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The Effect of Liberalizing Trade on Foreign Direct Investment Flows into Sub-Saharan Africa Countries

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Research Article

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ABSTRACT

Recently there has been an increase in FDI flows into SSA countries, with variations across countries. However, one of the potential determinants of FDI that is barriers to trade have affected the attraction of FDI in many of the SSA countries for long periods of time. Therefore, this paper tried to examine the effect of liberalizing trade which is measured by openness to trade on FDI inflows, using a long panel dataset for SSA countries during 1995 to 2016.

The study accounted for errors in measurement issues and heterogeneity, and hence employed a generalized method of moment (GMM) regressions, using FDI inflows per capita as a dependent variable, and openness to trade, as key variable in the model. In existing literatures there had been diversifications about their relationships. Some studies verified positive and significant relationship and some found it insignificant. This study results indicated that liberalization of trade in SSA countries had a positive relationship to FDI inflows in general. Particularly, trade openness had a significant effect on the flow of FDIs into non-resource intensive SSA countries but in resource intensive SSA countries it had insignificant though the effect of natural resource to FDI inflows was both positive and significant. The empirical results in general ratified that liberalization of trade had contributed positively to FDI flows into SSA countries but found significant difference in the effect on the flows of FDI in resource intensive versus non-resource intensive sets of countries.

Therefore, based up on the finding, SSA countries governments and policy makers should justify that countries have used general policies in improving the investment climate and specific policies that accelerate growth and contribute for development must be implemented.

INTRODUCTION

In many of the developing countries, domestic resources are usually inadequate to fund investment requisite for growth and development. This can largely be attributed to the low saving rate and chronic budget deficits particularly in SSA countries. According to a report by the United Nations Economic Commission for Africa (UNECA) in the year 2015 [1], growth in both private consumption and investment which is reflected by gross fixed capital formation is continued to drive growth, increasing from 3.3 per cent and 1.6 per cent in 2014, to 3.8 per cent and 2.6 per cent respectively in

2015. It is therefore not surprising that many developing countries have in recent years embarked on a number of market reforms and programs to attract foreign capital.

According to a report by the World Bank in 2012 [2], the recent increase in capital inflows particularly FDI to SSA is due to the increased global competition for natural resources, higher commodity prices and a fast rising middle class. Moreover, SSA countries have changed their orientations towards making their economies more open within the past three to four decades, on the reaction from the World Bank and some industrialized countries on developing countries to liberalize their trade, by creating a conducive environment to attract foreign investors. However, according to UNCTAD [3], the region accounted for only 5.1% of world inflows of FDI in 2009, compared to 26.0% for Asia and 11.9% for Central and South America which is relatively the smallest amount of FDI received globally.

Consequently, the relationship between liberalization of trade and FDI inflows is ambiguous from both a theoretical and an empirical perspectives which has largely remained inconclusive in literatures. Thus, empirical evidences which have used a large sample of countries accounting for their characteristics in SSA is lacking. The assertion offered is based on the evidence that liberalization of trade can lead to increase in foreign investment flows into SSA countries. While some empirical studies have found the relationship between the liberalization of trade and flows of FDI as positive, some other studies have found little empirical evidence to support the link.

Therefore, this study specifically provides an empirical evidence that differs from much of the existing literatures in SSA countries by using FDI per capita, as a dependent variable, as this allows in considering for country size as well as in view of the contradictory findings in literatures, to reconsider and update the evidence of the effect of liberalizing trade on FDI inflows in the context of the prevailing differences in the characteristics of SSA countries which displays and acts as a springboard for further initiatives and reforms.

REVIEW OF LITERATURE

Theories of Foreign Direct Investment

As to Dunning [4], the "eclectic paradigm" is a common conceptualization and theoretical frame of reference for FDI determinants which usually considered a frame work that sets micro and macro level determinants of FDI in order to analyze and investigate why and where multinational companies (MNCs) make investment in a foreign country. The framework denotes that firms invest in overseas for the quality of having a superior or more favorable types of positions/or advantages such as the Ownership (O), Location (L), and Internalization (I) advantages. Following these approaches, Cleeve [5] identified some of the categories of the main motives for FDI flows to foreign countries like resource seeking type which is usually set to access raw materials, labor force, and physical infrastructure resources; market seeking type which follows a horizontal type of strategy to access the local market of the host country; efficiency seeking type which follows a vertical type of strategy to take lower labor cost advantage in developing countries; and the strategic asset seeking type is to access the position of research and development, innovation, and advanced technology.

Some of the other main theories related to the topic of interest discussed are the portfolio theory of FDI, the Hymer-Kindleberger hypothesis and the internalization theory of FDI.

