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The foreign capital flows and Economic growth in Sub-Saharan Africa: the role of financial markets and institutional quality

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I would like to recognize and thank the organization from which the data were extracted, World Bank and IMF. Many of the data used in this paper were extracted from World Development Indicator of World Bank and World Economic Outlook of IMF.

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Contents

List of Figures

List of Tables

Abstract

There are competing theories when comes to the effect of foreign capital inflows on the recipient country's economic growth. The foreign capital inflows to the sub-saharan region has shown significant growth over last two decades which coincided with the relative economic progress in the region.

This study investigated the impact of foreign capital flows on Economic growth of Sub-Saharan African countries. System Generalized Method was employed on 33 cross country panel in the period 1996 - 2014. The foreign flows mainly categorized into three categories: Aggregate foreign capital flows, disaggregated foreign capital inflows and foreign capital outflows (capital flight).

Aggregate capital flows, which was measured by current account balance, didn't show significant impact on Economic growth in the region for the specified period. Inflows in the form of Official Development assistance, personal remittance and foreign direct investment, it was only official development assistance that found to have significant positive impact on the Economic growth.

1. *Introduction*

It is common to find a reference to the the term "rising Africa" if one look at the literatures written on African economy during last decade(Drummond et al. (2014), Mahajan (2011), August (2013)). If not anything the term reflects hopes;after all it wasn't long ago that Africa's economic growth was described as a tragedy (Easterly & Levine (1997)). The term, rising Africa, at best refers to the relative progress in Economic performance in the continent over the last few decades compared to the long time stagnation.

The economic performance of sub-saharan Africa could be roughly categorized into three categories if one looks at last 50 years: The colonial Economy (Early 1900s to 1960s), The Economic stagnation period (1970s and 1980s) and the rising period (1990s to recent).

There has been a recorded link between economic growth and poverty reduction(Moser & Ichida (2001)). Regardless of the recent progress the continent in general and the Sub Saharan region in particular is still among the poorest area of the globe. past Slow Economic growth and unsatisfactory recent progress are among the many reasons for the underutilized potential of the region. understanding factors that contributed to the recent relative progress and building on it is important and has caught attention of researchers. Although there are a number of theories about why Africa is poor, Poor saving habit that resulted from the status of living could be potential sources of challenge for better economic performance. One possible way this shortage could be mitigated is through foreign capital inflows. Therefore Knowing the role of foreign capital in recent economic performance is important not only for academic argument but also for policy purposes.

The flow of foreign capital to the sub-saharan region has also shown growth during last decade(??evidence needed). However the flow of capital hasn't been one directional, there has also been capital flight from the region(Ndikumana & Boyce (2011)). Investigating the role net foreign capital flow has on economic growth is the interest of this study.

The literature on the topic is inconclusive. The literatures that focused in the geographic area

of sub-saharan africa are scarce. The recent availability of time series data for many countries in the region adds to the importance of this study. The foreign capital flows were measured in Current account Balance. Current account balance is the difference between domestic saving and investment which is equal with external capital flows that filled this gap. The role of financial institution and institution quality were also investigated.

This study investigates the aggregated capital flows, the disaggregated capital inflows and the capital outflows and their impact on Economic growth. The disaggregated capital inflows are net official development assistance, personal remitance and foreign direct investment measured as percentage of GDP.

The general objective of the study was to find out the relationship between foreign capital and Economic growth in Sub-Saharan Africa. It tests if controlling for growth of finacial institutions and institutional quality has any change on the relationship between Economic growth and foreign capital inflows.

The following conjunctures were tested in the study

1. There is no positive correlation between aggregate foreign capital flows and Economic growth in sub Saharan Africa

2. There is no positive relationship between net official assistance, personal remittance and Foreign direct investment and Economic growth

3. Financial market and institutional quality plays a facilitating role the relationship between foreign capital and Economic growth

To test these conjectures, panel data from 35 sub-sharan african countries have been used between the period 1996 - 2014. The system general method of moments (system GMM) were selected to take into consideration the potential dynamics of panel data and the endogeneity of current account balance and other foreign capital inflow and outflow measure.

2. *Background: stylized facts of Sub-Saharan African Region*

Sub-Saharan african countries are the economic region south of saharan desert and they are 45 economies according to IMF categorization. Sub saharan africa is among the poorest region of the globe. The region has major challenges among which poor economic growth has been only one.

In this chapter stylized facts of sub-Saharan region are presented. Macroeconomic variables such as GDP and current account balance are going to be presented to provide background base for the consequent analysis. In addition to GDP and Current account balance, the status of financial market and the quality of the institution are also summarized in this chapter.

