International Journal of Economic Policy in Emerging Economies

ISSN online: 1752-0460 - ISSN print: 1752-0452
https://www.inderscience.com/ijepee

Capital flight, tax revenue and economic growth in Sub-Saharan Africa: the role of good governance

James Atta Peprah, Harold Ngalawa, Evelyn Derera

DOI: 10.1504/IJEPEE.2022.10048308

Article History:
Received: 05 February 2020
Accepted: 22 April 2022
Published online: 22 May 2023

Capital flight, tax revenue and economic growth in Sub-Saharan Africa: the role of good governance

James Atta Peprah

School of Economics,
University of Cape Coast,
Cape Coast, Ghana
Email: jpeperah@ucc.edu.gh

Harold Ngalawa*

School of Accounting, Economics and Finance,
University of KwaZulu-Natal,
Durban, South Africa
Email: ngalawa@ukzn.ac.za
*Corresponding author

Evelyn Derera

School of Management, Information Technology and Governance,
University of KwaZulu-Natal,
Pietermaritzburg, South Africa
Email: dererae@ukzn.ac.za

Abstract: The study examines the moderating role of good governance indicators in the capital flight, tax revenue and economic growth relationship in 28 SSA countries. The data for the study spans from 1996 to 2018, and dynamic panel estimators were employed for the data analysis. As expected, the findings indicate that capital flight hinders economic growth in SSA whiles increasing tax revenue promotes growth. However, the effects of both capital flight and tax revenue on economic growth in sub-Saharan Africa are moderated by good governance indicators. In other words, with good governance, the drainage effect of capital flight on economic growth reduces significantly and the growth enhancing effect of domestic revenue mobilisation is increased. It is concluded, therefore, that policies that strengthen good governance are essential for Africa's growth prospects.

Keywords: capital flight; good governance; economic growth; Sub-Saharan Africa.

JEL Codes: H26, O10.

Reference to this paper should be made as follows: Peprah, J.A., Ngalawa, H. and Derera, E. (2023) 'Capital flight, tax revenue and economic growth in Sub-Saharan Africa: the role of good governance', *Int. J. Economic Policy in Emerging Economies*, Vol. 17, No. 3, pp.444–464.

Biographical notes: James Atta Peprah is an Associate Professor of Economics in the Department of Applied Economics at the School of Economics, University of Cape Coast, Ghana. He holds a PhD in Economics,

MPhil in Economics and Bilingual MBA (Banking and Finance). His areas of research include development economics, financial markets and institutions in developing countries, microfinance, economic growth and development as well as small and medium scale enterprise studies. He has a number of publications that focus on SMEs, microfinance and poverty in Ghana. Currently, he is the Head of the Department of Applied Economics and coordinator of Microfinance at the School of Economics, University of Cape Coast, Ghana.

Harold Ngalawa is a Professor of Economics in the School of Accounting, Economics and Finance (SAEF) at the University of KwaZulu-Natal (UKZN) in South Africa. He is also the Founder of the Macroeconomics Research Unit at UKZN, the only research establishment specialising in macroeconomics research in South Africa. Previously, he taught Economics at the University of Malawi. Before joining the academia, he worked as a Bank Economist and later as the Head of Research at a Discount House in Malawi. He holds a PhD in Economics from the University of Cape Town.

Evelyn Derera is an Associate Professor of Entrepreneurship in the School of Management, IT and Governance at the University of KwaZulu-Natal (UKZN). Over the years, she has served as the Academic Leader for the discipline of Management and Entrepreneurship; Program Manager for the Postgraduate Diploma in Management for Self-Funded Teaching Programs at UKZN Pietermaritzburg Campus and an academic development officer. She holds a PhD in Entrepreneurship from UKZN. She is passionate about entrepreneurship, particularly the role of women entrepreneurs in developing nations. She has also published in the area of social and youth entrepreneurship. She also holds a Diploma in Banking from the Institute of Bankers of Zimbabwe. Before joining the academia, she worked in the banking sector in Zimbabwe where she held several positions including the Customer Relationship Manager in private banking. Her financial sector experience spans over ten years.

1 Introduction

Target four of the United Nations Sustainable Development Goals (SDGs) No. 16 seeks to reduce all forms of illicit financial flows, including capital flight by 2030 (UN General Assembly, 2015). Not surprisingly, the literature is awash with research on capital flight and its implications for economic growth (see for example, Bredino et al., 2018; Geda and Yimer, 2017; Lawal et al., 2017). While studies have investigated the determinants of capital flight (Osei-Assibey et al., 2018; Forson et al., 2017) others studies have examined the effects of capital flight on investment, economic growth and development (Ndiaye, 2014; Fofack and Ndikumana, 2010) and several recommendations have been put forward. Capital flight, however, has continued to pose a serious problem in the continent. According to Ndikumna and Boyce (2011), Africa has the highest record of capital flight (Ndikumana and Boyce, 2011). Since 2010, capital flight in Africa has been growing faster than foreign direct investment and official development assistance (Boyce and Ndikumana, 2012). While capital flight continues to increase, the level of private domestic investment in Africa continues to decline and lags behind other regions (African Development Bank, 2018). In Sub-Saharan Africa (SSA), capital flight is highest in

oil-producing economies compared to non-oil producing economies (Boyce and Ndikumana, 2012).

Research on capital flight in SSA has gained substantial attention in academia and the policy arena, especially in the context of the debate on financing for sustainable development. A majority of countries in the sub-region have failed to achieve the just ended millennium development goal (MDGs) of halving extreme poverty by 2015, yet Africa is the only continent still witnessing an increase in the number of people living in poverty. Capital flight out of Africa constitutes resources that could otherwise have contributed significantly to financing development. For example, between 1970 and 2015, an estimated US$1.4 trillion was lost through capital flight in Africa (Ndikumana and Boyce, 2018). Recently, the loss increased because of the accelerated growth in unregulated cryptocurrency activities in the region. Thus, financing the SDGs calls for more proactive policies since foreign capital flows have dwindled. As an alternative method of financing sustained economic growth, some development practitioners advocate for the use of domestic private capital and domestic tax revenue as effective methods of financing development, while reducing capital flight. One key inward-looking policy has been improving institutional factors such as governance systems, regulatory quality, and control of corruption, among others. These factors will enhance tax capacity, increase domestic investment and reduce the effect of capital flight on economic growth.

What is the state of domestic resource mobilisation in SSA? Some studies have shown that SSA has low tax capacity of about 20% of gross domestic product (GDP) and a lower tax revenue to GDP ratio of 1.7. This is largely caused by inefficiencies such as corrupt practices and laxity in tax policies and revenue collection. A recent report by UNECA (2019) indicates that addressing tax capacity constraints and collection inefficiencies could boost tax revenue in Africa by 3% of GDP. Similarly, improving tax governance by combating corruption and bolstering accountability could reduce inefficiencies and, on average, mobilise up to US$72 billion a year, which is about a third of the estimated average investment financing gap of US$230 billion. These resources could contribute towards the achievement of the SDGs and Agenda 2063 in Africa.

