



DO FOREIGN FINANCIAL INFLOWS IMPACT ON ECONOMIC GROWTH? EVIDENCE FROM SUB- SAHARAN AFRICA

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ABSTRACT

The study examines the impact of financial inflows, proxied by Foreign Direct Investment, Official Development Assistance and remittances on Economic growth in Sub-Saharan Africa using the Generalized Method of Moments technique and panel data for 47 Sub Saharan African countries for the period 1995-2017, while controlling for domestic investment, human capital, government expenditure, trade openness, inflation, financial development, political rights and civil liberty. The results indicate that remittances and Foreign Direct Investment are growth-enhancing as they impact positively on economic growth consistent with Solow neoclassical model. However, Official Development Assistance reduces economic growth possibly as a result of weak institutional quality. While government expenditure, domestic investment and inflation positively impact on Economic growth, trade openness and Secondary School Enrolment had a negative impact on growth. We recommend countries in the sub-region to come up with policies that encourage Foreign Direct Investment and remittances inflow while ensuring that institutional structures are improved to ensure the efficiency of Official Development Assistance and the better allocation of such resources. Countries also need to focus more on internal sources of finance for government expenditure.

Key Words: Foreign Direct Investment, Remittances, Official Development Assistance, Economic Growth

RESUMEN

En el estudio se examinan las repercusiones de las corrientes financieras, representadas por la inversión extranjera directa, la asistencia oficial para el desarrollo y las remesas, en el crecimiento económico del África subsahariana mediante la técnica del Método Generalizado de los Momentos y los datos de panel de 47 países del África subsahariana para el período 1995-2017, al tiempo que se controla la inversión interna, el capital humano, el gasto público, la apertura comercial, la inflación, el desarrollo financiero, los derechos políticos y las libertades civiles. Los resultados indican que las remesas y la inversión extranjera directa favorecen el crecimiento, ya que repercuten positivamente en el crecimiento económico, en consonancia con el modelo neoclásico de Solow. Sin embargo, la asistencia oficial para el desarrollo reduce el crecimiento económico, posiblemente como resultado de una débil calidad institucional. Si bien el gasto público, la inversión interna y la inflación repercuten positivamente en el crecimiento económico, la apertura comercial y la matriculación en la enseñanza secundaria tienen un efecto negativo en el crecimiento. Recomendamos a los países de la subregión que elaboren políticas que fomenten la inversión extranjera directa y la entrada de remesas y que, al mismo tiempo, velen por mejorar las estructuras institucionales para garantizar la eficacia de la asistencia oficial para el desarrollo y una mejor asignación de esos recursos. Los países también deben centrarse más en las fuentes internas de financiación del gasto público.

Palabras claves: Inversión extranjera directa, remesas, asistencia oficial para el desarrollo, crecimiento económico

JEL Classification: E44, F43, F45

1. INTRODUCTION

Over the past three decades, Sub-Saharan Africa (SSA) has come under several risk factors including expansionary fiscal policy, depreciation of some currencies, upsurge in instability in the global market, poor progress in export markets with decreasing prices of commodities (International Monetary Fund, 2015) that has made it difficult for many of them to raise financing internally. Also, the growing population, especially in urban areas has made it difficult for governments to finance social expenditure and investment with local resources, especially in an environment of huge differences between debt payment and capital inflows, domestic investment and savings, imports and exports (Kanu, 2015).

To address these challenges, many countries in the sub-region have resorted to international financial inflows as an attractive source of funding for investment and economic growth (Todaro and Smith, 2009). Thus, financial inflows that come through private capital flows such as Foreign Direct Investment (FDI) and remittances, and Overseas Development A (ODA) such as loans or grants have become one of the important sources of finance for economic growth and poverty reduction (Clunies-Ross *et. al* 2009; Todaro and Smith, 2009). The World Bank (2019b) reports that financial inflows to SSA has increased from about \$4 billion in 1975 to about \$131 billion in 2017, largely attributable to growth in remittances and FDI brought about by reduced interest rates in advanced markets, sufficient liquidity and relaxed environment created by the international financial markets. Economic growth has also increased in line with growth in financial inflows from about -0.8 percent in 1975 to about 2.5 percent in 2017 and has averaged about 3 percent between 1980 to 2017 (World Bank, 201a).

One issue that has become debatable among scholars is: Do financial inflows impact on economic growth in developing countries? The answer to this question has been mixed. While the works of Armah and Nelson (2008) and Fayissa and Nsiah (2008) affirm this position, others such as Chami *et al*, (2005) and Agenor (2003) argue otherwise. One notable observation is that many of these studies focus on developing countries in general and countries with advanced markets. Even the few that have focused on SSA such as Adams (2009), Gupta, *et al*. (2009), Liew et al (2012), Kanu (2015) and Hojjati (2015) do not take into account financial development and institutional quality of countries in SSA. Research questions that arise are: Do the various forms of financial inflow impact on economic growth in SSA? If they do, what are the exact impacts of these inflows on economic growth? The objective of this paper is to empirically examine the nature and extent of the impact of various forms of financial inflows on economic growth in SSA for the period 1995 to 2017.

