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Capital flows and the distribution of income in sub-Saharan Africa

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Abstract

In this study, we examine the differential effects of capital flows on the distribution of income in 21 sub-Saharan African (SSA) countries over the period 1984-2013. The empirical results show that FDI has a moderate positive effect on income inequality, which suggests that FDI increases income inequality in both the short and the long-run. Remittances, external debt and aid flows, however, do not have robust impact on income inequality. Further, our findings indicate unidirectional causality from FDI to income inequality in the short-run when we account for heterogeneity. Finally, our country-specific estimates indicate that capital flows have mixed effect on inequality in SSA.

Keywords: aid · FDI · external debt · income inequality · remittances

1. Introduction

Over the last few decades, researchers and policy analysts have concentrated on the benefits of capital flows to developing countries. For many Sub Saharan African (SSA) countries, domestic resources are often inadequate to fund development projects due to the low level of development and its associated low savings rate. The United Nations Economic Commission for Africa's (UNECA) (2006) report shows that the investment rate in SSA had to increase from the then level of 20% to 22.5%, to promote development. Accordingly, many developing countries embarked on market reforms to attract foreign capital. Foreign capital inflows to SSA increased from $8 billion in 2000 to $45 billion in 2006, which is nearly 6% of its gross domestic product (GDP). The figure increased to $46.5 billion in 2008 and reached $73.6 billion in 2012 (UNECA 2006; World Bank 2014a; United Nations (UN) 2014). In 2013, capital inflows to SSA accounted for 5.3% of the region's GDP (World Bank, 2014b).

Inequality is also on the agenda of many developing countries because of the failure of the past policies to significantly reduce global poverty in an era of increasing liberalization despite robust economic growth (Milanovic 1999; Africa Progress Report, 2014). Azis and Shin (2015) claim that the volatility of global liquidity and capital flows could have detrimental effects on growth, income inequality, and poverty. Many studies have examined the growth effects of capital flows but little on income inequality (Castells-Quintana and Larrú 2015). The study fills the gap in this light. The motivation for this study is based on the assumption that distributional effects drive the competition for resources by various interest groups (Joskow and Rose 1989). Evidently, the interrogation into who gains and who is held back by capital flows is an important issue especially in SSA because of its power and wealth effects. However, how capital flows to SSA affects the distribution of income has not been studied. Accordingly, this

study examines empirically the differential effects of the individual components of capital flows (FDI, aid, debt, and remittances) on the distribution of income in SSA, the first to our knowledge to do this. It is important to note many studies have examined the individual effects on income inequality. For example, Anyanwu (2011) and Adams and Klobodu (2016) investigate the effect of remittances and inequality in Africa, while Herzer et al. (2014) and Herzer and Nunnenkamp (2011) analyze the effect of FDI on inequality and Chong et al. (2009) and Castells-Quintana and Larru (2015) examine the aid - income inequality nexus for Latin American countries.

With respect to the individual components, Foreign direct investment (FDI) inflows to SSA have increased persistently from an amount of $18 billion in 2004 to $29 billion in 2010 and $42 billion in 2014, compared to the total African value of $54 billion and $381 billion for East and South-East Asia respectively and $159 billion for Latin America and the Caribbean (United Nations Conference on Trade and Development [UNCTAD] 2014, 2015). The net private capital flows on the whole increased by 3.3% and the net portfolio equity decreased by 29% in 2013 (World Bank 2015). Although the services share in Africa's FDI is still lower than the global and developing-country averages, in 2012, services accounted for 48 per cent of the total FDI stock in the region, more than twice the share of manufacturing (21 per cent). The increase in the flow of FDI to SSA is attributed to the increased global competition for natural resources, higher commodity prices, and a fast rising middle class. Similarly, debt inflows have increased consistently in the last fifty years. For example, the external debt stock of SSA which stood at $213.5 billion in 2000 increased to $234.4 billion in 2005 and $296 billion in 2010, compared to the total developing country net debt flow of $542 billion in 2013 (World Bank 2013, 2015).

The SSA region as the poorest in the developing world also received the largest amount of official development assistance. For example, out of a total ODA of $192.5 billion in 2013, the SSA region received $45.2 billion (23.47%). In particular, SSA countries have received roughly the same amount of ODA (around 23% of the world ODA) since 1985 (Pham, 2015). It is not surprising therefore that the share of aid in national budget has maintained an upward surge since 2000, and reaching over 50% for many SSA countries, with Liberia's ODA/GNI ratio exceeding 130% in 2013. Thus, SSA could be described as the most dependent region in the world. Additionally, for the first time in 2013, recorded remittances to developing countries were estimated at $ 404 billion surpassing official development assistance (ODA) as well as private debt and portfolio equity making remittance a key resource flow. In the same year global remittance flows, including those to high-income countries were estimated at $542 billion (World Bank 2014).