Since the 1990's good governance gains have been achieved in SSA and the region continues to build on these gains. African Development Bank (2000) asserts that good governance should be built on a foundation of effective states, mobilised civil societies, and an efficient private sector. The key elements of good governance, according to the African Development Bank (2000), are accountability, transparency, combating corruption, citizen participation, and an enabling legal and judicial framework. Unfortunately, some African countries are yet to achieve the type of reforms that can reduce corruption and economic decline. Some SSA countries remain saddled by poor-functioning governance structures. The absence of good governance in many African countries has been extremely damaging to the government's corrective intervention role, particularly in the maintenance of peace and security, as well as the promotion of economic growth and the creation of the wealth (through domestic resource mobilisation) needed to finance development and improve welfare.

Previous studies have been conducted on the effects of capital flight, private capital investment and domestic tax revenue on economic growth (Ndikumana, 2014; Ajayi, 1997). Ajayi (1997) and Ndikumana (2014) researched on capital flight from different perspectives on Africa. Recently, similar work was conducted by Osei-Assibey et al. (2018) on corruption, institutions and capital flight in Sub-Saharan Africa. In this study, the authors examined how institutions and governance affect capital flight in SSA.

Similarly, Ndikumana (2014) examined capital flight and tax havens and their impact on investment and growth in Africa. In addition, Asongu (2014) proposed ways of harmonising the fight against capital flight in Africa. Even though good governance indicators play a crucial role in reducing capital flight and increasing domestic investment and tax revenues, the aforementioned studies did not examine the moderating role of good governance indicators. By extension, this paper adds to the body of knowledge by examining the role of governance indicators in reducing the effect of capital flight on economic growth. Institutional factors such as good governance matter for capital flight because public authorities may contribute to capital flight under different governance conditions such as government (in)stability and control of corruption (Asongu and Odhiambo, 2019). This article seeks to explore the role of good governance (e.g., the rule of law and government stability) in minimising the effect of capital flight on economic growth and how good governance enhances the impact of domestic revenue on economic growth. Another contribution of this article is its examination of the effect of capital flight shocks on economic growth in a panel vector autoregressive (panel VAR) model, a key component of research that is overlooked by most researchers. Consequently, the key hypothesis that was tested is that capital flight and domestic tax revenue do not significantly affect economic growth in Sub-Saharan Africa. The main objective of this paper is to examine the moderating role of good governance among the relationship between capital flight, tax revenue and economic growth in Sub-Saharan Africa. In line with this objective, the study tested the hypothesis that good governance indicators do not reduce the effects of capital flight on economic growth. In a nutshell, the focus of this study is primarily on examining the effect of capital flight and domestic tax revenue on economic growth and the role that good governance plays.

The remaining part of the paper is structured as follows: Section 2 is a review of the literature; Section 3 details the main methods employed for analysis in the article; Section 4 presents and explains the study results; and Section 5 concludes.

2 Literature survey

There is near consensus in the literature that capital flight has negative consequences on economic growth (Raheem and Adeniyi, 2015; Asongu, 2014; Ndikumana, 2014). While some capital gravitates into SSA, a substantial portion flows out of the region. The phenomenon of capital flight takes place through transferring abroad a portion of domestic financial resources. Conceptually, capital flight has a negative influence on domestic output growth rate through the investment channel, which has the potential of reducing domestic investment and consequently, output (Geda and Yimer, 2017). Ndikumana (2009) found that capital flight reduces domestic investment by decreasing the volume of savings channelled through the domestic banking and non-banking financial system, thereby retarding economic growth. Capital flight can also induce negative feedback processes, especially during periods of uncertainty and crises (Muchai and Muchai, 2016) with adverse implications on economic growth.

Many studies have ignored the moderating effect of institutional factors such as government stability and the rule of law (see for example, Muchai and Muchai, 2016; Geda and Yimer, 2016) in the study of capital flight on economic growth. In the field of institutional economics, seminal contributions from North (1990), Scott (1995) and

Williamson (2000) state that formal rules (constitutions, laws, and property rights, among others) occupy a crucial role in economic development and the production of real output. Some studies on economic growth show that institutions are the fundamental cause of economic growth, shaping more proximate causes like the accumulation of physical and human capital (Fatas and Mihov, 2013; Acemoglu et al., 2005; North, 2002).

The empirical literature on private investment behaviour in developing countries has focused on the hypothesis that explains variations in private capital investment in these economies instead of explaining their effect on economic growth (Afonso and Aubyn, 2019; Makuyana and Odhiambo, 2017). Theoretically, the relationship between private capital investment and economic growth can be derived from a flexible-accelerator model with the assumption that the underlying production function has a fixed relationship between the desired capital stock and the level of real output (Ngoma et al., 2019). Private domestic capital is less expensive, reliable and comes with no conditionalities compared to foreign resources (United Nations, 2009). As a result, it is accepted that domestic private capital may be growth-enhancing compared to foreign capital due to the foreign costs associated with the latter (United Nations, 2009) but this is dependent on the extent of capital flight. African countries cannot rely solely on external financial resources to meet their developmental needs (United Nations, 2009) and this situation may be compounded by frequent outflow of limited capital. Domestic resource mobilisation and investment in areas that promote structural transformation and sustainable development are essential (United Nations, 2009). For domestic private capital to be generated to support growth there is the need for good governance and effective institutions in Africa.

Another catalyst for spurring growth is domestic tax revenue mobilisation. It is well-known that effective institutions and good governance promote domestic revenue mobilisation. There is also near agreement among scholars that the tax system has a positive influence on different economies. Barro (1990) explains how the economy can be made more productive when tax revenues are spent on public goods and investments without considering the role of good governance. Barro and Sala-i-Martin (1992) show that in endogenous-growth models, well-designed tax systems can minimise efficiency losses and raise the GDP growth rate at the same time. This study, however, failed to recognise the role of good governance, which is essential for efficient tax systems. For SSA, Ebeke and Ehrhart (2011) find that the instability of tax revenue leads to instability in public investment and government consumption, and it also reduces the level of public investment which in the long term affects sustained growth prospects. Seidel and Thum (2015) find that stricter tax enforcement forces corrupt officials to reduce bribe demands, which promotes entry by private firms. It is necessary to recognise that institutions play a vital role in mobilising tax revenues for financing development.

The literature has documented that good governance impacts positively on economic growth through the implementation of developmental and poverty reduction policies and the signalling of government's adherence to standards of institutional functioning free of corruption or other factors such as rent-seeking behaviour (Han et al., 2014; Persson and Tabellini, 2006). The dimensions of good governance include the rule of law, control of corruption, and government stability and accountability, *inter alia*. Several studies have confirmed that good governance enhances economic growth and development (Goel, 2019; Matovu, 2018). The effect may not be direct, meaning good governance may impact economic growth through a reduction in the level of capital flight, and an improvement in tax revenue mobilisation and domestic capital investment, among others.

The effect of democracy on economic growth is expected to be positive as democratic countries are characterised by independent and stable political institutions that tend to attract investors (Ndiaye and Siri, 2015). In addition, democratic processes encourage governments to promote economic freedom and private initiatives, which foster investment initiatives. For example, Rodrik and Wacziarg (2005) explain that democracy creates political circumstances conducive to investment, increase in productivity and consequently, economic growth. A more recent study by Acemoglu et al. (2019) showed that good governance (measured by democracy) has a significant impact on growth, especially in countries where a greater fraction of the population has secondary or high schooling.

3 Methodology

This section is presented in two parts, and it details how capital flight is measured, discusses the key methods used in estimating the models and finally, provides a description of the data and measurement of variables used for the study.

