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The Effect of Capital inflows on Domestic Private Investment in Sub-Saharan Africa

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Abstract

This study empirically investigates the effect capital inflows, namely FDI and foreign aid on domestic private investment in 26 SSA countries for the periods 2000 to 2019. The study applied random effect and system GMM to estimate model that explain the behaviour of investment in most of developing countries. The results of the study show that FDI crowds-in domestic private investment in SSA countries, but foreign aid has negative effect on domestic private investment. Furthermore, the result of the study indicates that devaluation of official exchange rate enhances private investment in SSA countries. The findings of this study suggest that SSA countries need to create hospitable environment and incentives for attracting multinational corporations in order to achieve rapid and accelerated growth of domestic private investment. Equally, SSA countries need to reduce their dependency on foreign aid and reinforce devaluation of their currency in order to promote private investment.

Key words: 1. Capital inflows 2. Domestic private investment 3. Random effect 4. GMM 5. SSA

Introduction

Capital inflows are a major source of financing in economies that often face the resource gap and, therefore, are indispensable in accelerating investment in recipient countries (Calderon&Nguyen, 2015). Foreign direct investment (FDI) and foreign aid are the two dominant capital inflows for Sub-Saharan Africa (World Bank, 2018; Caderon et al., 2019). According to Calderon et al (2019), during the period 2000 to 2017, FDI accounted on average 3.4% of GDP while foreign aid amounted to 3.3 % of GDP in Sub-Saharan Africa (SSA). In 2018, the world recorded downward trend in FDI inflows, but

SSA defied the downward trend and recorded a 13% increase after successive declines in 2016 and 2017(UN, 2019). Moreover, SSA countries receive the largest amount of foreign aid for long periods(Ogundipe et al., 2014; Williams, 2020).

The huge FDI inflows and foreign aid are conceived to play a vital role in capital formation in SSA. Nevertheless, domestic private investment (DPI) in SSA lags well below all other regions of the world(IMF, 2018). A number of studies have been carried out to investigate why SSA lags behind all other regions of the world, with specific emphasis on the effect of capital inflows on domestic private investment (DPI). In particular, the effect of FDI and foreign aid on DPI is a controversial issue in economics literature.

With regards to the impact of FDI, the main debatable issue is whether FDI crowds in or crowds out DPI. Fujimori et al (2020) argue that when FDI takes place, capital, technology, knowledge, management expertise and skills are transferred from the origin country to the host country. These positive spill-overs help the host country's private investors to adopt the foreign technology, new knowledge and skills and further produce new products (Agosin& Mayer, 2000; Acar et al., 2012).

On the other hand, a large body of literature indicate that the DPI is weakened by the flows of FDI to developing countries (Mutenyo et al., 2010; Acar et al., 2012; Budang& Hakim, 2019; Budang& Hakim, 2020). This is due to the reason that domestic private investors in developing countries could not resist a fierce competition arising from more efficient and technologically superior multinational corporations(Kastrati, 2013). Thus, FDI could displace the DPI by making the domestic firms exit the market(Agosin& Mayer, 2000; Acar et al., 2012; Kastrati, 2013).

Similarly, concerning the impact of foreign aid, the debatable issue is whether foreign aid has positive or negative effect on recipient country's private investment(Mossie, 2014). Some scholars argue that foreign aid promotes investment by filling the resource gap of developing countries (Gomanee et al., 2005). On the contrary, it is claimed that foreign aid has counterproductive effect on recipient counties' investment by generating "Dutch Disease" effect(Rajan&Subramanian, 2011; Herzer & Grimm, 2012). Besides, others contest that the effect of foreign aid on private investment depends on institutions governing foreign aid in the recipient countries (Burnside & Dollar, 1997; Dollar & Easterly, 1999).