Obviously, understanding how this massive inflow of capital is impacting on the distribution of income has policy implications in terms of the appropriate targeting for particular types of capital in promoting socioeconomic development. Our study makes a contribution in this light. The focus on SSA is important because the region is increasingly recognized as an investment destination, due to its natural resources endowment and recent discovery of oil in many of the countries in the region. Further, rising inequality is known to slow the rate at which growth reduces poverty (Africa Progress Panel 2013; Adams and Atsu 2015). Consistent with this view, Adejumobi (2014) argues that increasing inequality may threaten not only the little progress the African continent has made but its collective sense of humanity and decency which defines Africa's value system. According to the International Monetary Fund [IMF] (2007) and complementary works by the United Nations (2013), high income inequality can be detrimental

to economic stability as well as economic growth. Although inequalities have diminished over the period, Africa still remains the poorest in the world and the second continent on the income inequality chart after Latin America (African Development Bank [AfDB] 2012). Evidently, being one of the most unequal regions in the world, it is important to understand what factors could reduce or worsen the condition. The AfDB (2012) report reveals that six (6) out of 10 most unequal countries were in Sub-Saharan Africa, with South Africa being the highest with a Gini coefficient of about 70 (World Bank 2012). The World Bank has noted that "no country has managed to transition beyond a middle-income status while maintaining high levels of inequality as the resulting risk-levels may distort public spending towards security measures and away from those essential for human development progress.

The argument of this paper is that if capital flows do not have the same socioeconomic effects and that the national policy matters, it is of great importance for these differences to be examined so that the appropriate targeting of particular capital flows could be encouraged to promote sustainable development. To achieve this objective, the study employs a panel vector autoregressive (PVAR) technique and for robustness, additional tests that account for heterogeneity and cross-sectional dependence. The rest of the paper is organized as follows. The next section presents the literature review after which the methodology is described. The results are then presented and discussed and policy implications given.

2. Literature Review

Isolating the effects of capital flows on income inequality or establishing a relationship between the two variables is a difficult task, however, two main perspectives (optimist and pessimist) stand out in explaining how capital flows impact the distribution of income. The optimist view

relates to the neoclassical or modernization paradigm which suggests that liberalization of capital account and integration in to the world economy should lead to reduction in income inequality within and across nations (Wade 2001; Heshmati 2005). The free flow of capital, according to this view allows capital to seek out the highest rate of return and benefits the host country in terms of the reducing the funding constraint, spreading of best practices of corporate governance, and limiting the ability of governments to pursue bad policies (Hecht et al. 2002).

Further, the influx of capital could reduce the cost of capital and thereby raise investment and curb unemployment. Additionally, because labor earnings are the primary source of income for most low-income households, capital inflows is expected to improve the distribution of income (Coibion et al. 2012; Galbraith 2007; United Nations Development Programme (UNDP) 2014). Beer (2015) made a similar argument in the assertion that continued influx of capital to resource constrained countries could help to expand the middle class and increases employment and the savings rates among the poor, leading to reduction in income inequality. Bua (2016) claims that the influx of capital flows associated with loose monetary policy will lead to lower interest rate which will benefit borrowers and hurt savers.

Empirically, Delis et al. (2014) examine the effect of capital flows on income inequality for 91 countries based on annual data over the period 1973-2005 and report that privatization and liberalization of capital flows decrease income inequality. However, the authors find that the effect becomes insignificant for countries with low levels of economic and institutional development. Jensen and Rosas (2007) examine income inequality within states in Mexico as capital flows were liberalized between 1990 and 2000. They compare states that received a lot of FDI with those that received little FDI since most US multinationals choose to locate close to six

border routes between the two countries. Using an instrumental variable technique the authors find that states with lots of FDI had lower income inequality

Castells-Quintana and Larru (2015) analyze the role of aid in the evolution of income distribution over the last two decades for 18 Latin American countries and find a significant effect of international aid on reducing income inequality. Shafiullah (2011) runs random and fixed effects regressions on a panel of 88 countries over the period 1989-2008 and reports that the growth rate of aid has a negative effect on inequality. Cuesta et al. (2006) use an ordered probit model to investigate income inequality in 30 countries over the years 1995-1998. The result shows that aid generally reduces inequality if it is given over a longer time period. Ebeke and Goff (2009) factoring in the endogeneity of remittances, demonstrate that there is an inequality decreasing effect of remittances using a panel sample of 80 developing countries over the period 1970-2000. Consistent with these findings, Pant (2008) argues that independent of what remittances are used for (purchasing houses or investment), they are likely to have a positive impact on the economy by stimulating demand for other goods and services and consequently having a positive impact on both growth, poverty and income inequality.