3.1 Estimating capital flight

The study follows the World Bank's (1985) residual method which defines capital flight (KF) as the difference between total capital inflows and recorded foreign exchange outflows. Several adjustments have been made to this method by including: trade mis-invoicing, under-reporting of remittances, inflation and exchange rates. According to this method, in a given year t for country i, the residual measure of capital flight is given as:

$$KF_{it} = \Delta DEBTADJ_{it} + NDFI_{it} - \left(CAD_{it} + \Delta RS_{it}\right) \tag{1}$$

where for country i in year t, KF_{it} is capital flight, $\Delta DEBTADJ_{it}$ is the change in the country's stock of external debt adjusted for exchange rate fluctuations, $NDFI_{it}$ is the net direct foreign investment, CAD_{it} is the current account deficit and ΔRS_{it} is net additions to the stock of foreign reserves. As a way of updating the methodology to estimate capital flight, several attempts have been made over the years by various researchers. By employing the methodologies outlined by Ndikumana (2009), Ndikumana (2000) and Osei-Assibey et al. (2018), an updated approach was used for the measurement of capital flight. This study follows these earlier studies.

3.2 Adjusting for exchange rate fluctuation

Exchange rate fluctuations exist among countries, and it is necessary to correct for any discrepancies they may cause. In this regard, long-term debt stock was adjusted for fluctuations using the US dollar exchange rate against domestic currencies of the sampled countries. For country i, the US dollar value of the beginning-of-year stock of debt at the end-of-year exchange rate is obtained as follows:

$$ND_{i,t-1} = \sum_{k=1}^{7}\left(\theta_{ik,t-1} * LTDebt_{i,t-1}\right)/\left(EX_{kt}/EX_{k,t-1}\right) + IMFCREDIT_{i,t-1}/\left(EX_{SDR,t}/EX_{SDR,t-1}\right) + LTOTHERUSC_{i,t-1} + LTMULTC_{i,t-1} + LTUSD_{i,t-1} + STDEBT_{i,t-1} \quad (2)$$

where *NDT* is the value of the beginning-of-year stock of debt at the end-of-year exchange rate; *LTDebt* is the total long-term debt; θ_{ik} is the proportion of long-term debt held in currency *k*, for non-US currencies; *EX* is the end-of-year exchange rate of the currency of denomination against the US dollar ; *IMFCREDIT* is the use of International Monetary Fund (IMF) credit; *LTOTHERUSC* is long-term debt denominated in other unspecified currencies; *LTMULTC* is long-term debt denominated in multiple currencies; *LTUSD* is long-term debt denominated in US dollars; *STDEBT* is short-term debt; and *DEBT* is the total debt stock reported by the World Bank. The exchange rate adjustment is obtained as follows:

$$EXRADJ_t = NEWdebt_{t-1} - DEBT_{t-1} \quad (3)$$

where $EXRADJ_t$ is the exchange rate adjusted debt and *NEWdebt* is new debt stock. It follows that the adjusted change in debt can be obtained as:

$$\Delta DEBTADJ_t = \Delta DEBT_t - EXRADJ_t \quad (4)$$

Since $\Delta DEBT_t = DEBT_t - DEBT_{t-1}$, it implies that (4) is equivalent to

$$\Delta DEBTADJ_t = DEBT_t - NEWdebt_{t-1} \quad (5)$$

Adjusting (1) by the inclusion of trade mis-invoicing and under-reporting of remittances as a modification to the World Bank residual method of estimating capital flight advanced by Ndikumana (2000) yields adjusted capital flight ($ADJKF_{it}$) in (6):

$$ADJKF_{it} = \Delta DEBTADJ_{it} + NDFI_{it} - \left(CAD_{it} + \Delta RS_{it}\right) + TradeMisV_{it} \quad (6)$$

where $TradeMisV_{it}$ is trade mis-invoicing and RID_{it} is the remittance inflow discrepancy in country *i* in year *t*.

3.3 Adjusting for trade mis-invoicing

Trade mis-invoicing is estimated by comparing a country's declared import and export statistics to those of its trading partners taking note of the addition of the cost of insurance and freight (CIF). It is expected that trade data from industrialised countries are somewhat accurate compared to that of the SSA (Boyce and Ndikumana, 2012). Consequently, a measure of the discrepancy between them is presumed to be evidence of trade mis-invoicing. Therefore, for an individual SSA country *i* in year *t*, export discrepancies with the industrialised countries (*QXIC*) are computed as follows:

$$QXIC_{it} = IMAC_{it} - \left(EXAC_{it} * CIF_t\right)$$

$$QMIC_{it} = MIC_{it} - \left(EXIC_{it} * CIF_t t\right)$$

where $QXIC_{it}$ is the SSA country *i* at time *t* export discrepancies with industrialised countries; $IMAC_{it}$ is the value of imports from the SSA country as reported by the industrialised trading partners; $EXAC_{it}$ is the SSA country's exports to industrialised

countries as reported by the SSA country; $QMIC_{it}$ is the SSA country i at time t import discrepancies with industrialised countries; MIC_{it} is the SSA country's imports from industrialised countries as reported by that SSA country; and $EXIC_{it}$ is the industrialised countries' exports to the SSA country as reported by the industrialised trading partner.

We define Z as total trade mis-invoicing; CTX as a country's total exports; and CTI as a country's total imports.

$$Z_{it}\left(TradeMisV_{it}\right) = \frac{QXIC_{it}}{CTX_i} + \frac{QMIC_{it}}{CTI_i}. \tag{7}$$

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

In this study, we add remittance inflow discrepancy (RID_{it}) in country i in year t to (6) to obtain corrected capital flight as follows:

$$CADJKF_{it} = ADJKF_{it} + RID_{it} \tag{8}$$

3.4 Adjusting for remittances not reported for

A significant number of SSA countries receive large inflows of remittances from their citizens working outside the sub-region. Unfortunately, these inflows are underreported in the official statistics. The World Bank (2006) states that underreporting in the balance of payments (BOP) statistics is particularly large in Africa, with unrecorded remittances accounting for more than half of the total remittances flow. The inaccurate reporting of remittances has an effect on capital flight estimates since the volume of foreign exchange that enters SSA is markedly more than what is captured in the BOP statistics. The omission of these inflows (remittances) leads to an underestimation of their true value. We estimated the quantum of unreported remittances, comparing estimated inflows from industrialised countries to the total inflows recorded in the official BOP statistics. The discrepancy is calculated based on 2006 data (the year for which the alternative estimates are available) and extrapolated to estimate discrepancies for earlier years:

$$RID_{it} = \frac{BPRIit}{BPRI2006} * \left(ARIi, 2006 - BPRIi, 2006\right)$$

where RID_{it} is the remittance inflow discrepancy in country i in year t; $ARIi$, 2006 is the alternative measure of remittance inflows to African countries in year 2006; $BPRIi$, 2006 is the BOP measure of remittance inflows in country i in year 2006; $BPRI_t$ and $BPRi$ 2006 are the BOP measures of remittance inflows to African countries in year t and 2006, respectively.