2.1 Economic growth trend

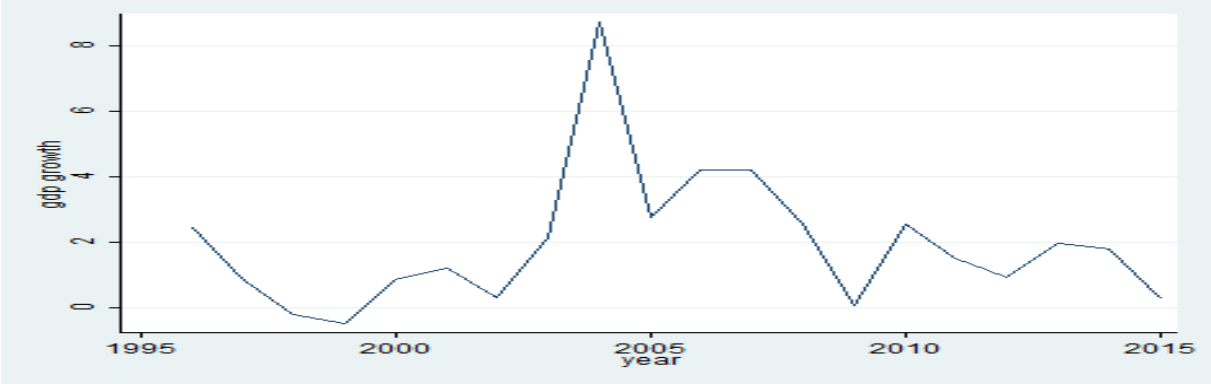

Figure 2.1: GDP per capita annual growth from World Bank Indicators

Source: World Bank Database

The economic situation during 1980s was dire in the continent as a whole and in sub saharan in particular. The situation was only slightly start to change since 1994 (Calamitsis et al. (1999)).

"Rapid population growth, low human capital development and inadequate infrastructure" were identified as the contributing factor to the economic situation of the region(Calamitsis et al. (1999)). From the above graph, the economic performance in the region picked off from the early 1990s and it has been trending upward since then. This pickup was contributed to the growth of total factor productivity(TFP) (Takahashi (2012)).

Different reasons has been attributed to the growth or lack thereof of Economic performance. Investment and human capital are among the fundamental factors that affects the Economic performance of countries in sub saharan africa.

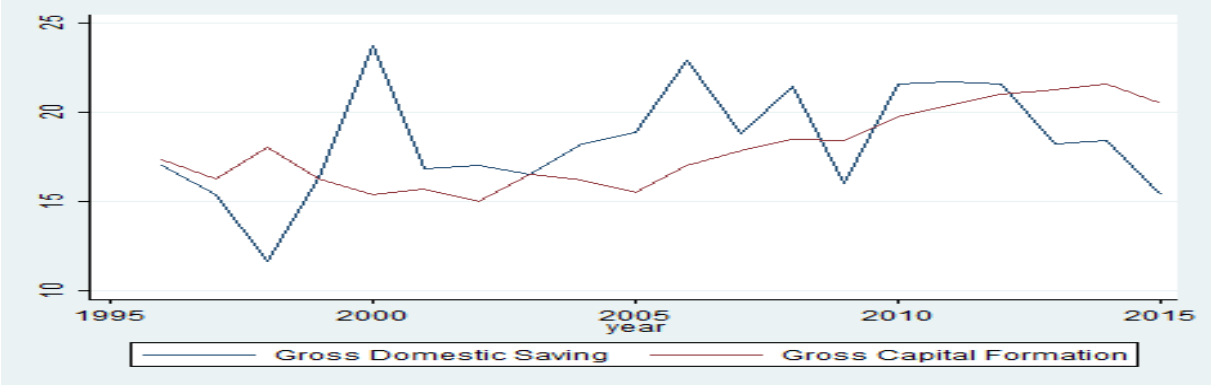

Figure 2.2: GDP per capita annual growth from World Bank Indicators

Source: World Bank Database

2.2 Current Account Balance

The flow of capital to the sub-saharan region can be catagorized as Private foreign transfers and Public foreign transfers. The foreign direct investment, Portifolio investment and Bank loan are part of the Private foreign capital. Official Development aid and long time loan to the region is another opportunity to the area. Current account balance measure the aggregate net flows into an economy (citation from the articles curruent account and foreign capital google.).

The trend of current account deficit, as part of balance of payment, in sub saharan african was ups and downs. The region had current account deficits between year 1986-2000 and the driving factor was the trade oppeness(UNCTAD, 2016). There was also a registered deficit after 2008. Also Osakwe & Verick (2007) found that over the period 1970s to 2005 the sub saharan region were running a current account deficit of about 5.6% on average.

As it's evident in Balance of Payment accounting (BoP=Current account Capital account + financial account), the deficit in current account has to filled by inflows of capital from abroad.

2.3 Financial market development

It's difficult to overstate the importance of well functioning financial market to the economic performance for a country or a region. Applegarth et al. (2004) listed the ways through which capital market and financial sector contribute to Economic growth: "1. It promotes private sector development, 2. It increase liquidity, 3. It helps mobilize local savings and makes resources available for local decision making, 4. It enhances bank competition and develops a greater diversity of financial institutions, 5. It could increase remittances and facilitate their use, 6. It leads to improved corporate governance, 7. It rewards sound economic policies and creates tools for African countries to conduct monetary policy."

2.4 Institutional quality

Institution is one of the four categorization of "fundamental causes of Economic growth" according to Acemoglu (2008), luck, geography and culture being the remaining three. He emphasis that these factors are the reason why some economies invest in capital accumulation or human capital to boost their economic growth while others fall short of doing that. Institutions is a broad concept that refers to "rules, regulations, laws and policies that affect economic incentives and thus the incentives to invest in technology, physical capital and human capital" (Acemoglu 2008, page, 111)

Institutional problem was at the heart of Africa's economic stagnation in 1980s. Quoting world bank's 1989 study, Bräutigam & Knack (2004) support this by stating that the "underlying the litany of Africas' development problems is a crisis of governance." In order to improve this staggering situation, institutions like IMF and World Bank engaged in structural adjustment in many african countries with objective of improving this situations(Riddell (1992)).