Examining this issue is quite imperative since it will help policy to determine the differential impacts on the growth of the various financial inflows and consequently put in place measures to enhance growth. It will also enable the sub-region to know if depending on international financial inflows to solve the problems of resource scarcity to boost economic growth is worthwhile or they should rather concentrate on domestic sources of finance as well as helping to better direct the flow of these financial resources into the regions.

The paper has 4 sections. Following this section is section 2 that reviews literature on the topic. This is followed by section 3 that provides the methodology and section 4 which discusses the results. The last section concludes the paper and makes policy recommendations.

2. REVIEW OF RELATED LITERATURE

2.1 Theoretical literature

Theories of economic growth posit four main components of growth: human capital development, growth in population, accumulation of capital and improvement in technology (Todaro and Smith, 2009). Many studies such as Jain and Arya (2015), have shown that SSA does not have the capacity to acquire the necessary resources needed to improve economic growth, largely attributable to the low level of government revenue, high government expenditure and low savings. Consequently, foreign financial inflows provide an alternative source of funding to finance fiscal gaps. (Clunies-Ross et al, 2009; Jain and Arya, 2015).

The impact of foreign capital inflows on economic growth can be positive or negative. Proponents of foreign capital flows having a positive impact on growth argue that developing countries including SSA are not technologically developed compared to developed economies. They can therefore improve their technology and productivity through capital flows from the advanced countries that come through practical knowledge and skills development and has the potential to enhance productivity, employment, out-put and incomes (Jain and Arya, 2015). Also, many SSA countries do not have adequate domestic capital required to enhance growth and development largely as a result of the high poverty levels. In such an environment, savings are low since much of the income is consumed. This generates a

resource gap between savings and investment which needs to be financed, in many cases through foreign capital inflows (Jain and Arya, 2015; Clunies-Ross et al, 2009). Further, many SSA countries do not have sufficient domestic capital for economic and social infrastructural development such as generation and supply of electricity, development of irrigation facilities, transport and communication systems. Consequently, these economies require foreign capital to support infrastructural development (Jain and Arya, 2015). From the foregoing, one can conclude that theoretically, foreign financial inflow is an important source of funding that could spur growth in recipient countries.

Opponents of foreign capital inflows having rather a negative impact on economic growth argue that, in an environment of weak institutions, unstable macroeconomic policies and less developed financial markets, excessive inflow of capital, if not controlled could have dire impacts on economic growth (Agenor, 2003). Specifically, financial inflows in the form of ODA from multilateral and bilateral institutions increase government debts and interest payments which have the potential to stifle growth. Prasad *et al.* (2003) argue that many developing countries have over-borrowed and such borrowings have the potential to affect growth in a negative direction. Also, large inflows of capital has the potential to impact on macroeconomic management through real exchange rate appreciation, inflationary pressures, rapid monetary expansion, widening current accounts deficit, among others (Agenor, 2003).

An interesting dimension of the negative impact of financial inflows on growth is the volatility of the inflows since it complicates macroeconomic management. Usually, capital inflows increase when an economy is booming and the international financial market becomes attractive. The reverse occurs during a bust. Bust is usually associated with economic and currency crises, reduction in output, investment and employment which brings about an increase in poverty and reduction in economic growth (Agenor, 2003).

2.2 Empirical Literature

Like the theoretical review, empirical works on the subject remains ambiguous for the different types of financial flows. Ndambendia and Njoupouognigni (2010) investigated the long-run relationship between foreign capital inflows, investment and economic growth in 38 SSA countries for the period 1980-2007. Using the pooled mean group estimator and dynamic fixed effect technique, they find that foreign capital inflows add up to domestic savings which consequently increases investment in recipient countries and spurs growth. A study by Calderón and Nguyen (2015) used data for 38 SSA countries and a two-step approach to address reverse causality and investigate the relationship between financial inflows and economic growth for the period 1970-2012. The study established a positive relationship between financial inflows and economic growth. Chigbu *et al.* (2015) employed data for the period 1986-2012 and the Ordinary Least Squares (OLS) estimation technique to examine the effects of financial flows on economic growth in Nigeria, Ghana and India. Their results established a significantly positive impact of foreign borrowing, FDI and portfolio investment on economic growth in Ghana and Nigeria, and a significantly positive impact of remittances on growth in all the countries.