Contrary to the idea of convergence by the optimists, the pessimists or dependency theorists argue that capital inflows could be a cause of divergence of incomes between the world's economies. They suggest that the traditional causes of income inequality (e.g., land concentration, unequal access to education, and urban-rural gap) are unlikely to explain the rise in income inequality in the past two decades. Such an increase, they argue is more likely to be related to the adoption of unfettered financialization and capital account liberalization (Beer 2015; Bornschier and Chase-Dunn 1985; Azis and Shin 2015). Azis and Shin (2015) claim that in a liberalized financial and capital account environment, rich urban-based households are better

able to reap benefits from an expanding financial sector due to the increase in value of their financial assets compared to those derived from factor incomes. Moreover, the financial sector usually grows faster than the real sector during a boom, so that the rich earn more and subsequently, worsen the income distribution gap.

Like Azis and Shin (2015), Cornia (2012) suggests that during capital booms, it is usually the rich household who gains at the expense of the poor from expanding financial markets and rising asset valuations. In support of this view, Adejumobi (2014) asserts that unfettered capital flows to Africa has led to what he calls the development transnational capitalist elitist who are the primary beneficiaries of the resultant economic growth associated with capital inflow. Additionally, the dependency approach predicts that divergence is more likely from integration because of the differential in benefits from economic integration for developed and developing countries. Thus, national income inequality is in large part determined by growth potentials of productivities in the large global structure. For instance, Bornschier and Chase–Dunn (1985) claim that countries that are wholly dependent on foreign investment experience stagnation, unemployment, and increasing inequality. Similarly, Beer (2015) claims that FDI is the primary means through which the modern capitalist world system creates and maintains intra and international socioeconomic inequities.

In support of the theoretical arguments against the influx of capital into developing economies, Herzer et al. (2014) examine the effect of FDI in five Latin American countries based on panel cointegration techniques and report a significant positive effect of FDI on income inequality. Furthermore, FDI contributed to widening income gaps in all individual sample countries, except for Uruguay. The findings are robust to the choice of different estimation methods. Cabral et al. (2016) investigate the effect of capital flows on income inequality for a

sample of 15 countries over the period 1970-2004 using system GMM estimation technique and show that the financial integration measure based on portfolio equity and FDI stocks (GEQ) turn to have a large impact on the top income shares leading to an increase in income inequality. Herzer and Nunnenkamp (2012) employ a bivariate model and panel cointegration techniques on data from 21 countries over the period 1970-1995 and find that the long-run effect of aid on income inequality is positive. Likewise, in a study of 88 countries over the years 1960-2000, Bjørnskov (2010) using the a random effects weighted least squares (WLS) technique show a positive association and potential causality between aid and inequality in democracies, but the effect is missing in non-democratic settings.

Clark et al. (2011) in a review of the literature conclude that FDI is generally associated with positive technological spillovers, economic growth, and increasing income inequality. Petreski and Jovanovic (2013) investigate whether remittances in Macedonia affect poverty and inequality. Using two household surveys, one conducted in 2008, and the other in 2012, the authors report that remittances reduce both poverty and inequality with the effect being more severe in the latter period. Other studies, however, show that capital flows do not have a significant impact on income inequality (Chong et al. 2009; Layton and Nielson 2008). For example, Chong et al. (2009) employed the generalized method of moments (GMM) estimation technique to investigate the effect of foreign aid on income inequality on a sample of 116 countries for the period 1971-2002 and show that there is no evidence that foreign aid is conducive to the improvement of the distribution of income.