Thus, overview of the empirical studies that emphasized on the effect of capital inflows on domestic private investment show diverging findings. The divergence in the findings may be attributed to difference in countries under study, methodological framework, period covered and nature of data used by them. In short, determining the effect of capital inflows (FDI and foreign aid) on domestic private investment in different contexts of developing countries requires strong evidence obtained through conducting rigorous empirical research. Motivated with this, this paper aims to investigate the effect of capital inflows on domestic private investment in SSA. Few studies have been conducted to address this research objective. Acquah(2017) examined the impact of FDI

on domestic investment in SSA using system Generalized Method of Moments (GMM). Mutenyo et al (2010) investigated the impact of FDI on domestic private investment in SSA wherein they applied standard linear panel models and two-stage least squares (2SLS). In addition, Diallo et al (2020) examined the relationship between FDI and private investment in SSA using Pooled Mean Group (PMG), Mean Group (MG) and Dynamic Full Effects (DFE). Mossie (2014) empirically investigated the effect of foreign aid on domestic private investment in East Africa using dynamic Ordinary Least Squares (OLS). Some of these studies focused on the impact of either FDI (Acquah, 2017; Mutenyo et al., 2010 and Diallo et al., 2020) or foreign aid (Mossie, 2014) on domestic private investment; others fail to study effects of FDI on private and public investment independently (Acquah, 2017). Moreover, the study conducted by Mossie (2014) covers only the Eastern region of Africa. Thus, this study is an attempt to fill these gaps by analyzing the effect of both FDI and foreign aid on DPI in SSA over the periods from 2000 to 2019 using standard linear panel model and system GMM.

The rest of the paper is structured as follows. Section two provides review of theoretical and empirical literatures. Data, model specification, estimation methods and diagnostic tests are presented in section three. Section four is devoted to results and discussion, and section five provides conclusion and policy implications.

Literature Review

Definition and type of FDI

According to Moosa (2002) and Chen (2021) definitions, FDI is the process whereby residents of one country (the source country) acquire ownership of assets for the purpose of controlling the production, distribution and other activities of a firm in another country (the host country). Most of FDI is carried out by multinational corporations (MNCs), which are also called transnational or global companies/enterprises (Moosa, 2002).

It is important to distinguish different forms of FDI since their effects on host country's private investment are not alike. FDI can be classified from the perspective of the investor (the source country) and from the perspective of the host country. From the perspective of the investor, there are three types of FDI: horizontal, vertical and conglomerate FDI (Moosa, 2002; CFI, 2019; Boyce, 2021; Chen, 2021).

Horizontal FDI occurs when an investor expands its domestic operations to a foreign country where the funds are invested in the same industry as in the source country. Vertical FDI happens when the investor expands its business into a foreign country by engaging in the supply chain or distribution. Vertical FDI is undertaken for the purpose of exploiting raw materials (backward vertical FDI) or to be nearer to the consumers through the acquisition of distribution outlets (forward vertical FDI). The third type of FDI, conglomerate FDI, is a type of investment where an investment is made in a

completely different industry in a foreign country. This kind of FDI is challenged by two barriers: entering a foreign country and entering a new industry or market.

Source country

Host country

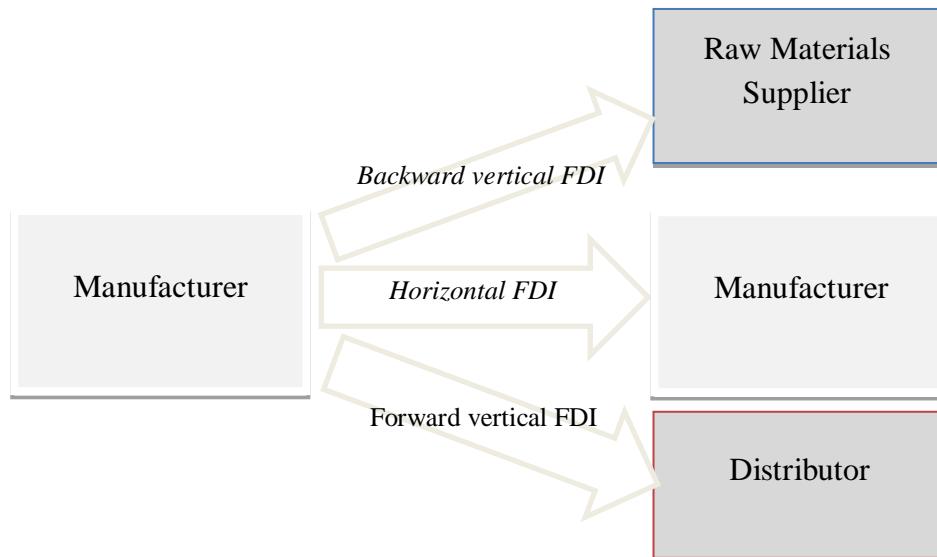


Figure 1: Horizontal and vertical FDI adapted from CFI (2019)

On the other hand, from the viewpoint of the host country, FDI can be classified into (i) import-substituting FDI; (ii) export-increasing FDI; and (iii) government-initiated FDI (Moosa, 2002).