Some studies have reported mixed, negative or no evidence on the impact of financial inflows on economic growth. Fambon (2013) examined the impact of financial inflows on economic growth in Cameroon using time series data and the augmented dickey fuller and cointegration techniques for the period 1980-2008. His work concluded that domestic investment and FDI have a significantly positive impact on economic growth while foreign aid had a positive but insignificant impact on growth in the long and short run.

Using time-series data for three SSA countries -Ghana, Nigeria and South Africa for the period 1980-2010, Kanu (2015) examined the impact of financial inflow on economic growth. No long run significant relationship was found between foreign capital inflows and the level of economic growth in Nigeria and South Africa, even though FDI was found to have a positive and significant impact on economic growth in Ghana. Klobodu and Adams (2016), with the help of the Autoregressive Distributed Lag (ARDL) methodology and data for the period 1970-2014 examined the impact of financial inflows on economic growth in Ghana and concluded that aid, FDI and external debt have a negative impact on economic growth, with the impact of remittances on growth being positive though insignificant.

One of the strategies that has been used by SSA countries to improve their standard of living and overall development since independence is the attraction of ODA. Even though this support has been going on for a long time, it has remained debatable in the literature as to what their exact impact on growth is. Investigating the relationship between ODA and economic growth of low-income countries in SSA, Levy (1988) concluded that ODA has a positive and significant impact on economic growth and domestic investment. This argument is supported by the work of Husein (1998), Svensson (1999), Armah and Nelson (2008), Hossain (2014) and Tait et al. (2015) who also established a positive impact of ODA on economic growth.

In the midst of the positive impact of ODA on growth, studies such as Liew et al (2012), Driffield and Jones (2013), Yiew & Lau (2018) and Phiri (2017) reports of a negative impact of foreign aid on economic growth of

recipient countries. Specifically, Yiew & Lau (2018) examined the impact of ODA on economic growth using panel data for 95 developing countries for the period 2005-2013 and concluded that initially, ODA has a negative impact on growth but positively impact on growth over some time. In a related study Phiri (2017), using data from 12 least developed countries in Africa over 20 years (1995-2014) and the fixed effects instrumental variable technique concluded that aid has a negative impact on economic growth.

Other studies have also argued that aid works efficiently and effectively under some specific conditions. For example, Burnside and Dollar (2000) and Guillaumont and Chauvet (2004) report that aid can impact positively on economic growth only when recipient countries have quality institutions. In addition to the type of institutions, the form and type of aid given also matters. Using the systems Generalized Methods of Moments (GMM) estimation technique and a panel data of eighty-five years average from 1960 to 2000, Reddy and Minoiu (2009), examined the effect of non-developmental and developmental aid on economic growth and concluded that developmental aid has a positive and significant impact on economic growth in the long run whereas non-developmental aid had a reverse impact. However, the work of Easterly (2003) and Kolawole (2013) has argued that aid has no impact on growth irrespective of the institutional quality.

Remittances in SSA compared to other financial inflows have been increasing and have the potential to encourage financial development, increase economic growth and facilitate poverty reduction. Empirical works by Pradhan *et al.* (2008), Siddique *et al.* (2010), Marzovilla and Marco (2015) and John *et al.* (2015) has demonstrated that remittances are key components of economic growth in host countries while others have provided the conditions under which they impact on economic growth in a positive direction. For example, Fayissa and Nsiah (2008) reported that remittances positively impact on economic growth in countries whose economic structures are weak, by offering a different way to funding investment projects and prevent income constraints. Using the system GMM to address endogeneity problems, Giuliano and Ruiz-Arranz (2009) established that remittances promote growth and development through investment, especially in countries with low levels of financial development. In a related work, Driffield and Jones (2013) found a significant positive impact of remittances on economic growth in a strong institutional environment.

The impact of remittances on growth has also been observed to depend on its use in recipient countries. Countries that rely on them as a source of revenue stand a chance of reducing their incentive to pursue reforms and investments that has the potential to spur growth. Studies such as Chami *et al.* (2012) and Spatafora (2005) found a negative and no impact of remittances on economic growth respectively, attributing the situation to the potential of remittances to enhance government's propensity to raise the tax burden and to employ greater resources for inefficient and unproductive expenses. They argue that remittances can also promote dependency syndromes and moral hazard of beneficiary households as well as reducing their participation in the production process, once they cultivate the habit of substituting labour income with incomes from remittances (Chami *et al.* 2012)

Like the argument on remittances and ODA, mixed results have also been obtained on the relationship between FDI and economic growth. Adams (2009) examines the impact of FDI and domestic investment on growth in SSA over the period 1990-2003 using the fixed effect and OLS technique. His results revealed a positive and significant effect of FDI on growth in the OLS technique alone. Other studies such as Juma (2012), Hojjati (2015), and Koffi, *et al.* (2016) have also confirmed the positive impact of FDI on economic growth even without institutional variables.

