos, 1992) find no statistically significant association between taxes and capital flight. Hermes and Lensink (1992) obtain a direct relationship between the uncertainty of tax policy and capital flight. These studies produced mixed result regarding taxes and capital flight. However, a gap still exist in terms of knowing the amount of tax burden that triggers capital flight.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter presents the methodology for the study. It discusses the research design, the data type and source, the methods and tools of analysis employed, empirical specification of the model, description of variables employed in the model, diagnostic tests, an a priori expectation and the estimation procedure used.

Research Design

Given the objectives of the study, this study adopts the explanatory research under the quantitative research design in addressing the hypotheses of the study. Futhermore, this study is also situated in the positivist tradition. The positivist tradition assumes that the objective knowledge systematically pursued by researchers is based on relational laws (Acquaah, Zoogah & Kwesiga, 2013). Also, the positivist philosophy assumes that knowledge is externally objective and researchers take strictly neutral and detached positions towards the phenomenon being investigated. Such a stance ensures that the values and biases of the researcher do not affect the study and thus threaten its validity (Eberhardt & Teal, 2011). Various statistical tests such as the Panel unit root tests, cointegration tests and Hausman tests were employed to minimise the possible threat to validity if not eliminated completely.

Reliability in the positivist philosophy encompasses the extent to which the result from a study's research are met. Positivist research can exhibit a high likelihood of reliability enabling confident replication or repetition in similar settings.

Theoretical model specification

By considering government integrity as a contributor to domestic investment risk, this study considers an economy, say a country in sub-Saharan Africa with a vast number of infinitely-lived identical agents. The economic agents optimise their consumption patterns between investment in the domestic economy or in the foreign country. This study assumes 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 also normalised to unity and the assumption of a single homogenous commodity produced in both countries. Investment in the domestic economy is denoted by K_t at time *t*. This investment earns a rate of return R^h. It is assumed that in the domestic economy, investment is risky due to lack of government integrity while that of the foreign investment earn a risk-free rate of return R^f when agents invest K_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 maximises utility of his wealth by solving:

$$Max_{W_t}\, E\sum_{t=0}^{\infty} B^t U\,(W_t)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Subject to

$$W_t = (1 + R^h)\, Kt + (1 + R^f)\, Kt^f - K_{t+1} - K^f_{t+1}\ldots\ldots\ldots\ldots(2)$$

Where U (w) is strictly increasing continuous and concave.

Solving the necessary and sufficient conditions for an optimum the utility maximisation problem (1) yields

$$K_{t+1}^{*} = \frac{E(R_{t+1}^{h} - R^{f})}{\alpha VAR(R_{t+1}^{h})}\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where $VAR(R_{t+1}^{h})$ is the variance of the return on domestic investment and the risk aversion is $\alpha = - \frac{E[U''(W_{t+1})]}{E[U'(W_{t+1})]}$

The assumption that is made here is that individuals in different countries are confronted with solving the same problem. The study denotes capital outflows and capital inflows from equation (3) as $K_{t+1}^{fo} and\ K_{t+1}^{f*}$ respectively so the net capital flight is defined as F_{t+1}^{f}=K_{t+1}^{fo}+ K_{t+1}^{f*}. Then the average capital ***A*** invested in the domestic country from time t to time t +1 is given by

$$A_{t+1}= K_{t+1}^{*}+ F_{t+1}^{f} \text{..... .....(4)}$$

Equation (4) depicts that in equilibrium, the capital stock from the domestic country consists of domestic investment and net foreign investment where both depend on the political and economic characteristics of the domestic and foreign markets.

Rearranging equation 4 and substituting equation 3 into equation 4 yields an equilibrium capital flight as

$$F_{t+1}^{f}= A_{t+1}- \frac{E(R_{t+1}^{h}-R^{f})}{\alpha VAR(R_{t+1}^{h})} \text{..... (5)}$$

Equation 5 indicates that a higher capital flight is associated with lower expected return and higher domestic investment risk.

To obtain capital flight as a ratio of physical capital stock equation 5 is divided by Vt as below:

$$\frac{F_{t}^{f}}{A_{t}} = 1 - \frac{E(R_{t}^{h}-R^{f})}{\alpha A_{t} VAR(R_{t}^{h})} \text{..... (6)}$$

Given that our main interest is in the determinants of domestic investment risk, the study now looks at the determinants of domestic investment risk which happens to be the study's main interest and in so doing the study breaks

down the variance in the equilibrium capital flight. The variation associated with the returns is made up of the political instability δ_{pt}^2, economic risk , $\delta_{et}^2$and policy uncertainty $\delta_{\tau t}^2$. The domestic investment risk now becomes:

$$VAR(R_t^h) = \delta_{pt}^2+\delta_{et}^2 + \delta_{\tau t}^2 + Govtinteg_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

From this perspective, Equation (7) shows that the variance of inflation measures the domestic economic risk and government integrity is added as contributor to domestic economic risk.

Lastly, the study inculcates the decomposed variance of returns in equation (7) into (6) to get the capital flight equation to be estimated as

$$KF_t = \beta_0 + \beta_1(R_t^h - R^f) + \beta_2 Govtinteg_t+\beta_3\delta_{pt}^2+\beta_4\delta_{pt}^2 + \beta_5\delta_{pt}^2 + \varepsilon_t \ldots..(8)$$

Equation (8) indicates that given the return differential, economic risk factors, political and policy risk factors, uncertainties and government integrity can influence capital flight by either raising or lowering the domestic investment risk. From the above theoretical analysis of portfolio choice theory, a higher capital flight occurs when expected returns domestically are low and domestic economic risk is high. Thus, lack of integrity-driven funds move from a country because governments that lack integrity are feared with the notion that they will not provide a stable and conducive environment for investment. This lack of government integrity-driven money explains the earlier statement that lack of government integrity 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 (Tanzi & Davoodi, 1998). These authors reiterated that corruption (lack of government integrity) 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.

General panel model specification

Following the models of Baek and Yang (2010) and Ndikumana et al. (2013) with few modifications (inclusion of government integrity and government size variables) to suit the objectives of this study, the equation below is specified:

$$KF_{it}=\sum_{j=1}^{q}\theta_j KF_{it-j}+\alpha_1 Govtinteg_{it}+\alpha_2 Govspend_{it}+\alpha_3 Taxburden_{it}+\beta' X_{it}+\varepsilon_{it} \quad (9)$$

Where KF_{it} represents capital flight, measured in millions of constant US dollars for each country i in year *t*; (j=1……q is the number of lags). $Govtinteg_{it}$ is the Government integrity, $Govspend_{it}$ *and* $Taxburden_{it}$ are proxies for government size and X is a vector of control variables; 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 ν_{it} thus; $\varepsilon_{it}=\mu_i+\nu_{it}$. Where *i* represents each country understudy, *t* denotes the number of years under consideration. Among the control variables the study explores are the macroeconomic environment (using GDP growth rate and inflation as proxies), trade openness (sum of import and export as %of GDp), inrest rate differential and domestic credit to the private sector is used as proxy of financial development.

Estimation Techniques

Several estimation techniques have been employed in capital flight literature However the adoption of a particular estimation techniques depends on

the assumptions of the data sample size and also the nature of the phenomenon understudy(dynamic or static).

The study employs a panel ARDL model based on the three estimators: the mean group (MG) of Pesaran and Smith (1995), pooled mean group (PMG) and dynamic fixed effect (DFE) estimators developed by Pesaran et al. (1999). The standard panel models such as pooled OLS, fixed effects and random effects models have some serious shortcomings. For instance, pooled OLS is a highly restrictive model since it imposes common intercept and slope coefficients for all cross sections and thus disregards individual heterogeneity. The fixed effects model on the other hand, assumes that the estimator has common slopes and variance but country-specific intercepts. Both the cross sectional and time effects can be observed through the introduction of dummy variables especially in two-way fixed models. However, this estimator faces severe problems due to the loss of degrees of freedom (Baltagi, 2008). Furthermore, the parameter estimates produced by the fixed effects model are biased when some regressors are endogenous and correlated with the error terms (Kinoshita & Campos, 2008).

In contrast to the fixed effects model, the random effects model is relatively less problematic in terms of degrees of freedom by assuming common intercepts. Nevertheless, the random effects model has another limitation in that it considers the model to be time invariant. This implies that the error at any period is uncorrelated with the past. present and future known as strict exogeneity (Arellano, 2003). In real life this assumption is very often invalid. Additionally, according to Loayza and Ranciere (2006) static panel estimators do

not take advantage of the panel dimension of the data by distinguishing between the short and long-run relationships.

Furthermore, Holly and Raissi (2009) argue that conventional panel data models assume homogeneity of the coefficients of the lagged dependent variable. This can lead to serious bias when in fact the dynamics are heterogeneous across the cross section units.

In summary, the static panel approaches are unable to capture the dynamic nature of the data which is a fundamental issue in the empirical capital flight literature. In addition, these estimators can only deal with the structural heterogeneity in the form of random or fixed effects but impose homogeneity in the model's slope coefficients across countries even when there may be substantial variations between them.

Dynamic panel model

According to Roodman (2006), when the data feature a large numbers of countries (N) relative to the time period (T), the GMM-difference estimator proposed by (Arellano & Bond, 1991) and the GMM system estimator by Arellano and Bover (1995), (Blundell & Bond, 1998) work efficiently. These two estimators are typically used to analyse micro panel datasets (Eberhardt, 2012). However, a wide range of recent literature have applied GMM techniques to macro panel data including the area of capital flight (Arcand, Berkes & Panizza, 2012). Roodman (2006) argues that in the small N and large T case the GMM estimators are likely to produce spurious results for two reasons. First small N might lead to unreliable autocorrelation test.

Second as the time span of the data gets larger the number of instruments will get larger too. This affects the validity of the Sargan test of over identification restriction and cause the rejection of the null hypothesis of the exogeneity of instruments. Hence, we have doubts about the reliability and consistency of the results obtained using GMM. Another point is that GMM captures only the short-run dynamics and the stationarity of the variables tends to be ignored because these models are mostly restricted to short time series. Thus it is not clear whether the estimated panel models represent a structural long–run equilibrium relationship or a spurious one (Christopoulos & Tsionas, 2004). More importantly Kiviet (1995) argues that in GMM estimation the imposition of homogeneity assumptions on the slope coefficients of lagged dependent variables could lead to serious biases. These estimation procedures are likely to produce inconsistent and misleading long-run coefficients unless the slope coefficients are indeed identical (Pesaran & Smith 1995; Pesaran, 1997; Pesaran et al., 1999).

Based on Pesaran et al. (1999), the dynamic heterogeneous panel regression can be incorporated into the error correction model using the autoregressive distributed lag ARDL (p q) technique and stated as follows (Loayza & Ranciere, 2006):

$$\Delta(KF_{it})=\sum_{j=i}^{p-1}\gamma_j^i\Delta KF_{it-j}+\sum_{j=0}^{q-1}\delta_j^i\Delta X_{it-j}+\varphi^i[KF_{it-1}-\{\beta_0^i+\beta_1^i(X_{it-1})\}]+\epsilon_{it} \quad (10)$$

Where KF is capital flight, X is a set of independent variables including government integrity and government size (proxied by either government spending or tax burden) and all the control variables. γ *and* δ represent the short-run coefficients of lagged dependent and independent variables respectively. β are the

long-run coefficients and φ is the coefficient of speed of adjustment to the long run equilibrium. The subscripts i and t represent country and time respectively. The term in the square brackets of equation (10) contains the long-run capital flight regression which includes the long-run coefficients of X vectors which is derived from the equation 11 below

$$(y_i)_t=\beta_0^i + \beta_1^i(X_i)_t+ \mu_{it} \quad \text{where } \mu_{it}\sim I(0) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(11)$$

Equation (10) can be estimated by three different estimators: the mean group (MG), model of Pesaran and Smith (1995), the pooled mean group (PMG) estimator developed by Pesaran et al. (1999) and the dynamic fixed effects estimator (DFE). All three estimators consider the long-run equilibrium and the heterogeneity of the dynamic adjustment process (Demetriades & Law, 2006) and are computed by maximum likelihood. Pesaran and Smith (1995) Pesaran (1997) and Pesaran et al. (1999) present the autoregressive distributed lag (ARDL) model in error correction form as a relatively new cointegration test.

However, here the emphasis is on the need to have consistent and efficient estimates of the parameters in a long-run relationship. According to Johansen (1995); Philipps and Hansen (1990), the long-run relationships exist only in the context of cointegration among variables with the same order of integration. Nevertheless, Pesaran et al. (1999) argue that panel ARDL can be used even with variables with different order of integration irrespective of whether the variables under study are I (0) or I (1). In addition, both the short-run and long-run effects can be estimated simultaneously from a data set with large cross-section and time dimensions. Finally, the ARDL model especially PMG and MG provides consistent coefficients despite the possible presence of

endogeneity because it includes lags of dependent and independent variables (Pesaran et al., 1999). For further understanding of the key features of the three different estimators in the dynamic panel framework, the study presents the assumptions relating to each estimator under the estimation technique section.

Pooled Mean Group (PMG) Estimator

The main characteristic of PMG is that it allows short-run coefficients including the intercepts, the speed of adjustment to the long-run equilibrium values and error variances to be heterogeneous country by country while the long-run slope coefficients are restricted to be homogeneous across countries. This is particularly useful when there are reasons to expect that the long-run equilibrium relationship between the variables is similar across countries or at least a sub-set of them. The short run adjustment is allowed to be country-specific due to the widely different impact of the vulnerability to external shocks, stabilisation policies, fiscal and monetary policy and so on. However, there are several requirements for the validity, consistency and efficiency of this methodology.

First, the existence of a long-run cointegration among the variables of interest requires that the coefficient of the error–correction term to be negative and not lower than -2.

Second, an important assumption for the consistency of the ARDL model is that the resulting residual of the error-correction model be serially uncorrelated and the explanatory variables can be treated as exogenous. Such conditions can be fulfilled by including the ARDL (p q) lags for the dependent (p) and independent variables (q) in error correction form.

Third, the relative size of T and N is crucial since when both of them are relatively large this allows us to use the dynamic panel technique which helps to avoid the bias in the average estimators and resolves the issue of heterogeneity. Eberhardt and Teal (2011) argue that the treatment of heterogeneity is central to understanding the capital flight process. Therefore, failing to fulfil these conditions will produce inconsistent estimation results.