Import-substituting FDI involves the production of goods previously imported by the host country, which necessarily leads to decline in the imports by the host country and exports by the investing country. Export-increasing, on the other hand, occurs when the host country is motivated to increase its exports of raw materials and intermediate goods to the investing country and other countries of the world.



Figure 2: Export-increasing FDI adapted from CFI (2019)

The government-initiated FDI is resulted when a government provides incentives to foreign investors in order to eliminate a problem of balance of payments deficit.

Two-gap model of capital inflows

Theoretically, the relationship between capital inflows and host country's private investment is widely explained by two-gap model which holds a key role in policy

decisions related to FDI and foreign aid. The two-gap model shows that developing countries face the problem of increasing their savings to match their investment needs, and that of financing imports through export earnings (Quibria, 1980; Gersovitz, 1982; Moosa, 2002). According to the two-gap model, capital inflows (such as foreign aid and FDI) can play an important role in filling the saving-investment and import-export gaps (Ayesha, 2021). Besides, the model suggests that capital inflows can have a multiplier effect on investment of developing countries.

Beginning with the national income identity (Mankiw, 2003),

$$Y = C + I + X - M \quad (1)$$

where Y stands for national income, C for consumption, I for investment, X for exports and M for imports.

The saving equation is written as:

$$S = Y - C \quad (2)$$

where S represents for total domestic savings.

From equation (2), the national income is expressed as:

$$Y = C + S \quad (3)$$

Equations (1) and (3) together yields the dual gap model, which is given as:

$$I - S = M - X \quad (4)$$

Equation (3) shows that saving-investment gap ($I - S$) equals import-export gap ($M - X$).

The capital inflows are defined as foreign savings (F), which is given as (Bacha, 1983):

$$F = M - X \quad (5)$$

Thus, equation (4) can be expressed as:

$$I = S + F \quad (6)$$

Equation (6) states that investment (I) must be financed by domestic private savings (S) or capital inflows (F). Assuming capital inflows (F) is an exogenous, it is clear that investment demand increases dollar for dollar with F .

Relationship between FDI and private investment

Reviews of theoretical and empirical literatures show that there is fundamental divergence among economists with regard to the effect of FDI on the host country's private investment. Two main theoretical perspectives have been used to explain the impact of FDI on host countries' investment. These are crowding-in and crowding-out theories.

Crowding-in theory suggests that FDI could promote private investment in developing countries. Jenkins and Thomas (2002) argue that FDI provides foreign capital and crowds-in additional domestic investment. Similarly, Kastrati (2013) strongly supported crowding-in effect of FDI wherein it was indicated that there is a near one-to-one relationship between the FDI and the domestic investment once FDI takes place. According to Moosa (2002), the FDI leads to an increase in the inflow of financial resources available for investment. In addition, the FDI strengthens the domestic

financial market through which domestic savings can be channelled to finance domestic investment, and it supplies foreign savings on top of domestic savings to finance domestic investment (Jenkins & Thomas, 2002).

In contrast to the crowding-in theory, the crowding-out theory claims that FDI displaces domestic firms by pre-empting their investment opportunities and, therefore, it discourages domestic private investment (Denisia, 2010).

Given the conflicting theoretical views, many empirical studies have examined the relationship between FDI and domestic investment in developing countries (Adams, 2009; Mutenyo et al., 2010; Acar et al., 2012; Sadig, 2013; Ahmed et al., 2015; Wu et al., 2015; Acquah, 2017; Budang & Hakim, 2019; Budang & Hakim, 2020; Diallo et al., 2020).

Using panel data for 91 developing host countries over the period 1970-2000, Sadig (2013) examined the effects of FDI inflows on private investment. The result of the study showed that FDI stimulates private domestic investment which supports the crowding-in effect hypothesis. Moreover, Sadig (2013) found that the positive effect of FDI on private investment in low-income countries depends on the availability of human capital.

Budang and Hakim (2020) investigated the crowding effects of FDI on domestic investment in 38 Asian countries throughout 1993-2016 wherein they applied the fixed effect regression. The result of the regression suggested that FDI by no means always promise a good impact, clearly indicating FDI inflows endanger local firms by crowding them out of the Asian business market.