A notable observation is that the level of development of the financial system and institution is a necessary condition for FDI inflow to impact positively on economic growth as evidenced by studies such as Lee and Chang (2009), Hermes and Lensink (2010), Driffield and Jones (2013) and Nasreen and Anwar (2014). These studies emphasize that FDI can bring about economic growth in economies with well-established and efficient local financial markets, high-quality institutions as well as the level of human capital and structure of the market.

Several studies have revealed no or a negative impact of FDI on economic growth. For example, Tait *et al.*, (2015) and Makori *et al.*, (2015) used data for the period 1970-2013 to examine the effect of external inflows on the economic growth of Kenya and the OLS methodology. The authors found a positive but insignificant effect of FDI on economic growth. Also, Kolawole (2013) investigates the impact of FDI and ODA on growth in Nigeria for the period 1980-2011 by employing a two-gap model and find a negative impact of FDI on growth.

In a gist, one can conclude that there exists an ambiguous relationship between financial inflows and economic growth of recipient countries, with some scholars having mixed results. While some of the studies have taken into account the extent to which some institutional variables could affect the financial inflows-economic growth nexus, others have not. Additionally, most of these studies focus on developing countries in general with few of them concentrating on SSA. It is for these reasons that this study, which seeks to examine the impact of the three most important financial inflows on economic growth in SSA, becomes imperative.

3. METHODOLOGY AND DATA

This section discusses the theoretical framework and estimation technique used in the study. It also provides information on the definition of variables and sources of data used in the analysis.

3.1 Theoretical Framework

The theoretical framework of the study is based on the Solow (1956) long-run growth model. This model explains economic growth in the long-run by considering population growth, the accumulation of capital and improvement in technology. Using the Cobb-Douglas production function, the model can be written as equation (1).

$$Y(t) = K(t)^\alpha (A(t)L(t))^{1-\alpha} \quad (1)$$

Where $0 < \alpha < 1$, α is the share of labour in output, t denotes time, $Y(t)$ denotes total production, $K(t)$ is capital, $L(t)$ is labour, $A(t)$ represents labour-augmenting technology and $A(t)L(t)$ denotes effective labour.

The performance of capital stock per effective worker, k over time is given by equation as;

$$\dot{k}(t) = sk(t)^\alpha - (n + g + \delta) k(t) \quad (2)$$

where s is savings rate, g is technological progress, n is population growth rate and δ is depreciation.

This suggests that $k(t)$ gets closer to the steady state value of k^* defined by equation 3:

$$s(k^*(t))^\alpha = (n + g + \delta) k^*(t) \quad (3)$$

The steady-state capital per effective worker can be expressed as equation 4

$$k^* = \left(\frac{s}{n + g + \delta} \right)^{\frac{1}{1-\alpha}} \quad (4)$$

With equation (4), the unit of effective labour $A(t)L(t)$ and capital stock, $K(t)$ are known to be growing at a rate of $(n + g)$, $Y(t)$ is also growing at the same rate due to the constant returns to scale the theory assumes.

Substituting equation (4) into the steady-state output per effective worker $y^* = (k^*(t))^\alpha$ we obtain

$$y^* = \left(\frac{s}{n + g + \delta} \right)^{\frac{\alpha}{1-\alpha}} \quad (5)$$

Taking the logs of equation 5 we obtain equation 6:

$$\ln y^* = \frac{\alpha}{1-\alpha} \ln s - \frac{\alpha}{1-\alpha} \ln(n + g + \delta) \quad (6)$$

This shows that, growth in the steady-state output per unit of effective worker, y^* , is a function of the savings rate s , and is positively related to the steady-state output per unit of effective worker. Thus, an increase in s would bring about an improvement in output (economic growth) through an increase in investments. Technological progress, g , population growth rate n and the rate of depreciation, δ are however inversely related to output growth and capital per effective worker.

Theoretically, there are various ways by which financial inflows can impact on economic growth. Financial inflows enhance growth by augmenting capital stock. Therefore, the proxies for financial inflows (FDI, ODA and remittances) as well as domestic investment add to the physical capital (K). Financial inflows supplement the savings or add to the capital stocks of countries that do not have enough savings to undertake investment projects and also help close the resource gap.

3.2 Estimation technique and empirical model

Various techniques have been used to estimate the impact of financial inflows on economic growth. While Pradhan et al (2008) used the OLS technique, Adams (2009) and Liew et al. (2012) employed the Generalized Least Squares (GLS) estimation technique. Driffield and Jones (2013) used the systems approach and Giuliano and Ruiz-Arranz (2009) also used the GMM technique.