Portfolio theory

To avoid risk in doing a business, someone who commits capital in order to gain returns must build an efficient portfolio of investment. The rates of return gained from the alternative portfolio investments are compatible with an element of risk in the selection among the seemingly equivalent items of assets to frame an efficient portfolio. Moreover, the portfolio theory of investment which is the neoclassical theory of financial flows of a portfolio and is one of the earliest descriptions of FDI to some area. The foundation for this description mainly lies due to differences in the interest rate among countries. Accordingly, capital flows as a result of changes in interest rate differentials among countries and multinational companies are simply based on individual preference of capital from countries where its investment return is low to countries where it is seen as high. This explanation, however, leave something undone to account for the cross flows of capital across countries because in an ideal situations, movement of capital is bi-directional, that is, the flows is in both directions between countries. In addition to this idea, according to Harrison et al. [6] explanation, capital is only a complementary factor in setting up direct investment in overseas developing countries.

The Hymer-Kindleberger hypothesis

The issue of global industrial organizations draws attention on the role and functions of multinational companies in Hymer's [7] pioneering study in which its major contribution was to shift attention away from the neoclassical financial theory where his main argument was on the need to exercise control over operation than the mere flow of capital. Accordingly, capital is used as the main initiative for FDI and enhances the facilitation and the establishment of FDIs. It is

also stated that for companies to be engaged in overseas activities, possessing some other kind of market structure advantages like monopolistic competition is a must in order to have the advantages which result from ownership of patents, know-how, and managerial and technical skills which are not being available to domestic investments. His argument mostly relies on the prevailing conditions of market imperfections like difficulty in marketing and pricing knowledge in some other cases the inaccessibility of markets for some products, or if it is accessible, it may entail huge costs of transactions. In such a cases it would be more important for the firms to be engaged in direct investment than involving in export which consequently allow multi-national companies to control over and use fully their monopoly power. As to Harrison et al. [6] explanation, Hymer's [7] arguments that the internalization of firms in their activities whenever there exists inefficiencies in dealing with the external market and FDI would occur when this internalization involves operation across countries which consequently led to the development of internalization theory.

Internalization theory of FDI

The theory of internalization gives a brief and concise answer for why production of goods and services in different countries are carried out by the same firm in cases where there are things that interferes with trade activities. The interferences may include two dimensions of market imperfections. On the one hand, imperfections cause a rational market participant to deviate from holding the market portfolio. On the other, imperfections cause a rational market participant to deviate from his preferred level of risk. Marketing and pricing are what operates here which interfere with trade that rational individuals make or would make in the absence of the imperfection. Thus, the problem lack of knowledge in the existing market and price forces multi-national companies to go out to form a subsidiary in a foreign country instead of selling the existing technology. In some cases there may arise a number of problems when a firm opens a subsidiary like if an output of a given firm is an input to other firm in another country. For instance," if each has a monopoly position, they may get into a conflict as the buyer of the input tries to hold the price down while the firm that produces input tries to raise it".

Theories of Trade Liberalization

The theory of trade liberalization was solely elaborated in Hak Choi [8] as the theory of monopoly in the reverse direction. In this section, it could be tried to make clear that liberalization of trade will make the competitive firms bigger and stronger in terms of the profit earned. And hence, liberalization does not only allow competitive firms to become larger and more profitable, but it will also help to produce more differentiated and new products. Accordingly, when more output is produced, there will be growth in the economy of a particular country which generates more profit and then in turn enhances welfare to be elevated. Therefore, it is mentioned in many of the literatures of international economics that there are three most influential and important results of international trade theory such as gains from trade; benefits from trade exchange which is expressed by selling of goods or services to each other; and the more efficient benefits obtained in relative terms which is implied due to benefits from trade even if one of them is more efficient than the other at producing goods and services.

The comparative advantage of Ricardo's theory

The comparative advantage of Ricardo's theory is introduced in the early 19th century by an economist David Ricardo, and hence it is referred as the Ricardian Model which is a model of that relies on differences of labor productivity based on comparative advantage of countries. As well noted in Economic literatures suggesting that gains obtained from trading of goods and services can come from better utilization of scare resources. Thus, exchange of goods and services allows countries to focus in the production and distribution of the goods that they can produce more efficiently and import the goods that they produce less efficiently in relative terms leading both trading countries get beneficial and makes firms to produce at economies of scale. Moreover, in situations where trade barriers are reduced, companies face the demand of a larger market which will be able to get alternatives to produce at a more efficient level of production as well as save costs that benefit the entire economy.

As discussed in Salvatore [9], gains from world trade would be realized that if each nation specializes in the production of the commodity in which it has a comparative advantage. The type of gains obtained from trade could be considered as both static and dynamic types. Static type of gains of trade could be realized from the fact of differences in factor endowments that countries have and hence the opportunity cost of production varies between countries. As to Thirlwall [10], a measure of the gains that could be obtained by exporting to get imports more cheaply are by the resource gains; in terms of the resources employed in comparison with producing the good. On the other hand, dynamic gains from trade are obtained from an increase in the productivity of available resources. Consequently, international trade improves access to foreign market destinations leading trading countries to gain, if increasing returns are assumed to hold.