Acemoglu & Robinson (2010) concluded that the reason why Africa is poor is because of poor political and economic institution.

Of course the institutional quality in the sub saharan economic region are not all the same among countries. But the trend is.

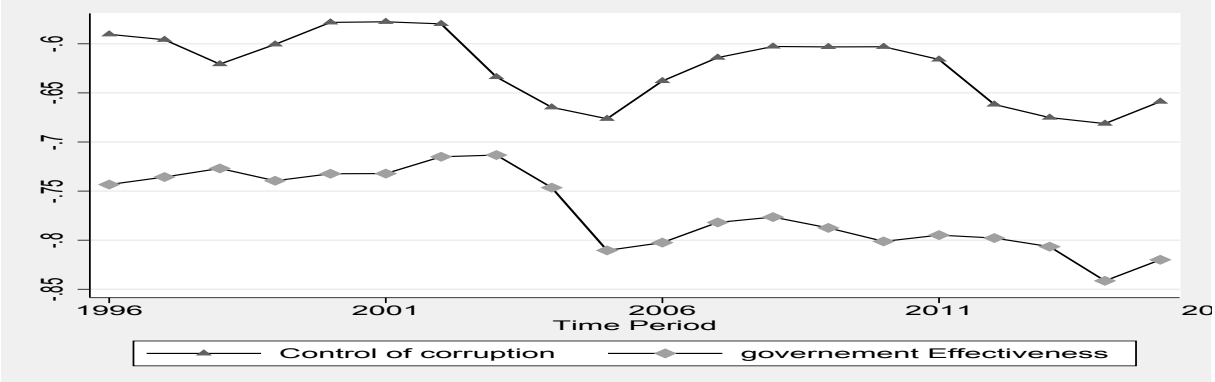

Figure 2.3: Institutional trend in Sub saharan Africa

3. *Theoretical and Empirical literature*

In this chapter both theoretical and empirical literatures are presented. The literature are categorized based on the theoretical argument they make and the empirical evidence they support. The Literatures that make a positive theoretical argument for foreign capital inflow are called Positive-impact literatures, while those that argue that the relationship is nonpositive relations are dubbed nonpositive-impact literature. Those literatures that support the argument that the relationship between foreign capital inflow and Economic growth depends on the condition of the host country are called conditional-impact literatures.

3.1 Theoretical Literature

There are three competing theories when it comes to the effect of foreign capital inflow on the recipient country's economic growth: positive impact, negative impact (nonpositive impact) and conditional impact. Physical capital, human capital and technological progress are, according to Acemoglu (2008), a proximate cause of Economic growth. It's through these proximate causes that foreign capital affects economic growth. The fundamental determinant of economic growth are capital accumulation, human capital and labor according to Solow growht model. Foreign capital contributes to capital accumulation directly and human capital indirectly.

Foreign capital inflow impacts economic growth positively through the channel of augmenting investment, transfer of positive technology, and contributing to the improvement of human skill. During 1960s foreign capital was considered to play a positive role in helping a developing nation's economy to transition to self-sustaining economy (Chenery & Strout (1966)). It was this idea that lead to the development of gap models. The core element of the gap models argument is that the "bottlenecks" that domestically arise and thereby hinder the effective use of domestic sources is augmented by foreign assistance. The basic assumption in this theory is that domestic and foreign capital have the same impact on economic growth. Atleast they have

positive impact even if it may be not as strong impact as domestic capital. Chenery & Strout (1966) listed three limitations, skill, saving and trade limit, that foreign capital could augment and thereby contribute positively to Economic growth. They showed how these limitations arise at different growth phase and the role foreign assistance plays at every levels.

It was the believe that Foreign capital has a positive impact on the Economic performance of developing countries that gave base for many to argue, during 1990s, for the liberalization of capital account.

Aizenman et al. (2007) through answering their own question, "Is foreign saving a viable option?", argued that countries that support their growth by domestic finance showed better growth than those countries that depended on foreign saving.

Using neoclassical model, Chow & Zeng (2001) argued that in developing countries foreign investment encourages both capital accumulation and consumption in the long-run. but Parai (2003) refuted this claim and concluded that the impact of foreign capital on economic growth in ambiguous.

There are parallel arguments to the positive-impact argument of foreign capital. This argument mainly points to the unintended consequences of foreign capital inflows to the developing countries to support their argument that the capital inflows and Economic growth are negatively correlated. These literatures emphasize that to the very least the relationship is significantly low or non-existent. Using neoclassical models of growth, Barro et al. (1992) concluded that the tendency of mobility of capital to encourage economic convergence between poor and rich countries through its positive effect on economic growth of poor countries is very small. They indicated that there are capitals such as human capital that "cannot be financed by borrowing on world markets."

The adverse effect of of external debt accumulation overtime is one of the reason why foreign capital deemed to have negative impact on economic growth of a developing country (Waheed 2004) by some theoreticians. Even if it may be good for an economy the issue that comes up due to debt accumulation would reverse that positive contribution, they argue.