The data set used for this study has spatial or location units (e.g., regions and countries), which could create problems of spatial heterogeneity and spatial dependence (Arbia and Piras, 2005). As a result, we use the system GMM

dynamic panel estimation technique developed by Blundell and Bond (1998) because of its ability not only to control for endogeneity of the weakly exogenous variables that may arise from possible reverse causality in the model but also, control for country specific-fixed effects which may exist in the error term of some estimation methods (Bond, Hoeffler, & Temple, 2001). The technique also produces the least bias and highest precision for series that are persistent as well as having the best small sample properties in terms of sample bias and precision (Blundell & Bond, 1998). We also estimate the model using the GLS estimation technique to examine the robustness of the GMM results. The GMM estimation model is specified as equation 7.

$$\ln GDP_{it} = \beta_0 + \beta_1 \ln GDP_{i,t-1} + \beta_2 \ln FI_{it} + \beta_3 \ln X_{it} + e_{it} \quad (7)$$

Where β is the coefficient and e_{it} is the error term.

The dependent variable for the study is economic growth proxied by *GDP*. The GDP_{t-1} is the lagged value of GDP. FI_{it} represents financial inflows. Three financial inflows were considered: remittances, *ODA* and *FDI*. X_{it} is a vector of control variables, which include Secondary School Enrollment (*SSE*), Government Final Consumption Expenditure (*Gov*), Trade Openness (*trade*) and Gross Domestic Investment (*Dinvest*), Inflation (*Infl*), Financial Development (*findev*), Political Right (*Pol*) and Civil Liberty (*Civ*).

3.3 Data and Measurement

Table 1 provides the description of the variables, expected sign and the empirical justification of the use of the variable. We use data for forty-eight SSA countries¹ for the period 1995 to 2017. The choice of the countries is solely based on the availability of data for the years under consideration. Data on GDP, FDI, ODA, Remittances, Gross Domestic Investment, SSE and inflation were obtained from the World Development Indicators (WDI) database (World Bank, 2018b). Data on financial development was obtained from the Global Financial Development Database (World Bank, 2019a). Data on political rights and civil liberties were obtained from Freedom House (2019). We use the Stata 14.0 statistical package for the estimation. The use of the robust command in STATA and the systems GMM approach allows us to control for the problem of heterogeneity and endogeneity. We carry out various diagnostic tests to obtain the appropriateness of the variables and model as well as the reliability of the results.

4. RESULTS AND DISCUSSIONS

In this section, we provide results of the estimations and discuss it with other results. We begin by discussing the summary statistics of the variables and later results of the stationarity test. Once that is done we present the GMM results and discuss it together with the probable reasons for the observed results.

4.1 Summary Statistics

Results of the summary statistics presented as Table 2 indicate that the mean GDP for the countries for the period under consideration is \$18.1billion with a standard deviation of \$54billion. Also, FDI and remittances had mean values of \$0.413 billion and \$0.0479 billion and standard deviations of \$1.140 billion and \$2.230 billion respectively. Overseas Development Assistance also had a standard deviation of \$0.570 billion and a mean value of \$0.763 billion.

¹ Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Congo (Democratic Republic), Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

It could be seen from the table that ODA had the highest value as far as financial inflows to SSA are concerned, with a maximum value amounting to \$11.4 billion, whereas FDI has the lowest value with a maximum value of \$9.8 billion.

Table 1: Variables Description, expected sign and Empirical justification

Variables	Definition	Expected sign	Empirical justification of variable
GDP (\$billion)	Sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products in Current US\$.		Driffield and Jones (2013), Kolawole (2013)
FDI (\$billion)	Net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor.	Positive	Lee and Chang (2009), Hermes and Lensink (2010)
Remittances (\$billion)	Personal transfers and compensation of workers who are employed in an economy where they are not resident.	Positive	Driffield and Jones (2013).
Gross Domestic Investment	Outlays on additions to fixed assets of the economy plus net changes in the level of inventories.	Positive	Adams (2009), Kolawole (2013).
SSE (%)	Gross enrollment ratio (secondary school, both sexes).	Positive	Driffield and Jones (2013), Mankiw <i>et al.</i> , (1992).
Government Expenditure (\$billion)	All government current expenditure for purchases of goods and services including compensation of employees.	Positive	Rjou et al. (2017)
Inflation (%)	Annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that are fixed.	Negative	Rjou et al. (2017)
Trade Openness (%)	Sum of exports and imports as a percentage of GDP.	Positive	Rjou et al., (2017)
Financial Development (%)	Financial system deposit as a percentage of GDP.	Positive	Estrada <i>et. al.</i> (2015).
Political right	Measures the status of elections, competitiveness of political parties, the power enjoyed and roles played by opposition and representation of the interests of the minority. Its rating ranges from 1 (countries and territories enjoy a wide range of political right) to 7 (countries and territories have few or no political rights).	Positive	Gossel (2017).
Civil liberty	This is a measure of freedom of expression, assembly, association, education and religion in an economy. The rating ranges from 1 (countries enjoy a wide range of civil liberties) to 7 (countries have few or no civil liberties).	Positive	Gossel (2017).
ODA (\$billion)	Disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries.	Positive	Liew <i>et. al.</i> , (2012), Driffield and Jones (2013).