The literature reviewed shows varied results of the capital flows-inequality relationship based on different estimation techniques, time period, countries and regions studied. It is possible that the studies might be suffering from omitted variable bias (in terms of the different

components of capital flows) and therefore we contribute to the literature by controlling for the types of capital flows to reduce the bias in our estimates for a sample of 21 SSA countries over the period 1984-2013. The data and methodology employed are described next

3. Methodology

To empirically examine the relationship between capital flows and income inequality we employ a panel vector autoregressive (PVAR) technique in a generalized method of moment (GMM) framework. PVAR enables static and dynamic interdependencies to be captured in the presence of shocks in the capital flows-income inequality nexus. More importantly, this methodology performs well in the absence of a priori relationships between variables of interest. Further, this technique allows for time variations in the variance of these shocks through decompositions and impulse responses. PVAR models combine the traditional VAR approach for time series with panel data approach allowing for country specific effects or unobserved individual heterogeneity as well as accounting for endogeneity. Moreover like VAR, the PVAR approach can be implemented straight away without pre-testing the order of integration of the variables. Precisely, we use yearly panel data of 21 Sub-Saharan African countries[1] from 1984 to 2013. Accordingly, the 21-country 30-year balanced panel used was due to the quest for larger number of observations. We specify our empirical model as follows:

$$y_{it} = u_0 + B_1 y_{it-1} + \ldots + B_k y_{it-1} + \alpha_i + \gamma_t + \mu_{it} \quad (1)$$

$$i = 1,\ldots,N; t = 1,\ldots,T$$

where the subscript i and t denote country and time period (years) respectively; $y_{it} = (\text{GINI}_{it}, \text{FDI}_{it}, \text{REMIT}_{it}, \text{DEBT}_{it}, \text{AID}_{it})'$ is a matrix made up of income inequality, measured by Gini (GINI); foreign direct investment inflows as a percent of GDP (FDI); remittances

[1] Botswana, Burkina Faso, Cameroon, Cote D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Madagascar, Malawi, Mali, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia and Zimbabwe

inflows a percent of GDP (REMIT); total external debt stock as a share of GDP (DEBT), aid (i.e. net official development assistance and official aid received) as a percent of GDP (AID); $B_j's$ are coefficients of a 5×5 matrices; α_i denote unobserved country effects; γ_t denote time effect; and μ_{it} is 5×1 vector of idiosyncratic errors. All these variables are transformed to natural logarithms except FDI because some of the values are negative. In addition, we obtain all our variables from the World Development indicators except GINI which we obtain from The Standardized World Income Inequality Database (SWIID) by Solt (2016) scaled between 0 and 100; higher values denote high income inequality and lower values denote low income inequality. The Gini index from SWIID provides Gini estimates that are comparable and also spans a wider coverage compared to alternative datasets which makes it suitable for broadly cross-national research. Moreover, the SWIID employs a custom missing-data algorithm (interpolation) that minimizes reliance on problematic assumptions. Although, the SWIID has been used extensively (see Clark 2013; Acemeglou et al. 2013; Ostry et al. 2014), it has been criticized by a few (see Jenkins 2015). To this end, we use SWIID as our measure of inequality because it provides a longer span of data suitable for our analysis. In our compilation of data we noticed Gini for SWIID generates 630 observations whereas World Income Inequality Database (WIID) and University of Texas Inequality Project Gini generates 117 and 163 observations respectively. As Galbraith (2009) rightly points out, WIID is limited in terms of data continuity and consistency over time.

A number of issues arise when estimating fixed effect panel models. For instance, the presence of lagged dependent variables is likely to induce correlation between fixed effects and regressors causing biasedness in regression estimates. A strategy implemented is the use of forward mean-differencing to remove the mean of all the future observations available for each

individual time period (i.e. fixed effects). This transformation preserves the orthogonality between mean-differenced variables and lagged regressors, with lagged regressors acting as instruments for system GMM estimation. This procedure is achieved by using a PVAR in a generalized method of moments (GMM) framework following Abrigo and Love (2015).

3.1 Data

Table 1 shows the annual average growth rate of the variables. The annual average growth rate in Gini ranges from a high of 4.093 in South Africa to a low of 3.661 in Tanzania. In addition to South Africa, Botswana and Zambia have inequality growth rates greater than 4.000 and more than half of the countries have average annual growth rate below the sample average (3.845). The average FDI was 2.170, with Zambia obtaining the highest (4.614) and Kenya experiencing the lowest FDI growth rate (0.510). Gambia documented the highest growth rate in remittances (2.415) whiles Zimbabwe experienced the lowest (0.053). On the average, remittances growth rate was 0.850. Guinea-Bissau recorded the highest debt annual growth rate (5.168), followed by Côte d'Ivoire (4.420) and South Africa having the lowest growth rate in debt. The sample had an average growth rate of 3.817. The average annual aid growth rate is 2.153, with Guinea-Bissau having the highest growth rate in aid inflows (3.366) and South Africa having the lowest growth rate in aid. The results from descriptive statistics reflect some degree of heterogeneity in our panel.