3.5 Adjusting for price level changes

Inflation is adjusted to make annual capital flight comparable over an extended period of time. The US producer price index (PPI) with base year 2015 is employed to convert nominal flows to constant dollars (see Osei-Assibey et al., 2018; Boyce and Ndikumana,

2001; Chipalkitti and Rishi, 2001; Ajayi, 1997). As a result, the inflation-adjusted real capital flight ($RADJKF_{it}$) is calculated as:

$$RADJKF_{it} = \frac{CADJKF_{it}}{PPI_{it}} \tag{9}$$

where *PPI* is the US PPI (with 2015 as the base year). Ndikumana and Boyce (2018) updated the earlier measurement of capital flight. They proposed an inclusion of two components namely portfolio investments (*PI*) and other investments (*OI*) into the capital flight measurement. However, the new updated measurement excludes an adjustment for unrecorded remittances due to lack of updated benchmark data that can be compared to the flows reported in the BOP. In this regard, we finally define capital flight (*KF*) as follows:

$$\begin{aligned} KF_{it} &= CDEBTADJ_{it} + FDI_{it} + PI_{it} + OI_{it} \\ &\quad -(CAD_{it} + CRED_{it}) + MISINV_{it} \end{aligned} \tag{10}$$

where *CDEBTADJ* is change in debt stock adjusted for exchange rate fluctuations, interest arrears and debt forgiveness; *FDI* is foreign direct investment; *PI* is portfolio investment, *OI* is other investments; *CAD* is the current account deficit; *CRED* is the net additions to reserves; and *MISINV* is net trade mis-invoicing. This study looked beyond the debate of the definition of capital flight because, regardless of the definition, economists agree that capital flight is not good for economic growth and development prospects of a country. Osei-Assibey et al. (2018) showed how return differentials explain capital flight. Even though this article appreciates this fact, we argue that even if return differentials were positive, good governance would be supreme because investors do not only consider positive returns but also protection for their investment. The reason is that individuals who engage in capital flight generally are members of the economic and political elites, who take advantage of their privileged positions to acquire and channel funds abroad, making governance issues more prominent.

3.6 The model

Given the likelihood that past growth rates may influence current growth rates, the study considered a dynamic panel model of the form where economic growth of the country *i* at time, $y_{i,t}$ is explained by its lagged values and a set of exogenous variables as specified in equation (11). However, the inclusion of the lag of the dependent variable as an explanatory variable leads to endogeneity as a result of the correlation between the variable and the error term. There is also an additional possibility of endogeneity from the reverse causality between capital flight and economic growth. Addressing these challenges require the use of instrumental variable estimation techniques. External instruments are hard to find and those that have been used successfully like settler mortality as an instrument of institutions, are time invariant and thus not useful in the panel data context. As an alternative, the use of internal instruments as in the popular generalised methods of moments (GMM) estimator has gained momentum. The study therefore employed Arellano and Bond's (1991) proposed system GMM estimator to estimate the model. Arellano and Bond's (1991) GMM provides consistent estimates in the presence of an agglomeration effect. In addition, GMM is able to correct for endogeneity by using lags of both the dependent and independent variables as

instruments. In order to confirm the consistency of our estimates, we perform a number of tests. We conduct the J-Hansen test of over-identification to ascertain the validity of the instruments and the serial autocorrelation test to check the absence of serial autocorrelation in our model. Failing to reject the null hypothesis in both tests provides support for the consistency of the estimates. The final dynamic panel model was estimated using a system GMM estimator specified in equation (11). Equation (11) encapsulates the sub-models for the dynamic specifications.

$$EG_{it} = EG_{it-1} + \alpha KF_{it} + \alpha_1 GST_{it} + \alpha_2 RL_{it} + \alpha_3 GFCF_{it} + \alpha_4 DTR_{it} + \alpha_5 NE_{it} + \mu_i + \lambda_i + \varepsilon_{it} \tag{11}$$

where i is the country index and t is the time index; EG_{it} represents economic growth for each country at time t; KF_{it} represents capital flight for each country at time t; GST_{it} represents government stability; RL_{it} represents the rule of law; $GFCF_{it}$ represents gross fixed capital formation for each country at time t; DTR_{it} is the domestic tax revenue of each country at time t; NE_{it} represents net exports for each country; μ_i is the unobserved individual specific effect; λ_t is the unobserved time specific effect; and ε_{it} is the zero mean random disturbance.

The study further estimated a panel VAR model. This was largely informed by two reasons. First, the panel VAR model allows for the treatment of both capital flight and economic growth as endogenous variables and thereby test the feedback effect. Secondly, to use the impulse responses to determine how capital flight shock will affect economic growth the study used the Lagrangian multiplier (LM) test to determine the most appropriate lag to be used. The specific dynamic model estimated using the PVAR is given as:

$$EG_{it} = \alpha_0 + \sum_{j=1}^{m} \alpha_{1,j} EG_{I,t-j} + \sum_{j=1}^{m} \alpha_{2,j} KF_{i,t-j} + \sum_{j=1}^{m} \alpha_{3,j} W_{i,t-j} + \eta_{it} + u_{it} \tag{12}$$

$$KF_{i,t-j} = \beta_0 + \sum_{j=1}^{m} \beta_{1,j} EG_{I,t-j} + \sum_{j=1}^{m} \beta_{3,j} W_{i,t-j} + \lambda_{it} + v_{it} \tag{13}$$

where $W_{i,t-j}$ is a matrix of exogenous variables; u_{it} and v_{it} are white noise errors and η_{it} and λ_{it} represent the individual fixed effects for panel member i at time t. In this study, since no restrictions are imposed the norm is to follow a causal ordering. The variables that come at front end of the VAR affect earlier variables simultaneously or with a lag, however, variables at the end of the VAR affect the following ones only with a lag and the variables at the front end are weakly exogenous.

3.7 Data, and description and measurement of variables

The study used macroeconomic data from 1996 to 2018 from selected SSA countries obtained from the World Bank database of socio-economic indicators called the World Development Indicators. The macroeconomic variables were available for 27 countries in Sub-Saharan Africa comprising: Angola, Botswana, Burkina Faso, Burundi, Cameroon, Democratic Republic of Congo, Congo Republic, Cote d'Ivoire, Ethiopia, Gabon, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mozambique, Nigeria, Rwanda, Seychelles, Sierra Leone, Tanzania, Togo, Uganda, Zambia and Zimbabwe. Data on South Africa is available but due to South Africa's outlier characteristics, we

deliberately excluded it from our estimations. The rest of the SSA countries were excluded from the sample because their data was not consistently available. Other data sources included the Polity IV database, Transparency International and Boyce and Ndikumana (2012) (see Table 1 for a description and measurement of the variables and their respective sources). The choice of the variables was based on earlier studies such as Osei-Assibey et al. (2018), Asongu, 2014 and Ndikumana (2014).

Table 1 Description and measurement of variables

Variables name	*Variable description/measurement*	*Expected sign*	*Source*
Economic growth	Changes in Real GDP per capita		World Bank
Capital flight	Difference between sources of capital inflow and capital outflow	-	Boyce and Ndikumana (2012)
Tax revenue	Tax revenue as a percentage of GDP	+	World Bank
Private domestic investment	Gross capital fixed formation as a percentage of GDP	+	World Bank
Rule of law	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society	-	Polity IV database
Government stability	The likelihood that a government will be destabilised by unconstitutional or violent means, including terrorism.	+	Transparency International
Net export	Export minus imports as a percent of GDP	+/	World Bank

Source: Compiled by the authors

4 Results and discussion

This paper explored the moderating effect of good governance on capital flight (KF) and tax revenue and its effects on economic growth (EG) in SSA after controlling for macroeconomic variables such as private domestic capital, and net exports (NEx). This section presents the econometric results and discusses the findings of the study.