The relationship between FDI and domestic investment in 13 countries in the Middle East and North Africa (MENA) was examined by Acar et al (2012) wherein they showed that FDI crowds out domestic investment in the sample countries of MENA region as well as in the oil-poor and oil-rich countries of the MENA.

Empirical studies done at country level in SSA using time series data also reveals mixed findings. Nxazonke and Van Wyk (2019) examined the effect of foreign direct investment on domestic entrepreneurship in South Africa for the period 2000-2018 using Threshold Vector Autoregressive model. The key finding of the study is that FDI has a positive short-run and long-run effect on domestic entrepreneurship. However, study by Aboye (2017), which aimed to examine the nexus between FDI and domestic private investment in Ethiopia, showed that FDI crowds out private domestic investment in the country. Ahmed et al (2015) studied whether FDI crowds-out domestic investment in Uganda using data from 1992 to 2012. Their findings showed that FDI has a robust neutral effect on the overall investment of the country's economy, but has neutral, crowding-in or crowding-out effects at the sectoral level.

More important to this study are empirical literatures that focused on SSA and employed panel data analysis. Adams (2009) studied the impact of FDI on domestic

investment in 42 SSA countries for the period 1990-2003 and reported that FDI has an initial negative effect on domestic investment, but has positive effect in the subsequent periods of the panel of the countries under study, supporting both crowding-in and crowding-out hypotheses.

Similarly, Mutenyo et al (2010) investigated the impact of FDI on domestic private investment in 34 SSA countries over the period 1990-2003, and found that FDI crowds-out domestic private investment in the selected SSA countries. On the contrary, the study by Acquah (2017) revealed the crowding-in effect of FDI on domestic investment for 36 countries in SSA over the period 1980-2014.

Based on a sample of 40 countries in SSA over 1980-2013, Diallo et al (2020) investigated the relationship between FDI and private investment, and reported that FDI inflows has substantial crowding-in effects in the long-run; a 1% increase in FDI is associated with a 0.3% increase in private domestic investment. In contrast, the result of the study indicated weak evidence that FDI inflows have crowding-out effects in the short-run. The finding of the study showed that FDI combined with higher public investment may enhance private domestic investment in the long-run. Diallo et al (2020) also showed that the effect of FDI on domestic private investment is more substantial in export diversified countries than in undiversified commodity exporters.

Relationship between foreign aid and private investment

The effect of foreign aid on recipient country's private investment is also debatable, both theoretically and empirically. There are three arguments on how foreign aid affects private investment in developing countries (Mossie, 2014). The first argument claims that foreign aid has positive effect on private investment by relaxing saving and trade gaps of developing countries (Gomanee et al., 2005). According to this view, poor countries face shortage of domestic resources to finance investment and foreign exchange to import capital goods and technology. The foreign aid can directly fill the savings-investment gap and indirectly fill the foreign exchange gap by providing hard currency.

The second argument states that an increase in foreign aid reduces private investment in recipient countries (Herzer& Grimm, 2012). In the same way, Rajan& Subramanian (2011) conjectured that foreign aid leads to appreciation of real exchange rate. An appreciation of real exchange rate further leads to decline in the competitiveness of the trade-able sectors of the economy. The consequence is that the economy will shift from manufacturing sector to the primary sector. Therefore, with manufacturing sector become uncompetitive, output will fall and there will be a decline in investment. This negative effect of foreign aid which is resulted from appreciation of exchange rate is known as "Dutch Disease" effect (Rajan& Subramanian, 2011).

The third argument asserts that the effect of foreign aid on private investment depends on the macroeconomic policies of aid in the recipient countries (Burnside & Dollar,

1997; Dollar & Easterly, 1999). According to Burnside & Dollar (1997), the effectiveness of aid is conditional on recipient economies' policies and institutions:

"Foreign aid to developing countries has been criticized as wasteful and even counterproductive. Careful examination of the recent experience with foreign aid shows, however, that it can be an effective investment when a recipient country's economic policies are sound before aid is provided."

Methodology

Data

This study used panel data consisting of 26 SSA countries and covering periods from 2000 to 2019. We selected countries for which missing values of variables of interest are minimal. The data was obtained from World Development Indicators (WDI) of World Bank. In order to address the research objective, we used private gross fixed capital formation as percentage of GDP to measure DPI, net inflows of FDI (as percentage of GDP), real GDP, official exchange rate, lending interest rate, inflation and net official development assistance (ODA) to measure foreign aid (AID).