[Table 1: Average annual growth rate and correlation matrix]

Further, Table 1 (Panel B) presents correlations between capital flows and income inequality. Capital flows are negatively correlation with income inequality, however, correlations between the capital flows themselves are relatively low except for DEBT and AID which is moderately correlated (0.631).

3.2 Estimation Strategy

The capital flows-inequality nexus is analysed in a six (6) step process. To begin with, the order of integration of the variables and the number of lags needed for PVAR analyses are determined. Secondly, the panel vector autoregressive model (PVAR) is estimated to determine causality. Subsequently, impulse response functions (IRFs) and variance decompositions are computed to determine impact of the causal dynamics pictorially and the reaction of variables to changes in the innovations of another variable. It should be noted that we account for heterogeneity in our sample to produce reliable and robust results. Accordingly, we employ newly developed heterogeneous pairwise causality by Dumitrescu and Hurlin [D-H] (2012). This technique assumes that all the coefficients are different across cross-sections, thus providing more reliable estimates compared with the Granger causality test which is homogeneous by nature. Nonetheless, a prerequisite of the D-H test is that all the variables are stationary. Our final step involves performing panel heterogeneous as a means of examining the long-run country-specific capital flows coefficient. Specifically, we employ the common correlated effects mean group estimator (CCEMG) by Pesaran (2006) to recover the country-specific coefficients. This procedure is attractive because it caters for heterogeneity as well as cross-sectional correlation in errors in large T and large N panels which our study presents.

4. Empirical Results

The first step of the analysis is to investigate the properties of the data (Table 2). We test for the presence of unit root using “second generation” panel-based unit root test (i.e. cross-sectional augmented IPS (CIPS) by Pesaran (2007)) which caters for cross-sectional dependency in our panel as detected by the Pesaran cross-sectional dependence (CD) test. Results from Table 2

show that our variables are stationary after first difference (i.e. I(1)) except for FDI which is stationary at levels (I(0)).

[Table 2: Test of Cross-sectional dependence]

Next, the optimal number of lags to use in the PVAR model is determined to avoid specification problem and satisfy moment condition. We employ moment and model selection criteria (MMSC) for GMM models based on Hansen's (1982) *J* statistic of over-identifying restrictions proposed by Andrews and Lu (2001). Based on results from moment and model selection criteria we opt for panel VAR of order one (See Appendix Table A1). Consequently, we discovered that order one preserves the information and also maintains a desired degree of freedom based on selection criteria.

The investigation of the causal links (i.e. in the short-run) using the PVAR model is summarized in Table 3. Strikingly, there are unidirectional relationships from GINI to REMIT, GINI to DEBT and GINI to AID whiles a feedback effect exist between GINI and FDI. Surprisingly, the results indicate causality from income inequality to capital flows in the short-run. Further, the findings indicate a bi-directional relationship between DEBT and REMIT and FDI and AID whiles uni-directional relationships run from REMIT to FDI and REMIT to AID.

[Table 3: Panel vector autoregressive estimates]

The next stage involves assessing the strength and the impact of the causality using impulse response functions (IRFs) **<<Figure 1>>.** The results from the IRFs indicate that the bi-directional causalities (i.e. feedback effects) between GINI and FDI and FDI and AID are not robust. In the case of GINI and FDI the absence of a feedback effect is due to the inconsistent direction of causality; causal links from FDI to GINI being positive and that of GINI to FDI being negative. Interestingly, we find that shocks in FDI leads to an increase of GINI by roughly 0.02 on impact. However, after two years the peak response of GINI to shocks of FDI then

converges smoothly to its predefined level smoothly. Such results lead us to investigate the importance of shocks (impulse) on one variable in explaining changes in the other using variance decompositions (response). We present decompositions pertaining to GINI (outcome variable) since we are more interested in the causal impact of capital flows on GINI. The 10-year horizon of FDI remains the highest contributor to GINI (10.20%) relative to REMIT, DEBT and AID. The REMIT forecast variances due to GINI are 0.63% and 1.27% respectively the 5-year and 10-year horizons. Similarly, the variance decompositions (VDs) show that DEBT (1.21%) and AID (1.76%) explain small variations in GINI in the long-run. Based on the findings from Granger causality test, VDs and IRFs it can be concluded that FDI has a moderate effect on the distribution of income.

