FDI IN SUB SHARAN AFRICA: ITS IMPACTS AND DETRMINANTS USING INVESTMENT FREEDOM INDEX AS INSTRUMENTAL VARIABLE FOR FDI

By

BEKELLE, Engida Abebe

THESIS

Submitted to

KDI School of Public Policy and Management

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ABSTRACT

FDI IN SUB SHARAN AFRICA: ITS IMPACTS AND DETRMINANTS

USING INVESTMENT FREEDOM INDEX AS INSTRUMENTAL VARIABLE FOR FDI

The growth process of the Sub Saharan Africa region has not been significantly influenced by Foreign direct investment inflow in the previous 25 years. The robustness of the result is tested using various model specifications. First pooled OLS regression method was applied; however, due to its methodological limitations of not removing the biasedness of the results, the result was not accepted. Therefore, to control for at least the unobservable time invariant variables, panel fixed effect model was used.

Using this method was not sound enough to remove all biasedness of the estimates. Thus, to get the most efficient estimates two strategies were employed: first, three stages least square (TSLS) combined with fixed effect was used with similar insignificant results; and Finally, an instrumental variable approach using investment freedom as an instrument for FDI is used resulting in high positive impact compared to other models; although it was insignificant.

In addition, the main constraining factors of FDI inflow in to the sub region were unbundled. The study found that improvement in investment freedom has played a positive significant role. the other categories of variables such as resource endowment, macro-economic related policies, human right, human capital and institutional variables did not have a meaning full effect on the FDI inflow. The paper used various methodologies including fixed effect and TSLS to control for all the sources of the endogeneity.

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Table of Contents

ABSTRACT 2

ACKNOWLEDGMENTS 3

LIST OF TABLES 5

1.1. INTRODUCTION 1

1.2. STATEMENT OF THE PROBLEM 3

1.3. PURPOSE OF THE STUDY 4

1.4. OBJECTIVES OF THE STUDY 5

1.4.1. General objectives 5

1.4.2. Specific objectives 5

1.5. RESEARCH QUESTIONS AND HYPOTHESIS OF THE STUDY 6

1.5.1. Research questions 6

1.5.2. Hypothesis of the study 6

Ⅱ. LITRETURE REVIEW 7

2.1. THEORETICAL AND EMPERICAL LITERATURE REVIEW ON THE IMPACT OF FDI ON ECONOMIC GROWTHI. 7

2.1.1. ON DEFINING FDI 7

2.1.2. DIFFERENT PERSPECTIVES ON THE IMPACT OF FDI 7

2.2. THEORIES ON THE DETERMINANTS OF FDI 10

2.2.1. ARGUMENTS ON FACTORS OF ATTRACTION 10

2.2.2. EMPIRICAL STUDIES ON THE DETERMINANTS OF FDI 12

Ⅲ. METHODOLOGY 13

3.1. POTENTIAL SOURCES OF BIASDNESS AND POSSIBLE CORRECTIONS 13

3.1.1. ENDOGENEITY PROBLEM 13

3.1.2. THREE STAGE LEAST SQUARE METHOD: CONTROLLING SIMULTANEITY USING EXOGENEOUS INTERNAL INSTRUMENTS 13

3.1.3. UNIT ROOT TEST 14

3.1.4. INSTRUMENTAL VARIABLE: INVESTMENT FREEDOM AS AN IV FOR FDI 14

3.2. DATA GENERATION AND THE ECONOMETRIC MODELS 15

3.2.1. Econometric model for The Determinants of FDI 15

3.2.2. THE IMPACT OF FDI ON ECONOMIC GROWTH 17

Ⅳ. RESULTS AND DISCUSSION 19

4.1. RESULTS AND DISCUSSIONS ON THE DETERMINANTS OF FDI 19

4.2. IMPACT OF FDI ON ECONOMIC GROWTH 24

Ⅴ. POLICY RECOMMENDATIONS 31

Ⅵ. CONCLUSION 35

REFERENCES 37

ANNEXES 39

LIST OF TABLES

Table 1: Determinants of FDI; using different specifications.....20
Table 2: Combining TSLS with Fixed Effect.....21
Table 3: The impact of FDI on economic growth.....25
Table 4: interaction effects.....29

Ⅰ. INTRODUCTION

1.1. INTRODUCTION

In the last 25 years, despite faced with structural, institutional, human right and democracy constraints, Foreign Direct investment (FDI) inflow to developing countries increased by twelve folds; reached 646 million US dollars in 2016 from 53.4 million US dollars in 1992(UNCTAD, 2016). In 2016, out of the total inflow of FDI to developing regions, 68% goes to South East Asia; 15.6% to Latin America; 0.5% to the Caribbean; and 7.1% to sub Sharan Africa (UNCTAD, data center). This shows that sub Saharan Africa is the third largest host of FDI in this year, next to South East Asia and South America. Therefore, detail analysis of trends of FDI in to the region is crucial to identify main determining factors of its inflow; to find out the main impacts of FDI in the economy of the region; and to design policies by taking the experience of other effective countries.