Mean Group Estimator

The second technique (MG) introduced by Pesaran and Smith (1995) calls for estimating separate regressions for each country and calculating the coefficients as unweighted means of the estimated coefficients for the individual countries. This does not impose any restrictions. It allows for all coefficients to vary and be heterogeneous in the long-run and short-run. However, the necessary condition for the consistency and validity of this approach is to have a sufficiently large time-series dimension of the data. The cross-country dimension should also be large (to include about 20 to 30 countries). Additionally, for small N the average estimators in this approach are quite sensitive to outliers and small model permutations (Favara, 2003).

Dynamic Fixed Effects Estimator

Finally, the dynamic fixed effects estimator (DFE) is very similar to the PMG estimator and imposes restrictions on the slope coefficient and error variances to be equal across all countries in the long run. The DFE model further restricts the speed of adjustment coefficient and the short-run coefficient to be equal too. However, the model features country-specific intercepts. DFE has

cluster option to estimate intra-group correlation with the standard error (Blackburne & Frank, 2007). Nevertheless, Baltagi, Gri and Xiong (2000) point out that this model is subject to a simultaneous equation bias due to the endogeneity between the error term and the lagged dependent variable in case of small sample size.

Empirical Model specification

Specifically, the study sets up the following equations step-wisely. In equation 12, while controlling for the other variables, the study estimates the individual effect of government integrity on capital flight. Here, the a priori expectation is that the coefficient of the government integrity be negative both in the short and long run respectively (that is $\alpha_1 < 0 \; and \; \beta_1 < 0$).

$$\Delta(KF_{it}) = \gamma_j^i \Delta KF_{it-1} + \alpha_1 \Delta Govinteg_{it} + \alpha_2 \Delta Inflation_{it} + \alpha_3 \Delta GDPgrowth_{it} + \alpha_4 \Delta Domesticcredit_{it} + \alpha_5 \Delta Interestratediff_{it} + \alpha_6 \Delta Tradeopenness_{it} + \varphi^i [KF_{it-1} - \{\beta_0 + (\beta_1 Govinteg_{it} + \beta_2 Inflation_{it} + \beta_3 GDPgrowth_{it} + \beta_4 Domesticcredit_{it} + \beta_5 Interestratediff_{it} + \beta_6 Tradeopenness_{it})\}] + \epsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (12)$$

In equation 13, the study estimates individual effect of Government spending while controlling for the other variables. expected $\alpha_1 < 0, \beta_1 < 0$ both in the short and the long run respectively.

$$\Delta(KF_{it}) = \gamma_j^i \Delta KF_{it-1} + \alpha_1 \Delta Govspending_{it} + \alpha_2 \Delta Inflation_{it} + \alpha_3 \Delta GDPgrowth_{it} + \alpha_4 \Delta Domesticcredit_{it} + \alpha_5 \Delta Interestratediff_{it} + \alpha_6 \Delta Tradeopenness_{it} + \varphi^i [KF_{it-1} - \{\beta_0 + (\beta_1 Govspending_{it} + \beta_2 Inflation_{it} + \beta_3 GDPgrowth_{it} + \beta_4 Domesticcredit_{it} + \beta_5 Interestratediff_{it} + \beta_6 Tradeopenness_{it})\}] + \epsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (13)$$

For equation 14, the effect of tax burden is estimated and it is expected to be positively related to capital flight both in the short and long run.That is $\alpha_1 > 0,\ \beta_1 > 0$.

$$\Delta(KF_{it}) = \gamma_j^i \Delta KF_{it-1} + \alpha_1 \Delta \text{Taxburden}_{\text{it}} + \alpha_2 \Delta Inflation_{it} + \alpha_3 \Delta GDPgrowth_{it} + \alpha_4 \Delta Domesticcredit_{it} + \alpha_5 \Delta Interestratediff_{it} + \alpha_6 \Delta Tradeopenness_{it} + \varphi^i [KF_{it-1} - \{\beta_0 + (\beta_1 Taxburden + \beta_2 Inflation_{it} + \beta_3 GDPgrowth_{it} + \beta_4 Domesticcredit_{it} + \beta_5 Interestratediff_{it} + \beta_6 Tradeopenness_{it})\}] + \epsilon_{it} \ldots\ldots\ldots\ldots\ldots (14)$$

Finally, in the 15th equation, all the 3 main variables of interest are included into the model (this was possible because multicollinearity issues are not detected)

$$\Delta(KF_{it}) = \gamma_j^i \Delta KF_{it-1} + \alpha_1 \Delta Govinteg_{it} + \alpha_2 \Delta Inflation_{it} + \alpha_3 \Delta GDPgrowth_{it} + \alpha_4 \Delta Domesticcredit_{it} + \alpha_5 \Delta Interestratediff_{it} + \alpha_6 \Delta Tradeopenness_{it} + \alpha_7 \Delta Govspending_{it} + \alpha_8 \Delta \text{Taxburden}_{\text{it}} + \varphi^i [KF_{it-1} - \{\beta_0 + (\beta_1 Govinteg_{it} + \beta_2 Inflation_{it} + \beta_3 GDPgrowth_{it} + \beta_4 Domesticcredit_{it} + \beta_5 Interestratediff_{it} + \beta_6 Tradeopenness_{it} + \beta_7 Govspending_{it} + \beta_8 \text{Taxburden}_{\text{it}})\}] + \epsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (15)$$

The study estimates the equations 12-15 using the PMG, MG and the DFE estimators. In addition to the signs of the three main variables, the study expects that inflation, domestic credit to the private sector (proxy for financial development) should be positively related to capital flight while GDP growth rate and interest rate differentials are expected to be negatively related to capital flight. For trade openness, either signs is expected.

Model Selection

The study estimates equation (12-15) step wisely for the whole sample with PMG, MG and DFE estimators and then applies the Hausman test to see whether there are significant differences amongst these three estimators. After that the countries are grouped according to income categories to capture if there is a differential impact of government integrity, tax burden and government spending upon capital flight according to the income groups in our sample of sub-Saharan African countries (lower-middle income, lower income and upper middle income).

Firstly, the study performs a stepwise estimations for the full sample of 20 countries comprising 10 lower income countries, 7 lower middle income countries and 3 Upper Middle Income countries.

Secondly, the study analyses the interacting effects government integrity and government spending (proxy for government size) on capital flight. Also, analysis of the interacting effect of government integrity and taxburden on capital flight from sub-Saharan Africa is carried out.

Finally, the study carries out separate estimations for each of the 3 main income groups that make up the panel with the same variables as in the full sample to compare the effects of government integrity, tax burden and government spending on capital flight among the 3 income groups. For each of the sub groups, the study anticipates that the countries in same group to be homogenous with respect to capital flight, government integrity, government spending and tax burden. However, in the short run, there is bound to be country-specific heterogeneity due to the effect of local laws and regulations. The PMG estimator offers more efficient estimates as compared to the MG estimators under the

assumption of long-run homogeneity. Moreover, the time span for this study is 20 years and the MG estimator may lack degrees of freedom. Consequently, the PMG estimation is more relevant for this analysis.

However, to identify the choice among the MG, PMG and DFE methods, the Hausman test is used to test whether there is a significant difference between these estimators. The null of this test is that the difference between PMG and MG or PMG and DFE estimation is not significant. If the null is not rejected the PMG estimator is recommended since it is efficient. The alternative is that there is a significant difference between PMG and MG or PMG and DFE. If there are outliers the average estimator may have a large variance and in that case the power of the Hausman test would be very small. The PMG will be used if the p-value is insignificant at the 5 percent level. On the other hand, if it happens to have a significant p-value, then the use of a MG or DFE estimator is appropriate. Another important issue is that ARDL lag structure should be determined by some consistent information criterion. Based on the Schwartz Bayesian criterion the study imposes the following lag structure (1, 0, 0, 0, 0, 0, 0, 0, 0) for capital flight ,government integrity, tax burden, government spending, inflation interest rate differential, GDP growth rate and trade openness respectively. The lag structure was selected based on the most common lags of the variables for all the 20 countries that make up the panel.

Definition/Measurement and Expected Signs of Variables

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 and Boyce (2012).

Measurements of Capital Flight

Generally, capital flight can be measured using the direct and indirect methods. As such, the literature on the subject matter abounds with several capital flightmeasures. Cuddington (1986) measurement which is also known as "hot money" measure of capital flight is a direct method in measuring capital flight. Cuddington (1986) and Schneider and Neumaier (2001) presume that capital flight emanates from "errors and omissions" and "short-term capital outflows from non-bank private sector" in the balance of payments statistic. This measurement proposes that capital flight goes unrecorded due to the illicit nature of the capital movements across the country. As compared to the other two measurements, it is the narrowest measure of capital flight.

The World Bank (1985) method compares the sources of finance (the change in external debt and net foreign direct investment) with the uses of finance (a current account deficit and the change in official reserves) in defining the capital flight. In this approach, capital flight is defined as the difference between capital inflows and foreign exchange outflow because it assumes that any inflow that does not finance the current account deficit or adds to reserves flees the country in form of capital flight (see Ndikumana & Boyce, 1998; Ndikumana & Boyce, 2001; Ndikumana & Boyce, 2003). This definition is also termed as "residual method" or "indirect method" and it is a broader definition of measurement of capital flight.

In addition, Morgan Guaranty Trust Company (1986) measure is also another measure which is similar to the World Bank's with one modification in which it excludes the acquisition of foreign assets by banks.

Following this method the acquisition of foreign assets by commercial banks are not considered as capital flight however the foreign asset holdings by other economic and financial units are classified as part of capital flight (Kirton, 1987).

Estimating capital flight

This thesis adopts the most recent capital flight estimates in the work of (Ndikumana & Boyce, 2018). This new measure of capital flight provides an update to the earlier measures. The new updates includes two additional components namely Portfolio investment (PI) and other investment (OI) into the capital flight measurement. However, the new updates excludes an adjustment for unrecorded remittances due to lack of updated benchmark data that can be compared to the flows reported in the Balance of Payments.

Therefore, the revised algorithm for computation of capital flight *KF* is the following:

KF = CDEBTADJ + FDI + PI + OI – (CAD+CRES) + MISINV

where *CDEBTADJ* is change in debt stock adjusted for exchange rate fluctuation, interest arrears and debt forgiveness, *FDI* is foreign direct investment , *PI* is portfolio investment, *OI* is other investment, *CAD* is the current account deficit, *CRES* is net additions to reserves and *MISINV* is net trade misinvoicing.

In this current study, the log of capital flight is considered so as to control for the outliers present in the estimates of capital flight. Therefore capital flight is given by

$$kf = Ln(KF)$$

Explanatory Variables

Government Integrity

Government integrity is one of the main variable of interest. This study adopts the the Heritage foundation's definitions and measurement of government integrity index which comprises six components namely public trust in politicians, irregular payments and bribes, transparency of government policy-making, absence of corruption, perception of corruption and government and civil service transparency. Each of these sub-factors is derived from numerical data sets that are normalised for comparative purposes using the following equation:

Subfactor scorej = 100 x (Subfactor - maxsubfactor*j*)/(SubfactorMax - subfactor Min) where Subfactor *j* represents the original data for country *j*; SubfactorMax and SubfactorMin represent the upper and lower bounds for the corresponding data set; and Sub-factor Score *j* represents the computed sub-factor score for country j. According to Miller and Kim (2013) and Heritage Foundation (2018) government integrity is defined as freedom from corruption. In other words, corruption is defined as failure of integrity. This follows that where corruption is highest government integrity is least and vice versa. Government integrity is measured based on the measurement of the Heritage Foundation and it is measured on the scale of zero to hundred where zero means no government integrity (highest level of corruption) and a 100 means that government integrity is highest (no corruption). The study follows tune with the definition of government integrity as freedom from corruption and a negative relationship is expected between government integrity and capital flight.

Government Size

Government size is a index defined by either tax burden or government spending (Heritage Foundation, 2018).

Tax burden

Tax burden is a index which measures the marginal tax rates on both personal and corporate income and the overall level of taxation (including direct and indirect taxes imposed by all levels of government) as a percentage of gross domestic product (GDP). The component score is derived from three quantitative sub-factors: the top marginal tax rate on individual income, top marginal tax rate on corporate income and the total tax burden as a percentage of GDP. Each of these numerical variables is weighted equally as one-third of the component score. Tax burden scores are calculated with a quadratic cost function to reflect the diminishing revenue returns from very high rates of taxation. The data for each sub-factor are converted to a 100-point scale using the following equation:

$Tax\ burden_{ij}$ =100- α$(Factor_{ij})^2$

where $Tax\ burden_{ij}$ represents the tax burden in country i for factor j; $Factor_{ij}$ represents the value (a percentage expressed on a scale of 0 to 100) in country i for factor j. The scale of zero implies no tax burden while 100 means highest level of tax burden. The study expects a positive relationship between tax burden and capital flight.

Government Spending

The government spending variable is an index which captures the burden imposed by government expenditures which includes consumption by the

state and all transfer payments related to various entitlement programmes. The equation used for computing a country's government spending score is:

$$\mathrm{GE_i} = 100 - \alpha(Expenditures_{ij})^2$$

Where GE_i represents the government expenditure score in country i; $Expenditures_{ij}$ represents the average total government spending at all levels as a percentage of GDP for the most recent three years. The study expects a negative relationship between government spending and capital flight.

GDP growth rate

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). For gowth rate the study expects a negative relationship between capital flight and growth rate.

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 Bank (2018). 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. It is expected that inflation has a positive relationship with capital flight.

Financial development

Domestic credit to private sector (% GDP) refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks) such as through loans purchases of non-equity securities and trade credits and other accounts receivable that establish a claim for repayment. For some countries these claims include credit to public enterprises (Word Bank, 2018). As a measure of financial development the study employs domestic credit to the private sector as a ratio of GDP. The study expects a positive relationship between financial development and capital flight.