[Table 4: Variance Decompositions]

A problem that arises when estimating large T large N panel data is the possibility of heterogeneity bias, as a result we subject our panel data to heterogeneous pairwise causality developed by Dumitrescu and Hurlin [D-H] (2012). The stationary nature of our variables as established by the CIPS allowed the D-H test to be conducted. The results are presented in Table 5. The results indicate causality from FDI to GINI and GINI to AID in the short-run. These are in line with earlier findings from Granger causality test. However, we could not establish causality from or between other capital flows and income inequality. This differs from traditional Granger causality results because it is restrictive and does not account for heterogeneity.

[Table 5: Heterogeneous pairwise causality test]

We then employ the CCEMG technique to unravel the country-specific effect of capital flows on inequality. Results are presented in Table 6. The impact of FDI on inequality is not robust (i.e. moderate). This is consistent with the findings obtained using the granger causality test which indicate that the causal link from FDI to inequality is not resilient. The coefficients of REMIT,

DEBT and AID are inelastic (elasticity values are less one). Indeed, Burkina Faso (0.122) and Nigeria (0.089) remittances have a significant positive elasticity suggesting that in the long-run remittances seem to increase inequality. Cote D'Ivoire (-0.233), Guinea-Bissau (-0.154), Niger (-0.137), Senegal and Tanzania (-0.166), however, exhibit significant negative elasticities. These findings indicate that remittances have an inequality reducing effect in these countries. Nonetheless, remittances inflows in the remaining countries (14 countries) have no significant impact on inequality. This suggests that the effect of remittances on inequality is not robust in these countries. Concerning DEBT, Cameroon (-0.290), Cote D'Ivoire (-0.119), Guinea-Bissau (-0.154), Senegal (-0.181) and Tanzania (-0.157) have negative elasticities whiles Ghana (0.100), Kenya (0.180), Mali (0.197) and Zimbabwe (0.101) have positive elasticities. Equally, for majority of the countries in the sample (13 countries) debt has no significant impact on inequality in the long-run. Turning to AID, whiles economies such as Burkina Faso (-0.160), Nigeria (-0.0.44) and Senegal (-0.103) exhibit significant negative elasticities, Gambia (0.106), Guinea-Bissau (0.108) and Tanzania (0.260) show positive and significant elasticities. Overall, our findings do not show significant relationship between capital flows and income inequality.

[Table 6: CCEMG Group-Specific estimates]

4.1 Sensitivity of results

To assess the sensitivity of our results we adjust the time series component of our data. Specifically, we collapse our annual data into 5 year averages; 1984-1988, 1989-1993, 1994-1998, 1999-2003, 2004-2008, 2009-2013. This procedure is essential due to the interpolation and low variability of income inequality data and also business cycle fluctuations which are likely to impact FDI. Our findings are similar to prior findings which are available on request. Notably our sensitivity analyses also reveal the FDI increases income inequality.

5. Conclusion

We examine the effect of capital flows on the distribution of income in 21 sub-Saharan African countries over the period 1984-2013. The study contributes to the literature by examining the differential effects of capital flows on income inequality. The empirical results show that FDI has a moderate positive effect on income inequality, while remittances, external debt and aid flows, however, do not have robust impact on income inequality.. The findings of the study provide three main policy implications.

First, the inequality increasing effect of FDI is consistent with the view that the unfettered financial sector and capital account liberalization was flawed (Committee on International Economic Policy Reform [CIEPR] 2012) as they relate to SSA. After decades of preaching the virtues of cross-border capital flows, the International Monetary Fund (IMF) finally admitted that some restrictions on capital flows can help protect an economy from financial turmoil. Central to the analysis is the need to maintain financial stability and macro prudential policy (IMF 2012). The effect of FDI is also more supportive of the world systems theory that it disadvantages the poor or the economically weak in society and hence appropriate policies need to be put in place to reduce the negative effects. Nearly, two decades ago, the UNCTAD (2000) explained that the negative effect is associated with the bid to attract FDI and the implementation of policies that decrease the bargaining power of labor and inhibit vertical mobility by the lower classes, while enhancing the mobility of the economic elite.