Growth theories have described various factors as the main sources of FDI inflow in to the host country. According to Eclectic paradigm theory, factors related to ownership, location and internalization(OLI) highly constrain FDI inflow (Dunning, 1993). Existing market condition in the host country (Hymer,1976); stage of a product in development cycle (Vernon ,1966); human right condition (Dar et al. 2004); factor cost differences and wages (Carr, Markusen, & Maskus, 2001); trade cost (Disdier & Mayer, 2004); market size and taxation (Yeaple, 2003) are considered as the main influencing factors in the flow of FDI by different theories. Examining these determining factors on FDI inflow using sound econometric model and data analysis techniques has importance for effective policy making to improve the inflow of FDI in to the region.

This paper also examines the validity of various growth theories in association with FDI and growth in the countries under consideration. Growth impact of FDI in hosting countries has various features explained both in theoretical and empirical economic growth theories. For instance, Neoclassical growth theory prescribes FDI as a exogeneous source of technological progress causing a short-term growth with only level effect (Barro and Sala-i-Martin, 1992). Whereas, new growth theory states the endogenization of technological change through FDI, and hence long-term output growth (Bornstein, De Gregorio et al. ,1998). In addition to these arguments on short-term vs long term growth impacts; and exogenity and endogenization process of FDI in the growth process, development theorists have contentious views on kinds of FDI growth effects, and other features of it. In this regard the positive impact advocated by modernization theory (Calvo and Sanchez-Robles, 2002); the negative effect hypothesis proposed by dependency (Amin, 1974) and decapitalization theory (Bornschier ,1980); and no significance impact by itself(Akinlo,2004) are the most dominant controversies existed for long time.

The researcher focusing on two main purposes i.e. discovering the effect of FDI on growth and factoring out constraints of FDI inflow in to the region, employs various identification and empirical methodologies. The technics are believed to address problems arising from endogeneity, individual heterogeneity; and dependency across and within observations due to panel and time series natures of the data.

Considering theoretical and methodological variations, here presented the organization of this paper. Part one introduces the topic, statement of problem and its purposes. The second part examines literature reviews pertinent to the development effects of FDI and its main determinants. In part three, the methodology will be discussed in detail. In doing that, it focuses

on the data generation process; explains the identification strategy of methodologies and presents econometric model to be used for data analysis. Part four presents the results of data analysis presented and discussed with interpretations and implications. In part five, key policy recommendations will be suggested. Part six concludes the paper.

1.2. STATEMENT OF THE PROBLEM

Sub Sharan African(SSA) economy in the last 25 years has shown growth acceleration (5% on average per year). This growth has brought about remarkable effects in various socio-economic aspects. In the social and human resource development, good achievements have been gained; for example, Primary school completion rate improved from 54.1% to 68.6%; maternal mortality ratio has reduced to 547 from 975 per 100, 000 live births; infant mortality rate reached to 56 from 107 per 1000 live births from 1991 to 2015 (world development indicators,2015). Results in the physical infrastructure, e.g. Road expansion, power generation and connectivity are also encouraging (e.g. Access to electricity improves from 19% to 37%)

Despite all these improvements, the sub region is still facing huge, deep rooted and complicated obstacles. Poverty is still intensive and immense (25 percent), the infrastructural deficit is still huge, and the quality and accessibility in the human resource services is also lagging (high school completion rate only 42%). In addition, lack of structural transformation in the economy is the biggest obstacle of development. Physical and human capital accumulation, considered as the basic elements of structural transformation and modern growth (e.g. gross fixed capital formation 20.2 percent); shifts in sectorial composition of economic activity (share of manufacturing to GDP is only 10.5 percent); and changes in the location of activity (rate of urbanization is 37.7 percent) are still at the lower level (world development indicators, 2015).

Furthermore, other concomitant aspects of industrialization (demographic transition), income

distribution;(e.g. annual average income growth is low at 1.2 percent); and shifts in the composition of demand and trade, described as the economic core of transformation, are lacking in the economy. The two most important sources of economic growth and structural transformation; i.e. export and FDI are at low rate. Export share to GDP remains almost constant at 25 percent; and FDI only increases by 1.9 percentage points from 0.7% to 2.6% from 1991 to 2016(UNCTAD, 2016).

The attraction of FDI to the region when it is compared with other parts of the world is also at the low level. This hindered the technology transfer, growth acceleration and other important contributions of FDI to the economy at large. This low level of FDI is believed to be due to various interrelated institutional; infrastructure and socio-political factors. In most of academic literatures, low development in connectivity in both hard and soft infrastructure; constraining institutions that do not protect property and human right; weak financial, monetary and trade related policies, and lack in human and absorptive capacities are identified as key issues posing problems in the inflow of FDI. Therefore, the study tries to disentangle the main factors and their magnitudes that impact the FDI attraction in the sub region. In addition, various methodologies are employed to find out most efficient estimates to find out the impact of FDI on growth.

1.3. PURPOSE OF THE STUDY

This paper has purposes of identifying the effect of FDI on basic economic indicators such as economic growth, and domestic private investment. It also tries to unbundle institutional, investment climate, infrastructural and socio-political factors that constrain the inflow of foreign investment in to sub-Saharan Africa countries.

For these purposes, appropriate empirical identification strategies and research design will be used by employing econometric models. These strategies will address the expected endogeneity

problems arising from omitted variables bias, reverse causality, simultaneity bias, and measurement errors. In addition, recommendations on main policy directions will be provided relaying on the results of the study and the best experiences of effective countries on the subject under consideration.