Through isolating the impact of foreign assistance, Griffin (1970) came up with an argument which refuted the conclusion that foreign capital fills gaps created by saving limitation in developing countries. They concluded that foreign assistance is bad for developing economy. The base for their result is that foreign capital encourage consumption and thereby leads to less availability of investable domestic resources which would worsen the already existing saving

limitation. It is important to mention that their result was contradicted by Over (1975) who indicated the endogeneity of foreign aid which was assumed to be exogeneous by Chenery & Strout (1966) as the cause of the problem. Nevertheless the impact foreign capital has on domestic saving underlies theoretical argument of nonpositive impact literatures.

One other theoretical reason for nonpositive impact of foreign capital lies at the nature of the flow itself. This argument differentiates between capital flow and capital stock and focuses on the impact of the flow. Foreign capital inflows are volatile and such volatility has a potential to hurt the economic performance of a host country(Stiglitz (2000)).

The impact of foreign capital on real exchange rate is a source for concern. Flow of capital encourages appreciation of domestic currency which leads to drop in export. This malign impact on Economic growth is another argument at the center of the debate (Prasad et al. (2007)).

By referring to the developing countries' economic environment, the conditional-impact literature takes a middle ground between negative-impact literature and positive-impact literature. One of reciepient countries condition that could limit the effect of the foreign capital on economic growth is whether the host country's economic condition is capital constrained or not (Gulati 1978). According to Gulati, the structural economic condition is the determining condition that determine the direction of impact of foreign capital on economic growth.

The financial market development and the institutional quality are among the common factor that found to have significant role in impacting the relationship between foreign capital and economic growth.

3.2 Empirical Literature

The empirical literature on this topic are also as controversial as the theoretical literature (Waheed 2004). The literatures differs in their geographical focus, Econometric method they use and what type of data they employed. It is safe to say that there are evidence that support all the possible end of the argument: the positive impact, the negative impact and the conditional impact. It is the undeniable fact that lack or poor quality of data availability has a significant role in spurring the controversy of the empirical evidence on this topic.

In an attempt to summarize empirical literature on the relationship between foreign capital, economic growth, domestic saving and investment, Waheed (2004) listed a number of studies focused on developing countries as far back as 1973. Most of those studies used cross-sectional

data and employed Ordinary least square (OLS) estimators. About 16 studies on the impact of foreign capital on economic growth reviewed by Waheed, the result were mixed, some found positive impact, while others found negative impact.

Baharumshah et al. (2015) documented positive relationship between Foreign capital and Economic growth. They used coss-sectional data of 80 countries(including developing countries.) They divided countries in the study into above or below the financial threshold they set. The positive result was only documented for those countries in the category of better financial situation.

The spill over effect of foreign investment such as FDI is a plausable argument for call for policies that encourage foreign capital inflows. The finding of Gui-Diby & Renard (2015) was disappointing for the proponents of that argument. The paper examined the relationship between FDI and industrialization process and they didn't find a positive relationship. The focus of the study was Africa.

In the study that focused on three Sub-Saharan economies (Nigeria, Ghana and south Africa), (Kanu 2015) investigated the impact of foreign capital inflows on Economic growth. The author categorized the foreign capital inflows into: FDI, foreign portfolio investment, Official development assistance and Migrants remittances. His estimation method of multiple regression didn't find significant impact of foreign capital inflow indicator except FDI on Gahana's Economy.

By making a distinction between loan and aid, Danielson & Mjema (1994) found that aid have contributed positively to economic growth of Tanzania while loan have not. Paul & Truong (2004)

One could make a point that since quality of institution enhance economic growth (Paul & Truong (2004)), it possible to make connecting argument that then it has a positive role in the relationship between Economic growth and foreign capital. The question of whether capital from outside the border of the host country discourages domestic investment was attempted by Farla et al. (2014). They concluded that "FDI inflows crowds out domestic investment" and the role of institution in mitigating that is insignificant.

Using a panel data of 19 sub-saharan african countries Ndambiri et al. (2012) found negative relatioship with foraign aid and economic growth.

The role of finance was found to have positive impact in imroving the relationshipd between the FDI and grwoth in the region according a recent paper in the region (Adeniyi et al. 2015).

4. *Data and The Methodology*

4.1 Data

This study is based on data from different secondary sources. The data is collected and compiled by institutions like world Bank, International Monetary Fund and researchers at the university of California-Davis and university of Groningen. World bank development indicators and recent Penn World Table (9.0) are main sources for GDP and other macroeconomic variables. The data for institutional quality was from Worldwide Governance Indicator. The data has been cross-checked with each other for the purpose of data reliability and integrity.

The data covers over two decades and the list of sub-saharan countries were selected based on the availability data over the period. The time period covers between 1996 and 2014. The time period selected were also based on the availability of data for the series of variables for countries selected into the study and the attempt was made to cover the period during which the regions shows relative economic growth.

The Economic growth is measured by national level per capita gross domestic product (GDP percapita) annual growth and the data is available for all countries in Penn World table (9.0). These national per capita GDP growth values are transformed by purchasing power parity (PPP) exchange rate. The purchasing power parity (PPP) exchange rate are collected by International Comparison Program (ICP) so that it is possible to compare growth across countries (Feenstra et al. (2015)). In the data set, distinctions have been made between two measure of real GDP per capita, based on whether the intention of the use of the variables are to measure the difference in standard of living across countries or difference in productive capacity across countries(ibid.). And this study uses the later since that reflects the economic performance we intend measure better.