Table 2: Summary statistic

Variable	Observations	Mean	Std. Dev.	Min.	Max.
GDP	1019	18,1	54	0,0799	568
FDI	970	0,413	1,140	-7,40	9,89
ODA	1058	0,570	0,763	0,0145	11,4
Remittances	836	0,0479	2,230	0,00115	22
Gross domestic investment	912,0000	4,14	10,60	0,0206	85,7
Government expenditure	914	2,590	8,010	0,016	84,7
SSE	605	37,9510	23,8126	5,2101	115,986
Trade openness	949	720,3207	35,8381	11,0875	290,499
Financial development	973	71,4723	28,3057	13,7536	221,947
Inflation	897	55,6712	825,227	-11,686	12773,13
Political rights	1081	4,4283	1,9019	1	7
Civil liberty	1081	4,2470	1,5077	1,0000	7,0000

Source: Authors' calculation with data World Bank (2019a, 2019b,) and Freedom House (2019)

4.2 Stationarity test

To carry out an efficient and unbiased panel data estimation, one has to undertake a stationarity test to determine whether the panel data-set has a unit-root or is stationary as argued by Greene (2012). We use the panel extension of the Fisher's Augmented Dickey-Fuller (ADF) test. The test is done on the null hypothesis that all panels are non-stationary against the alternative that some panels are stationary. We reject the null hypothesis of non-stationary if the p-value is zero and accept otherwise. Results of the ADF test (Appendix 1) indicate that nine variables, FDI, ODA, GDP, trade openness, remittances, government expenditure and SSE, inflation and domestic investment are stationary while three of them, political rights, civil liberties and financial development are non-stationary. Based on this we accept the null hypothesis that some panels are non-stationary and reject the null hypothesis of the seven variables that, all panels are non-stationary. This problem of non-stationarity is addressed by the GMM estimation technique.

4.3 Empirical results and discussions

Table 3 provides results for five different systems GMM estimation models estimated. The second-order Arellano-Bond tests and the Sargan test indicate that there is no autocorrelation and the instruments are valid. The p-values of the Sargan test generally improved with the addition of variables. We thus focus our discussion on the full model, Model 5. To control for heterogeneity, we used the robust command in STATA for the estimation analysis. We also control for other institutional variables such as civil liberty and political right, as well as macroeconomic variable like inflation.

From model 5 FDI retains the positive sign and significant at 5 percent. Specifically, a one percent increase in FDI brings about a 0.0475 per-cent increase in economic growth. This confirms Solow neoclassical model that FDI increases revenue, ensures technological spillovers and contributes to knowledge which consequently improves economic growth of recipient countries and empirically in line with the works of Adams (2009), Hermes and Lenisk (2010), Juma (2012), Nasreen and Anwar (2014) and Koffi et. al (2016). Remittances also exhibit a positive and significant effect on economic growth with an impact of 0.0233percent increase in economic growth relating to a percentage increase in remittances. The growth-enhancing nature of remittances could probably be attributed to the fact that they are not only consumed but rather invested in lucrative businesses that benefit recipient families and consequently the economy. This argument is supported by Giuliano and Ruiz-Arranz (2009), John *et al* (2015) and Marzovilla and Marco (2015). The positive effect of FDI and remittances on economic growth implies that they are growth-enhancing and as such, countries in SSA should depend on them to close the resource gap caused primarily by the difference in savings and investment, exports and imports, demand and supply, government expenditure and

revenue, especially in the face of weak institutions and low level of financial sector development (Giuliano and Ruiz-Arranz, 2009; Driffield and Jones, 2013).