1.4. OBJECTIVES OF THE STUDY

1.4.1. General objectives

The general objective of the study is to identify and measure the effects of FDI on economic growth, export performance and domestic private investment; and to differentiate in magnitude the key factors that constrain the inflow of FDI on the sub Sharan African continent.

1.4.2. Specific objectives

The paper has the following specific objectives;

- To identify the impact of FDI on economic growth in Sub Sharan African countries by controlling potential endogeneity sources;
- To figure out impact of FDI on domestic private sector development; that is whether it creates significant linkages with or deters domestic investment;
- To explore contributions of FDI on export sector performance;
- To unbundle the impact of institutional, socio political, infrastructural and investment related factors on FDI on Sub Sharan African countries.
- To find out significant FDI related policy instruments that are effectively implemented in successful countries and to recommend them in sub-Saharan Africa socio economic and political situations.

1.5. RESEARCH QUESTIONS AND HYPOTHESIS OF THE STUDY

1.5.1. Research questions

- How the effect of resource endowment, macro policy, HR and human capital related factors significantly differ in direction and magnitude in FDI attraction?
- How is the FDI endogenized in the growth process through the productivity spillover effect to bring a long run growth effect?
- Is FDI in sub Sharan Africa catalyzing the export sector performance or simply confined in the domestic economy chasing out domestic consumers?
- Does FDI substituting or complementing with the private domestic investment in Africa?
- How was FDI inflow interacted with the human right condition of the sub region so that to impact the growth process by augmenting the human capital level?

1.5.2. Hypothesis of the study

- FDI augments significantly the growth process through technological spillover effects
- FDI enhances positively and significantly the performance of the export sector by creating market opportunities, bringing technological and other know- how to domestic firms.
- FDI crowds in the development of domestic private sector through various spill over channels and linkage effects
- Institutional, infrastructural and investment climate related policies have significant but different effects on the inflow of FDI.
- The FDI inflow in to hosting countries enhances the human right condition of a country there by improving the human capital level and growth.

Ⅱ. LITRETURE REVIEW

2.1. THEORETICAL AND EMPERICAL LITERATURE REVIEW ON THE IMPACT OF FDI ON ECONOMIC GROWTHI.

2.1.1. ON DEFINING FDI

The concept of Foreign direct investment is discussed and defined by international institutions and researchers based on its characteristics; the criteria that it should fulfill; and the effects that it brings to the economy. Accordingly, International Monetary Fund (IMF) defined FDI based on the basic characteristics of a long-term relationship of two firms located in different countries: direct investors and hosting countries. Some investments are intended to possess at least 10% and more of management interest and equity in a firm located in other country. World Bank describes Such investment net inflows as FDI.

Economists such as De Mello have seen FDI from the view point of elements that it consisted of; for example, capital stock and technology are the main factors that FDI provides to the hosting nation as a bundle (De Mello, 1999). In addition, an investment to be regarded as FDI, there should be acquisition of a minimum threshold of voting right or equivalent interest in another firm (Griffin & Pustay, 2007). Farrell (2008) described FDI as “a package”; he said, it contains mainly of physical capital, technology, management, and entrepreneurship. This demonstrates that the ownership of the advantages permits a firm to perform well and become a winner in other country market.

2.1.2. DIFFERENT PERSPECTIVES ON THE IMPACT OF FDI

2.1.2.1. LEVEL VS GROWTH EFFECT

Development economic theories state their various views regarding causal association between FDI and Growth. Increase in Level against growth is among prevailing debates concerning the

impact of FDI on growth. Neo-classical development hypothesis states that FDI affects level of income for a short term due to the law of diminishing returns and exogeneous determination of growth factors combined in FDI (Hsiao and Hsiao ,2006). Whereas, the new growth model states that FDI can affect long run growth endogenously by assimilating the technological improvement (Herzer, Klasen et al.,2006); and by generating spillover effects (Balasubramanyam, Salisu et al.,1996). It also illustrates that the significant impacts of FDI on growth can be deliberately created and sustained by allocating budget, human capital and other arrangement to stimulate growth and development process.

2.1.2.2. ON TYPE OF FDI IMPACT ON GROWTH

Besides level vs growth argument, the type of impact FDI brings to the economy is other main hot issue in the FDI impact discourse. Modernization theories suggest that infrastructure, human capital, markets, economic and social stability gaps can be covered by FDI to promote growth (Calvo and Sanchez-Robles, 2002). By criticizing modernization perspective, dependency theory developed by Amin (1974) and Frank (1979), states that reliance on foreign investment will deter growth and results inequality in the long run. For example, Bornschier and Chase-Dunn (1985) argued that FDI will lead to “underutilization of productive forces”; and according to them, this is due to the total control of the market by few FDI related firms. This illustrates that FDI might hinder the balanced growth and effective structural transformation process in developing countries when it is concentrated on highly monopolized and weak linkage creating sectors.