The proxy variable used to measure aggregate foreign capital flows is current account balance. Prasad, Rajan & Subramanian, who also use the same variable to measure foreign

capital flows, equates current account balance "to country's saving less investment" and claims that it "provides a summary measure of the net amount of capital, including private and official capital, flowing in or out of a country"((Prasad et al. 2007, page, 154)). The data for current account balance was taken from the IMF's world economic outlook (WEO) database. WEO database is compiled by International Monetary Fund for the use of biannual WEO report. The current account balance includes all the major transactions between a economy and the rest of the world. This variable is presented in percentage terms to GDP.

The measure for capital inflows includes disaggregated variables such Net Official Development Assistance (ODA), personal remittance and Foreign Direct Investment. The variables are measured as percentage of GDP and are extracted from World Development Indicators. Capital outflows used were estimated by Boyce & Ndikumana (2012) and it covered the period until 2010.

The strength of financial market was measured by the amount of Broad Money in the market. The world bank defined Broad Money as the "sum of currency outside banks;demand deposits other than central government; bank and traveler's checks; and other securities such as certificate of deposit and commericial paper"(Wêreldbank (2016)). The higher the ratio of Broad money in the economy the better the depth, the liquidity and the strength of financial market(Creane et al. (2004)). The data for Broad money was extracted from World Development indicators (WDI), an open source for many macroeconomic data for most of the world's economies. It presented in terms of percentage of GDP. The choice of this variable as a measure of strength in financial market was partially driven by lack of data in other potential variable measure financial market development better.

To investigate the role of institution in the relationship between Economic growth and foreign capital inflows and outflows, the institutional quality measure devised by Kaufmann et al. as part of World Bank governance research project and presented as Worldwide Governance indicators were used. The WDI authors defined governance as ". . . the traditions and institutions by which authority in a country is exercised." Six governance indicators for about 212 economies were estimated using data about perception of governance from different sources(Kaufmann et al. (2009)). Six indicators, which span the time period from 1996 to 2015, includes: voice and accountability, political stability and absence of violence, government effectiveness, rule of law, and control of corruption. The estimates from WDI data base were used to test the role of institutional quality. Because the estimates are ordinal values, it would be difficult for

interpretation if included in the regression as it is. Following Morrissey & Udomkerdmongkol (2012), dummy variable were generated based on the percentile rank of the countries such that a country with percentile rank more than or equal to 50% get 1 and 0 otherwise.

In addition to the above listed variable of interest, other control variables were also included in the estimation model. Gross Capital Formation and Gross Domestic saving data were extracted World Development indicators.

Two policy variables were also included: Trade openness and inflation. Trade openness was also included as a control variable to control for the effect of trade on Economic growth in the region. Trade openness was measured as the difference between exports and imports divided by the GDP of the country.

4.2 Methodology

The econometric model to be estimated is a linear model that shows the relationship between the variable of interest according to the following equation.

$$y_{it} = \beta_0 + \alpha y_{i,t-1} + \beta_1 x_{1it} + \beta_2 x_{2it} + \beta_3 x_{3it} + \sum_{j=4}^{J} \beta_j x_{jit} + \varepsilon_{it} \tag{4.1}$$

where :

y_{it} = Annual growth of Gross Domestic Product in percentage of country i in year t

$y_{i,t-1}$ = the one year lag of annual growth of GDP in percentage of country i in year t

x_{1it} = Current Account Balance of country i in year t as percentage of GDP

x_{2it} = Broad Money to GDP ratio of country i in year t

x_{3it} = dummy variable for governance indicators of country i in year t

x_{jit} = vectors of control variables

ε_{it} = composite error term

The possibility of using the most common estimators like Ordinary least squares(OLS) depends on the nature of the error term and its relationship with the explanatory variables. Individual country specific and time invariant factors such as geographic and demographic characteristics, are part of the composite error term(ε_{it}). Judson & Owen (1999) argued that such individual characteristics are fixed rather than random because the choice of those

countries are not random like it would be in micro-level individual characteristics. The potential correlation between this omitted individual characteristics and the explanatory variables, whether this variable is the lag of the dependent variable or the potential endogenous current account balance, could lead to the violation of Guass-Markov assumption that would ensure the OLS estimation to be best linear unbiased Estimator(BLUE).

Putting explicitly the fixed effect component, the composite error term can be written as,

$$\varepsilon_{it} = \upsilon_i + \upsilon_{it} \tag{4.2}$$

As a result of potential correlation between one or more of the explanatory variable and the fixed effect component, the exogeneity assumption of explanatory variable is violated under this circumstances.

$$cov(\boldsymbol{x_{it}}, \upsilon_i) \neq \mathbf{0} \tag{4.3}$$

With this violation, Wooldridge (2010) indicates that the estimation of the coefficients is no longer consistent and unbiased without additional information. In our model (equation 4.1) the potential endogeneity of foreign capital and the presence of lag dependent variable make the argument for the use of Ordinary least square weaker.