4.1 Descriptive statistics

The unit root test (Table 2), descriptive statistics (Table 3) and the correlation matrix (Table 4) of the variables used for the estimation are presented. The differences in the number of observations for each variable are due to missing data for several years and across particular countries. We employed the Im et al. (2003) (IPS) approach to test the data for stationarity. The purpose for running the unit root test was to ensure a flat looking series, without trend, constant variance over time, a constant autocorrelation structure over time and with no periodic fluctuations. To ensure non-spurious regression results, prior to estimating the models, we first examined the stationary properties of the variables using first and second order generation unit root tests. The variables that were not significant at levels (i.e., $I(0)$) were differenced to satisfy the time series properties. At first difference, capital flight, tax revenue (as a percentage of GDP), political risk

rating and political stability were all found to be significant at 1% (i.e., they are *I*(1)). The correlation matrix shows that none of the variables were highly correlated with another.

4.2 System GMM results

Table 2 contains the results of the dynamic models estimated using Arellano and Bond's (1991) proposed system GMM estimator. In all, four models were estimated. The first model, named as model 1, is the baseline model. The baseline model was used to ascertain the influence of capital flight and tax revenue on economic growth. All other variables were added as control variables. In model 2, we interacted rule of law with capital flight and tax revenue to see if rule of law moderates the influence of capital flight and tax revenue on economic growth. In model 3, we interacted capital flight and tax revenue with government stability to examine if government stability moderates the influence of capital flight and tax revenue on economic growth and finally, model 4 is the fully parameterised model.

Beginning with model 1, the results show that the coefficient of capital flight is –0.0254. The sign of this coefficient is as expected, and it is accepted as statistically significant at 10%. As a result, an increase in capital flight causes a decrease in economic growth by 0.0254, holding other variables constant. This is the case because capital flight represents a loss of domestic savings sent abroad irrespective of the motive. If these domestic savings are held in the domestic economies of the SSA, the expectation is that they will enhance economic growth, all other variables being equal. This finding is consistent with Ndikumana and Boyce (2011) who found that capital flight implies less spending on social services such as education and health, which undermine human development in Africa. Similar studies by Lawal et al. (2017) and Geda and Yimer (2016) reveal that capital flight had a negative effect on economic growth in Nigeria and Ethiopia, respectively, due to its financial resources draining effect. We now turn to our second variable of interest (tax revenue). Considering the effect of tax revenue, the results (model 1) show that a one percentage point increase in tax revenue induces economic growth by 0.0023%, *ceteris paribus*. The expectation is that as tax revenue rises, economic growth is also induced. This is because tax revenue mobilisation is one approach used by most governments to enhance domestic economic activities. As economic activities are stimulated, there is an opportunity for growth to be boosted as well. It is observed that in all the models, tax revenue is statistically significant in enhancing economic growth regardless of what variable is introduced. This finding is also consistent with Maganya (2020), who also reported a positive relationship between domestic tax revenue and economic growth.

In model 2, it is observed that the coefficient of the interaction of capital flight and the rule of law is insignificant. This indicates that the rule of law plays no role in influencing the impact of capital flight on economic growth in SSA. What should be noted is that all the estimated models from 1 to 4 indicate that the rule of law has an insignificant effect on economic growth. Similarly, the interaction between tax revenue and the rule of law is statistically insignificant.

One possible reason is the presence of weak institutions to enforce the rule of law.

In model 3, we dropped the rule of law indicator and interact capital flight and tax revenue with government stability (the second indicator for good governance). The net effect of the interaction between capital flight and government stability is –0.0424 (net

effect calculation is shown in Appendix), which is lesser than the main effect. This shows that government stability reduces the adverse effect of capital flight on the economy. One hypothetical explanation is that when a government is stable, investors (both domestic and foreign), are certain about their returns on investment because of sound political and economic policies. When this occurs, a significant amount of domestic savings, which would have been sent abroad or which would have not come into the economy due to government instability would remain for investment. Also, from model 3, the study results reveal that the net effect of the interaction between tax revenue and government stability (shown in Appendix) is 0.0265%. This implies that given the level of government stability, a unit increase in tax revenue increases economic growth by 0.0265%, *ceteris paribus*. This significant effect of the interaction between tax revenue and government stability is observed in model 4 as well, buttressing the earlier statement that government stability plays a significant role in influencing the effect of tax revenue on economic growth.

Similarly, in model 4, we introduced all the variables of interest together with their interaction terms. The results show that while the rule of law is accepted as insignificant in the context, capital flight has a negative and statistically significant effect on economic growth. While the interaction between the rule of law and capital flight remains insignificant as in the earlier case, the effect of the interaction between capital flight and government stability is equally significant, but now at 10%.

4.3 Effects of the control variables

With respect to the control variables, in all the models, gross fixed capital formation, which is a proxy for private domestic investment, was positive and statistically significant. This finding is consistent with economic theory, which maintains that investment drives economic growth (Ndiaye, 2014; Ndikumana, 2014; Fofack and Ndikumana, 2010). The findings also support a number of empirical studies including Tang et al. (2008) and Cinyabuguma and Putterman (2010) who found that investment has a robust effect on economic growth.

4.4 Post estimation result for GMM

The two main post estimation tests include the test for autocorrelation (AR) and the Sargan test of over identifying restrictions. Arellano and Bond (1991), however, show that the one-step Sargan test over-rejects the presence of heteroskedasticity. Because its asymptotic distribution is not known under assumptions of the variance-covariance matrix of the estimators (vce (robust)) model, the Arellano-Bover/Blundell-Bond linear dynamic panel-data estimation (xtdpdsys) does not compute it when vce (robust) is specified. Consistent with Arellano and Bond (1991), the result for the Sargan test could not be computed since we used the vce (robust) model because it gives a better estimate than the vce (GMM) model.

For the test for autocorrelation (AR), the study tested for the first and second order autocorrelation, and the results are presented in Table 2. From the results, it can be clearly seen that the null hypothesis of no first order autocorrelation, $AR\ (1)$ is rejected for all the four models estimated. According to Arellano and Bond (1991), the fact that the first differences of independent and identically distributed idiosyncratic errors are serially correlated, rejecting the null hypothesis of no serial correlation in the

first-differenced errors at order one, does not imply that the model was mis-specified. However, rejecting the null hypothesis at higher orders implies that the moment conditions are not valid. In accordance with this, our results for *AR* (*2*) show that the null hypothesis of no serial correlation is not rejected in all the four models specified and consequently it is concluded that the moment conditions are valid.