2.1.2.3. CHANNELS OF THE IMPACT

The other perspective on the impact of FDI on economic growth is based on channels through which it affects growth. In this regard direct impact, indirect spillover effects and interaction

effects of FDI through other channels are the dominant ones. The neoclassical trade theory focuses on the direct effects of FDI on factor rewards, employment and capital flows, while those following the industrial organization approach have put more emphasis on potential effects or externalities from FDI inflows.

several authors argue that FDI might have no effect on growth by its own; Contrary to the argument of direct and spillover effects of FDI. They argue that the role of FDI on growth depends on adequate availability of factors such as such as strong absorptive capability (Benhabib and Spiegel ,1994; Nelson and Phelps ,1966); favorable investment and trade environment; and stability in socio, economic and political situation (Balasubramanyamet al., 1996). Thus, the results of the above mentioned empirical works illustrate that insignificant direct role of FDI for economic growth is not a rare case. However; the combined effect of FDI with some factors such as human capital, financial market development and trade, might be positively correlated with growth (Borensztein et al., 1998).

2.1.3. EMPIRICAL STUDIES ON THE IMPACT OF FDI

To ascertain the validity of the above-mentioned growth theories, researches were conducted taking different countries as a sample. For example, Balasubramanyam, Salisu, and Sapsford (1996) demonstrated that FDI is the significant vehicle in transferring growth factors. In addition, it was proved that FDI is crucial for effective technological transfer by analyzing FDI flows from developed to developing countries (Borensztein, Gregorio, and Lee, 1998). These results also illustrate the existence of at least some amount of human capital is necessary to assimilate and diffuse foreign advanced ways of production efficiently.

To identify the most favorable conditions that facilitate the FDI inflow to channel it towards economic growth, numerous researches have been conducted. The study of Makki and Somwaru

(2004) found a strong interaction between FDI and trade in achieving to economic growth. Zhang (2001) investigating this issue in 11 countries of East Asia and Latin America, expressed that FDI tends to be more likely to promote economic growth when host countries exert a liberalized trade regime. In addition, the study identified improved education creating good human capital, export-oriented trade, and macroeconomic stability as essential conditions to facilitate the impact of FDI on economic growth (Zhang, 2001).

2.2. THEORIES ON THE DETERMINANTS OF FDI

2.2.1. ARGUMENTS ON FACTORS OF ATTRACTION

POLICY ATTRACTIVENESS

The theories on FDI also differ and argue on the main factors that determine the inflow of FDI in to the host country. These differences in FDI sources can be categorized as origins of advantages and policy attractiveness; market conditions; the stage of the product life cycle and eclectic paradigm. For example, in terms of policy attractiveness, the neoclassical financial theory gives emphasis on the importance of interest rate as the main source of FDI. In this theory, interest rate variation among countries is considered as the main attracting factor for FDI (Aoyama, 1996). In this sense, foreign investors are considered as individuals who attempt to maximize their profit by effectively utilizing interest rate differentials.

On the other hand, this theory is highly criticized due to its inadequacy to explain the nature of FDI inflow. In this regard Fan (2002) described the inability of neo-classical economists as a failure in differentiating foreign direct investments from portfolio investments in terms of growth effect of the two categories of investment (Fan ,2002).

MARKET IMPERFECTION

The other main factor identified as origin of FDI in the hosting countries is market condition. accordingly, Hymer (1976), FDI as a product of Market imperfection. According to him, this environment is created due to two main factors: protection of indigenous industry using trade, finance and monetary related policies; and occurred by itself in relation to unpredictability in suppliers and inputs. naturally because of uncertainty about the behavior of suppliers and quality of inputs.

PRODUCT DEVELOPMENT CYCLE

The other factor determining the inflow of FDI in developing countries is the stage in the product development cycle. It is believed that when products enter at the stage of maturity, the profit gained by monopolistic control of the product starts to reduce. In addition, at this stage the costs related to sailing and advertisement and other factors rise significantly due to the entrance of many competing firms to the industry producing the same product. Observing theses phenomenon, Vernon stated that these cumulative factors force the firm that first introduces the product into the market to shift its production location to other places to regain its monopolistic position; in this he said, “FDI becomes an inevitable” phenomenon in the long run. Therefore, his analysis implies that aiming at reducing cost; and maintaining and increasing market share are the two main deriving forces for the origin of FDI in hosting countries (Vernon, 1966).

Electic Paradigm

The above-mentioned factors i.e. interest rate, market imperfection and product life cycle are not considered as the main determinants of FDI in the eclectic paradigm theory. In 1988, this theory was developed by Dunning due to the inability of different theories to show the main factors for

FDI attraction to the hosting countries. In addition, it is credited as a wholistic approach for the origin pf FDI in hosting countries. Furthermore, according to the OLI framework, FDI decision is based on three factors i.e., internalization advantages (Schaefer, 2002), ownership advantages and location advantages such as availability of raw materials, cheaper factor inputs, good human right condition and less transportation cost (Andersen, 1997).