Second, the lack of significant effect of aid, remittances, and debt on inequality contradicts the modernization perspective that capital flows are good for the development of peripheral nations. With respect to aid, for example, Layton and Nielson (2008) find that the effect of aid on inequality is between zero and weakly positive (increasing inequality). Chong et

al. (2009) find that there is no evidence that aid has an impact on the distribution of income. Thus it can be inferred that the very purpose of aid to curb income inequality in Africa has not been realized. This suggests that policies have to be put in place to enhance the effectiveness of aid (Herzer and Nunnenkamp 2012). Accordingly, Beer's (2015) argument that dependence on aid benefits the economic and political elites has to be reconsidered and necessary steps taken to ensure foreign aid achieves its intended purpose of helping the poor to reduce income inequality and consequently poverty. Indeed, Sachs and McArthur (2005: 347) and OECD (2006) have noted that increases in ODA, if properly directed, could improve income equality and the poverty reducing impact of a given rate of economic growth.

Third, we deduce from literature and our findings that market forces alone might not be adequate in reducing inequality. As noted by the UNDP (2013), the determinants of the degree of income inequality in a country include not just economic but also social and political forces as well. The report notes that in particular, government transfers and taxes play an important redistributive role. The report concludes that the extent of inequality, their impact, and the ways in which they can be reduced can only be achieved through the action and voices of many or citizens. Pham (2015) also in the examination of inequality–aid relationship for 27 SSA countries over the period 1990-2011, find that aid usually has an inequality increasing effect in SSA but this situation reverses when corruption is controlled. García-Peñalosa, (2010) argues that public policy plays a significant role in affecting inequality, which suggest that the political space matters and therefore further studies could look at the moderating role of institutional quality or government effectiveness. Azis and Shin (2014) also mention that national policy is key in understanding the impact of capital flows and inequality. Castells-Quintana (2015) and Lustig (2012) assert that the expansion and more effective social spending through cash and in-kind

transfers and to a less extent progressive direct taxes could be determinants of income inequality. However, these issues have not been examined empirically in the context of SSA and therefore further studies should elaborate further on these issues to guide policy makers as to how to make capital flows beneficial to the recipient countries. Finally, many studies indicate that the relationship between capital flows and inequality is complex and different for different countries (Bourguignon, 2009-2010). Accordingly, further studies should focus more on country specific studies to provide more light on the relationship.

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Table 1: Average annual growth rate and correlation matrix

	GINI	FDI	REMIT	DEBT	AID
Botswana	4.009	2.880	0.732	2.513	1.129
Burkina Faso	3.932	0.614	1.323	3.470	2.644
Cameroon	3.938	1.094	0.307	3.704	1.575
Côte d'Ivoire	3.762	1.356	0.620	4.420	1.595
Gambia	3.931	3.195	2.415	4.195	2.634
Ghana	3.690	2.889	0.430	3.754	2.195
Guinea	3.693	2.230	0.453	4.022	2.075
Guinea-Bissau	3.826	1.254	1.207	5.168	3.366
Kenya	3.848	0.510	1.118	3.704	1.906
Madagascar	3.743	2.941	0.669	4.206	2.385
Malawi	3.889	2.498	0.225	4.092	3.017
Mali	3.686	2.138	1.627	4.093	2.702
Niger	3.765	2.739	0.720	3.948	2.721
Nigeria	3.841	3.369	1.233	3.661	0.582
Senegal	3.772	1.358	1.725	3.894	2.396
Sierra Leone	3.931	2.712	0.591	4.357	2.853
South Africa	4.093	1.014	0.156	1.842	0.190
Tanzania	3.661	2.347	0.230	3.473	2.299
Uganda	3.728	2.791	1.670	3.548	2.480
Zambia	4.025	4.614	0.339	4.285	2.662
Zimbabwe	3.988	1.038	0.053	3.820	1.814
Total	3.845	2.170	0.850	3.817	2.153
Panel B: Correlation Matrix					
GINI	1.000				
FDI	-0.125	1.000			
REMIT	-0.132	0.151	1.000		
DEBT	-0.141	-0.125	-0.005	1.000	
AID	-0.200	-0.030	0.178	0.631	1.000

Table 2: Test of Cross-sectional dependence and stationary test

Variables	GINI	FDI	REMIT	DEBT	AID
Pesaran CD test (cross-sectional dependence test)	3.710	22.255	11.076	34.659	12.891
p-value	0.000	0.000	0.000	0.000	0.000
CIPS (stationary test)					
Level	-1.649	-2.892[a]	1.905	-2.422	-2.287
1st Difference	-3.064[a]	-3.741[a]	-2.947[a]	-3.535[a]	-3.352[a]

Notes: [a], [b], [c] denote significance at 1%, 5% and 10% respectively; null hypothesis for Pesaran CD is, there is no cross-sectional dependence in error term.