Table 2 Unit root tests

		With intercept		*With intercept and trend*	
		Statistic	*P-value*	*Statistic*	*P-value*
Economic growth	IPS	–13.872	0.000	–12.114	0.000
	FISHERS	877.109	0.000	775.531	0.000
Capital flight (KF)	IPS	8.529	1.000	6.059	1.000
	FISHERS	38.421	1.000	7.839	1.000
Gross fixed capital formation	IPS	–5.513	0.000	–3.482	0.000
	FISHERS	207.251	0.000	218.955	0.000
Domestic tax revenue (DTR)	IPS	6.081	1.000	0.559	0.712
	FISHERS	203.713	0.008	229.414	0.000
Government stability (GST)	IPS	–2.674	0.003	2.574	0.995
	FISHERS	–4.118	0.000	42.667	0.925
Rule of law	IPS	–12.456	0.000	–10.567	0.000
	FISHERS	904.5523	0.000	149.3386	0.000
		With intercept		*With intercept and trend*	
		Statistics	*P-value*	*Statistic*	*P-value*
Capital flight	IPS	–9.118	0.000	–9.256	0.000
	FISHERS	296.881	0.000	287.752	0.000
Domestic tax revenue	IPS	–25.230	0.000	–21.635	0.000
	FISHERS	1,048.713	0.000	866.005	0.000
Government stability	IPS	–14.294	0.000	–12.067	0.000
	FISHERS	982.155	0.000	845.112	0.000

Source: Author calculation

4.5 Panel VAR: impulse response function (IRF)

Figure 1 presents the results for the panel VAR model. Similar to the GMM estimation, the authors treated both economic growth and capital flight as endogenous variables. The other control variables included in the model were assumed to be exogenous. We first examined the stationarity properties of the variables using second order generation unit root tests. Although the results indicate that most of the variables are stationary in levels (that is, *I*(0)), capital flight, and tax revenue are *I*(1) (i.e., stationary after first differencing), thereby, violating certain condition for estimating a VAR model in levels (see Table 4). However, according to Sims et al. (1990), one can still estimate a VAR model in levels if the objective is to analyse the IRFs. The Sims et al. (1990) seminal paper has been supported by subsequent studies (see Bernanke and Mihov, 1997;

Ngalawa and Viegi, 2011; Nguyen et al., 2019). Sims et al. (1990) showed that the common practice of transforming models into stationary form by difference or cointegration operators when the data are integrated is not necessary because statistics of interest often have distributions that are unaffected by non-stationarity. Kim and Roubini (2000) and Becklemans (2005) have further argued that the preference of VARs in levels is probably because of the reluctance 'to impose possibly incorrect restrictions on a model'. Reiterating the point, Kim and Roubini (2000) have maintained that if erroneous restrictions are imposed, then the resulting inferences may be incorrect as well.

Figure 1 Impulse-response graph (see online version for colours)

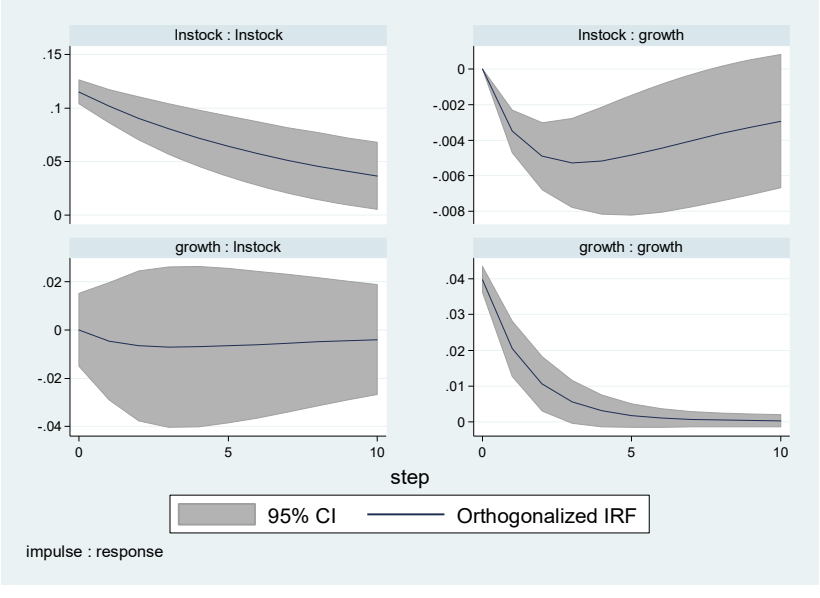

Table 3 Descriptive statistics

	Obs.	*Mean*	*Std. dev.*	*Min.*	*Max.*
EG	1,460	0.04	0.083	−0.51	1.5
CF	612	0.096	0.429	–0.988	9.31
GST	924	7.283	2.364	0	12
RoL	924	2.894	1.089	0	6
TR	1,079	14.55	8.241	0	49.978
NEx	1,463	–12.766	28.269	–344.751	49.761
GFCF	1,396	20.751	15.918	–2.424	219.069

Source: Author calculation

Although the simple IRFs have no causal interpretation, a shock on one variable is likely to be accompanied by shocks in other variables, as well, since the innovations it are correlated contemporaneously. Figure 1 presents the IRFs from our panel VAR model for all endogenous variables in the system along with its confidence bands. In the first quadrant, it is showed that a one standard deviation shock to capital flight (an unexpected

increase in capital flight) causes a sharp decline in economic growth in the short run. It is further observed that after the initial sharp decline, the adverse effect of capital flight on economic growth begins to ebb. Row two shows the effect of a one standard deviation shock on economic growth. We found that a one standard deviation shock to economic growth has no significant effect on capital flight (because the confidence intervals include the zero line in the bottom right graph of Figure 1). The interpretation is that economic growth has no feedback effect on capital flight, which confirms Osei-Assibey et al.'s (2018) findings.

Table 4 Correlation matrix

EG	*CF*	*GST*	*RoL*	*TR*	*NEx*	*GFCF*	
1	–0.143	0.201	0.087	0.256	–0.01	0.177	EG
	1	–0.098	–0.186	–0.003	0.249	–0.216	CF
		1	0.213	0.378	0.039	0.249	GST
			1	0.009	–0.158	0.259	RoL
				1	0.392	0.258	TR
					1	–0.098	NEx
						1	GFCF

Source: Author calculation

Table 5 GMM results

Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
Lag of economic growth	0.0041	0.0031	–0.0079	–0.0050
	(0.115)	(0.110)	(0.0998)	(0.0998)
Capital flight	–0.0254*	–0.131	–0.175***	–0.210**
	(0.0146)	(0.0947)	(0.0433)	(0.0958)
Rule of law	0.00153	0.00419		–0.00912
	(0.0062)	(0.0101)		(0.0079)
Tax revenue	0.0023**	0.0041**	0.0067**	0.0057*
	(0.0011)	(0.0019)	(0.0031)	(0.0034)
Cap. flight*rule of law		0.0371		0.0124
		(0.0387)		(0.0330)
Tax revenue*rule of law		–0.0006		0.0005
		(0.0007)		(0.0005)
Net export	–0.0001	–0.00012	0.0003	0.0004
	(0.0009)	(0.0009)	(0.0009)	(0.0009)
Gross fixed cap. formation	0.0010**	0.0010**	0.00114**	0.0013**
	(0.0004)	(0.0004)	(0.0005)	(0.0005)
Govt. stability	0.0010		0.0036	0.00459*
	(0.0028)		(0.0027)	(0.0025)

Note: Standard errors in parentheses ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table 5 GMM results (continued)

Variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
Cap. flight *govt. stability			0.0182***	0.0185***
			(0.0070)	(0.0059)
Tax revenue*govt. stability			–0.0006*	–0.0007**
			(0.0003)	(0.0003)
Constant	–0.0190	–0.0192	–0.0262	–0.0091
	(0.0256)	(0.0295)	(0.0263)	(0.0335)
Observations	254	254	254	254
No. of countries	17	17	17	17
AR (1)	P-value – 0.0155	0.0153	0.0123	0.0114
AR (2)	P-value – 0.3807	0.4085	0.4377	0.3541

Note: Standard errors in parentheses ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

5 Conclusions and recommendations

The main objective of the article was to examine the effect of capital flight, and domestic tax revenue on economic growth in SSA, and to ascertain if good governance indicators moderate the relationship. Based on the findings of the study, it is proposed that reducing capital flight should take a prominent place in the debate on mobilisation of resources to finance economic growth in SSA. The results from both GMM estimator and panel VAR models confirm our proposal. The results also suggest that the fundamental ingredient in the success of reducing capital flight for promoting economic growth lies in good governance which is a product of strong political will at the level of SSA governments and individual countries. Practicing good governance such as ensuring the rule of law and promoting government stability is paramount. More importantly, intensifying corruption-control as an element of good governance may be one of the most effective deterrents against capital flight (Andrés and Asongu, 2013). The need for African governments to strengthen democratic processes to promote economic freedom and private initiatives is essential. This is an ingredient that will foster private investment initiatives instead of capital flight. With this, the negative effect of capital flight on a country's economy will be minimised. In addition, given the findings on domestic tax revenue as well as the increasingly decreasing external financing sources for most SSA countries, it is imperative that SSA countries reinforce their tax revenue mobilisation capacity and promote the use of domestic capital investments to spur economic growth. The need to implement changes to fortify internal organisational structures and training, as well as relationships with local governments in SSA countries, cannot be overemphasised.