2.2.2. EMPIRICAL STUDIES ON THE DETERMINANTS OF FDI

Having been so important in the countries growth and development process; and basing on the theoretical determinants of FDI as it has been discussed above; many empirical researches have been conducted with various results. In some studies, factors related to production cost, and advantages in gaining profits are identified as the main hindering factors for FDI inflow (Carr, Markusen, & Maskus, 2001). Lim (2001) found that quality in physical facilities, good situation in political economy and conducive regional integrations as key variables for FDI attraction. Researchers also have proved that the effect of unfavorable social and political situation, for instance, various conflicts, nepotism and embezzlement, lack of respecting basic democratic and human right freedom, etc., on FDI attraction (Dar et al, 2004; Root and Ahmed, 1979)

Researchers such as Dunning (1973), Asiedu (2002), Moosa and Cardak (2003), gave attention and found meaningful effect of macro-economic factors on FDI flows. However, for others these factors such as high financing constraints, weak institutions, and lack of skilled labor are not necessarily the most important ones in developing countries given lack of infrastructure, high financing constraints, weak institutions, and lack of skilled labor (Daude & Stein, 2007). In this thesis, using the above discussed theoretical and empirical foundations as spring board, examines the determinants of FDI and Its impact on various economic outcomes using various methodologies covering 46 countries in sub Saharan Africa from 1992 to 2016.

Ⅲ. METHODOLOGY

3.1. POTENTIAL SOURCES OF BIASDNESS AND POSSIBLE CORRECTIONS

The framework for identification strategy to study factors affecting FDI attraction and the effect of FDI on growth emanates from the heterogeneity nature of individual observations and the time serious nature of the data. This panel data structure has the characteristics of cross-sectional and time series which gives a unique advantage to control individual and time invariant specific unobservable effects; and to remove some part of the omitted variable bias that may arise from the correlation of the error term and the explanatory variables. Therefore, this paper used panel data for 46 Sub Sharan African countries extending from 1992 to 2016. However, this panel model cannot entirely address the endogeneity bias on the independent variables; therefore, controlling for sources of possible bias is essential to produce efficient estimates.

3.1.1. ENDOGENEITY PROBLEM

The main problem in assessing the effects of FDI on growth and determinants of FDI is endogeneity. The sources of this problem might be reverse causality, simultaneity and measurement error. It is highly believed in theories that FDI has huge importance to economic growth. The inverse is also true that economic growth can be a main attraction factor for FDI inflows for it will create a shortage or a high level of requirement for needed capital in the host country; and it will build the confidence of investors who intend to invest in the host country (Lean, 2008). To test the association between these two variables, endogeneity test is conducted and it ascertained that the OLS estimator is not efficient.

3.1.2. THREE STAGE LEAST SQUARE METHOD: CONTROLLING SIMULTANEITY USING EXOGENEOUS INTERNAL INSTRUMENTS

In response to the inefficiency of a single equation estimate to control endogeneity problem, the simultaneous system of equations approach was adopted. The proper identification of system of

equations; and both the internal and external instrumental variables relevant to the endogenous regressors is important to address the problem properly. Depending on this identification process, Three Stages Least Square (TSLS) method was used to correct for the biasedness due to simultaneity and reverse causality of variables both in the FDI and growth models.

In this paper, the above mentioned two models are estimated jointly through the system of equations technique. To improve the large sample efficiency through controlling the cross-correlation equations by generating smaller asymptotic variance-covariance matrix than single-equation estimators; and controlling for endogeneity; for this paper, the TSLS method was preferred among different types of systems of equations. In addition, to make this 3SLS estimates more efficient, it was employed in combination with the fixed effect methods

3.1.3. UNIT ROOT TEST

The other methodological issue that has been given high concern was the time series nature of the data. This will result in persistence on the time trend and spurious correlation of the error terms over time across and within individuals leading to over biased estimates. Testing the presence of this persistency and trending using stationarity test methods is crucial to bring about most efficient estimates. For this, two solutions were used: the data averaged in to five-year periods and various panel unit root tests were employed. Based on these tests, only stationary variables were included in to the model.

3.1.4. INSTRUMENTAL VARIABLE: INVESTMENT FREEDOM AS AN IV FOR FDI

Finally, and most interestingly, this paper applied instrumental variable approach using investment freedom as instrument to remove the confounding effect of FDI on growth. This variable captures FDI policy restriction on cross-border investment measured by the Heritage

Foundation's indicator on Investment Freedom. This indicators scores FDI regimes based on whether countries discriminate against foreign investors, pose risks against expropriation, have transparent bureaucracy, impose equity restrictions on foreign ownership, and have currency controls. The relevance of this instrument was proved using under identification test for the correlation of the instrument with the treatment variable(FDI) and the strength of the instrument test. The other assumption that states the independence of the instrument from the error term and its effect of growth only through the channel of FDI is taken on a faith. It is not possible to prove it using overidentification test because getting other second instrument is almost difficult for a time being.

In general, compared to the previously conducted research papers on this topic focusing on the region, this paper has the following unique features in terms of methodological considerations. First, to identify the determinants of FDI and to prove its effects on growth, it used indicators from different aspects. Infrastructure, macroeconomic policy, institutional, investment climate, human capital, technological indicators; human right and democracy variables are all together included in the model. In addition, it used various interaction terms on the model to check the combined effect of FDI with trade, domestic investment, human right and human capital on the growth. Lastly but most interestingly, it applied TSLS method to make simultaneous equation estimates; and instrumental variable approach with robust results.