Model specification

There are investment theories that have been advanced in the literature, which are Keynesian theory, accelerator model and neo-classical model. However, independently, these theories have not been applied successfully to explain the behaviour of investment in developing countries (Uneze, 2010). In this study, we follow Athukorala and Sen (2002) model, which builds on the accelerator and the neoclassical theories, to derive a fundamental investment equation that reflects the behaviour of investment in most of developing countries. In the model, it is expressed that the desired capital stock depends on the user cost of capital and the level of output (Uneze, 2010).

Mathematically, the relation between the desired capital stock (K^*), the level of output (Y) and the user cost of capital (C) is expressed as:

$$K_t^* = \phi Y_t C_t^{-\sigma} \quad (7)$$

where ϕ and σ represent the distribution parameter and the constant elasticity of substitution between capital and labour, respectively. The net component of investment is equal to the change in the desired capital stock, which will increase the capital stock by the amount of investment.

$$I_t = \Delta K_t^* \quad (8)$$

Substituting equation (7) into (8) the investment equation becomes:

$$I_t = \Delta(\phi Y_t C_t^{-\sigma}) \quad (9)$$

Assuming a unitary elasticity of substitution between capital and labour, and by adding the error term (μ_t), we get the basic investment model:

$$I_t = \beta_1 \Delta Y_t - \beta_2 \Delta C_t + \mu_t \quad (10)$$

Next, we augment this basic investment model with other determinants of private investment, including FDI and foreign aid. Moreover, Gala and Rocha (2011) suggest

dynamic formulation of investment in which the lag of the dependent variable is included as a regressor. Thus, the final model in this study can be formulated as:

$$\text{DPI}_{it} = f(\text{DPI}_{it-1}, \text{RGDP}_{it}, \text{LIR}_{it}, \text{FDI}_{it}, \text{AID}_{it}, \text{INF}_{it}, \text{OER}_{it})$$

The logarithmic formulation of the model will be given as follows.

$$\ln \text{DPI}_{it} = \ln \text{DPI}_{it-1} + \ln \text{RGDP}_{it} + \ln \text{LIR}_{it} + \ln \text{FDI}_{it} + \ln \text{AID}_{it} + \ln \text{INF}_{it} + \ln \text{OER}_{it} + \mu_{it} \quad (11)$$

The variables used in the specification of model (11) are described as follows.

Domestic private investment (DPI): It is dependent variable of this study. It measures outlays made by the private sector (including private non-profit agencies) on additions to its fixed domestic assets. It is given represented by private sector gross fixed capital formation as a percentage of GDP.

Real Gross Domestic Product (RGDP): It represents the level of output in the basic investment equation. It is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is adjusted for inflation as measured by the GDP deflator. It is calculated without making deductions for depreciation of manufactured assets or for depletion and degradation of natural resources.

Lending interest rate (LIR): It is a proxy for the user cost of capital in the basic investment equation. It is the bank rate that usually meets the short- and medium-term financing needs of the private sector. This rate is normally differentiated according to creditworthiness of borrowers and objectives of financing.

Foreign direct investment (FDI): It refers to direct investment equity flows to the host economy. It is the sum of equity capital, reinvestment of earnings, and other capitals as shown in the balance of payments of the host country. Direct investment is a category of cross-border investment in which an investor in one economy has control or a significant degree of influence on the management of an enterprise that is operating in another economy. It is given as a percentage of GDP.

Foreign aid (AID): It consists of disbursements of loans made on concessional terms and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries called ODA recipients. It includes loans with a grant element of at least 25 %. It is given as a percentage of gross capital formation.

Inflation (INF): It is measured by annual percentage change in the consumer price index.

Official exchange rate (OER): It refers to the exchange rate that is determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar).

Estimation and diagnostic tests

This study used dynamic panel (in particular, one-step system GMM) and random effectto estimate the model specified in equation (11). GMM is an estimator that is well suited to deal with potential endogeneity problem and it controls for the three sources

of endogeneity, namely unobserved heterogeneity, simultaneity and dynamic endogeneity(Ullah et al., 2018). Moreover, GMM is designed for conditions with (i) panels for which time periods (T) are less than entities (N); (ii) a linear functional relationship; (iii) dependent variable that is dynamic, depending on its own past realizations; (iv) independent variables that are not strictly exogenous;and (v) heteroskedasticity and autocorrelation within countries but not across them(Roodman, 2006; Labra & Torrecillas, 2018). Some of these preconditions can be met for the model specified in equation (11). Therefore, we can apply system GMM that was developed by Arellano Bover (1995) and Blundell Bond (1998). Here, this study preferred to employ system GMM to difference GMM because system GMM allows introduction of more instruments and is more efficient than difference GMM. It builds a system of two equations – the original equation and the differenced equation.