With the assumption that the country specific and time invariant components of the composite error term is fixed, the error correction models such as first difference (FD) and fixed effect (FE) could be used to remove the unobserved fixed effect so that the Ordinary least square might be appropriately used. For instance FD estimator suggest the following procedure:

$$y_{i,t-1} = \beta_0 + \alpha y_{i,t-2} + \beta_1 x_{1i,t-1} + \beta_2 x_{2i,t-1} + \beta_3 x_{3i,t-1} + \sum_{j=4}^{J} \beta_j x_{ji,t-1} + \varepsilon_{i,t-1} \tag{4.4}$$

Subtracting this equation (4.4) from equation (4.1) above produces the first difference estimator:

$$\begin{aligned}(y_{it} - y_{i,t-1}) = \alpha(y_{it-1} - y_{i,t-2}) &+ \beta_1(x_{1it} - x_{1i,t-1}) + \beta_2(x_{2it} - x_{2i,t-1}) \\ &+ \beta_3(x_{3it} - x_{3i,t-1}) + \sum_{j=4}^{J} \beta_j(x_{jit} - x_{ji,t-1}) + (\upsilon_{it} - \upsilon_{i,t-1})\end{aligned}$$

$$\Delta y_{it} = \alpha \Delta y_{i,t-1} + \beta_1 \Delta x_{1it} + \beta_2 \Delta x_{2it} + \beta_3 \Delta x_{3it} + \sum_{j=4}^{J} \beta_j \Delta x_{jit} + \Delta \upsilon_{it} \tag{4.5}$$

Under any form of correlation between fixed effect (υ_i) and the explanatory variables, as long as the assumptions $E(\Delta\upsilon_{it}/\Delta y_{i,t-1}) = 0$ and $E(\Delta\upsilon_{it}/\Delta x_{i,t-1}) = 0$ hold, the first difference in equation (4.6) is consistent (Wooldridge (2010)). But the technique of error correction model such as this that removes the fixed effect doesn't suffice in this case. The reason being error correction models "require strict exogeneity with regard to the relationship between the explanatory variables and the time-varying part of the residual [υ_{it}]" (Söderbom et al. (2015))

Because of the presence of lag of dependent variable as an explanatory variable and the endogeneity of foreign capital, General Method of Moments (GMM) is a preferable estimator for our model. In addition to endogeneity and dynamic panel data bias, this method is also robust for omitted variable bias and measurement error (Bond et al. (2001), Adams & Klobodu 2016). GMM, first introduced by Lars Hansen in 1982, is a method that works by instrumenting the endogenous variable given that the population moment condition hold (Hall (2005)). Let us suppose that vector $\boldsymbol{Z}_i$ is the vector of instrumental variable. The two desired characteristics of instrument variables are that: one they are uncorrelated with the error terms (υ_{it} in our case) and second they have relations with the endogenous variable they instrument (Wooldridge (2010)). And this orthogonality of the instrumental variable with the error term, gives a base for population moment condition:

$$E(\boldsymbol{Z}_i\upsilon_{it}) = 0 \tag{4.6}$$

Two methods, difference GMM and system GMM, are among the widely used version of GMM. The idea behind this two methods is the smartness of instrumenting endogenous variables with their lags. It is relevant in our case because there are no readily available variable to serve as instruments. Roodman (2006) identified six situations for which "these general estimators" designed for and among them are when there is "small T"(number of years) relative to i(number of country in the sample) and "when independent variables that are not strictly exogenous." And this justifications are consistent with the problem of our model (equation 4.1).

Difference GMM which was developed (Arellano & Bond (1991)), is the more common for estimating the dynamic panel data. But for macroeconomic cross sectional studies like this one system GMM is more efficient than difference GMM (Prasad et al. (2007), Bond et al. (2001)). Because of that this study used system GMM to estimate the model.

System GMM were used to estimate the impact of aggregate capital flows, disaggregated capital inflows and capital inflows on Economci growth of sub-saharan African countries over

the period 1996 - 2014.

5. *Results and Discussions*

5.1 Descriptive Statistics

[1]

Table 5.1 shows that over the 18 years period, the average GDP per capita annual growth was 1.81% among sub-saharan african countries. As expected the region run an average 5% Current Account deficits. Export was higher than an import and because of that the Trade Openness measure which was the difference between imports and exports, was -9%. Over this period the major inflow into the region was in the form of Official development assistance which averaged about 68% of GDP. Gross domestic saving and Gross capital formation were averaged 10% and 20% of the GDP over the study period across 35 sub saharan African countries.

As it is expected the governance indicators for the region were very low during the study period. These indicates even if there has been improvement in the quality of institution, it was far from being satisfactory. The estimates for these indicators range between -2.5 to $+2.5$. The higher the estimates are, the better the quality of that indicator. The estimate were on average between -0.5 and -0.8 for Sub-Saharan african countries during the study period. Table 5.3 shows that percentile ranking of the sub-saharan Africa region during the period 1996 - 2014 was only about 30%. That indicates the poor institutional quality in the region.

[1] List of 36 countries in the appedix

Table 5.1: Summary statistics

Variable	Mean	Std. Dev.	N
GDP per capita Annual Growth	1.81	4.573	665
Lag of GDP per capita growth	1.793	4.672	630
CAB	-5.114	9.454	665
Broad Money	30.18	19.639	642
Trade Openness Measure	-9.153	18.022	660
Average Consumer price index	18.359	165.974	665
Gross Domestic Saving	10.967	17.141	658
Gross Capital Formation	20.105	8.993	659
Net ODA received	68.387	192.251	659
Foreign Direct investment inflow	3.844	6.036	661
Personal Remittance received	3.507	7.718	573