3.2. DATA GENERATION AND THE ECONOMETRIC MODELS

3.2.1. Econometric model for The Determinants of FDI

The estimation frameworks on the determinant of FDI can be explained by industrial organization theory, by product cycle theory and by the eclectic paradigm of ownership–location–internalization (OLI).

$$\text{Log of (FDI)}_{it} = \beta_0 + \beta_1(\text{investment freedom index})_{it} + \beta_2(\text{tele phone line})_{it}$$
$$+ \beta_3(\text{Governance index})_{it} + \beta_4(\text{labor})_{it} + \beta_5(\text{GDP growth rate})_{it}$$
$$+ \beta_6(\text{Trade to GDP ratio})_{it} + B_7(\text{resource to GDP ratio})_{it}$$
$$+ B_8(\text{Human Right})_{it} + B_9(\text{per capita income})_{it}$$
$$+ \beta_{10}(\text{government consumption})_{it} + \beta_{11}(\text{technological gap})_{it}$$
$$+ \beta_{12}(\text{domestic investment})_{it} + ai + \varepsilon_{ij}$$

where:

GDP growth rate will enhance the aggregate demand level in the economy; and believed to helps to attract more foreign investors in to the domestic economy to utilize this advantage of market (Lim,1983, Zhang, 2001). ***Labor force*** measures the availability of labor and its cost relative to productivity. In addition, ***Resource wealth may*** be a key locational criterion in investment decisions, particularly regarding primary sector industries.

The accumulation of human capital has both internal and external effects on productivity; and in this model its level is proxied by ***Technological gap***. It is measured by the weighted difference of each country's GDP per capita with the most technological frontier country i.e. USA. ***Domestic private investment*** is also included in the model. For this, domestic fixed capita as a ratio to GDP is used to proxy for domestic capital. The relationship between FDI and domestic capital might be complements or substitutes in the production process (Naudé and Krugell, 2007).

Infrastructure increases the productivity of investments, and reduces operating costs (Asiedu and Lien, 2004). This research paper used the number of telephone mainlines per 100 people as a proxy to measure infrastructure development. *Trade Openness* is also expected to increase FDI, and ratio of trade to GDP is inserted in to the model.

Government Consumption is also incorporated into the model. Its impact on the FDI inflow depends on its nature and type. The more consumption on non-capital goods will force the state to limit its intervention into its economy; whereas, significant intervention of government in providing public goods will have positive effects on the overall economic situation attracting more FDI Jensen (2003; see also Romer 1990).

The model also considers ***human right*** conditions as the main determinant of FDI inflow. To measure it, the Political Terror Scale (PTS) data is used which focus on the amount of respect a society gives to personal integrity rights, specifically the freedom from politically motivated imprisonment, torture, and murder. These rights are scaled from one to five, with one indicating a low level of abuse and higher scores reflecting greater levels of personal integrity rights abuse.

FDI policy restriction on cross-border investment is captured by the Heritage Foundation's indicator on Investment Freedom**.** The indicator scores FDI regimes on whether countries discriminate against foreign investors, pose risks against expropriation, have transparent bureaucracy, impose equity restrictions on foreign ownership, and have currency controls. ***Quality of governance and institutions*** are an averaged index of sub-indicators from the World Governance Indicators (WGI) on the rule of law, government effectiveness, control of corruption, political stability, and regulatory quality.

3.2.2. THE IMPACT OF FDI ON ECONOMIC GROWTH

To assess empirically the effects of FDI on economic growth, the following basic formulation is specified:

$$g_{it} = \alpha + \beta_1 FDI + \beta_2 TRD + \beta_3 HC + \beta_4 K + \beta_5 GI + B_6 GAP + B_7 PIV + GC + B_8 IRT + B_8 TX + B_8 GC + \gamma_1 FDI * TRD + \gamma_2 FDI * HC + \gamma_3 FDI * K + \varepsilon$$

where g is GDP growth rate; FDI, the foreign direct investment; TRD, the trade (exports plus imports) of goods and services; HC, the stock of human capital; K, the domestic capital investment; GI, governance index; GAP, technological gap; IRT, the inflation rate; GC is government consumption; TX, is tax on corporate profit.

Ⅳ. RESULTS AND DISCUSSION

4.1. RESULTS AND DISCUSSIONS ON THE DETERMINANTS OF FDI

In the first two specified models (see table 1), the impact of economic growth on FDI appears to be positive but not significant. To analysis the data, pooled OLS and random effect methods were used in the first two models, consecutively. The result shows that FDI inflow in to the region in the last 25 years was not attracted by the economic growth which is measured by GDP growth. This fact also demonstrates that the domestic market created by economic growth in the specified period was not large enough to convince foreign investors to flight to the region chasing the market.

Relaying on the above-mentioned techniques is not advisable due to the existence of unobservable time varying country specific and time invariant variables that are highly associated with the explanatory variables. Therefore, to enhance the robustness of the results, fixed effect panel data analysis was used in the third specification (see table 1). However, the result is still insignificant at 5 percent level of significance.