In addition to system GMM, we used random effect method to estimate the specified model. The random effect is chosen as compared to the fixed effect based on Hausman test.

Two fundamental diagnostic tests are very important after system GMM regression. These are test for over-identification and auto-correlation. Hansen test and Arellano and Bond autocorrelation test are used to conduct over-identification and autocorrelation, respectively. The null hypothesis of the tests and criterion of rejection is explained as follows (Labra &Torrecillas, 2018).

Hansen test

Null hypothesis: All the restrictions of over-identification are valid.

If the probability obtained is greater or equal to 0.05, the used instruments in the estimation are valid and, therefore, over-identification does not work. This implies that there is no evidence to reject the null hypothesis. However, if the probability is less than 0.05, it suggests that the instruments are not valid and, as a result, there is over-identification in the model. In this case, we reject the null hypothesis.

However, if the probability is close to 1, this does not mean that the instruments are valid. It means that the asymptotic properties of the Hansen test are not applied and, therefore, we should reject the null hypothesis, as in the case where the probability is less than 0.05. The probability obtained should be in the range of $0.05 \leq P(\chi^2) < 0.8$. If the probability is out of that range, the model could be over-identified and might need the introduction of some restrictions in the generation of instruments.

Arellano and Bond autocorrelation test

Dynamic panel model assumes the condition of no correlation in the errors term, which needs to be tested using Arellano and Bond test. The interpretation of this test will be as follows.

Null hypothesis: Autocorrelation does not exist.

The null hypothesis is rejected when the probability of AR (2) is less than 5%. Failure to reject the null hypothesis will confirm the absence of second order autocorrelation in the errors term. However, the probability of AR (1) should be significant at 5%.

Results and Discussion

Descriptive analysis

The descriptive statistics of the selected variables are reported in Table 1 with particular emphasis on their mean, minimum, maximum and standard deviation. Of these variables, AID and OER show substantial variation which is confirmed by their standard deviation of 136.552 and 1050.753, respectively.

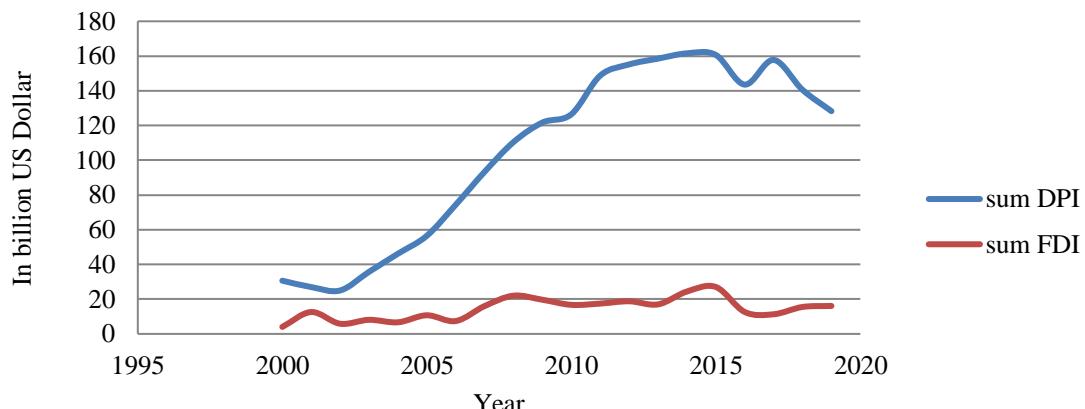
Table 1: Descriptive statistics of selected variables

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
DPI	454	16.037	7.601	2.44	72.164
RGDP	520	27.806	70.374	0.7	430
LIR	412	16.823	14.58	4.737	103.16
FDI	520	5.012	9.74	-6.37	103.337
AID	489	53.599	136.552	-1.054	2590.07
INF	497	9.268	33.029	-8.238	513.907
OER	520	686.184	1050.753	4.694	9010.22

Source: Author's computation (2021)