Trade openness

Trade openness was measured as the percentage of the sum of exports and import to the gross domestic product. The study includes this variable in the specification of capital flight so as to take into consideration the effect of the the open economy on capital flight. This is due to the fact that production in African economies is heavily dependent on imported inputs and equipment. Thus an increase in imports is likely going to have an impact on capital through import underrinvoicing. On the other hand an increase in exports reflects rising demand for African products which stimulates domestic investment and this eventually has implication for capital flight. In addition trade restrictions are removed when the economy is open. Therefore this makes releasing and opening of foreign trade possible and the transfer of funds abroad easier. This promotes capital flight as it allows individuals to transfer money abroad in legal ways where they are recorded in current account balance (Fofack & Ndikumana, 2014). The study expects positive sign between trade openness and capital flight.

Interest rate differential

This is the difference between domestic interest rate and the foreign interest rate. Interest rate differentials (difference in home country's lending rate minus US lending rate). This makes it possible to test the conventional portfolio theory assumption that capital flight is driven by higher world interest rates relative to domestic rates**.** The study expects a negative relationship between interest rate differentials and capital flight.

Data Sources

The study uses a sample of 20 countries for which data on capital flight are available over the period 1996–2015. The data on capital flight are from the Political Economy Research Institute (Boyce &Ndikumana, 2012). Other variables are obtained from the World Bank's World Development Indicators, the IMF's International Financial Statistics (IFS) and from economic freedom data source. The study is for the period 1996 - 2015 because of data availability constraints.

Table 1: Summary of Variable Definitions, Data Sources and Expected Signs

Variabes	Variable Description	Sources	Expected Signs
Capital flight	Total capital flight (billion, constant 2012 $) KF = CDEBTADJ + FDI + PI + OI – (CAD+CRES) + MISINV	Political Economic Research Institute website Boyce and Ndikumana (2012)	N/A
Government Integrity	Freedom from Corruption	Economic Freedom Database	Negative(-)
Government Spending	The government spending captures the burden imposed by government expenditures	Economic Freedom Database	Negative(-)

	which includes consumption by the state and all transfer payments related to various entitlement programmes.		
Tax burden	Tax burden measures the marginal tax rates on both personal and corporate income and the overall level of taxation as a percentage of gross domestic product (GDP)	Economic Freedom Database	Positive(+)
GDP growth rate	At purchaser's price is the sum of gross value added by all resident producers in the economy	World Bank, WDI	Negative(-)
Financial development	Ratio of bank credit to private sector to GDP	World Bank, WDI	Negative(-)
Inflation	Annual change in consumer prices (%)	WDI/IFS	Positive(+)
Interest Rate differentials	Interest rate differentials, which is Computed as the domestic real interest rate minus the average US real interest rate.	WDI/IFS	Negative(-)
Trade openness	Sum of exports and imports of goods and services (% of GDP)	World Bank, WDI	Positive(+)/ Negative(-)

Source: Authour's Computation , 2019

Panel Unit Root Test

Several authors have proposed unit root tests based on different assumptions. Since our dataset includes time period which is fairly long (20 years), it is very likely that the macroeconomic variables will follow a unit root process (Nelson & Plosser, 1982). We employ three different types of panel unit root

tests: (i) Im Pesaran and Shin (ii) Breitung and (iii) Levin Lin and Chu to determine the order of integration between all the series in our data-set. Among these tests, LLC and Breitung tests are based on the common unit root process assumption that the autocorrelation coefficients of the tested variables across cross-sections are identical. However, the IPS test relies on the individual unit root process assumption that the autocorrelation coefficients vary across cross-sections. In all the test specifications, we include deterministic time trend. Though testing for the order of integration of variables is not important when applying the ARDL model as long as the variables of interest are I(0) and I(1) (Pesaran & Smith, 1995; Pesaran, 1997; Pesaran et al., 1999), the study carries out these tests just to make sure that no series exceeds I(1) order of integration.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the main parts of the empirical results such as the descriptive analysis and econometric analysis. Graphs and summary statistics are used for the descriptive analysis while different dynamic panel models are estimated in the analytical section.

Descriptive Statistics and Analysis

Table 2 provides a summary descriptive statistics relating to twenty (20) countries in SSA for the period 1996 -2015. The table indicates the 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 of the variables. 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.

Table 2: Summary Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Kf	398	199.5	115.037	1	398
Govinteg	400	29.546	12.278	0	70
Taxburden	400	71.728	11.675	0	90.9
Govspend	400	76.283	15.559	0	96.4
Inflation	399	8.34	7.75	-8.5	46.6
GDPgrowth	400	5.043	4.96	-20.599	33.736
Domesticcrt	397	16.746	14.19	1.522	84.052
Interestdiff	400	-18.536	71.61	-169.912	9.233
Trade open-ness	400	60.934	21.514	21.447	132.494

Source: Author's Construct

The statistics indicate that the mean value of capital flight (kf) for the sampled countries over the period is 199.90 million constant US dollars with values ranging from a maximum score of 398.0 and a minimum score of 1.0 showing high level of variations. The standard deviation value 115.04 of capital flight further confirms that there is much variability in the levels of capital flight from its mean value of these countries.

On the independent variables side, government integrity (Govinteg) averages 29.55 % within the period across the sample. This shows a low level of government integrity within the region. Also within the period, the minimum and maximum government integrity sciores are 0.0% and 64%. Indeed, the government integrity values portray that a significant number of the countries included in the sample are associated with low level of government integrity. However, there is low level of variability in the government integrity values.

The tax burden (Taxburden) within the region is quite high as the mean tax burden is 71.73% within the period across the sample. Also, this variable indicates a significant variation in the sample as the maximum tax burden is 90.9% with the lowest being 0% annually.

Government spending (Govspend) also averages 76.28% within the period under consideration. The maximum and minimum government spending are 96.4% and 0.0% respectively. This shows that on the average, government spending in the sub-Saharan Africa is high. GDP growth rate averages 5.04% within the period under consideration. The maximum GDP growth rate (GDPgrowth), a proxy for economic growth is 33.74 percent while the minimum growth rate is -20.60 percent and a standard deviation of 4.96. Inflation rate (Inflation), a measure of annual consumer price index has an average score of 8.34 percent and it deviates 7.75 percent away from the mean. Domestic credit to private sector (domcredit), a proxy for financial development averages 16.746 percent and this deviates from the expected value by 14.19 percent with the minimum and maximum values being 1.52 and 84.05 respectively. The average value of interest rate differentials (interestdiff) is -18.536 and the standard deviation is 71.61 with the minimum and maximum values of -169.91 and 9.23 respectively. Finally the mean value of trade openness (trade) is 60.93 and the minimum and maximum values are 21.45 and 132.49 respectively.

Panel Unit Root Results

Table 3 reports the results of panel unit root tests which suggest that most of the variables including Government integrity, Government spending , Tax burden, inflation, GDP growth rate, Trade openness, Interest rate differentials and Domestic credit to private sector (proxy for financial development) under consideration are stationary of order I(0) with constant and trend using the IPS test. However, some of these variables are not stationary of order I (0) but they become stationary after first difference using Breitung and LLC tests. Capital flight variable becomes stationary only after first difference even with

the IPS test. Due to these mixed orders of integration, panel ARDL approach rather than the traditional panel cointegration test is appropriate.

Table 3: Panel unit root test

Variables	Level			First Difference		
	IPS	Breitung	LLC	IPS	Breitung	LLC
Capital flight	-0.8708			-7.8625***		
Govinteg	-3.5070***	-0.1824	-11.1632***	-10.2133***	-7.4128***	14.6566***
Govspend	-4.9092***	-1.1833	-0.2650	-10.2504***	-5.6677***	-3.9176***
Tax burden	-3.3239***	-0.8367	0.6375	-8.6118***	-4.1876***	1.2693
Inflation	-3.4587***			-10.0498***		
GDpgrowth	-8.2251***	-5.4842***	-3.4725***	-12.0217***	-10.3266***	-11.7305***
Domccredit	-9.4793***			-2.6274 ***	-10.8516***	-9.6330***
Interest dif ferential	-5.3799***	-1.1667	-5.1973	-8.8962***	-4.2064***	-8.4755***
TRADE	-4.2998***	-1.6054*	-3.1955***	-9.7449***	-7.6285***	-8.6598***

NB: Notes: * and *** indicate significance at 10% and 1% levels respectively. Test results on capital flight, domestic credit to private sector and inflation for LLC and Breitung are missing since these tests require strongly balanced data.

Source: authors' estimations.

Panel cointegration results

A cointegration test is required in order to avoid the spurious regression problem (Johansen, 1988). A valid inference can be made if a stable equilibrium exists amongst the variables under consideration. Albeit, the study finds that the variables are non-stationary, a linear combination of these non-stationary variables produces stationary error terms. Table 4 presents three variants of panel cointegration tests in this study. The Pedroni and Kao tests use the Schwartz Bayesian information criterion (SIC) to automatically select the appropriate lag

length. Further, spectral estimation is undertaken by the Bartlett kernel with the bandwidth selected by the Newey-West algorithm. While the Pedroni and Kao tests are based on residuals of the long-run static regression, the Fisher cointegration test is based on the multivariate framework of Johansen (1988). Deterministic time trends are included in all specifications. All tests are derived under the null hypothesis of no cointegration. When a common autoregressive coefficients is assumed, the pedroni test statistic provides some support for the presence of cointegration. In addition, when the between-dimensions (individual autoregressive coefficients) are considered, there appears to be some evidence of cointegration among the variables. These results are further reiterated by Kao's test which marginally rejects the null hypothesis of no cointegration at 5 percent level of significance.

The Fisher's test based on multivariate framework provides strong evidence of cointegration.

Table 4: Panel Cointegration Test

Pedroni Cointegration Test

[a] Common AR coefficients (within dimension)

	Statistic	p-value	weighted statistic	p-value
Panel v	-1.114892	0.8676	- 0.718248	0.2363
Panel rho	1.236930	0.8919	2.042902	0.9795
Panel PP	--3.071935	0.0011	-1.486634	0.0686
Panel ADF	--3.341492	0.0004	-1.598592	0.0550

[a] *Individual AR coefficients (between dimensions)*

Group rho	3.670427	0.9999
Group PP	-2.185174	0.0144
Group ADF	--2.435890	0 .0074

[b] Kao residual cointegration test

Test Statistic = -1.639943** [0.0505]

Fisher cointegration test

Null hypothesis	Trace test	p-value	Maximum Eigenvalue	p-value
$r = 0$	216.1	0.0000	188.7	0.0000
$\rho \leq 1$	81.17	0.0001	8.82	0.0031
$\rho \leq 2$	42.94	0.3462	43.51	0.3244
$\rho \leq 3$	26.43	0.9512	26.43	0.9512

Notes: Test results were generated by Eviews 9. Pedroni's panel statistics are weighted. The null hypothesis forall tests is that there is no cointegration. a = the alternative hypothesis for the Pedroni cointegration tests. b = there is no deterministic trend; automatic lag length selection based on SIC with a maximum lag of 2. ** and ***indicates significance at 10% and 5% respectively.

Source: authors' estimations

Empirical Estimation and Discussions

As a starting point of analysis, the study shows comparisons of government integrity and capital flight, government spending and capital flight and finally that of tax burden and capital flight respectively across the various countries in sub-Saharan Africa within the period of 1996 to 2015.

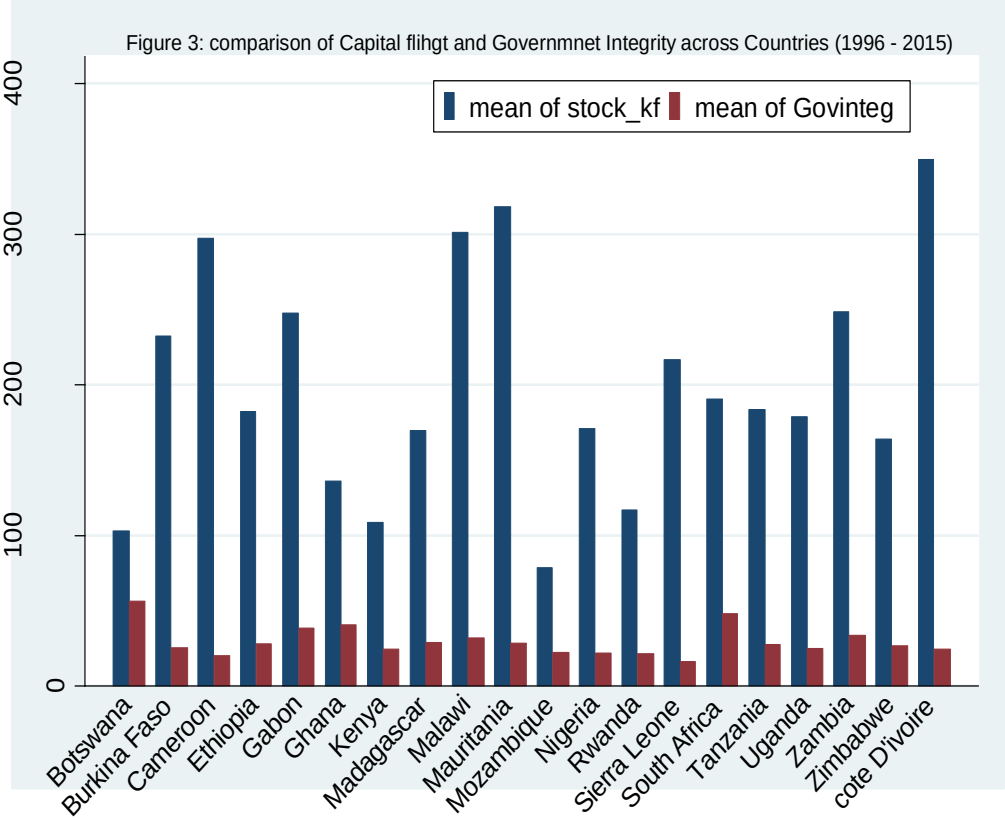

Figure 3: Capital flight and Governmemnt Integrity across Countries in SSA from 1996 to 2015

Source: Author's Construct

Figure 3 shows the comparison of capital flight in the countries understudy. Starting from the countries with the highest to lowest level of capital flight are Cote D'ivoire, Mauritania, Malawi, Cameroon, Gabon, Zambia, BurkinaFaso, Sierra Leone, South Africa, Tanzania, Ethiopia, Uganda, Nigeria, Zimbabwe, Madagascar, Ghana, Rwanada, Kenya, Botswana and Mozambique. For government integrity, the graphs of the majority of countries indicate

a relatively lower level of Government intergrity in the region. Botswana and South Africa show the highest level of government integrity in the region while Cameron and Sierra Leone show the least level of Government integrity. This actually confirms the 2017 and 2018 Corruption Perception Indext (CPI) reports which indicate that Botswana remains Africa's least corrupt country in the region. In 2017 and 2018 CPI reports, Botswana ranked first and second respectively in the region as the least corrupt country buttressing why Botswana shows the highest peak for government integrity amongst the countries understudy.