Therefore, SSA countries could enjoy those types of gains as a result of gradual liberalization of trade through a wider access to global market destinations. The hard currency realized from the sale of goods and services could boost countries foreign currency reserves and thereby in return cover the associated costs for its imports. Dynamic gains

obtained could be manifested through an increase in the productivity of local labor, acquisition of new administrative knowledge and transfer of foreign technology.

Factor proportion theory (the Heckscher-Ohlin model)

This theory is also known as specialization which is acquired from differences in existing factor endowments by which trade is defined not only just determined by technological differences, rather it is also a reflection of the differences in resource endowments across countries. And hence, the H-O theory builds itself from the comparative advantage theory of Ricardo in order to explain the importance of resources in trade between countries. According to the two pioneer economists, Heckscher and Ohlin, trade between countries is determined by the interaction of the relative abundance of factors of production such as capital, labor or land as well as their relative intensity with which these factors of production are employed in the production of different goods. Therefore, as to H-O theory, comparative advantages are determined by the proportion of factor endowments and the proportion in which these factors of production are employed in the production of goods, and consequently depends on countries relative endowment of factors of production.

As already described in WTO in 2013, in a type of closed economy, the good that usually uses relatively abundant factor more intensively will be cheaper, if that country is capital abundant which will then lead the cost of capital tend to be relatively low. Consequently, the production cost of the capital intensive product and its price will tend to be relatively low. On the other hand, the contrary condition will happen in a labor abundant country where wages will tend to be relatively low and the cost of the labor intensive products will be relatively low which in turn results in differences in relative prices of the goods leading to trade.

SSA countries, like most other developing countries are labor abundant with fertile and unexploited scarce resources for production such as labor, land and natural resources. Thus, the SSA countries have comparative advantage in producing a commodity which employs the available resources that usually depicts these characteristics [9]. Therefore, specialization in production and trade between and among countries produces welfare and a high standard of living for the countries involved through trade liberalization which can help countries immensely to better utilize their resources through specialization and exploitation of economies of scale.

EMPIRICAL STUDIES

Determinants of Foreign Direct Investment

There are large number of empirical literatures on the determinants of FDI flows to a given economy that includes both the developed and developing countries in the world on various levels, sectors and for different length of time periods. However, this study paper relied to review related studies focusing solely on developing countries as this is the context of our present study. Most of the topics which are specific to developing countries are likely tend to concentrate on the impact of corruption, rate of return, trade openness and natural resources with varied and mixed findings on the relationships with FDI flows. For example, Tsen attributed the positive and significant impact of human capital development to FDI flows to developing countries with the fact that foreign investments are not only seek to reduce costs but also acquire access to technological advancement and improvements in innovative capacity. Contrary to this, Oke et al. [11] found positive and insignificant effect of human capital development which is measured by education enrollment on FDI flows because of a lack of training and integration in the pool of human capital in their sample.

With respect to the infrastructure variable, there is also further controversies among researchers and scholars. In Adefeso and Agbrola [12], and Soremekun and Malgwi [13] study papers a positive and significant relationship between infrastructure which is measured by number of mobile phones per 1000 population and FDI inflows is found due to the fast penetration and the adoption of mobile phones in the sample of developing countries. However, Wadhwa and Sudhakara [14] used internet access to measure the infrastructure situation and found a negative relationship to FDI flows which is explained by the fact that developing countries have started using internet services extensively in the last couple of years. Another panel econometric study by Behreez and Mastafa [15] in 32 developing countries over the period of 1990-2007 showed that technology and internet services have positive effects on the flows of FDI into developing countries.

As stated by Dunning and Narula [16], political stability in a given country is highly relevant because it implies a long term, sustainable and stable environment. Political stability is in that way an underlying assumption for all other determinants since Dunning and Narula [16] stated that investments and trade only runs efficiently in a stable and peaceful environment. They also argued that a more stable political environment generally reduces the uncertainty of potential investors and have the potential to increase the level of inward FDI flows. Moreover, governance measures are also used widely in existing FDI studies in developing country samples in particular. For example, political instability is found to have a significant and negative effect on FDI flows in a study conducted by Buthe and Milner [17] and explained this by increases in the uncertainty of the political environment that intensify the risk of policy change and thus

discourages FDI flows. In the same manner Woo and Heo [18] also found negative relationship between FDI flows and corruption in a sample of Asian developing countries and this was implied due to the weak economic reforms, monopolistic power and rent seeking situations of government officials which in turn results the reduction in the flow of investors. Although, it has been argued that political instability in the host country could discourage the inflows of FDI, most empirical studies support this argument, but some empirical evidence suggested that political factors plays an insignificant role in firms decision to invest abroad [19].