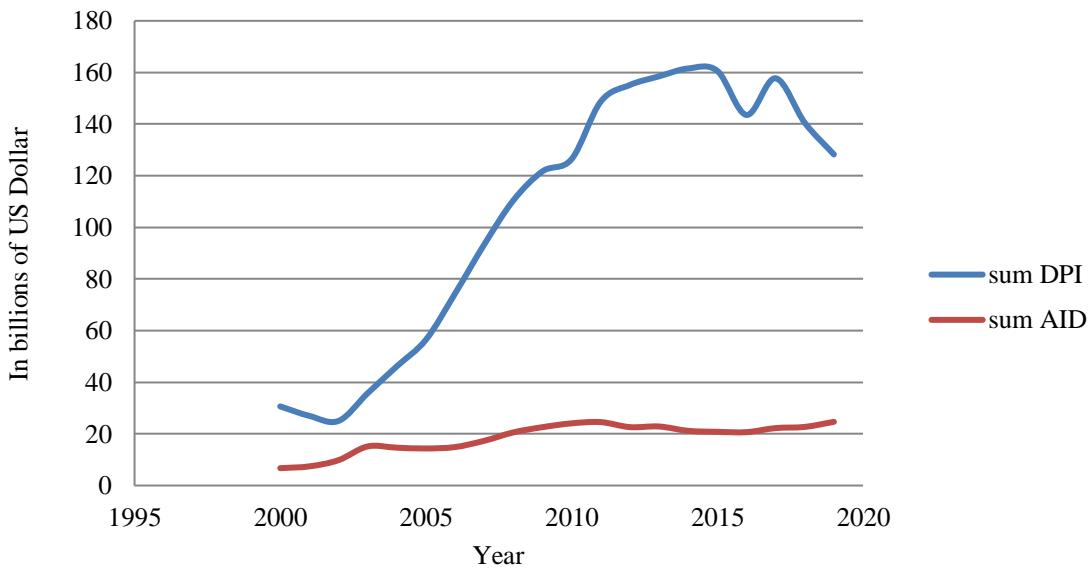
Looking at the trend of DPI over the past 20 years shows that the sum of DPI of the selected SSA countries has been increasing except in the initial two years as well as after 2015. But, the trend of the sum of FDI of the sample SSA has been fluctuating frequently. Like DPI, except for few years, the sum of foreign aid of the sample countries has been rising. The trends of DPI against FDI and AID are demonstrated in figure 3 and figure 4. From the trend analysis we observe that foreign aid and DPI appears to be correlated.

Figure 3: Trend of DPI vs. FDI for selected SSA countries



Source: Author's computation (2021)

Figure 4: Trend of DPI vs. AID for selected SSA countries



Source: Author's computation (2021)

Econometric results

This sub-section presents and discusses the results of the empirical approach which was explained under model specification, estimation and diagnostic tests. In particular, it presents the result of estimations using random effect and system GMM. The results of random effect and system GMM regressions are reported in the second column and third column of Table 2, respectively.

Moreover, the Arellano and Bond autocorrelation test and Hansen test for system GMM model are presented in the last rows of Table 2. The p-value of AR (2) 0.061 which is greater than 0.05, indicating that the test fails to reject the null hypothesis. This verifies there is no second-order autocorrelation in the errors term. Similarly, since Hansen p-value is 0.332, which falls in between 0.05 and 0.8, the Hansen test fails to reject the null hypothesis. It implies that the instruments used in the estimation of the model are valid and, therefore, over-identification does not exist.

Table 2:Random effect and system GMM regression results

Explanatory variables	Random effect	System GMM
L. lnDPI		0.639*** (0.191)
lnRGDP	-0.017 (0.053)	-0.004 (0.014)
lnLIR	0.019 (0.104)	0.003 (0.030)
lnFDI	0.067** (0.031)	0.041 (0.053)
lnAID	-0.205*** (0.052)	-0.087*** (0.028)
lnINF	-0.003 (0.023)	0.0003 (0.0178)
lnOER	0.054* (0.032)	0.032** (0.012)
Constant	3.318** (1.321)	1.110* (0.643)
No. of observations	310	296
No. of countries	23	23
F-test/Wald-test p-value	0.000	0.000
AR(1) p-value		0.033
AR(2) p-value		0.061
Hansen p-value		0.332

Source: Author's computation (2021)

Note that values in the parentheses are robust standard errors. *, ** and *** represent significance at 10%, 5% and 1%, respectively.