Table 3: System GMM estimation results
Dependent variable: lnGDP

Explanatory Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Lagged GDP	-0,1689*** (0,0442)	-0,0920 (0,0998)	-0,0475*** (0,0070)	-0,0454*** (0,0102)	-0,0239*** (0,0092)
SSE	0,0030 (0,0027)	0,0081 (0,0071)	0,0010 (0,0013)	-0,0012 (0,0018)	-0,0021* (0,0012)
InGoy	1,0132*** (0,0467)	0,0358 (0,2319)	0,3817*** (0,0527)	0,4329*** (0,0480)	0,4142*** (0,0439)
Trade	-0,0042*** (0,0015)	-0,0075*** (0,0025)	-0,0060*** (0,0007)	-0,0065*** (0,0009)	-0,0053*** (0,0008)
Findey	-0,0378** (0,0158)	-0,0193 (0,0312)	-0,0009 (0,0024)	-0,0005 (0,0026)	-0,0001 (0,0016)
Inflation	0,0002 (0,0003)	0,0003 (0,0003)	0,0045*** (0,0017)	0,0048** (0,0020)	0,0068*** (0,0020)
Pol	0,0484 (0,0708)	0,1094 (0,1435)	0,0097 (0,0250)	0,0038 (0,0285)	0,0140 (0,0226)
Civ	-0,0639 (0,1856)	-0,0192 (0,2054)	0,0136 (0,0304)	-0,0006 (0,0383)	0,0087 (0,0322)
InDinvest		0,7111*** (0,2486)	0,5390*** (0,1070)	0,5043*** (0,0617)	0,5198*** (0,0487)
InFDI			0,0312*** (0,0107)	0,0478*** (0,0161)	0,0475*** (0,0121)
InODA				-0,058** (0,0313)	-0,0545** (0,0211)
InRem					0,0233** (0,0102)
Constant	5,6490*** 1,6483	9,1630 8,2555	4,2280*** 0,3362	4,8040*** 0,6021	3,8476*** 0,4152
Number of observations	373	370	337	336	291
Number of instruments	40	14	269	201	196
P-Value of AR (1)	0,0000	0,3000	0,0000	0,0000	0,0000
P-Value of AR (2)	0,140	0,353	0,141	0,234	0,507
P-Value of Sargan test	0,893	0,790	0,861	0,628	0,358

One-step Systems GMM estimation results with robust standard errors in parentheses at *** p<0.01, ** p<0.05, * p<0.1; probability values of diagnostic tests are presented as well.

ODA, on the other hand, has a negative and significant impact on economic growth with a coefficient of 0.0545. This means that an increase in ODA would bring about 0.0545 percent reduction in the economic growth of SSA countries. This result is consistent with studies such as Liew *et al.* (2012) and Driffield and Jones (2013). Factors such as low level of institutional quality that breeds corruption and leakages of foreign inflows to unproductive areas and low financial development in SSA could be the reason for this observed result (Singh *et al.*, 2009). Indeed, countries in SSA are known to have low level of financial development, ineffective macroeconomic policies, as well as weak

and low institutional quality (Beck and Honohan, 2007). Burnside and Dollar (2000) and Makori et. al (2015) argue that ODA could bring about growth only when recipient countries fiscal, trade and monetary policies are properly formulated and implemented with strong institutional quality.

Gross domestic investment and government expenditure also exhibit a significant and positive impact on economic growth. The domestic investment coefficient of 0.5198 implies that a percentage increase in domestic investment proxied brings about a 0.0520 percent increase in GDP. This is consistent with a study by Levy (1988), Fayissa and Nsiah (2008) and Kolawole (2013). Also, the coefficient of 0.4141 for government expenditure implies that a percentage increase in government expenditure brings about 0.04141 percent increase in economic growth.

Trade openness and SSE had a negative and significant impact on economic growth while inflation had a positive and significant impact on growth. The negative coefficient of trade openness suggests that increase in trade openness brings about a decrease in economic growth in SSA confirming the argument by Olayungbo and Quadri (2019). This could probably be attributed to the existence of weak institutions and unfavorable trade regulations. Secondary School Enrollment has a negative coefficient, implying that an increase in SSE brings about a decrease in economic growth, consistent with the findings of Ikpesu (2019 and Odhiambo and Akinsola (2017). Bittencourt, *et. al.* (2015) argue that education in some countries in SSA is not growth-enhancing because growth in the region is still based on physical capital instead of human capital. Increase in inflation leads to an increase in economic growth supporting the work of Chu. *et. al.*, (2019) who finds similar results at a certain threshold of inflation. Political rights, civil liberties and financial development enter the model with an insignificant impact on economic growth. Results from the GLS estimation (Appendix 2) which the study accepts after the Hausman test (Appendix 3) is quite similar to that of the GMM, confirming the robustness of the GMM results.

Post estimation test meant to test for the validity of the instruments and serial correlation is presented as Appendix 4. The serial correlation test is done on the null hypothesis of no autocorrelation. The test from the autoregressive of the first order [AR (1)] fails to accept the null hypothesis at the 0.05 significance level with a p-value of 0.000. The AR (1) test is however considered unreliable because of difficulties associated with its construction in the Systems GMM model. We therefore provide the test for the autoregressive of the second-order [AR (2)] which is far more reliable. The p-value from the test is 0.507. This exceeds the conventional 0.05 significance level. Thus, we fail to reject the null hypothesis and conclude that there is no serial correlation in the systems GMM dynamic estimation model. The Sargan test (Appendix 5), which checks for validity of the instruments is conducted on the null hypothesis that the over-identifying restrictions are valid. The p-value of 0.358 exceeds the significance level of 0.05. We therefore fail to reject the null hypothesis implying that there is some form of validity in the over-identifying restrictions. This outcome of the post estimation test endorses the systems GMM estimator as efficient.