Table 1: Determinants of FDI; using different specifications

	(1) OLS	(2) RE	(3) FE
GDP growth	0.08	0.06	0.05
	(0.01)	(0.01)	(0.01)
telephone	0.12	0.12	0.06
	(0.02)	(0.03)	(0.02)
resource	0.22**	0.23**	0.16
	(0.01)	(0.01)	(0.01)
labor	0.02	0.13*	0.97***
	(0.00)	(0.00)	(0.00)
Technological gap	0.13	0.11	0.14
	(0.00)	(0.00)	(0.01)
trade	0.44***	0.30**	0.20
	(0.00)	(0.00)	(0.00)
Domestic investment	0.00	0.10	0.16*
	(0.01)	(0.01)	(0.01)
Government consumption	-0.15	-0.14	-0.12
	(0.01)	(0.02)	(0.02)
GDP per capita	-0.11	-0.06	-0.07
	(0.00)	(0.00)	(0.00)
Investment freedom	0.17**	0.27***	0.31***
	(0.00)	(0.00)	(0.00)
Governance index	0.11	0.16	0.12
	(0.19)	(0.22)	(0.21)
Human right	-0.02	0.03	0.15
	(0.11)	(0.12)	(0.13)
N	215	215	215

Standardized beta coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The use of fixed effect panel data analysis is not a cure for all problems of biasedness originating from various sources of endogeneity. Therefore, to control for the endogeneity that could arise from the simultaneity, reverse causality and measurement error, three stages least square method(TSLS)was applied in the fourth and fifth models (see table 2). In these specifications, the direction of the effect of economic growth on FDI was positive and insignificant; however, its

magnitude increased. The main difference in methodology in the two specifications is that the latter (i.e., the fifth model) considers the explanatory variable trade as endogenous and put it under a special treatment. However, the fourth model considers all the internal independent variables as exogenous. Despite these improvements in technical consideration using TSLS in two varieties, still economic growth has not been main determining factor for attracting FDI in to the region.

Table 2: Combining TSLS with Fixed Effect

	(4) 3SLS	(5) 3SLS Endog. (trade).	(6) 3SLS With FE
GDP growth	0.25	0.42	0.27
	(0.02)	(0.03)	(0.01)
tele	0.15	0.08	-0.17
	(0.02)	(0.03)	(0.05)
resource	0.25**	0.03	-0.06
	(0.01)	(0.02)	(0.02)
labor	0.01	0.05	0.89***
	(0.00)	(0.00)	(0.00)
Technology gap	0.13	0.11	0.46
	(0.00)	(0.00)	(0.01)
trade	0.34*	0.89*	0.72
	(0.00)	(0.01)	(0.01)
Domestic investment	-0.03	-0.31	0.01
	(0.01)	(0.03)	(0.02)
Government consumption	-0.12	-0.17	-0.19
	(0.01)	(0.02)	(0.02)
GDP per capita	-0.11	-0.12	0.43
	(0.00)	(0.00)	(0.00)
Investment freedom	0.17**	0.25**	0.27***
	(0.00)	(0.01)	(0.00)
Governance index	0.10	0.05	0.11
	(0.19)	(0.22)	(0.17)
Human right	-0.04	0.07	0.19*
	(0.11)	(0.15)	(0.12)
N	215	215	215

Standardized beta coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

To make the results more efficient and robust, the combination of previously mentioned methods becomes apparent. Therefore, TSLS in combination with fixed effect was applied in the last specification (table 2) which can be considered the most efficient in producing consistent and unbiased results. In this model, the positive effect of economic growth on FDI persisted without significance. This implies that the main driving forces of the FDI attraction in sub Saharan African countries was not fundamentally from economic growth process at least for the time horizon under consideration. This situation, if sustains, will possibly create a long-term negative effect in the transfer of technologies, know-how and skills through integrating FDI in the growth process in the host countries.

Fixed line telephone expansion in the last 25 years had a positive but insignificant impact on the FDI inflow in to the sub region (see table 1 and 2). All specifications resulted in a positive but insignificant result at 5% significant level. This fact shows that the expansion of infrastructural facilities has not played a dominant role in attracting the foreign investors to take part in the domestic economic process. If this trend is not strategically led in integration with the expansion of other types of physical and connectivity infrastructure investments, the productivity and competitiveness of the region will possibly be dwindled in terms of attracting more and more quantity with quality of FDI.

As expected theoretically, the improvement in Investment freedom in the region in the last 25 years had brought positive significant impact of FDI inflow. Interestingly, this fact was witnessed in all the models used. This result implies that the countries has been designing and implementing conducive investment policies to attract FDI in to the region. In the coming years, the countries should further pursue their effort of designing most effective policies by taking the

experience of successful countries on the area. Expansion of industrial parks in combination with conducive industrial and investment policies; and provision of incentives based on performance and competition, will further encourages highly competent foreign companies to participate in the domestic economy.

According to economic theories, the impact of government consumption on foreign investment depends on the nature of expenditure. All six specifications show that impact of government consumption on FDI was negative with insignificant effect at five percent of significance level (see table 1 and 2). This shows public expenditure might not systematically directed to basic provision and expansion of social, physical and connectivity infrastructures such as broad band and ICT infrastructure.

In theories it is believed that Export oriented counties attract more FDI than inward looking countries. Whereas, the results in these models, being insignificant in all specifications, did not support this hypothesis. This shows that the trade promoting policies of these countries was not encouraging foreign investors in the last 25 years. The result illustrates that these countries are not employing effective trade related policies that can catalyze and attract the foreign investors.