Table 5.2: Governance Indicators

Variable	Mean	Std. Dev.
Control of Corruption		
estimate	-0.566	0.595
Government Effectiveness		
Estimate	-0.648	0.604
Political Stability		
Absence of Violence estimate	-0.512	0.899
Regulatory Quality		
estimate	-0.561	0.592
Rule of Law		
Estimate	-0.661	0.665
Voice and Accountability	-0.549	0.683
N	662	

Table 5.3: Governance Indicators Percentile Ranking

Variable	Mean	Std. Dev.
Control of Corruption		
Ranking	33.135	22.422
Gvernment Effectiveness		
Ranking	30.484	20.823
Political Stability		
and Absence of Violence Ranking	34.23	22.74
Regulatory Quality ranking	32.536	18.245
Rule of Law		
ranking	31.005	21.113
Voice and Accountability		
ranking	32.967	19.394
N	662	

Table 5.4: Cross-correlation table

Variables	GDP per capita growth	Current Account Balance	bm/GDP ratio	Gross domestic savings	Gross capital formation
GDP percapita growth	1.000				
current account balance	0.002	1.000			
bm/GDP ratio	-0.004	-0.083	1.000		
Gross domestic savings	0.063	0.432	-0.006	1.000	
Gross capital formation	0.211	-0.248	0.264	0.160	1.000

The correlation table (table 5.4) shows that there was weak positive relation between Current account balance (CAB) and log of real GDP. The lower the flow of capital into a country, the better the economic performance according to this correlation table. The correlation between Gross Capital formation and Gross Domestic saving (both in percentage of GDP) was also positive during the study period. It is the rule of thumb that as long as the correlation between the regressors doesn't exceed 0.8 it doesn't have significant impact on the estimation process.

5.2 Empirical Results

5.2.1 Capital flows

Table 5.5 shows the system GMM estimation of aggregate capital flows, measured by current account balance as percentage of GDP and Economic growth measured by GDP per capita annual growth. Columns (1) - (5) gives a result for different governance indicator; the indicators are Control of corruption, Government effectiveness, Political stability and absence of violence, Regulatory Quality and Rule of law. The dummy variables were generated if the percentile ranking of these indicators were more than or equal to 50%.

The result shows that current account balance had negative impact on Economic growth only when the institutional quality's impact were significantly different from zero (That was Government effectiveness and Rule of law were significant). But current account was significantly different from zero only when Rule of Law was significantly different from zero. Broad money in the economy shows negative relation with economic growth. The measure of inflation, average consume price index was also found to have negative relationship with Economic growth and the result was significantly different from zero.

Table 5.5: Capital Flows

The dependent variable is GDP per capita Annual growth

	(1)	(2)	(3)	(4)	(5)
Lag of GDP per capita growth	0.151***	0.120***	0.134***	0.130***	0.130***
	(0.0191)	(0.0410)	(0.0133)	(0.0136)	(0.0228)

CAB	0.0129	-0.0139	0.0150	0.0350	-0.0496*
	(0.0253)	(0.0283)	(0.0282)	(0.0358)	(0.0273)
Broad Money	-0.00474	-0.0481**	-0.0192	-0.0322**	-0.0526***
	(0.0162)	(0.0202)	(0.0123)	(0.0155)	(0.0190)
TOM	-0.0717	-0.0380	0.0425***	0.0341	-0.0320
	(0.0675)	(0.0757)	(0.00810)	(0.0336)	(0.0574)
Average Consumer price index	-0.0173***	-0.0144***	-0.0120***	-0.0140***	-0.0173***
	(0.00390)	(0.00330)	(0.00341)	(0.00419)	(0.00384)
Gross Domestic Saving	0.102	0.0861	-0.000474	-0.0159	0.0783
	(0.0722)	(0.0825)	(0.0324)	(0.0475)	(0.0635)
Gross Capital Formation	-0.0255	-0.0235	0.136***	0.143**	-0.0340
	(0.103)	(0.124)	(0.0230)	(0.0579)	(0.0928)
Log of Capital Stock	-0.291	-0.855*	-0.519	-0.127	-0.210
	(0.334)	(0.479)	(0.837)	(0.758)	(0.456)
Institutional Quality (Control of Corruption)	-0.367				
	(0.930)				
(Government Effectiveness)		2.773*			
		(1.386)			
(Political Stability absence of violence)			0.144		
			(0.549)		
(Regulatory Quality)				1.118	
				(0.971)	
(Rule of Law)					3.344**
					(1.532)
Constant	3.888	10.92*	5.560	1.584	4.193

	(3.971)	(5.395)	(8.828)	(8.158)	(4.995)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.2.2 Capital inflows

To investigate the impact of inflows, as oppose to the aggregate capital flows, into sub-saharan Africa, the capital inflows were disaggregated into Personal remittance, Net Official development assistance and Foreign direct investment, all measured as percentage GDP.

Table 5.6 shows that only net official development assistance has a significant positive impact on Economic growth. Both Foreign direct investment and Personal remittance had negative impact on Economic growth and both were not significantly different from zero.