Another FDI determinant factor is exchange rate. According to a study conducted by Goldberg and Klien [20], the stability of domestic currency in relation to hard currencies brought more FDI than the frequent large variations. Moreover, their study revealed that frequent large variations eroded the values of foreign investor assets. In a study by Dipti Ranjan [21] also found that the exchange rate determined FDI inflows positively and significantly. In general, it could be said that a country with stable and weak currency attracts more FDI, that is, depreciating a country's exchange rate could attract more FDI in that foreign companies may merge with or acquire domestic industries.

Determinants of FDIs flows to developing countries could be different from country to country because of the type of their economies. Thus, in Demirhanand and Masca [22] paper displayed the determinants of FDI flows into 38 developing countries over the period of 2000 to 2004 found out positive and significant effect between the factors like income per growth rate, telephone lines, and degree of openness with FDI flows to developing countries.

Akinkugbu [23], in his empirical study of the determinant of FDI inflows found that the rate of inflation was not a significant determinant of FDI flows. But in a study by using OLS estimation model, the inflation rate was found positive and significant determinant of FDI inflows. In addition to this variable, other variables such as host country GDP, foreign exchange rate and costs of transport were not found significant at all. Asiedu [24] also examined the factors affecting FDI flows into Africa. Her study suggested that low inflation and efficient legal system promoted FDI flows to African countries but corruption and political instability had deters the flow of FDI into the countries.

Marcelo and Mario [25] in their study of 33 developing countries on the main determinants of FDI inflows using panel data analysis from 1975-2000 time periods, identified factors such as the size and pace of growth of economic activity, the level of labor qualification, conducive policies attracting foreign investment, risk status of the country and stock market performance situations as the main determinants of FDI flows. Moreover, in the special context of panel dataset to see the causal effects, a causality test was done and had displayed that FDI did not cause economic growth but the reverse holds which is economic growth caused FDI inflows. In the same issue the size of the market is also found to be one of the main determinants of FDI flows.

In general, the main empirical investigations by Soumyanada [26]; Anyanwu [27] and Dees [28] which dealt with the relationship between FDI flows and the factors influencing the inflows are also revealed that the markets size of the host country, deregulation, political instability and exchange rate depreciation, endowment of natural resources and inflation were significant determinants of FDI to SSA countries. Most of the studies in SSA countries, found market size measured by GDP growth was positive and significant in attracting FDI among other variables.

Trade Liberalization and FDI

According to author, determining the accurate time period at which trade liberalization took place in a given country as well as knowing whether a regime is a liberalized trade regime or not is a difficult issue, as the process of liberalization is a gradual phenomenon. One well known measure for liberalization of trade which is used to date was found by Sachs and Warner [29]. The Sachs and Warner measure highlights the main policy thrusts of liberalizing trade in a given country's trade regime. Thus, it displays any of the following five characteristics, if the economy is a closed type: (i) a country with 40 per cent or higher average tariff rates; (ii) a country with non-tariff measures covering at least 40 per cent of trade; (iii) a country with a period average parallel market exchange rate premium of 20 per cent or more; (iv) the existence of a state monopoly on major export products; and (v) a country with a socialist economic system. Historical data, secondary sources and country case studies were used by Sachs and Warner in order to collect the information to arrive at the above mentioned criteria. Accordingly, determined the countries which were deemed liberalized and which ones were not liberalized. Despite the limitations of Sachs and Warner measure, it has remained the most comprehensive widely used in the literatures on trade [30]. Consequently, as to the measure of Sachs and Warner, most African countries have liberalized trade regimes in which the process of liberalization started principally in the late 1980s and in the 1990s through the tariffication of non-tariff barriers, cuts in the number and value of tariffs, liberalization of exchange rate and the removal of barriers to export.

Proponents on trade liberalization versus FDI flows argued that liberalization positively affects FDI flows into countries. Their argument was that liberalization of trade reduces the costs of trade which lead to higher chances of exposing to vertical integration of foreign firms which are engaged in export-oriented businesses. Thus, Addison and Heshmati [31]; Botric and Skuflic [32]; Greenaway et al. [33] was found positive and significant effect of trade liberalization on FDI flows to countries. On the other side, opponents argued that liberalization of trade negatively influences FDI of the host country

when the foreign investments are likely the type of market-seeking. The rationale for it stems from the `tariff jumping' hypothesis in which it is argued that closed markets are more attractive to foreign investments since profits of the local investments will be improved by limitations on competitive imports [34]. Meanwhile, some researchers in Neary and Ruane [35] argued that the effect of liberalizing trade on FDI flows to countries is not clear as it depends on some of the underlying assumptions.