Table 3: Panel vector autoregressive estimates

Variables	GINI	FDI	REMIT	DEBT	AID
$GINI_{it-1}$	1.013	-27.637	-0.431	1.731	1.287
$\chi2(1)$	-	[23.178]^{a}	[3.587]^{c}	[15.532]^{a}	[8.337]^{a}
FDI_{it-1}	0.004	0.010	-0.002	0.013	0.020
$\chi2(1)$	[4.491]^{b}	-	[0.228]	[2.001]	[6.067]^{b}
$REMIT_{it-1}$	-0.016	2.049	0.866	-0.161	-0.186
$\chi2(1)$	[1.584]	[4.053]^{b}	-	[6.253]^{b}	[7.157]^{a}
$DEBT_{it-1}$	-0.007	0.099	-0.037	0.909	0.001
$\chi2(1)$	[2.016]	[0.053]	[2.949]^{c}	-	[0.000]
AID_{it-1}	0.015	-1.986	0.040	-0.028	0.841
$\chi2(1)$	[2.429]	[7.454]^{a}	[1.094]	[0.317]	-
ALL					
$\chi2(4)$	[5.926]	[42.689]^{a}	[5.309]	[43.087]^{a}	[26.167]^{a}

Note: ^{a}, ^{b}, ^{c} denote significance at 1%, 5% and 10% respectively.

Table 4: Variance Decompositions

	Impulse variable				
Response variable and forecast horizon	**GINI**	**FDI**	**REMIT**	**DEBT**	**AID**
GINI					
5	89.01	8.98	0.63	0.27	1.10
10	85.57	10.20	1.27	1.21	1.76

Table 5: Heterogeneous pairwise causality test

Null Hypothesis	Zbar-Stat	p-value
FDI does not homogeneously cause GINI	5.305^{a}	0.000
GINI does not homogeneously cause FDI	-0.073	0.942
REMIT does not homogeneously cause GINI	-1.268	0.205
GINI does not homogeneously cause REMIT	-1.007	0.314
DEBT does not homogeneously cause GINI	0.151	0.880
GINI does not homogeneously cause DEBT	-0.579	0.563
AID does not homogeneously cause GINI	-1.151	0.250
GINI does not homogeneously cause AID	2.403^{b}	0.016

Note: ^{a}, ^{b}, ^{c} denote significance at 1%, 5% and 10% respectively. Lag length selected by AIC.

Table 6: CCEMG Group-Specific estimates

Country	FDI	REMIT	DEBT	AID
Botswana	-0.002[c]	-0.030	0.009	-0.009
Burkina Faso	0.012	0.122[c]	0.157	-0.160[c]
Cameroon	0.018	0.170	-0.290[b]	0.015
Côte d'Ivoire	0.038[a]	-0.233[c]	-0.119[c]	0.001
Gambia	0.001	-0.031	0.029	0.106[a]
Ghana	0.001	-0.010	0.100[b]	0.022
Guinea	0.006	0.033	-0.010	0.028
Guinea-Bissau	0.003	-0.154[b]	-0.154[a]	0.108[b]
Kenya	-0.005	-0.088	0.180*	0.049
Madagascar	-0.005	-0.051	-0.025	0.021
Malawi	-0.003	-0.220	-0.062	-0.002
Mali	-0.003	-0.042	0.197[a]	0.055
Niger	-0.002	-0.137[b]	-0.059	-0.029
Nigeria	-0.002	0.089[a]	-0.025	-0.044[a]
Senegal	-0.016	-0.117[b]	-0.181[b]	-0.103[b]
Sierra Leone	-0.001	0.011	-0.006	-0.025
South Africa	-0.001	0.257	-0.003	-0.185
Tanzania	0.009	-0.166[a]	-0.157[a]	0.260[a]
Uganda	-0.012	0.149	-0.050	-0.044
Zambia	-0.005	-0.034	-0.088	-0.026
Zimbabwe	-0.009[c]	0.088	0.101[b]	-0.022

Note: [a], [b], [c] denote significance at 1%, 5% and 10% respectively.

Appendix

Table A1: Lag selection criteria

Lag	CD	J	J p-value	MBIC	MAIC	MQIC
1	0.999779	51.76849	0.404645	-263.363	-48.2315	-132.328
2	0.999828	28.03652	0.306175	-129.529	-21.9635	-64.0117
3	0.999825	4.03E-28	0.54321	4.03E-28	4.03E-28	4.03E-28

Figure 1: Impulse response functions