Table 5.6: Capital inflows

The dependent variable is GDP per capita Annual growth

	(1)	(2)	(3)
	Net ODA received	Personal remittance	Foreign Direct investment
Lag of GDP per capita growth	0.0998***	0.0645***	0.123***
	(0.00656)	(0.00987)	(0.0227)
Net ODA received	0.000166*		
	(9.60e-05)		
Personal remittance received		-0.00261	
		(0.0209)	
Foreign Direct investment inflow			-0.0531
			(0.0450)
Broad Money	-0.0457***	-0.0227	-0.0186
	(0.00862)	(0.0196)	(0.0205)

Institutional Quality			
(Rule of Law)	1.751**	1.853	0.158
	(0.765)	(1.377)	(1.632)
Trade Openness			
Measure	0.0576*	0.00624	0.0424***
	(0.0288)	(0.0113)	(0.00938)
Average Consumer			
Price index	-0.0141***	-0.0308*	-0.0150***
	(0.00270)	(0.0173)	(0.00254)
Gross Domestic			
Saving	-0.0339**	0.0308	-0.0240
	(0.0158)	(0.0218)	(0.0253)
Gross Capital			
Formation	0.157***	0.0472**	0.151***
	(0.0281)	(0.0204)	(0.0298)
Capital Stock	0.384	-0.616	0.149
	(0.288)	(0.617)	(0.636)
Constant	-3.638	7.671	-1.548
	(2.924)	(6.760)	(6.854)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.2.3 Capital Ouflow (Capital Flight)

Capital outflow had significant positive impact on Economic growth during the study period. Capital flight was estimated by Boyce & Ndikumana (2012) and it has small but significant positive impact on Economic growth. The result presented in Table 5.6 shows different indicators of governance measure. Only control of Corruption was significant and had positive coefficients.

Table 5.7: Capital Outflow

The dependent variable is GDP per capita Annual growth

	(1)	(2)	(3)	(4)	(5)

Lag of GDP	0.116**	0.134***	0.151*	0.115**	0.111
	(0.0488)	(0.0359)	(0.0807)	(0.0456)	(0.0701)
Capital Flight	0.0203**	0.0239**	0.00936	0.0268**	0.0289***
	(0.00832)	(0.00970)	(0.0104)	(0.0106)	(0.00891)
Broad Money	-0.0624***	-0.0516***	-0.0567***	-0.0425***	-0.0634***
	(0.00722)	(0.0175)	(0.00513)	(0.00970)	(0.00923)
Trade Openness Measure	0.0137	0.0127	0.0241	0.0135	0.0265
	(0.0189)	(0.0239)	(0.0204)	(0.0272)	(0.0218)
Average Consumer index	-0.0191***	-0.0175***	-0.0149***	-0.0182***	-0.0178***
	(0.00277)	(0.00232)	(0.00191)	(0.00267)	(0.00246)
Gross Domestic Saving	-0.0113	-0.0221	-0.0623**	-0.0200	-0.0408
	(0.0212)	(0.0324)	(0.0252)	(0.0386)	(0.0287)
Gross Capital Formation	0.0922**	0.110***	0.125***	0.122**	0.129**
	(0.0358)	(0.0378)	(0.0451)	(0.0502)	(0.0585)
Log of Capital Stock	0.771**	0.493	1.187***	0.733***	0.757***
	(0.327)	(0.300)	(0.239)	(0.239)	(0.201)
Institutional Quality (Control of Corruption)	2.101**				
	(0.958)				
(Government Effectiveness)		0.714			
		(1.569)			
(Political Stability and Absence of Violence)			1.436		
			(1.015)		
(Regulatory Quality)				-0.956	

				(2.409)	
(Rule of Law)					1.756
					(1.238)
Constant	-7.043**	-4.345	-11.50***	-6.992***	-6.983***
	(3.042)	(2.975)	(2.481)	(2.461)	(2.027)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6. *Conclusion*

In an attempt to understand the factors that contributed to the recent progress in economic performance of Sub-Saharan African countries, this study used panel of 35 countries to investigate the relation between foreign capital and Economic growth. The study period covered from 1996 - 2014. The objective was to assess if foreign capital flows to the region augment the poor domestic saving in the region and thereby contribute positively to the Economic growth.

The estimation result using system GMM method showed that current account balance, which measure the aggregate flows of foreign capital into region, didn't show significant impact on the economic growth of the region during the study period. It was only net ODA that showed positive impact on the Economic growth of the region. Capital flight from region had positive impact on Economic growth and this in contrary to the Expectation. And this could be due to the nature of the data.

The role of financial institution and institutional quality were not significant when it comes to the relation between foreign capital and Economic growth. Broad Money, which was the measure of the financial institution had significantly negative impact on the economic growth. This could be explained by the weak and non independent Central banking role in the financial institution. It is also consistent with the fact if not well manged the Broad money in the economy could lead to inflation. Inflation, which was measured average consumer index in this study, was also negatively correlated with the Economic growth in the region.

This study is limited by the poor availability of Data and any conclusion driven from this study should take into consideration this limitation.

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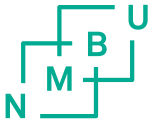
Appendix:List of Countries Included

- Angola
- Benin
- Botswana
- Burkina Faso
- Burundi
- Cameroon
- Central African Republic
- Congo, Dem. Rep.
- Congo, Rep.
- Cote d'Ivoire
- Gabon
- Gambia, The
- Ghana
- Guinea
- Guinea-Bissau
- Kenya
- Lesotho
- Madagascar
- Malawi
- Mali
- Mauritius
- Mozambique
- Namibia
- Niger
- Nigeria
- Rwanda
- Senegal
- Seychelles
- Sierra Leone
- South Africa
- Swaziland
- Tanzania
- Togo
- Uganda
- Zimbabwe



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