References

Acemoglu, D., Johnson, S. and Robinson, J.A. (2005) 'Institutions as a fundamental cause of long-run growth', *Handbook of Economic Growth*, Vol. 1, pp.385–472, Elsevier Inc., New York.

Acemoglu, D., Naidu, S., Restrepo, P. and Robinson, J.A. (2019) 'Democracy does cause growth?', *Journal of Political Economy*, Vol. 127, No. 1, pp.1–54.

Afonso, A. and Aubyn, M.S. (2019) 'Economic growth, public, and private investment returns in 17 OECD economies', *Portuguese Economic Journal*, Vol. 18, No. 1, pp.47–65.

African Development Bank (2000) *Bank Group Policy on Good Governance*, African Development Bank, Abidjan [online] https://www.afdb.org/en/documents/document/bank-group-policy-on-good-governance-27134 (accessed 17 May 2022).

African Development Bank (2018) *African Economic Outlook*, African Development Bank.

Ajayi, I.S. (1997) *An Analysis of External Debt and Capital Flight in the Severely Indebted Low Income Countries in sub-Sahara Africa*' IMF Working Paper No. WP/97/68.

Andrés, R.A. and Asongu, S.A. (2013) 'Fighting software piracy: which governance tools matter in Africa?', *Journal of Business Ethics*, Vol. 118, No. 3, pp.667–682.

Arellano, M. and Bond, S. (1991) 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations', *The Review of Economic Studies*, Vol. 58, No. 2, pp.277–297.

Asongu, S. (2014) 'Fighting African capital flight: empirics on benchmarking policy harmonization', *The European Journal of Comparative Economics*, Vol. 11, No. 1, pp.93–122.

Asongu, S.A. and Odhiambo, N.M. (2019) 'Governance, capital flight and industrialisation in Africa', *Economic Structures*, Vol. 8, No. 1, p.36.

Barro, R.J. (1990) 'Government spending in a simple model of endogeneous growth', *Journal of Political Economy*, Vol. 98, No. 5, Part 2, pp.S103–S125.

Barro, R.J. and Sala-i-Martin, X. (1992) 'Public finance in models of economic growth', *The Review of Economic Studies*, Vol. 59, No. 4, pp.645–661.

Becklemans, L. (2005) *Credit and Monetary Policy: An Australian SVAR*, Reserve Bank of Australia Discussion Paper Series, 2005-06, December.

Bernanke, B. and Mihov, I. (1997) 'What does the Bundesbank target?', *European Economic Review*, Vol. 41, No. 6, pp.1025–1053.

Boyce, J. and Ndikumana, L. (2012) *Capital flight from sub-Saharan African countries: Updated Estimates, 1970-2010*, Political Economy Research Institute Research Report, University of Massachusetts.

Boyce, J.K. and Ndikumana, L. (2001) 'Is Africa a net creditor? New estimates of capital flight from severely indebted sub-Saharan African countries, 1970-96', *Journal of Development Studies*, Vol. 38, No. 2, pp.27–56.

Bredino, S., Fiderikumo, P. and Adesuji, A. (2018) 'Impact of capital flight on economic growth in Nigeria: an econometric approach', *Journal of Business and Economic Development*, Vol. 3, No. 1, pp.22–29.

Chipalkatti, N. and Rishi, M. (2001) 'External debt and capital flight in the Indian economy', *Oxford Development Studies*, Vol. 29, No. 1, pp.31–44.

Cinyabuguma, M.M. and Putterman, L. (2010) 'Sub-Saharan growth surprises: being heterogeneous, inland and close to the equator does not slow growth within Africa', *Journal of African Economies*, Vol. 20, No. 2, pp.217–262.

Fatas, A. and Mihov, I. (2013) 'Political volatility, institutions and economic growth', *Review of Statistics*, Vol. 95, No. 2, pp.362–376.

Fofack, H. and Ndikumana, L. (2010) 'Capital flight repatriation: investigation of its potential gains for sub-Saharan African countries', *African Development Review*, Vol. 22, No. 1, pp.4–22.

Forson, R., Obeng, C.K. and Brafu-Insaidoo, W.G. (2017) 'Determinants of capital flight in Ghana', *Journal of Small Business and Enterprise Development*, Vol. 7, No. 7, pp.151–180.

Geda, A. and Yimer, A. (2016) 'Capital flight and its determinants: the case of Ethiopia', *African Development Review*, Vol. 28, No. 1, pp.39–49.

Geda, A. and Yimer, A. (2016) 'Capital flight and its determinants: the case of Ethiopia', *African Development Review*, Vol. 28, No. 1, pp.39–49.

Geda, A. and Yimer, A. (2017) 'Effects of capital flight on growth and poverty reduction in Ethiopia: evidence from a simulation – based analysis', in *Economic Transformation for Poverty Reduction in Africa*, First ed., Chapter 9, Routledge, Abingdon.

Goel, S. (2019) 'Corporate governance: the catalyst for economic growth and social change', in *Socio-Economic Development: Concepts, Methodologies, Tools, and Applications*, pp.328–339, IGI Global, Hershey.

Han, X., Khan, H. and Zhuang, J. (2014) *Do Governance Indicators Explain Development Performance? A Cross-Country Analysis*, ADB Economics Working Paper No 417.

Im, K.S., Pesaran, M.H. and Shin, Y. (2003) 'Testing for unit roots in heterogeneous panels', *Journal of Econometrics*, Vol. 115, No. 1, pp.53–74.

Kim, S. and Roubini, N. (2000) 'Exchange rate anomalies in the industrial countries: a solution with a structural VAR approach', *Journal of Monetary Economics*, Vol. 45, No. 3, pp.561–586.

Lawal, A.I., Kazi, K.P., Adeoti, J.O., Osuma, O.G., Akinmulegun, S.O. and Ilo, B. (2017) 'Capital flight and the economic growth: evidence from Nigeria', *Binus Business Review*, Vol. 8, No. 2 pp.125–132.

Maganya, M.H. (2020) 'Tax revenue and economic growth in developing country: an autoregressive distribution lags approach', *Central European Economic Journal*, Vol. 7, No. 54, pp.205–217.

Makuyana, G. and Odhiambo, N.M. (2017) 'Public and private investment and economic growth in Zimbabwe: An empirical test', *Business and Economic Horizons*, Vol. 13, No. 1232-2017-2404, pp.60–76.