According to Addison and Heshmati [31] investigation the relationship between FDI and trade openness in 110 developed and emerging countries over the period of 1970 to 1999 and found that trade openness had significant effect on FDI but this impact was comparatively small and varied by regions. Moreover, Asiedu [36] studied the impact of openness to trade on FDI flows into SSA and non-SSA countries from 1988 to 1997 and displayed that trade openness enhanced the flow of FDI into SSA and also into non-SSA countries but found that the ratio of benefit from trade openness was more for non-SSA countries as compared to SSA nations. Aizenman and Ilan [37] did a research work on trade and FDI and the linkage between them. They made analysis on 81 countries' data from 1982 to 1998 and asserted that there was a strong linkage between trade openness and FDI flows in developing countries as compared to industrialized countries due to lower trade barriers.

Greenaway et al. [33] studied the factors affecting trade liberalization measured by openness on FDI flows in 54 emerging economies from Latin America, Africa and Asia for 1990 to 2000 and found that trade openness had a positive and significant impact on FDI flows. Nevertheless, this impact was smaller for economies which are middle income as compared to low income once.

There are a number of empirical studies that included openness as a measure of trade liberalization and one of the factors influencing FDI flows like in Ali Asgher [38], which explored the relationship of FDIs inflows with trade openness in South Asian Economies using a panel dataset and random effects estimation methods found positive and significant effect. More specifically, M/GDP and (X+M)/GDP per capita were positive as well as had significant impact, while X/GDP was only positive but not significant. Another study conducted by Moosa and Cardak [39] which carried out an extreme bound test found that export as a percentage of GDP was strongly and positively influenced FDI inflows. Other studies by Busse and Hefeker [40] concluded that there was no a statistically significant relationship existed between FDI and trade openness, hence trade openness had no any influence on FDI inflows. However, results obtained by Goodspeed et al. [41] turned out inconclusive and mixed with respect to openness in that it had a positive and significant effect on FD inflows in a few country cases and was also insignificant in other specifications of the model. Soumyananda [26], in the study of factors attracting FDI to Nigeria, employed size of the market, exchange rate, rate of inflation, openness and natural resources as variables in his study in which findings showed that in the long run, FDI flows into Nigeria is co-integrated with natural resources outflow, GDP per capita, openness, inflation and foreign exchange rate suggesting the huge number of FDI flows into Nigeria could be explained by the resource seeking type of FDI [26].

In Asiedu [36] study of the determinants of FDIs to 71 developing countries which were divided into 32 SSA countries and 39 non-SSA countries over the period of 1988 to 1997 found that FDI and trade were compliments, and hence trade openness promoted FDI flows into SSA countries and non-SSA countries. Moreover, Asiedu [36] also ratified that openness to trade enhanced FDI to a smaller extent in SSA in relative to other developing economies. As to Liargovas and Skandalis [42], the importance of trade openness for attracting FDIs for 36 developing economies across the world for the period over 1990 to 2008 were investigated and found that there existed a positive long run relationship between openness to trade and FDI flows into developing countries.

METHODOLOGY

Data Type and Sources

This study is based on dataset on FDI flows from the entire world to individual countries in SSA countries from 1995 to 2016 time periods on 35 SSA countries on the availability of data post liberalization era. The study employed secondary sources of data from different sources mainly accessed and retrieved from the World Bank's World Development Indicators database (WDI) and World Bank African Development Indicator database, United Nations Commission on Trade and Development database (UNCTAD)[3], Global Economic Monitor (GEM) database and from World Economic Outlook database (WEO): Sub-Saharan Africa region (Appendix 1).

Empirical Model

Here we are concerned with establishing a model explaining the effect of liberalizing trade on the flows of FDI into SSA countries. Therefore, we estimated the following modified cross-country regression equation using the following basic linear panel equation:

$$FDIPC_{i,t}=\alpha_0+\alpha_1 Openness_{i,t}+\alpha_2 Openness_{i,t}*NR_{i,t}+\beta X_{i,t}+e_{i,t} \ldots\ldots(1)$$

Where:

$FDIPC_{i,t}$ - is a measure of FDI flows per capita in country i in year t,

X - are vectors of control variables,

$e_{i,t}$ and - is stochastic error terms, and

α and β - are coefficients to be estimated.

(i=1, 2, ..., 35; and t=1995, 1996, ..., 2016)

This research work was hypothesized and estimated using the appropriate functional model form to investigate the effect through which trade liberalization had on FDI per capita to contribute differently in SSA countries. Thus, in estimating the model first our quantitative dependent variable and explanatory variables except those with negative values, instrumented and dummy of natural resource variables, the rest were transformed in to natural logarithms (ln) in order to have the right functional form (that is to have a minimum possible mean square error). Accordingly, except FDI flows per capita, openness and GDPPC, all the right hand side variables are not logged for the intention of having the right functional model form.