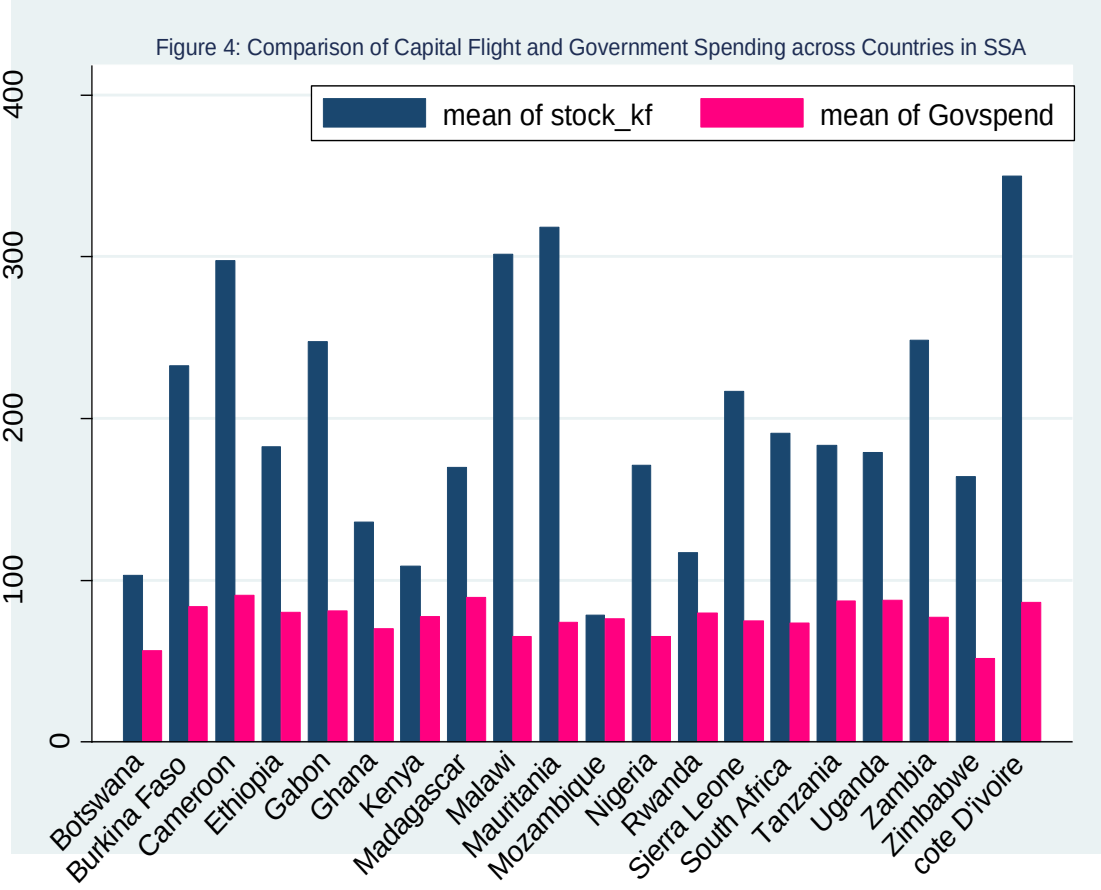

Figure 4: Capital flight and Governmemnt spending across Countries in SSA from 1996 to 2015

Source: Author's Construct

Figure 4 shows that Government spending across the countries does not show so much variations. While countries like Tanzania, Uganda, Cote D'ivoire, Kenya and Cameroon show relatively higher mean value of government spending Zimbabwe and Botswana show the least mean value with the rest of the countries showing almost similar average values for government spending. This indicates a resemblance of government spending across countries in sub Saharan Africa.

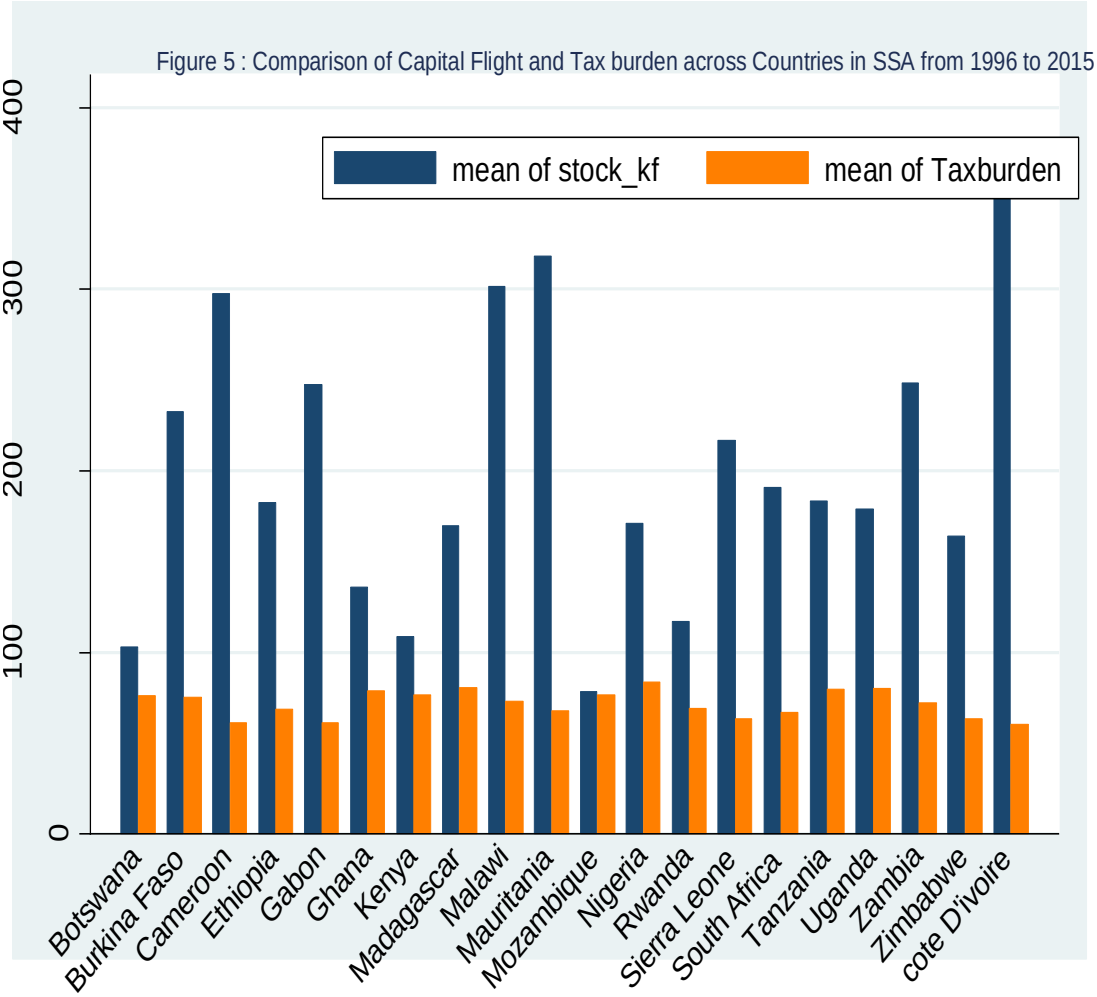

Figure 5: Capital flight and Governmemnt spending across Countries in SSA from 1996 to 2015

Source: Author's Construct

Figure 5 shows graphes of tax burden and capital flight across countries in sub-Saharan Africa. A careful description of the figure reveals that countries like Nigeria, Madagascar, Cote D'ivoire, Tanzania and Uganda on the average have the highest tax burden while Cameroon and Gabon on the average have the lowest tax burden in the region.

A comparison of Government spending and tax burden reveals that Government spending across almost all the countries are higher than tax burden. It goes to explain the fact that most governments in SSA spend more than what they generate as tax revenue. Figure 6 shows the scatter plots of Government integrity and capital flight in the sub-Saharan Africa from 1996 to 2015.

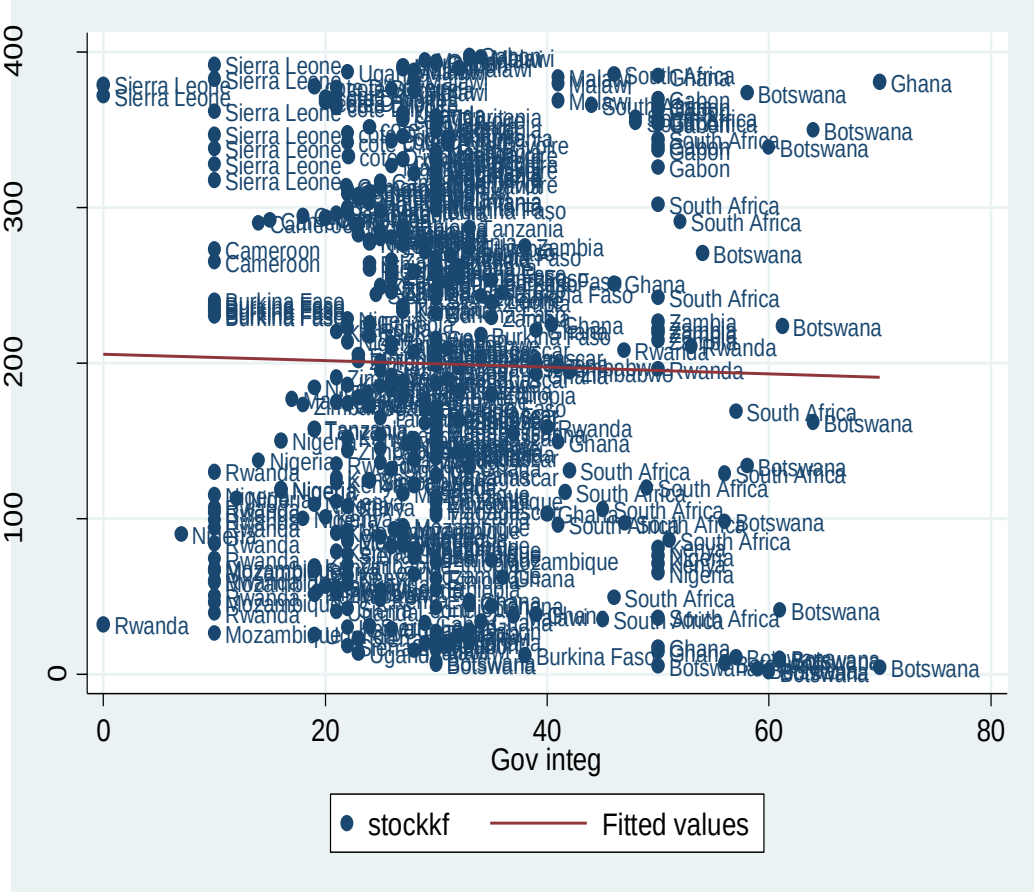

Figure 6: Relationship between Capital Flight and Government Integrity in SSA(1996-2015)

Source: Author's Construct

From figure 6, the fitted line from the scatter plot shows a strong and a negative correlation between government integrity and capital flight in sub-Saharan African within the period 1996 to 2015. Many of the countries cluster around the fitting line although there are some countries such as Botswana, South Africa, Rwanda and Ghana that appear to be outliers. This implies that if indeed government integrity has any implications for capital flight, the governments of these countries would have to work to improve government integrity so as to raise the confidence and trust of their citizenry. This goes to explain the fact that integrity plays a vital role in reducing capital flight and so needed attention should be paid to corruption controlled measures. Figures in Appendices G and H show the scatter plots of government spending, tax burden and capital flight in sub-Saharan Africa from 1996 to 2015 respectively.

Finally, in Appendix I, the study provides a trend analysis of each countries over the various years under consideration. It is observed that some of the countries like Zimbabwe, South Africa and Gabon experience downward trends in capital flight after 2005. While other countries like Botswana, Burkina Faso and Malawi show a fluctuating trends over the years. Others including Camerron, Ethiopia, Sierra Leone, Cote D'ivoire, Kenya, Madagascar, Uganda, Tanzania, Zambia, Mauritania and Rwanada exhibit an upward trends over the years.

Results of PMG, MG and DFE

In order to identify the effect of the variables of interest on the dependent variable, error correction based on autoregressive distributed lag ARDL (pq) model has been used with focus on the exclusive feature of Pooled Mean Group

(PMG) model over the other error-correction based estimations: Mean Group (MG) and Dynamic Fixed Effect (DFE).

In choosing the most appropriate estimation techniques, the Hausman test between the PMG and MG models and again the test between PMG and DFE are conducted. The Hausman test results are presented in Appendix B. The results of the hausman test favours the PMG estimatior so discussions are based on the PMG results. The long run and short run results of the MG and DFE are shown in Appendices C, D, E and F respectively.

PMG Longrun Estimation results

Four stepwise regression estimations are carried out. This is necessary so as to know how the coefficient or the significance of a variable of interest changes as different variables are in turn included in a given specification.

Table 5 provides the long run Pooled Mean Group estimation results. Column1 (PMG1) provides the estimation with only government integrity (one of the main variable of interest) while controlling for other variables such as inflation, GDP growth rate, financial development (domestic credit to the private sector as a proxy), trade openness and interest rate differential. Column 2 (PMG2) gives the estimation result with focus on the effect of only government spending as the variable of interest. Column 3 (PMG3) indicates the analysis of tax burden as the variable of interest while controlling for the other variables. Finally, column 4 (PMG4) gives the estimation results where all the three variables of interest are included in the specification.