Matovu, G. (2018) 'Policy options for good governance and local economic development in Eastern and Southern Africa', in *Local Economic Development in the Changing World*, pp.341–353, Routledge, Abingdon.

Muchai, D. and Muchai, J. (2016) 'Fiscal policy and capital flight in Kenya', *African Development Review*, Vol. 28, No. S1, pp.8–21.

Ndiaye, A. and Siri, A. (2015) *Impact of Capital Flight on Domestic Resource Mobilization in Burkina Faso, African Economic Research Consortium Collaborative Research Project on: Capital Flight and Tax Havens*, Final Reports Review Workshop, Tanzania, May 29–30.

Ndiaye, A.S. (2014) *Capital Flight from the Franc Zone: Exploring the Impact on Economic Growth*, AERC Research Paper 269 African Economic Research Consortium, Nairobi.

Ndikumana, L. (2000) 'Financial determinants of domestic investment in Sub-Saharan Africa: evidence from panel data', *World Development*, Vol. 28, No. 2, pp.381–400.

Ndikumana, L. (2009) 'Capital flight', in Reinert, K.A., Rajan, R.S., Glass, A.J., and Davis, L.S. (Eds.): *The Princeton Encyclopaedia of the World Economy*, Princeton University Press, Princeton.

Ndikumana, L. (2009) 'Capital flight', in Reinert, K.A., Rajan, R.S., Glass, A.J. and Davis, L.S. (Eds.): *The Princeton Encyclopaedia of the World Economy*, Princeton University Press, Princeton.

Ndikumana, L. (2014) 'Capital flight and tax havens: impact on investment and growth in Africa', *Review of Development Economies*, Vol. 2, No. 22, pp.113–141.

Ndikumana, L. and Boyce, J.K. (2011) 'Capital flight from Sub-Saharan Africa: linkages with external borrowing and policy options,' *International Review of Applied Economics*, Vol. 25, No. 2, pp. 149-170.

Ndikumana, L. and Boyce, J.K. (2018) *Capital Flight from Africa: Updated Methodology and New Estimates*, Research Report, Political Economy Research Institute, University of Massachusetts at Amherst.

Ngalawa, H. and Viegi, N. (2011) 'Dynamic effects of monetary policy shocks in Malawi', *South African Journal of Economics*, Vol. 79, No. 3, pp.224–250.

Ngoma, G., Bonga, W.G. and Nyoni, T. (2019) 'Macroeconomic determinants of private investment in sub-Saharan Africa', *DRJ's Journal of Economics and Finance*, Vol. 4, No. 3, pp.1–8.

Nguyen, T.M.L., Papyrakis, E. and Van Bergeijk, P.A. (2019) Assessing the price and output effects of monetary policy in Vietnam: evidence from a VAR analysis. *Applied Economics*, Vol. 51, No. 44, pp.4800–4819.

North, D.C. (1990) *Institutions, Institutional Change and Economic Performance*, Cambridge University Press, Cambridge.

North, D.C. (2002) 'Institutions and economic growth: a historical introduction', in *International Political Economy*, pp.57–69, Routledge, Abingdon.

Osei-Assibey, E., Domfeh, K.O. and Danquah, M. (2018) 'Corruption, institutions and capital flight: evidence from sub-Saharan Africa', *Journal of Economic Studies*, Vol. 45, No. 1, pp.59–76.

Persson, T. and Tabellini, G. (2006) *Democratic Capital: The Nexus of Political and Economic Change*, NBER Working Paper No. 12175, National Bureau of Economic Research, Cambridge, MA.

Raheem, I.D. and Adeniyi, O.A. (2015) 'Capital inflows and outflow and economic growth in Sub-Saharan Africa', *International Journal of Economics and Business Research*, Vol. 10, No. 1, pp.66–80.

Rodrik, D. and Wacziarg, R. (2005) 'Do democratic transitions produce bad economic outcomes?' *American Economic Review*, Vol. 95, No. 2, pp.50–55.

Scott, W.R. (1995) *Institutions and Organizations*, Vol. 2, Sage, Thousand Oaks.

Sims, C., Stock, J. and Watson, M. (1990) 'Inference in linear time series models with some unit roots', *Econometrica*, Vol. 58, No. 1, pp.113–144.

Tang, S., Selvanathan, E.A. and Selvanathan, S. (2008) 'Foreign direct investment, domestic investment and economic growth in China: a time series analysis', *World Economy*, Vol. 31, No. 10, pp.1292–1309.

UN General Assembly (2015) *Transforming Our World: The 2030 Agenda for Sustainable Development*, 21 October, a/res/70/1 [online] https://www.refworld.org/docid/57b6e3e44.html (accessed 25 January 2020).

UNECA (2019) *Economic Report on Africa*, United Nations Economic Commission for Africa.

United Nations (2009) *Enhancing the Role of Domestic Financial Resources in Africa's Development: A Policy Handbook*, United Nations, New York.

Williamson, O.E. (2000) 'The new institutional economics: taking stock, looking ahead', *Journal of Economic Literature*, Vol. 38, No. 3, pp.595–613.

World Bank (1985) *World Development Report 1985*, Oxford University Press, New York [online] https://openknowledge.worldbank.org/handle/10986/5968 (accessed 18 May 2022).

World Bank (2006) *Global Economic Prospects 2006: Economic Implications of Remittances and Migration*, pp.1–157, World Bank, Washington DC [online] https://openknowledge.worldbank.org/handle/10986/7306 (accessed 22 May 2022).

Appendix

Net effect calculations

Calculation of the effect of the interaction between capital flight and government stability

$$\text{Economic Growth} = -0.0262 + -0.175\ \text{Capital Flight} + 0.0036\ \text{Govt. Stability} + 0.0182\ \text{Cap. Flight} * \text{Govt. Stability}$$

$$\frac{dEG}{dCapital\ Flight}(\text{Government Stability}) = -0.175 + 0.0182\ \text{Govt. Stability}$$

We used the mean value (7.283) of government stability from the summary statistic.

$$\frac{dEG}{dCapital\ Flight}(@\,\text{Government Stability}) = -0.175 + 0.0182(7.283)$$

Thus, + the interaction effect of capital flight and government stability on economic growth is estimated at –4.244%.

Effect of the interaction between tax revenue and government stability

Model 3

$$\text{Economic Growth} = -0.0262 + 0.0067\ \text{Tax Revenue} + 0.0036\ \text{Govt. Stability} - 0.0006\ \text{Tax Revenue} * \text{Govt. Stability}$$

$$\frac{dEG}{dTax\ Revenue}(\text{Government Stability}) = 0.0067\ \text{Tax} - 0.0006\ \text{Govt. Stability}$$

We used the mean value (7.283) of government stability from the summary statistic.

$$\frac{dEG}{dTax\ Revenue}(\text{Government Stability}) = 0.0067 - 0.0006(7.283)$$

$$= 0.00265$$

$$= 0.0265\%$$

Thus the interaction effect of tax revenue and government stability on economic growth is estimated at 0.0265%.

Model 4

$$\text{Economic Growth} = -0.0476 + -0.214\ \text{Capital Flight} + 0.00768\ \text{Tax Revenue} + 0.00627\ \text{Govt. Stability} + 0.0187\ \text{Cap Flight} * \text{Govt. Stability} + -0.000735\ \text{Tax Revenue} * \text{Govt. Stability}$$