Empirical Estimation Methods

To study the effect of liberalizing trade on FDI flows into SSA countries, we used a generalized method of moments (GMM) estimation methods on panel dataset covering 35 SSA countries from 1995 to 2016. Generalized Method of Moments" was introduced by L. Hansen in his celebrated 1982 paper. There are a number of good modern texts that cover GMM, and one recent prominent text, Hayashi [43], presents virtually all the estimation techniques discussed in the GMM framework. For this study, we used Hansen [44] and other sources text that covers GMM. Accordingly, the GMM model gives us an estimation of linear relationship between the dependent and independent variables. The GMM estimator was typically used to correct for bias caused by endogenous explanatory variables and is a Method of Moments (MM) estimations like two stage least squares (2SLS) estimator like an instrumental variable estimator which selects parameter estimates that the correlations between instruments and disturbances are as close to zero as possible and also employs variance-covariance matrix to account for heteroskedasticity and autocorrelation and gives more weight to moment conditions possessing small variance. Thus, the GMM estimator provides consistent and asymptotically efficient estimates. To confirm for the robustness of the GMM estimation results, this study used OLS and fixed effects specifications. Ordinary least square (OLS) is used for estimating the unknown parameters in a linear regression model and fixed effects (FE) estimation for a panel is also used in order to provide a good check on the validity of GMM estimation by giving the upper and lower bounds. And hence OLS estimations usually overestimates the lagged coefficient of the dependent variable because it is positively correlated with errors and the FE estimations underestimate the coefficient in a short panel. The robustness and validity of GMM estimation was assured if the coefficient variables lie below the estimations of FE.

Specification Tests

The generalized method of moments (GMM) regressions on a pooled panel dataset covering 35 SSA countries were used over the period of 1995 to 2016 to study the effect of trade liberalization on FDI flows into SSA countries. And hence, the choice of the most appropriate estimator in our panel models are usually tested by panel data econometrics specification tests like Hausman test to decide between fixed or random effects; Breusch-Pagan Lagrange multiplier test for heteroskedasticity; serial correlation; J statistic of Hansen for over identifying restrictions in GMM; Durbin-Wu-Hausman (DWH) tests for endogeneity; Ramsey RESET test Ramsey RESET test of appropriate functional form; and VIF test of multicolinearity.

Hypotheses Test

This study attempted to investigate the validity of the hypothesis where ''there is a significant and positive effect of trade liberalization on FDI flows into SSA countries''. The modified version of the model for the hypothesis is:

$$LNFDIpercap_{i,t}=\beta_0+\beta_1 LNOpenness_{i,t}+\beta_2 LNOpennessi,t*NR_{i,t}+\beta 3HC_{i,t}+\beta 4Inflation_{i,t}+\beta_5 EXR_{i,t}+\beta_6 GDP\_Growth_{i,t}+\beta 7LNGDPPC_{i,t}+\beta_8 GS_{i,t}+\beta 9Infrastr_{i,t}+\beta_{10} NR_{i,t}++\varepsilon_{i,t}$$

where:

LNFDIPC - is log of FDI flows per capita

LNOpenness - is log of trade to GDP ratio which is the sum of exports and imports of

goods and services to GDP ratio

GDPPC - is the GDP per capital, which reflects the income level of the economy

GDP_Growth - is growth of GDP in annual %, to consider growth in economy

EXR - is exchange rate (LCU per US$, period average)

Inflation - is rate of inflation in consumer prices by annual %.

Infrastr - is infrastructure situation, which is measured by electricity access (% of population).

HC - is Human Capital, total enrollment in secondary education (% of gross)

GS - is Government Stability, Political Stability and Absence of Violence/ Terrorism: Percentile Rank

NR - is Resource Intensive including Oil exporters, and non resource intensive countries, Dummy (1 or 0)

LNOpenness*NR - is interaction term

This study anticipated FDIPC to be positively associated to SSA countries GDP_Growth, GDPPC, trade openness, infrastructure condition, human capital, government political stability and natural resources; while exchange rate and inflation rate were likely to be negatively associated to FDIPC. With regards to the openness measures, openness to trade is commonly measured by trade ratios represented by sum of exports and imports to GDP ratio [36] or a similar measure like ratio of export to import. As to Asiedu [36] explanation, trade restrictions were the other side of the coin regarding openness, and could also be a measure of this variable. We found the ratio of sum of export and import of goods and services to GDP as a simple and adequate measurement. A problem could be that it does not directly take into account free trade areas or trade restrictions. However, we argued that it does so indirectly and the ratio of summation of export and import to GDP was the most commonly used measure of openness of trade in literatures. Moreover, the effect of openness was also controversial. On the one hand, the higher level of openness in the host country would attract more foreign investment and had positive effect on the inflows of FDI. On the other side, it was negatively related with trade barriers of the host country. Contrary to previous studies, however, we expected the sign of openness to be indeterminate a priori.