Table 5: Longrun estimation result for Pooled Mean Group

VARIABLES	PMG1 LONGRUN	PMG2 LONGRUN	PMG3 LONGRUN	PMG4 LONGRUN
Convergence Coefficients	-0.0954*	-0.117*	-0.234***	-0.190***
	(0.0549)	(0.0683)	(0.0775)	(0.0660)
Government Integrity	-0.0540***			-0.0173***
	(0.0146)			(0.00305)
Inflation	-0.0025***	-0.0009***	-0.0007***	-0.0007***
	(0.0008)	(0.0003)	(0.0003)	(0.0002)
Gdpgrowth Rate	-0.0889***	-0.0478***	0.0101*	-0.00423
	(0.0241)	(0.0104)	(0.00519)	(0.00613)
Domestic credit	0.225***	0.0633***	0.0245***	0.0756***
	(0.0400)	(0.0126)	(0.0054)	(0.0102)
Interest Rate Differential	-0.0689***	-0.0234***	-0.0165**	-0.0395***
	(0.0219)	(0.0071)	(0.0067)	(0.00944)
Tradeopeness	-0.0161***	-0.000940	-0.00245*	-0.0040
	(0.00557)	(0.00165)	(0.00147)	(0.00268)
Government Spending		-0.00634		0.00701**
		(0.00542)		(0.00322)
Tax burden			0.0406***	0.0426***
			(0.00321)	(0.0041)
Constant	0.510**	0.419	0.228*	0.0444
	(0.245)	(0.342)	(0.124)	(0.0829)
Number of countries	20	20	20	20
OBSERVATIONS	374	374	374	374

Source**:** Author's Construct

Effect of Government Integrity on Capital Flight

The coefficients of error correction term from all specifications show negative and significant effects, thus suggesting the existence of long run relationship across the 20 countries within the panel.

From column 1, the coefficient of government integrit y is – 0.054. This shows that government integrity has a negative relationship with capital flight and this is statistically significant at one percent. This indicates that a percentage

increase in government integrity reduces capital flight by 0.054 percent in the long run all other things being equal.

Finally, in Column 4 (PMG 4) where all the 3 core variables of interest (government integrity, government spending and tax burden) are included in the model, the coefficient of government integrity is – 0.0173. This confirms the negative and significant (one percent) relationship between government integrity and capital flight in the long run. This implies that a percentage increase in government integrity reduces capital flight by 0.0173 percent in the long run ceteris paribus.

However, the study observes that the inclusion of the other variables of interest (government spending and tax burden) in the last specification reduces the coefficients of government integrity. Specifically, the coefficient of the effect of government integrity alone is – 0.054 but this reduces to – 0.0173 when other variables are included in the model. This could be due the fact that effects of tax burden and government spending have been more dominant than the effect of the government integrity alone.

In summary, the above results confirm the finding Le and Rishi (2006) and Osei et al. (2018) which indicated that corruption has a positive effect on capital flight. This is because government integrity is a flip side of corruption as indicated by the 2018 Corruption Perception Indext report such that the higher the level of perceived corruption in a country, the lower the integrity score . The finding is also in line with a study by Du et. al (2018) which found a positive relationship between higher government integrity and corporate investment efficiency. This is because as government integrity improves investors; both domestic and foreign repose enough confidence in the government in

that they are sure of their returns from investing in such a country. Finally, the finding confirms the study of Orkoh et al. (2017) who found that corruption control has a positive effect on capital flight from sub-sahran Africa.

Effect of Government Spending on Capital Flight

To examine the effect of government spending (a proxy for government size) on capital flight, the study performs a stepwise estimation. From the Column 2 (PMG2) of Table 5, the estimation shows that the coefficient of government spending is – 0.00634. The result indicates a negative but a statistically insignificant relationship between government spending and capital flight in the long run. Thus government spending has no impact on capital flight in the longrun.

In column 4 (PMG4), the coefficient of government spending is 0.00701 and this is statistically significant at five percent level of significance. The significance of the coefficient of government spending could be explained by the fact the effects of both government integrity and tax burden have been more dominant over the effect of government spending. This is evident in the statistically significant effects of both government integrity and tax burden in all specifications. Thus, a one percent increase in government spending increases capital flight by 0.00701 percent in the long run. This could be the case because government spending today may trigger an increase in taxes tomorrow and this may fuel capital flight as many businesses and investors would not want the value of their investment be eroded through future taxation and would try to transfer their capital to places considered tax havens. In addition, this can happen because an increase in government consumption expenditure increases the

tax burden on citizens which leads to a reduction in private spending and investment which may eventually fuel capital flight.

The earlier finding in PMG2 confirms that of Muchai et al. (2016) who found an insignificant effect of government spending on capital flight. However, the finding in PMG4 contradicts the finding of Muchai et al. (2016) who found an insignificant effect of government spending on capital flight in Kenya. The finding in PMG4 is in line with the finding of Ndikumana and Boyce (2003) which found that most developing countries engage in deficit spending to spur growth. This kind of spending has several theoretical implications for capital flight. For example, high budget deficits may cause tax-like distortions and increases in expected taxes that lead to capital flight (Ndikumana & Boyce, 2003). The finding also corroborates the finding of Mitra (2006) which found that government expenditure financed through increased borrowing crowds out private investment and dampens long-run growth which may induce capital flight.

Effect of Tax burden on capital flight

The result in column 3 (PMG3) shows the coefficient of tax burden to be 0.0406. This is statistically significant at one percent level of significance. The results shows a positive relationship between tax burden and capital flight. This implies that one percent increase in tax burden results in 0.0406 percent increase in capital flight in the long run, all other things being equal.

Finally, from PMG4 the coefficient of tax burden is 0.0426 and this indicates that tax burden has a positive relationship with capital flight and the coefficient is statistically significant at one percent. This implies that holding all other things constant, a one percent increase in tax burden leads to 0.042 percent increase in capital flight in the long run. The finding corroborates that

of Enyi (2014), O'Hare et al. (2014) and Muchai (2016) which found that taxation significantly influences capital flight. In other words, increase in tax rates have positive impact on capital flight. This is intuitive because people would love to transfer capital abroad to avoid high taxes. A higher tax burden means that the values of assets will be eroded as firms will be made to pay higher amount of their returns on domestic assets as tax to the government. By way of avoiding these tax burdens, firms will prefer transferring assets abroad. However, the finding is in contrast with the findings of Pastor (1990) and Vos (1992) which found no statistically significant association between taxes and capital flight.

Effects of the Control Variables

The control variables under consideration are inflation, GDP growth rate, Trade openness, interest rate differentials and domestic credit private sector (proxy for financial development).

From all the four estimations from PMG1 to PMG4, the coefficients of inflation show negative effect on capital flight. The coefficients of inflation are all statistically significant at one percent implying that all other things being equal, a percentage increase in inflation reduces capital flight by at least 0.0007 percent in the longrun. The negative effect of inflation on capital flight from this study concurs with the finding of Raheem (2015) who found a negative correlation between inflation and capital flight for 28 sub-Saharan Africa countries within the period 1996 -2010. Also, the finding is in line with that of Orkoh et al. (2017) who found a negative relationship between inflation and capital flight.

However, the finding of the study contradicts the findings of Le and Rishi (2006) and Al- basheer et. al. (2016) who found that inflation has a positive relationship with capital flight. It is also inconsistent with the finding of Osei-Assibey et al. (2018) which found no significant effect of inflation on capital flight in sub-Saharan Africa. The evidence is therefore inconclusive. The results suggest that there is a robust empirical evidence of the impact of inflation on sub-Saharan African capital flight. The negative relationship between inflation and capital flight could be explained by the fact that inflation signals high average prices for goods and services so investors may be motivated by the higher prices to invest thereby retaining capital or causing capital to flow into the economy with inflation.

GDP growth rate as a control variable shows a negative and significant results in specifications PMG1 to PMG2 in the long run and this is in line with a priori expectation. The finding of a negative relationship between GDP growth rate and capital flight is consistent with the evidence in the literature. This is the case because economic growth is a signal of economic performance. As investors consider economic performance as one of the factors that motivate their investment, capital flows into regions with such high economic performance which eventually reduces capital flight. While the result of PMG3 shows that the coefficient of growth rate is positive and significant only at ten percent, the results from PMG4 indicates that the coefficient of growth rate is negative but statistically insignificant. The evidence shows mixed results and this confirms earlier studies. For instance, Lensink Hermes and Murinde (2000) found a negative relationship between economic growth and capital flight while Boyce (1992), Hermes and Lensink (1992), Chipalkatti and Rishi (2001) and Demir

(2004) obtained no statistically significant relationship at all. As Ndikumana and Boyce (2003) explained the country's own growth rate is problematic in part because it is affected by some of the same factors that trigger capital flight so isolating its independent impact on capital flight can be difficult. But when using only the country's own growth rate for economic performance, the empirical evidence is actually mixed and finding of this study confirms the mixed results.

For interest rate differentials, it is anticpated that the coefficient of returns on investment be negative. This is based on the notion that an environment that is considered to be investment friendly deters capital flight. It also follows that domestic returns on investment are higher than foreign returns on investment. In all the specifications, negative and significant coefficients are obtained. The findings from all the specifications (PMG1 to PMG4) show that the relationship between interest rate differential and capital flight are consistently negative and statistically significant at all the conventional level of significance. Thus, all other things being equal, an increase in interest rate differential reduces capital flight by at least 0.0162 percent in the long run. This finding is consistent with Forson et. al (2015) who found that one percentage increase in interest rate differential reduces capital flight by 0.06% in the long run in Ghana and that of Ndiaye (2012) who posited that a one percent increase in capital flight reduces domestic investment by between 3.9%– 5% and also the estimate of Ndikumana (2013) who found the effect of interest differential to be between 2.7% - 8.0%. The finding also confirms that of Osei-Assibey et. al (2018) who found that interest rate differential has a negative and significant effect on cap-

ital flight from sub-Saharan Africa for the period, 2000 to 2012. Ths gives credence to the portfolio theory of investment. This implies that for sub-Saharan Africa, capital flight could be partly explained by interest rate differential.

To test for the effect of financial development, the study uses domestic-credit to the private sector as a ratio to GDP. In the long run, the results from all the specification; PMG1 to PMG4 indicate positive and significant effect at one percent alpha level. It may be argued that increased availability of bank credit provides resources that can be illegally transferred abroad as capital flight. Moreover cross-border financial transactions become easier as the financial system develops. This suggests a positive relationship between capital flight and credit to the private sector. However, this finding contradicts that of Ndikumana and Boyce (2003) who also used credit to the private sector as a measure of financial development and their result indicated a negative and statistically significant effect on capital flight from sub-Saharan Africa. The finding is not in line with Forson et.al. (2015) and Raheem (2015) who used M2 to GDP ratio as proxies for financial development and found a negative and significant effect of financial development on capital flight. Ndiaye (2011) established a negative and significant impact of ratio of deposit to GDP on capital flight. Accordingly, Ndiaye explains that a rise in domestic savings will encourage and increase financing domestic investment thereby reducing capital flight. Combing through the literature, the effect of financial development on capital flight is mixed and it is therefore sensitive to the variable used as a measure of financial development.

The effect of trade openness from some specifications show negative and significant results. Some of the results show positive and significant results

while the others also show no significant results. Going by the results obtained, the study concludes that trade openness is ambiguous as it produces mixed signs for the coefficients and this satisfies economic intuition. This finding is in line with that of Raheem (2015) who found a mixed result for the effect of trade openness on capital flight in sub-Saharan Africa.

PMG Short Run Estimation results

Table 6 shows the short run estimations of the PMG results. In similar fashion and as seen in the long run estimations in Table 5, the descriptions of PMG1, PMG2, PMG3 and PMG4 in Table 6 remain the same.

Table 6: Shortrun estimation Results for Pooled Mean Group

	(PMG1)	(PMG2)	(PMG3)	(PMG4)
VARIABLES	**SR**	**SR**	**SR**	**SR**
Δ.Government integrity	-0.0153*			-0.0248*
	(0.00799)			(0.0149)
Δ.Inflation	-0.000604	-0.000758	-0.000493	-0.000567
	(0.000621)	(0.000680)	(0.000798)	(0.000743)
Δ.Domesticcredit	0.00313	0.0119	0.0257	0.00149
	(0.0293)	(0.0228)	(0.0226)	(0.0278)
Δ.Tradeopenness	-0.00410	-0.00839	-0.00903	-0.00902
	(0.00782)	(0.00613)	(0.00597)	(0.00746)
Δ.interest rate diff	-0.00433	-0.00286	-0.00357	0.00358
	(0.0158)	(0.0110)	(0.0125)	(0.0120)
Δ.Gdpgrowth	-0.0406	-0.0237*	-0.0275*	-0.0341**
	(0.0255)	(0.0127)	(0.0142)	(0.0160)
Δ.Government spending		0.00351		0.00515
		(0.00369)		(0.00511)
Δ.Taxburden			0.000193	-0.00983
			(0.0113)	(0.00926)
Constant	0.510**	0.419	0.228*	0.0444
	(0.245)	(0.342)	(0.124)	(0.0829)
Observations	374	374	374	374

Source: Author's Construct

For the short run estimations, the result from the first specification in column 1 (PMG1) indicates that the coefficient of government integrity is – 0.0153, showing a negative relationship between government integrity and capital flight. This result is statistically significant at 10 percent. This implies that an increase in government integrity by one percent reduces capital flight by 0.0153 percent in the short-run ceteris paribus. Similarly, the result from PMG4 shows that the coefficient of government integrity is – 0.0248, confirming the earlier point that government integrity has a negative link with capital flight. The coefficient of government integrity is statistically significant 10 percent. It follows that one percentage increase in government integrity reduces capital flight by 0.0248 percent in the short-run, all other things being equal.

The study observes that even though government integrity is significant in both short run and in the long run, its significance maintains high precision in the long run than in the short run. While the coeffiecient of government integrity is statistically significant at one percent in the long run, it is only significant at 10 percent in the short run. This is the case since it may take time for citizenry to build their confidence or trust in the government. In similar vein, investors; both foreign and domestic take time to observe the riskiness of their asset before doing any investment since lack of integrity in a particular country could mean losses for them.

For government spending, both the short run results from the column 2 (PMG2) and column 4 (PMG4) show that the coefficients of government spending are 0.00351 and 0.00515 respectively. This results indicate that even though government spending has a positive relationship with capital flight, its coefficients are statistically insignificant in the short run implying that government

spending does not have any significant impact on capital flight in the short run, all other things being equal.