According to the random effect result, the domestic private investment in sample of SSA is significantly influenced by FDI inflows, foreign aid and official exchange rate. On the other hand, as reported in the system GMM result, lagged value of DPI, foreign aid and official exchange rate are explanatory variables that significantly affect private investment in the sample of SSA countries.

The random effect regression result presents that the coefficient of FDI is significantly positive for the chosen SSA countries reflecting a positive impact of FDI on private gross fixed capital formation. This result indicates that FDI inflows increase private investment in the sample of SSA countries, revealing the crowding-in effect of FDI to private investment. This result is consistent with many studies that were reviewed earlier(Sadig, 2013; Acquah, 2017;Nxazonke& Van Wyk, 2019; Diallo et al., 2020). But, according to the system GMM result, the coefficient of FDI found to be insignificant though its sign is positive, which partly support the random effect result.

As expected, the lagged value of DPI is found to be statistically significant at 1%. This may verify the dynamic specification of the private investment model in the sample of SSA countries. As reported inthe system GMM result, a 1% increase in the lagged value of DPI would lead to about 0.64% increases in the contemporaneous value of DPI.

As reported in Table 2, random effect and system GMM results give similar interpretation on the effect of foreign aid on private investment in the sample of SSA countries. Both results reveal that the estimated coefficient of foreign aid is negative and statistically significant at 1%. This implies that foreign aid, represented by official development assistance, plays a counterproductive role in promoting private investment in SSA countries. This finding supports the pessimist approach to the effectiveness of foreign aid in developing countries. The main channel through which the negative effect of foreign aid on recipient country's investment is felt is the exchange rate, which is called aid-induced 'Dutch Disease' in economics literature (Adam, 2013). An aid-induced 'Dutch Disease' occurs when foreign aid inflows result in a sharp appreciation of the recipient country's real exchange rate, thereby undercutting the international competitiveness of local investors engaged in export sector. This impairs the growth of private investment in the recipient country.

Moreover, from Table2 we observe the positive and significant effect of official exchange rate on private investment in the sample of SSA countries. The random effect as well as system GMM regression results show that an increases in official exchange rate (which is often called devaluation or depreciation) leads to an increase in private investment in the selected countries of SSA. Theoretically, devaluation affects private investment through different channels; by altering the real supply price of capital goods; by raising the real price of imported inputs; by altering the real product wage and thereby affecting profitability; by producing changes in real income that affect the demand for domestically produced goods; and by affecting nominal and real interest rates, which in turn have an impact on investment (Chhibber & Shafik, 1992).Therefore, the net effect of devaluation on private investment may be quite complex and is theoretically indeterminate since the effects of these channels work in opposite directions.

However, the positive effect of devaluation on private investment found by this study can be justified via export-promoting channel effect of devaluation. Fundamentally,

devaluation will make exports cheaper. In this case, domestic firms will earn higher benefits from their exports and this encourages private investment. Thus, the positive impact of devaluation on private investment in sample SSA countries seems robust evidence. This result matches with the finding obtained by Chhibber and Shafik (1990) wherein they indicated that the real exchange rate depreciation leads to restructuring of domestic industry to meet the rising export demand and efficiency improvements which enhance profitability. As export demand and profitability are revived, private investment recovers quickly.

Conclusion and Policy Implications

Capital inflows are a major source of financing in developing economies and play immense role in accelerating investment by filling saving and trade gaps. The objective of this study is to analyse the effect of capital inflows (FDI and foreign aid) on domestic private investment in sample of SSA countries. The study applied random effect and system GMM to estimate the investment model formulated based on theoretical foundation. In particular, the model is formulated in dynamic form and takes into account the main determinants of private investment in developing countries, such as real GDP, lending interest rate, FDI, foreign aid, official exchange rate and inflation rate. While the random effect result shows that DPI is significantly influenced by FDI, foreign aid and official exchange rate, the system GMM indicates that DPI is significantly affected by lagged value of DPI, foreign aid and official exchange rate. The main finding of this study is that domestic private investment in SSA is enhanced by FDI, but it is weakened by foreign aid. Moreover, the result of the study reveals that devaluation of official exchange rate enhances private investment in SSA.

The results of this study have important policy implications. First, SSA countries need to create hospitable environment and incentives for attracting multinational corporations in order to achieve rapid and accelerated growth of domestic private investment. Second, SSA countries need to reduce their dependency on foreign aid and reinforce devaluation of their currency in order to promote private investment.

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