5. Conclusion and recommendations

In this study, we investigate the impact of financial inflows in the form of remittances, FDI and ODA on economic growth using the systems GMM estimation technique and panel data for 48 countries in SSA. The results indicate that remittances and FDI impacts positively on economic growth in the sub-region which is quite consistent with Solow neoclassical model that argues that FDI and remittances increase revenue, ensures technological spillovers which are growth-enhancing. However, the same cannot be said about ODA which reduces growth possibly as a result of weak institutional quality that breeds corruption and leakages of foreign inflows. Gross Domestic investment and government expenditure are also found to have a positive and significant effect on growth. While government expenditure, domestic investment and inflation positively impact on growth, trade openness and SSE had a negative impact on growth.

We recommend countries in the sub-region to come up with policies that encourage FDI and remittances inflow while ensuring that institutional structures are improved to ensure the efficiency of ODA and the better allocation of such resources. Enhancing institutional quality and having a stable business environment that supports the smooth operation of multinational companies as well as focusing more on internal sources of finance for government expenditure will also enhance growth. We recommend further works to focus on individual countries and should include other institutional quality and democracy variables such as good governance, rule of law, corruption control, bureaucratic quality, property right and financial freedom in the financial inflows-economic growth nexus.

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APPENDICES

Appendix 1: Fisher's ADF Tests results

Variable	Test Statistic		Probability Value
	Structure of lag	Value	
GDP Growth	Level	36.2161	0.0000
FDI	Level	41.2592	0.0000
Remittances	Level	39.6767	0.0000
Domestic investment	Level	54.3381	0.0000
SSE	Level	32.7086	0.0000
Government Expenditure	Level	36.0641	0.0000
Trade openness	Level	29.0384	0.0000
Inflation	Level	92.5055	0.0000
Financial development	Level	0.3639	0.3580
Political Right	Level	0.8343	0.2020
Civil Liberty	Level	0.6872	0.2460
ODA	Level	86.2713	0.0000

Source: Authors calculation with data from World Bank (2019a, 2019b), freedom house (2019)

Note: The modified inv. chi-square Pm statistical values are reported.

Appendix 2: Fixed Effects estimation results

Explanatory Variable	Coefficient	Standard Errors (Robust)
Log of FDI	0,0564***	0,0122
Log of ODA	-0,0561***	0,0187
Log of Remittances	0,0044	0,0079
Log of Domestic Investment	0,5455***	0,0425
SSE	-0,0023*	0,0012
Log of Government expenditure	0,4159***	0,0392
Trade openness	-0,0051***	0,0000
Financial development	-0,0004	0,0007
Inflation	0,0072***	0,0015
Political rights	0,0079	0,0180
Civil liberty	0,0216	0,0296
Number of observations	329	
Number of groups	46	
R-squared (overall)	0,9764	
Hausman Test (P-Value)	0,0000	
Wooldridge serial correlation Test (P-Value)	0,6167	

Source: Authors calculation from World Bank (2019a,2019b), Freedom House (2019),

Note: Fixed Effects estimation results with robust standard error at *** p<0.01, ** p<0.05, * p<0.1; probability values of a diagnostic test are presented as well.

Appendix 3: Test of Endogeneity

Variable	Durbin		Wu-Hausman	
	Chi2 statistic	Probability	F-Statistic	Probability
FDI	131.608	0.0000	215.354	0.0000
Financial development	5.35156	0.0207	5.3079	0.0219
Remittances	0.10288	0.7484	0.10010	0.7519
Domestic investment	91.4593	0.0000	123.978	0.0000
SSE	5.47277	0.0193	5.48077	0.0198
Government Expenditure	128.828	0.0000	207.877	0.0000
Trade openness	0.10094	0.7534	0.09882	0.7534
Inflation	26.4897	0.0000	28.0212	0.0000
Political rights	0.02162	0.8831	0.02123	0.8842
Civil liberty	0.61315	0.4291	0.6132	0.4342
ODA	57.9538	0.0000	69.0623	0.0000

Source: Authors calculation with data from World Bank (2019a, 2019b), Freedom House (2019)

Appendix 4: Arellano-Bond test for zero autocorrelation in first-differenced errors

Order	Z-Value	Probability Value
AR (1)	-3.59	0.000
AR (2)	0.66	0.507

Source: Authors calculation with data from World Bank (2019a, 2019b), Freedom House (2019)

Appendix 5: Sargan test of over-identifying restrictions

Chi2 Statistic (x^2)	Probability Value
189.38	0.358

Source: Authors calculation with data from World Bank (2019a, 2019b), Freedom House (2019)