In the short-run, the results from PMG3 and PMG4 indicate that the co-efficients of tax burden are 0.000193 and – 0.00983 respectively. The coeffi-cients of tax burden are statistically insignificant in the short run, all other things remaining the same. This implies therefore that tax burden has no effect on capital flight in the short run.

The short run results on inflation reveal that even though a negative sign is consistently observed, the coefficients of inflation are statistically insignifi-cant implying that inflation does not have any effect on capital in the short run ceteris paribus. A similar result holds for the effect of trade openness on capital flight.

In analysing the short run effect of interest rate differentials, the results show that interest rate differential does not have any effect on capital flight all other things being eual.

With the exception of PMG1, the result shows that GDP growth rate has a negative relationship with capital flight in the short-run. The result is statis-cally significant at 10 percent level of significance.

Finally, the effect of financial development shows that domestic credit to the private sector as percentage of GDP has a positive but statistically insig-nicant effect on capital flight. Hence, there is no short short-run effect of the financial development on capital flight.

Net Effect of the interaction term (government spending and government integrity) on Capital Flight

The validity of the long run homogeneity restriction across countries and hence the efficiency of the PMG estimator over the other estimators is examined by the Hausman test. The Hausman test accepts the null hypothesis which states that the PMG estimation is the best. The homogeneity restriction on the regressors in the long run indicates that PMG is more efficient estimator than MG.

This section presents the results of PMG, MG and DFE estimations. The appropriate model is chosen by the help of the hausman test. The hausman test favours the PMG over the MG and the DFE so attention is focused on the analysis of the PMG results. From Table 7, the study focuses on the interaction between government integrity and government spending.

Table 7: Interaction Effect Of Government Spending and Government Integrity on Capital Flight

	MG	PMG	DFE
VARIABLES	**SR**	**SR**	**SR**
ECT	-0.0292	-0.193***	-0.391***
	(0.0213)	(0.0669)	(0.0445)
	Short Run Estimation Results		
Δ.Taxburden	-0.189	-0.0115	0.000298
	(0.147)	(0.00954)	(0.00708)
Δ.Govspend	0.183	0.00983	0.000218
	(0.208)	(0.00750)	(0.00498)
Δ.Govinteg*Govspend	-0.00175	-0.000291	-1.76e-05
	(0.00172)	(0.000191)	(9.02e-05)
Δ.Inflation	0.00590	-0.000517	-0.000457
	(0.00714)	(0.000753)	(0.000475)
Δ.Domesticcredit	-0.0901	0.00794	-0.00453
	(0.187)	(0.0262)	(0.00840)
Δ.Trade	0.0956	-0.00922	-0.00456
	(0.0832)	(0.00735)	(0.00468)
Δ.Interestratedifferential	0.0535	0.00167	0.000306
	(0.212)	(0.0115)	(0.000635)
Δ.Gdpgrowth	0.00759	-0.0316**	-0.0152*
	(0.149)	(0.0142)	(0.00877)
	Longrun Estimation Results		
Tax Burden	28.51	0.0417***	-0.0160
	(22.04)	(0.00401)	(0.0128)
Govspend	11.53	0.0128***	9.41e-05

	(14.82)	(0.00330)	(0.0103)
Govinteg*Govspend	-0.0881	-0.000213***	0.000226
	(0.117)	(3.80e-05)	(0.000176)
Inflation	-0.182	-0.000753***	0.000213
	(0.682)	(0.000241)	(0.00102)
Gdpgrowth	21.35	0.00137	0.0277
	(22.93)	(0.00593)	(0.0304)
Domestic Credit	-33.37	0.0722***	0.0254
	(24.98)	(0.00993)	(0.0190)
Interestratedifferential	4.941	-0.0429***	-0.00219
	(7.463)	(0.0107)	(0.00175)
Trade	4.409	-0.00469*	-0.00457
	(9.870)	(0.00276)	(0.00916)
Constant			2.078***
	(37.71)		(0.475)
Hausman Test	P-value=1.0000		
Observations	374	374	374

Source: Author's Construct

The PMG result shows that the coefficient of the interaction of government integrity and government spending is – 0.000213 and this is statistically significant at one percent. This is expected because an increase in government spending gives a boost to economic growth which in turns inspires investor confidence thus, reducing capital flight. Also, an increase in government spending bolsters aggregate demand and foster domestic investment which eventually attracts foreign capital.

However, the net effect is calculated. The coefficient of the net effect (computation of the net effect is shown in Appendix J) of government integrity and government spending is 0.0065. This implies that given the level of government integrity on the continent, a percentage increase in government spending increases capital flight by 0.0065 percent in the long run and this is statistically significant at one percent. A careful comparison between the magnitude of effect of government spending without the interaction and the one with the interaction (net effect) reveals that the latter coefficient is marginally lower than that of the former. This goes to buttress the intuition that government integrity

plays a significant moderating role in reducing capital flight from the sub-Saharan region. Thus, the coefficient of government spending alone is 0.00701 and that of the interaction term is 0.0065.

In the short run, however, the coefficient of the interaction effect of government integrity and government spending on capital flight is – 0.000291 and this is statistically insignificant. This follows that there is no interaction effect of government integrity and government spending in the short run.

Net Effect of the interaction term (Tax burden and government integrity) on Capital Flight

Table 8 shows the joint effect of government integrity and tax burden on capital flight. Column 1 gives the Mean Group Results, Column 2 gives the Pooled Mean Group Results and column 3 gives the Dynamic Fixed Effect Results.

Table 8: Interaction effect of Government integrity and Tax burden on Capital Flight

Variables	MG SR	PMG SR	DFE SR
Error correction term	-0.00916***	-0.194***	-0.388***
	(0.00268)	(0.0652)	(0.0445)
	Short Run Estimation Results		
Δ.Taxburden	-0.115	-0.00471	0.000893
	(0.130)	(0.00926)	(0.00727)
Δ.Govspend	0.00147	0.00462	-0.000303
	(0.0355)	(0.00505)	(0.00464)
Δ.Govinteg*Tax Burden	-0.000246	-0.000318	-3.39e-05
	(0.000298)	(0.000195)	(9.13e-05)
Δ.Inflation	-0.000405	-0.000528	-0.000467
	(0.00362)	(0.000749)	(0.000476)
Δ.Domesticcredit	0.106	0.00383	-0.00472
	(0.100)	(0.0266)	(0.00842)
Δ.Trade	0.0547	-0.00870	-0.00486
	(0.0744)	(0.00728)	(0.00468)
Δ.interest rate differential	-0.226**	0.00283	0.000291
	(0.114)	(0.0115)	(0.000637)
Δ.Gdpgrowth	0.0810	-0.0336**	-0.0150*
	(0.134)	(0.0156)	(0.00882)

	Longrun Estimation Results		
Tax Burden	38.85	0.0474***	-0.0205
	(26.80)	(0.00427)	(0.0144)
Govspend	14.66	0.00766**	0.00564
	(16.57)	(0.00304)	(0.0105)
Govinteg*Tax Burden	-0.106	-0.000226***	0.000186
	(0.157)	(3.95e-05)	(0.000198)
Inflation	0.157	-0.000678***	0.000230
	(0.592)	(0.000231)	(0.00103)
Gdpgrowth	32.05	-0.00111	0.0269
	(32.77)	(0.00590)	(0.0310)
Domestic Credit	-47.02	0.0765***	0.0266
	(33.73)	(0.00989)	(0.0192)
interest rate differential	1.081	-0.0402***	-0.00216
	(10.49)	(0.00948)	(0.00177)
Trade	7.433	-0.00438*	-0.00436
	(13.66)	(0.00265)	(0.00923)
Constant			
Hausman(PMG And MG)	Chi-squared=0.48		
Observations	374	374	374

Source: Author's Construct

From Table 8, using the PMG estimations, the result of the interaction of government integrity and tax burden reveals a negative relationship between the interaction term and capital flight. The net effect indicates that given the level of government integrity, a one percent increase in tax burden induces capital flight by 0.0407 percent (calculation is shown in Appendix J) in the long run. This finding is in conformity with intuition because government integrity is thought to reduce capital flight all things being equal. Tax burden on the other hand, increases capital flight since taxes tend to reduce the value of assets and investments. The net effect of government integrity and tax burden is 0.0407 percent. This is marginally lower than the individual effect (without interaction) of tax burden on capital flight. Thus, the individual effect (without interaction) of tax burden on capital flight as in PMG4 of Table 5 is 0.0426 percent. This

corroborates the significant effect of government integrity in the sub-Saharan Africa. The short run effect is however, insignificant.

In realising objective 3 of the study, where the study seeks to compare the effects of the government integrity and government size (government spending or tax burden as proxies) on capital flight across income groups of countries, the study first of all uses a graph to analyse the comparison of these variables on capital flight for sub-Saharan Africa within the period of 1996 to 2015. The study relies on the income categorisation from the World Bank (2018). From the panel of 20 countries, three main income groups are identified namely: Lower Income (LI), Lower Middle Income (LMI) and Upper/Middle Upper income(UMI) countries.

Figure 7 shows that compared to Upper Middle Income (UMI) group of countries, Middle Income(MI) group of countries experience the highest mean value of capital flight with Lower Income (LI) group of countries having a slightly higher values for capital flight. The figure also shows that upper income group of countries have higher level of government integrity in comparison to the other income groups. Another thing worth noting here is that upper income group of countries experience the lowest capital flight as compared to the other income groups and this could be adduced to the high level of government integrity level in this group. For the fact that South Africa and Botswana are part of this group, there is an expectation of higher government integrity level as these countries rank high in terms of government integrity score in the region. Government spending on the other hand, shows slightly higher trends for Lower income and Lower Middle income group of countries than in the Upper Middle Income group of countries. However, these variations are not too conspicuous.

For tax burden. there is not so much variations in the region as the mean values almost equal across the income groups.

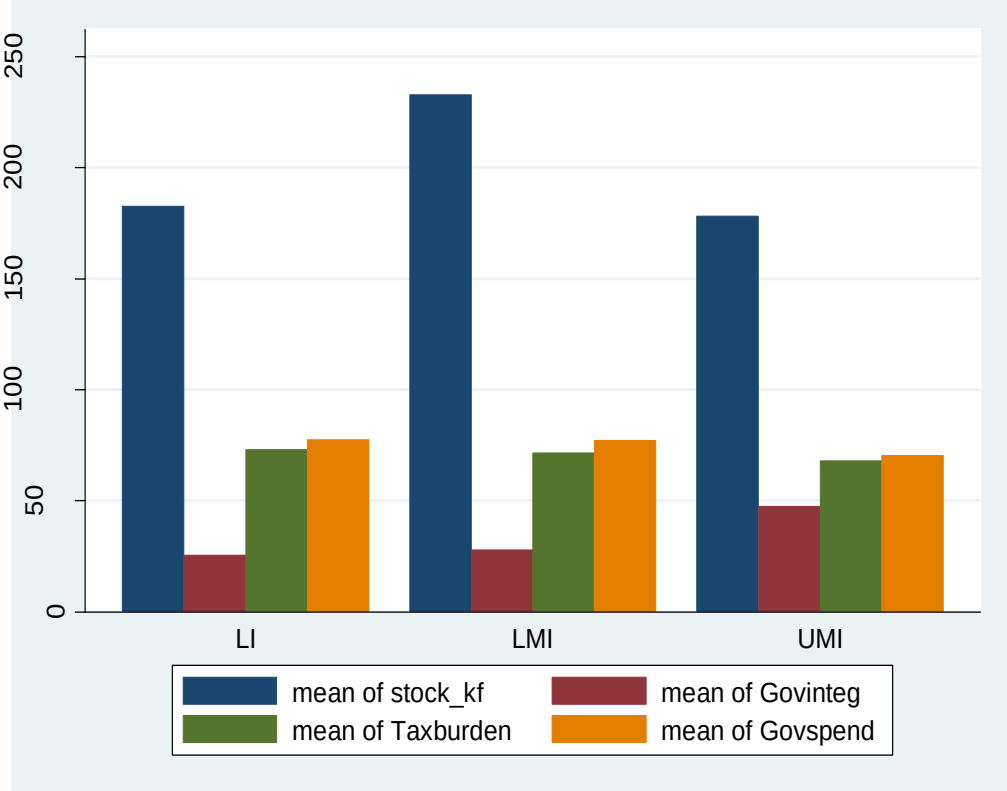

Figure 7: Comparison of Capital flight Governemnt Integrity Government spending and Tax burden across the income Groups

Source: Author's Construct

Effects of Government integrity Government spending and Taxburden on capital flight across the Income Groups of Countries

Table 9 presents the long run and the short run PMG results for the income groups within our sample. Here, the study focuses solely on the effects of the 3 main variables of interest on capital flight across the income groups. The discussion across income class is necessary so as to know if countries that fall in a particular income class are associated with low or high capital flight. Another justification is to minimise the impact of countries like South Africa (a high income country) whose presence in the entire sample might not give true

results due to its being an outlier. Therefore, disaggregating the results according to income class might bring out the true picture as far as the effects of the variables of interest on capital flight are concerned.

The first three columns under the heading "lower income countries" are the estimations results of government integrity, government spending and tax burden respectively while controlling for the other variables in the lower income group. This description goes for the rest of the income groups of countries.

For the lower income group of countries, the result shows that with the exception of the tax burden which is statistically significant at one percent and has the expected positive relationship with capital flight in the long run, the coefficients of government integrity and government spending are not statistically significant in the long run. The coefficient of tax burden in the long run is 0.0395. This implies that one percent increment in taxburden induces capital flight by 0.0395 percent, ceteris paribus. The insignificance of government integrity in the long run could be explained by the low level of government integrity of many countries that form the group of lower income countries.

However, in the short-run government integrity has a negative relationship with capital flight and it is significant at 5 percent while the tax burden and government spending are insignificant.