RESULTS

Model Specifications Test Results

The Hausman specification test of hypothesis results revealed that Prob. chi^2=0.0000, was less than 0.05 which implied the rejection of the null, that is, difference in coefficients not systematic. Thus, it is significant and we used the fixed effects which is the average effect in the entire population, which was expressed by the regression coefficient (Appendix 3.1.1). At the same time, it could be also tested to see if time fixed effects are needed when running fixed effects model. This is a joint test to see if the dummies for all years are equal to 0. Accordingly, the hypothesis test result revealed that the Prob. F=0.0000 is less than 0.05, so we rejected the null that the coefficients for all the years equal to zero, and hence, time fixed effects are needed in this case (Appendix 3.2.2). The Modified Wald test for group wise heteroskedasticity in fixed effect regression model obtained revealed the rejection of the null, that is, homoskedasticity (or constant variance) and found presence of heteroskedasticity (Appendix 3.1.3). The Wooldridge test for serial correlation in panel data test result revealed that the Prob. F=0.2299 (Appendix 3.1.4), which implied that it was failed to reject the null hypothesis of no serial correlation and concluded the data could not had first order autocorrelation. The Hansen-Sargan statistics test results revealed that J is positive and the sargan statistics value p=0.3332 which is greater than 0.05 indicating over-identification (valid) instruments (Appendix 3.1.5). Durbin-Wu-Hausman (DWH) test results revealed that Prob. chi^2=1.0000 which implied that we failed to reject the null hypothesis that the GMM estimator was consistent and fully efficient (Appendix 3.1.6). The Ramsey RESET result displayed that the regression equations were correctly specified (Appendix 3.1.7). The vif values implied that there was no serious multicollinearity problem in our panel dataset (Appendix 3.1.8).

Hypothesis Test Results

Based on the formulated framework, the hypothesis of trade liberalization had an effect on FDI flows into SSA countries is tested. The null hypothesis of trade liberalization had not a significant effect on FDI flows into SSA countries was tested by splitting countries into subgroups of their characteristics like resource intensive and non-resource intensive SSA countries. Accordingly, resource intensive SSA countries were likely to receive a higher quantity of primary

sector FDI, and countries missing such resources were expected to get a higher amount of manufacturing and services sector FDI. Since the hypothesis test result for our variable of interest, which was LNOpenness=0 resulted $Chi^2(1)=177.34$ and Prob. $Chi^2=0.0000$, which is less than 0.05 significance level (Appendix 3.1.9). Therefore, we rejected the null hypothesis and accordingly accepted the alternative hypothesis. Thus, there was a significant and positive effect of trade liberalization on flows of FDI into SSA economy. In spite of this, GDP_Growth, Natural resources, GDPPC and openness showed significant and positive impact on the flows FDI into SSA countries. Human capital and rate of inflation had significant and negative impact on the flows of FDI into the region. Specifically, the effect of openness for non-resource intensive SSA countries was significant and positive, while in resource intensive SSA countries it is found that it was insignificant. Though endowment of natural resources in SSA countries were affecting positively and significantly at a 1% level, the test result showed that the effect of natural resources (NR=0) in FDI flows into SSA countries was Chi2 (1)=1.86 and Prob. Chi2=0.1732, which implied that it is a weak factor influencing the flows of FDI into the SSA countries.

Empirical Results

Following estimation of the model.

Model summary

LNFDIPC=-1.314-0.0119HC+0.00817GDP_Growth+0.0000206EXR-0.000180Inflation+0.146NR+1.122LNGDPPC +1.334LNOpenness+0.185LNOpenness*NR

Based on empirical results, openness to trade had a significant and positive effect on FDI flows at a 1% level in non-resource intensive SSA countries. While in resource intensive SSA countries it had positive but insignificant effect on the flows of FDI though the effect of natural resources to FDI flows is significant and positive at a 1% level. This implied that liberalization of trade in SSA countries had a positive effect to FDI inflows. Thus, the result is in line with Addison & Heshmati [31], Aseidu [36], Aizenman and Ilan [37], Greenaway et al. [33], Botric and Skuflic [32], and Liargovas and Skandalis [42]. The insignificant and positive result of the interaction term openness with resource intensive countries of the SSA economy to FDI flows on the other side implied that the higher extent of openness in the SSA economy had less effect on the flows of FDI during the post liberalization era. Accordingly, the result is interprated in a similar way with the result of Busse and Hefker [40] and Markusen and Maskus [45] where positive result was found on the high extent of openness in the countries. The endowment of natural resources had significant and positive effect on the flows of FDI into SSA countries. The positive and significant role of natural resource is in line with Soumyananda [26] and Aseidu [36] and this reflects the situation that has continued to attract more foreign direct investments. The results of the other explanatory variables had expected signs and significance. The coefficient on GDP_Growth and GDP per capita was significant and positive effect on the flows of FDI into the SSA countries economy indicating that flows of FDI into SSA countries care more about the costs of operating business. Thus, the coefficient of GDP per capita which was significant implied that increase in purchasing power will lead to more flows of FDI into SSA countries. While human capital development variable measured by total enrollment in secondary education (% gross) was significant and negative at a 1% level which indicates that flows of FDI into SSA countries do not care for the labor productivity in the countries. The coefficient on inflation rate is negative and significant as expected. The significant and negative effect of inflation implied that a greatly unstable currency would discourage investors to be engaged in FDI in SSA countries. The coefficient on exchange rate had insignificant and positive effect on FDI flows into SSA countries. The insignificant and positive impact of the rate of exchange on FDI flows implied that macroeconomic stability is not an influential factor determining FDI flows into SSA countries.