For the middle income group of countries, a similar observation as in the case of the lower income group is made. Tax burden is significant at one percent. The result indicates that a percentage increase in tax burden results in 0.135 percent increase in capital flight in the long run. This result confirms the finding of Muchai and Muchai (2016) who found that taxation has a positive and significant effect on capital flight in Kenya. In the short-run on the other

hand, the results for government integrity and government spending are are insignificant. The resemblance of the results of both lower and lower middle income countries could be explained by the fact that these countries share so many things in common and hence the income grouping might not have so much altered their characteristics.

Finally, the results of the upper middle/upper income group of countries are considered. The last three columns of Table 9 present the results as follows; government integrity retains its expected sign and it is significant at one percent. This means that one percent increase in government integrity reduces capital flight by 0.115 percent in the long run. This justifies the reason why countries such as South Africa and Botswana which form part of this group rank high in the continent as far as government integrity issues are concerned. From the 2017 and 2018 Corruption Perception Index reports, Botswana ranks first and second respectively as the country with the least level of corruption while South Africa ranks nineth. The higher government integrity score for a country implies that the economy is freer from corruption. This study validates the study of Osei-Assibey et al. (2018) who found that corruption has a positive and significant effect on capital flight. In addition, the finding corroborates economic intuition as it is expected that if government integrity improves capital flight should be reduced. Tax burden is also positive and significant at one level of significance implying at an increase in the burden of tax by one percentage point triggers capital flight by 0.151 percent. This falls in line with economic intuition. Both government integrity and government spending are significant but have counterintuitive signs in the short-run.

Table 9: Pooled Mean Group Results For The Income Groups

	Lower income countries			lower Middle income countries			Upper/Middle upper income countries		
Convergence coefficients	**-0.151****	**-0.0864**	**-0.244***	**-0.0240**	**-0.0911***	**-0.135**	**-0.879*****	**-0.672*****	**-1.143*****
	(0.0683)	(0.143)	(0.144)	(0.0185)	(0.0515)	(0.0876)	(0.0251)	(0.194)	(0.386)
SHORT-RUN COEFFICIENTS									
Δ.Govinteg	**-0.0326****			**0.00119**			**0.0460****		
	(0.0153)			(0.00332)			(0.0223)		
Δ.Inflation	0.000167	7.47e-05	0.000592	-0.000436	-0.000524*	-7.34e-05	-0.000437	-0.00181	-0.000912
	(0.000262)	(0.000281)	(0.000493)	(0.000320)	(0.000290)	(0.000116)	(0.00217)	(0.00454)	(0.00103)
Δ.Domesticcredit	0.0377	0.0283	0.0393	-0.0151	-0.0135	-0.0175	-0.105	-0.0803*	0.113**
	(0.0499)	(0.0358)	(0.0421)	(0.0128)	(0.0152)	(0.0117)	(0.172)	(0.0414)	(0.0504)
Δ.Tradeopennesss	-0.0130*	-0.0115*	-0.00778*	0.000750	0.00233	-0.000478	-0.0106	-0.0250***	-0.0321
	(0.00786)	(0.00609)	(0.00465)	(0.000961)	(0.00150)	(0.00179)	(0.0563)	(0.00938)	(0.0353)
Δ.Interst rate differential	-0.0111	-0.00250	-0.00421	-0.0185	-0.0157	-0.00995	0.115	0.0566	0.512**
	(0.0116)	(0.00701)	(0.0126)	(0.0134)	(0.0102)	(0.00832)	(0.0970)	(0.104)	(0.221)
Δ.Gdpgrowth	-0.00875	-0.00671	-0.0109	-0.00830	-0.0113*	-0.00579**	-0.0680	-0.0935**	-0.0304***
	(0.0114)	(0.0146)	(0.0123)	(0.00601)	(0.00687)	(0.00258)	(0.0754)	(0.0432)	(0.00983)
Δ.Taxburden			**0.00879**			**-0.0107**			**0.0354**
			(0.0134)			(0.0101)			(0.160)
Δ.Govspend		**0.00166**			**-2.64e-06**			**0.0380*****	
		(0.00559)			(0.000718)			(0.0399)	
LONG-RUN COEFFICIENTS									
Govinteg	**-0.00207**			**0.0731**			**-0.115*****		
	(0.00649)			(0.0475)			(0.0207)		
Inflation	0.000409	-2.97e-05	-0.000670**	0.00197	0.00124***	-0.00108	-0.0163***	-0.0179***	-0.0155***
	(0.000637)	(0.000268)	(0.000281)	(0.00183)	(0.000341)	(0.00176)	(0.00269)	(0.00431)	(0.00130)
Gdpgrowth	-0.0808***	-0.0349***	0.00941*	0.0111	0.0372***	0.0128	-0.0966**	-0.0184	-0.0254
	(0.0204)	(0.00828)	(0.00522)	(0.0422)	(0.0140)	(0.0464)	(0.0426)	(0.0838)	(0.0202)
Domestic credit	-0.000851	0.0757***	0.0205***	-0.00479	-0.0223*	0.0743	0.231***	0.157***	0.0960***
	(0.00576)	(0.0150)	(0.00528)	(0.0427)	(0.0130)	(0.0465)	(0.0460)	(0.0580)	(0.0228)
Interest rate differential	0.00187***	0.0139***	-0.0130*	0.114	0.0262***	-0.0234	-0.424***	-0.301***	-0.449***
	(0.000542)	(0.00227)	(0.00682)	(0.109)	(0.00806)	(0.0239)	(0.0656)	(0.0849)	(0.0388)
Trade openness	0.0606***	0.0108***	-0.00121	0.0264	-0.00202**	-0.00202	-0.0450	-0.0337	-0.0376**
	(0.00974)	(0.00308)	(0.00141)	(0.0226)	(0.000955)	(0.0158)	(0.0306)	(0.0427)	(0.0150)
Govspend		**-0.00235**			**0.00357**			**-0.0333**	

Table 9 contiuned

		(0.00466)			(0.00421)			(0.0521)	
Tax burden			**0.0395*** **			**0.135*** **			**0.151*** **
			(0.00331)			(0.0494)			(0.0199)
Constant	0.301**	0.370	0.282	0.0203	0.488**	-0.947	8.020***	4.587***	-7.543
	(0.152)	(0.630)	(0.242)	(0.0537)	(0.230)	(0.614)	(0.121)	(0.176)	(4.935)
Observations	189	189	189	130	130	130	36	36	36
Standard errors in parentheses	*** p<0.01 ** p<0.05 * p<0.1								

Source: Author's Construct

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

Introduction

The chapter provides a summary of the study. Based on the findings of the study, this chapter draws conclusions and make recommendations for policy analysis and also considers limitation of the study and finally suggests areas for future studies on the topic.

The study aims at finding the effects of government integrity and government size on capital flight in sub-Saharan Africa. Also, the interacting effects of government integrity and government size variables on capital flight are considered. Finally, the study compares the effects of variables of interest across three income groups within the sample. Panel data set of twenty (20) countries in sub-Saharan Africa is analysed over the period 1996-2015. The portfolio choice frame work is used for the theoretical model. Also three different estimation techniques : Pooled Mean Group, Mean group and DFE regression models are used. However, the PMG estimator was preferred to the other two estimators by the help of the hausman test. This is because the PMG provides efficient estimates of the coefficients.

Summary of Findings

In summary, the study finds that government integrity has a negative relationship with capital flight and that a percentage increase in government integrity reduces capital flight by at least 0.0173 percent in the long run holding constant the other variables included in the model. The short run effect of government integrity also reveals a negative and significant relationship between

government integrity and capital flight. This is in line with the finding of Osei-Assibey et al. (2018) who find a positive relationship between corruption and capital flight. This is because failure of integrity in the system connotes corruption**.** This implies that when government integrity is high corruption is low and vice versa.

Tax burden, one of the measures of government size has positive effect on capital flight. The results from all the specification produce positive and significant result. Thus, from the last specification a percentage increase in tax burden as a measure of government size increases capital flight by 0.0426 percent in the long run all other things being equal. Government spending, the second proxy for government size yields mixed results both in the long run and in the short run in almost all specifications. In the last specification, government spending yields positive and significant result implying that all other things being equal, a one percent increase in government size results in 0.007 percent increase in capital flight. While the domestic credit to private sector as a ratio of GDP yields positive and significant results in all specifications in the long run, interest rate differentials and inflation rate remain negative and significant. However, the results for GDP growth rate and trade openness are mixed.

For the second objective, the study examines the interaction effects of government integrity and government size variables on capital flight. The result shows that government integrity serves a moderating role in reducing capital flight from the sub-Saharan countries when interacted with government spending and tax burden.This is evident in a marginally lower coeffficient of tax burden in the interaction term than the individual effect of tax burden.

Lastly, the study explores the effects of the government integrity and government size on capital flight across three main income categories. The results indicate that government integrity has a negative and significant impact on capital flight in middle upper income countries category while insignificant effects are observed in the lower and lower middle income counterparts. Across all the income groups, the study shows that tax burden retains its positive and significant effect on capital flight. This highlights the impact of tax burden on capital flight within the sub-Saharan Africa sub region.

Conclusion

Most studies on capital flight as observed in the empirical literature are biased towards the cause and determinants with no studies on government integrity and government size as key factors of capital flight particularly in Sub-Saharan Africa. Hence, the main objectives of this study are to establish the relationships between capital flight and government integrity and also the relationship between government size and capital flight in sub-Saharan Africa. It also examines the interacting effect of government integrity and government size variables on capital flight. Finally the study compares the effects of variables of interest across the income groups within the sample.

The study finds that government integrity is significant in reducing capital flight in sub-Saharan Africa. This implies that government integrity has a significant impact in determining the rate of capital flight from the sub-Saharan Africa countries in the long-run and short-run thus supporting the notion of the investment diversion thesis that plays a significant role in influencing capital flight from developing countries. The justification for this result is that good government integrity gives the citizenry the confidence and incentive to invest

their resources in the domestic economy as they are confident on adequate returns from investment and safety of their funds. Similarly, foreign investors would want to reinvest their profit in the host economy as they are optimistic of getting good returns on investment given that the government is trustworthy. The findings of this study also lend credence to the existing theory of portfolio choice on capital flight as interest rate differential is found to be significant and with the expected sign in all specifications.

Finally, from aforementioned discussions, this research work has enough evidence to conclude that while government integrity has a negative effect on capital flight, tax burden (a proxy of government size) has a positive and significant effect on capital flight in sub-Saharan Africa. The finding also indicates that tax burden has a positive and significant effect on capital flight among the three income groups of countries. Government integrity shows a negative and significant effect on capital flight in upper middle/upper income group of countries but no significant effect is seen for the other income group of countries.

Recommendations

In view of the study's results it is suggested that:

Policymakers such as government of the respective countries and other stakeholders for example, Transparency International, Global Integrity Initiatives and Integrated Social Development Centre in SSA countries should intensify campaigns geared towards improving government intergrity. For instance Commision on Human Right and Administrative Justice and Senior Fraud Office in Ghana should not be left out of this campaign so as to investigate corrupt practices involving both private and public institutions and applying appropriate

sanctions when the need arises. This should be done so as to ensure governmental and civil service transparency, acoountability in the public and private institutions and transparency of government policymaking.

The study also recommends that governments, especially those of low or middle income group of countries in sub-Saharan Africa must ensure that institutions responsible for enhancing government integrity and other forms of anticorruption strategies are well empowered and given the needed resources to work effectively to reduce corruption to the barest minimum in order to help improve integrity in all fabric of the society.

In addition, as countries transit from lower income status to upper income status, there is the need to focus attention on government integrity as this is found to have a significant and a reducing effect on capital flight from the upper income group of countries.

Finally, governments in collaboration with tax authorities of sub-Saharan countries for example, Tax Justice Network and Ghana Revenue Authority should try to reduce tax burden on their citizenry so as to lessen the effect of capital flight from the region. Tax reliefs programs like tax holidays and other tax incentives should be given to domestic firms as a way of motivating homegrown investment which will bolster domestic investment.

Limitation of the Study

One of the main limitation of this study is the inability to get enough cross sectional units and data points for the analysis and so only a sample of 20 countries were considered. In addition, there were missing values on some of the control variables for some countries. This possibly limits the study because the presence of those values may influence the outcome.

For a heterogeneous panel analysis, there are different characteristics of the sub-sample that needs to be considered in the analysis. For instance, an analysis of both oil and non oil countries could not be considered due to the limitedness of the sample selected which excludes some of the major oil producing countries in sub-Saharan Africa like Angola, Republic of Congo, Equatorial Guinea and the likes. Notwithstanding the above limitations, the results of this study are still valid.

Areas for Future Research

While it is important to know the impact of government integrity and government size on capital flight from sub-Saharan Africa, there is the need for a more detailed investigation on the topic at specific country level so as to bring to the fore the impacts of government integrity and government size on capital flight to shed light on effective strategies to prevent each country's financial hemorrhage.

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APPENDICES

A: Correlation Matrix

Variables	Capital Flight	Govern-ment integ-rity	Tax bur-den	Government spending	Infla-tion	GDP growth	Domes-ticcredit	Interest rate differential	Trade open-ness
Capital flight	1								
Govinteg	-0.0165	1							
Taxburden	-0.263***	0.115*	1						
Govspend	0.107*	-0.214***	0.209***	1					
Inflation	0.0685	-0.0130	-0.188***	0.114*	1				
GDPgrowth	-0.140**	-0.193***	0.150**	-0.0752	-0.112*	1			
Domesticcredit	-0.0938	0.380***	0.0134	-0.159**	-0.00788	-0.144**	1		
Interest rate Differential	-0.0135	0.0373	0.0475	0.176***	-0.0793	0.324***	0.0142	1	
Trade openness	-0.0385	0.327***	0.0750	-0.260***	-0.116*	-0.0794	0.148**	-0.143**	1

B: Hausman Test

Models	PMG versus MG		PMG versus DFE	
	χ^2	P-VALUE	χ^2	P-VALUE
1	9.06	0.401	Not Appliable	Not Applicable
2	3.32	0.7672	Not Applica-ble	Not Applicable
3	0.64	0.9957	575.72	0.000
4	0.34	1.0000	182.57	0.00

C: A Step-wise Long Run Mean Group Estimation Results

	MG1	MG2	MG3	MG4
VARIABLES	ECT	ECT	ECT	ECT
Convergence Coeffic	-0.635***	-0.566***	-0.556***	-0.009***
	(0.100)	(0.0931)	(0.127)	(0.003)
Govinteg	-0.00116			-9.391
	(0.0346)			(12.35)
Inflation	-0.000580	-0.00920	-0.00167	0.357
	(0.00315)	(0.00763)	(0.00174)	(0.698)
Gdpgrowth	-0.0129	-1.033	-0.0745	32.92
	(0.0555)	(0.909)	(0.0592)	(32.08)
Domestic credit	0.108	-0.706	0.0193	-48.03
	(0.0861)	(0.723)	(0.0360)	(33.53)
Dlr	0.0622	-0.342	0.0700	1.430
	(0.144)	(0.417)	(0.0938)	(10.29)
Trade	0.0319	0.166	0.00139	7.047
	(0.0214)	(0.117)	(0.0125)	(13.47)
Govspend		0.183		15.75
		(0.215)		(16.33)
Tax burden			-0.00150	39.63
			(0.0398)	(27.03)
Constant	2.856***	4.011**	2.182	-3.275
	(0.927)	(1.996)	(3.486)	(13.27)
Observations	374	374	374	374

D: A Step-wise Short Run Mean Group Estimation Results

	(MG1)	(MG2)	(MG3)	(MG4)
VARIABLES	SR	SR	SR	SR
ECT	-0.635***	-0.566***	-0.556***	-0.00956***
	(0.100)	(0.0931)	(0.127)	(0.00302)
Δ.Govinteg	-0.0292**			-0.0122
	(0.0139)			(0.0223)
Δ.inflation	-0.000336	0.000205	0.000358	-0.000658
	(0.000304)	(0.000463)	(0.000578)	(0.00389)
Δ.domesticcredit	-0.0158	0.0265	0.0211	0.117
	(0.0239)	(0.0307)	(0.0328)	(0.102)
Δ.trade	-0.0105	-0.0118	-0.0119	0.0656
	(0.00998)	(0.0101)	(0.00928)	(0.0889)
Δ.Dlr	0.00179	0.00641	0.0159	-0.255*
	(0.0439)	(0.0627)	(0.0543)	(0.132)
Δ.GDPgrowth	0.0142	0.0392	0.0260	0.0882
	(0.0322)	(0.0377)	(0.0214)	(0.144)
Δ.Govspend		-0.00426		0.00213
		(0.00878)		(0.0389)
Δ.Taxburden			0.0296	-0.141
			(0.0404)	(0.140)
Constant	2.856***	4.011**	2.182	-3.275
	(0.927)	(1.996)	(3.486)	(13.27)
Observations	374	374	374	374

E: A Step-wise Long Dynamic Fixed Effect Estimation Results

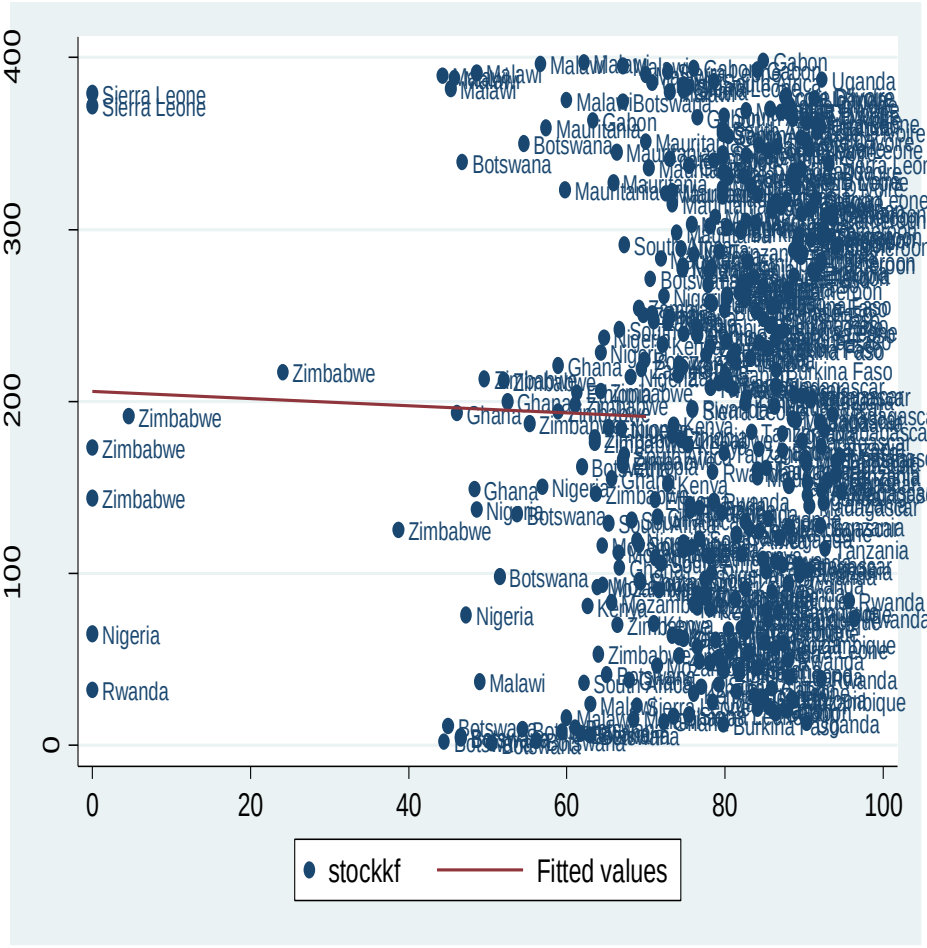
	DFE1	DFE2	DFE3	DFE4
VARIABLES	ECT	ECT	ECT	ECT
ECT		-0.379*** (0.0437) -0.387***	-0.382*** (0.0436)	
GOVINTEG	0.00875			0.0121
	(0.0131)			(0.0135)
INFLATION	0.000298	0.000261	0.000166	0.000174
	(0.00104)	(0.00105)	(0.00104)	(0.00103)
GDPGROWTH	0.0128	0.00707	0.0147	0.0268
	(0.0278)	(0.0285)	(0.0277)	(0.0312)
DOMESTICCREDIT	0.0217	0.0229	0.0273	0.0271
	(0.0188)	(0.0187)	(0.0189)	(0.0192)
DLR	-0.00191	-0.00181	-0.00189	-0.00218
	(0.00172)	(0.00178)	(0.00172)	(0.00178)
TRADE	-0.00726	-0.00683	-0.00450	-0.00424
	(0.00895)	(0.00902)	(0.00927)	(0.00926)
GOVSPEND		-0.00115		0.00476
		(0.00948)		(0.0103)
TAXBURDEN			-0.0128	-0.0169
			(0.0119)	(0.0132)
CONSTANT	1.800*** (0.344)	1.910*** (0.451)	2.151*** (0.415)	
OBSERVATIONS	374.	374	374	374

F: A Step-wise Short Run Dynamic Fixed Effect Estimation Results

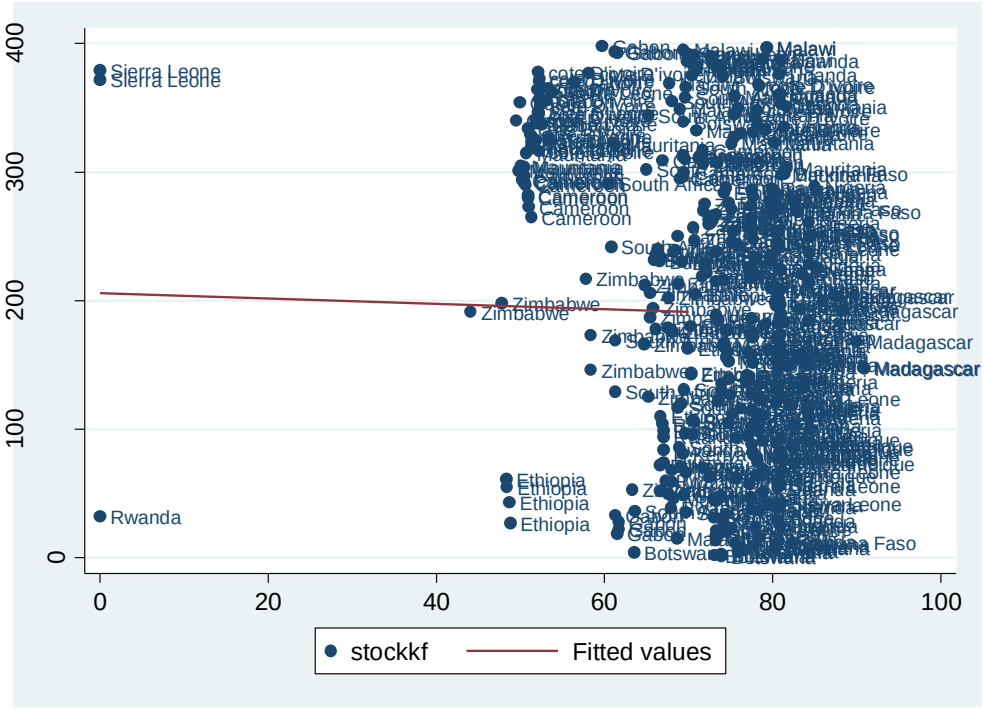
	(DFE1)	(DFE2)	(DFE3)	(DFE4)
VARIABLES	SR	SR	SR	SR
ECT	-0.383***	-0.379***	-0.382***	-0.387***
	(0.0440)	(0.0437)	(0.0436)	(0.0444)
Δ.Govinteg	-0.00216			-0.00219
	(0.00652)			(0.00660)
Δ.inflation	-0.000420	-0.000408	-0.000428	-0.000458
	(0.000471)	(0.000472)	(0.000471)	(0.000476)
Δ.domesticcredit	-0.00338	-0.00324	-0.00447	-0.00491
	(0.00828)	(0.00824)	(0.00830)	(0.00844)

Δ.trade	-0.00463	-0.00457	-0.00474	-0.00494
	(0.00457)	(0.00456)	(0.00463)	(0.00469)
Δ.Dlr	0.000233	0.000215	0.000211	0.000282
	(0.000618)	(0.000632)	(0.000617)	(0.000635)
Δ.GDPgrowth	-0.0114	-0.0106	-0.0127	-0.0148*
	(0.00823)	(0.00827)	(0.00839)	(0.00880)
Δ.Govspend		7.29e-05		-8.62e-05
		(0.00347)		(0.00458)
Δ.Taxburden			6.41e-05	0.000261
			(0.00528)	(0.00701)
Constant	1.800***	1.910***	2.151***	1.984***
	(0.344)	(0.451)	(0.415)	(0.488)
Observations	374	374	374	374

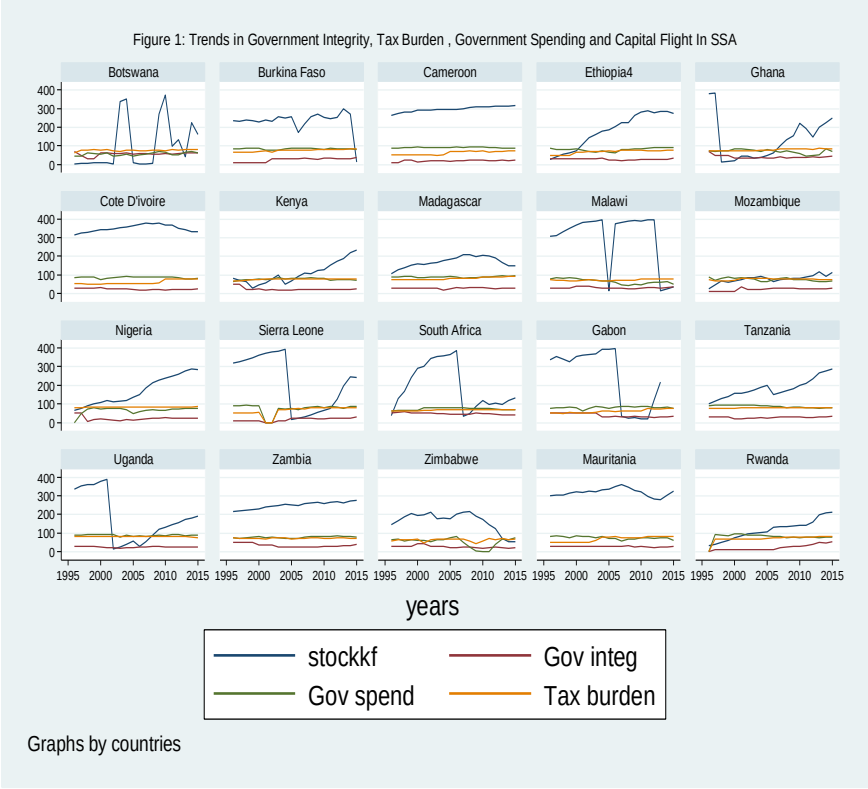
G: Relationship between Capital Flight and Government Spending in SSA(1996-2015)



H: Relationship between Capital Flight and Tax burden in SSA(1996-2015)



I: Trend Analysis of Capital Flight Government Integrity Tax burden and Government Spending in SSA(1996-2015)



J: Calculation of the effect of the interaction between Governemnt spending and Government Integrity.

In this appendix we demonstrate how the interaction between government spending and government integrity is calculated.

Longrun

LnStockkf = 0.0128LnGovspend + (– 0.000213LnGovspend*LnGovinteg)

We used the mean value (29.95%) of Government Integrity from Table 4.1

$$\frac{dStockkf}{dGovspend} = 0.0128 + (-0.000213*29.55)$$

$$= \mathbf{0.0065\%}$$

Thus the interaction effect of Government spending and Government integrity on capital flight is estimated at **0.0065%**

Calculation of the effect of the interaction between Tax burden and Government Integrity.

LnStockkf = 0.0474LnTaxburden + (– 0.000226LnTaxburden*LnGovinteg)

We used the mean value (29.95%) of Government Integrity from Table 4.1

$$\frac{dStockkf}{dTaxburden} = 0.0474 + (-0.000226*29.55)$$

$$= \mathbf{0.0407221\%}$$

K: List of countries Studied

Botswana, Burkina Faso, Camerron, Ethiopia, Ghana, Cote D'voire, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Sierra Leone, South Africa, Gabon, Tanzania, Uganda, Zambia, Zimbabwe, Mauritania and Rwanda.