As a robustness check, we included natural resources, infrastructure and government stability as additional regressors to see if this will qualitatively affect the coefficient estimates of openness. The OLS and fixed effects regression specifications were used to test the effect of trade liberalization on FDI flows into SSA economy. However, they provided a good check on the validity of GMM estimation by providing the upper and lower bounds. OLS overestimates the coefficient of variable because it is positively correlated with errors [46] and the FE estimations underestimate the coefficient. The validity of the GMM estimation method is assured if the coefficient of variables lies in between the OLS and FE specification estimations [47].

Relationship between Trade Liberalization and FDI Inflows Regressions

Following estimation of the model, the results were got in order to validate the robustness of our estimation method to analyze the relationship that trade openness has an effect on FDI flows into Sub-Saharan Africa countries[48].

Summary Results of Estimation of Model

LNFDIPC=f(GDP_Growth, EXR, INF, HC, GS, Infrastra, NR, LNGDPPC, LNOpenness, LNOpenness*NR)

As it could be observed from the results for the whole sample, column (1) presents the OLS regression results without controlling for the country-specific effects, column (2) presents the FE (fixed effect) regression results by controlling for the country and time specific effects and column (3) presents the GMM regression results by treating human capital as endogenous, and infrastructure as well as government stability variables as other instruments to see if this affected the coefficient estimates of Openness, NR and LNOpenness*NR. The addition of any of these variables as additional regressors/instruments did qualitatively affect the magnitudes of the coefficient estimates of Openness, NR and LNOpenness*NR. Thus, the value of the estimated coefficients of Openness, NR and LNOpenness*NR lied below the corresponding upper bound of OLS estimation, and above the corresponding lower bound of FE estimation, providing evidence of robust and valid estimation [49].

CONCLUSION AND POLICY REMARKS

This paper examine the effect of liberalizing trade which is measured by openness to trade with its relation to FDI flows from the world, using a panel dataset for SSA countries during post liberalization period (1995 to 2016). It further investigates the above mentioned effects with respect to the characteristics of endowment in natural resources of SSA countries.

Based on the GMM estimation methodology, results indicate that trade liberalization is positively associated with FDI flows into SSA countries. Particularly in resource intensive and non-resource intensive SSA countries, the impact of trade liberalization on FDI inflows is not significant in resource intensive countries as opposed to their non-resource intensive counterparts though endowment of natural resources is found to determine FDI flows significantly in SSA countries [50-52]. The findings of the study provides some supportive context for the effect of liberalizing trade towards the effort of attracting FDI by SSA countries.

This paper suggests that SSA policymakers can make their countries more conducive for FDI inflows by liberalizing their trade practices. Furthermore, to ensure that some of the benefits of FDI should go to the poor, countries may have to implement policies that will encourage foreign investments to utilize countries physical as well as capital resources based on comparative advantage of countries.

The founding of this study specifically would signify that improving the inflow of FDIs as well as the business environment in order to enhance trade gains over time, and hence policymakers should concentrate on ways to build on the trade initiation activities. Thus, contributes to the existing empirical literatures on trade liberalization and FDI in an approach that the study employed modified versions of earlier models in the investigation of the SSA countries situations [53]. And hence, the study will enable SSA policy makers and researchers to plan and formulate in intensifying the trade liberalization measures that would benefit countries according to their existing specific characteristics.

The study would like to finalize that the results of the study should be interpreted by taking the following points into consideration:

- First, our measure of FDI is based on aggregate investment data. This is problematic because the effect of trade liberalization which depend on the types of FDI, that is, FDI in natural resources tends to be less sensitive to policy changes than FDI in manufacturing and service sectors. Thus, a better approach is to disaggregate the FDI data and carry out a sectoral analysis. Unfortunately, such data are not easily accessible in SSA countries.
- Secondly, the study does not examined the long-run and short-run effects of trade liberalization. Therefore, the long-run effect of trade liberalization could be significantly different from the short-run effects [54]. Thus, to consider the effect of trade liberalization on FDI flows in SSA countries, one should have to conduct a time series analysis.

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