The abundance of labor has contributed positively in a significant way in the inflow of FDI in the sub region. This fact may be due to the availability of cheap labor. Therefore, this demographic dividend should be utilized efficiently combining it with the human capital development effort of the countries. It can be used as a base for to takeoff to the next phase of economic structural transformation efforts of the region.

Other factors such as domestic investment, human capital development and institutional building process had no significant role in the FDI inflow in the region in the last 25 years (see table 2). This illustrates that the coordination and innovative spillovers were not well created and

integrated with the overall FDI policy environment. In addition, the technological absorptive capacity of these countries has been so weak to internalize the benefits of FDI. Therefore, to realize the direct and externality effects of FDI in to the economy it should be synergized with the overall human capital, social capital and domestic linkage process of the countries.

4.2. IMPACT OF FDI ON ECONOMIC GROWTH

The impact of FDI on economic growth was found to be insignificant in all specifications presented (see table 3). This means that the FDI inflow in the last 25 years in to the sub region was not a main driver in the economic growth process. The result also demonstrates that the FDI attracted in to the region in the last 25 years can be characterized with low productivity, little spillover effects in the technology and skills improvement on the factors of production. If this trend continues, it will weakness the competitiveness of the region with other parts of the world thereby slowing down the rate of structural transformation. In addition, ineffectiveness in the utilization of main resources allocated to promote quality FDI attraction in to endogenous growth process may create financial distress on the other productive sectors of the economy resulting in unbalanced growth and uneven income distribution.

various specification and related tests were used to check the robustness of the result that FDI has no significant impact on the growth process of the region. First, the stationarity of variables was tested using panel unit root test and only those stationery variables are included in to the model. In addition, the 25-year longitudinal data has changed to five 5 years averaged data. These processes made the data stationery by removing the time trend.

Table 3: The impact of FDI on economic growth

	(1) OLS	(2) RE	(3) FE	(4) IV
Ln_FDI	0.06 (1.44)	0.06 (1.27)	0.17 (1.72)	0.27 (2.49)
Technological gap	0.07 (0.02)	0.06 (0.03)	-0.61 (0.10)	-0.64 (0.09)
trade	0.44 (0.08)	0.44 (0.08)	0.63 (0.12)	0.60 (0.12)
Gov. consumption	-0.13 (0.16)	-0.13 (0.14)	-0.28 (0.27)	-0.26 (0.32)
Domestic investment	0.13 (0.15)	0.13 (0.11)	0.13 (0.11)	0.11 (0.16)
inflation	0.02 (0.00)	0.02 (0.00)	0.04 (0.00)	0.04 (0.00)
tax	-0.09 (0.08)	-0.09 (0.07)	-0.20 (0.12)	-0.21 (0.12)
Governance index	0.05 (1.62)	0.05 (1.49)	0.01 (1.58)	-0.02 (1.88)
Labor growth	0.23 (2.12)	0.23 (2.18)	0.38 (3.61)	0.38 (3.27)
Credit to private sector	0.10 (0.06)	0.10 (0.04)	0.05 (0.12)	-0.00 (0.11)
N	218	218	218	218

Standardized beta coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After ascertaining the stationarity of the data, then pooled OLS regression was employed in the first model. This resulted in a positive insignificant value. However, it is not logical to accept

this result due to a possible biasedness of the regressors. Therefore, correcting this problem was the next step that has been dealt with. In this regard, the application of panel data analysis method become the appropriate and immediate solution to control and remove for some of time invariant fixed effects from the model. Hausman Test was conducted to check which method to use and fixed effect was confirmed by the test (see the annex). Therefore, on the third specification, fixed effect method was applied with the same results as the previous specifications.

However, panel data analysis methods employed in the second and third specifications were not efficient enough to produce most consistent results due to endogeneity problems. Thus, as a last resort to this problem, instrumental variable approach was employed. The identification strategy to isolate instruments for the endogenous policy variable FDI was based on FDI distribution in these countries due to exogeneous variation in terms of FDI investment freedom in these countries. This fact was observed on the findings of the determinants of FDI model (see part four section 4.1.). In that model, the investment freedom has become the most significant and consistent factor in the FDI attraction process of the region.

This instrument to have relevance, it should satisfy two basic assumptions. Therefore, the relevance of the instrument has been tested using under identification test for correlation of the instruments with the regressors; and the strength of the instruments. Interestingly, the instrument passed the two basic tests: under identification and strength of the instrument (see the annex part for detail of the results of the tests). To check the exclusion restriction or over identification restriction, additional instrument is required. There for, it is only accepted on faith that, the investment freedom affects the outcome i.e. economic growth only through FDI inflow. Relaying on the above-mentioned identification strategy, Model 4 used investment freedom as

instrumental variable for the endogenous regressor of FDI (see table 3). In this mode, FDI was still insignificant with positive value: However, compared to the fixed effect result, its magnitude has increased.

The human capital level that helps to absorb technological diffusion was denoted by the technological gap; and its impact on growth was positive and insignificant at the first model. However, the result changed to negative and significant in the rest of the specification. This demonstrates that the absorptive capacity and the human capita level of the nations in the sub region is too weak to facilitate the technological diffusion through FDI in to the growth process.

The other category of variables inserted on the model are macro policy related ones. In this regard trade policy, inflation and domestic investment encouraging policies have a positive impact with no significance on the growth process on the last 25 years. The results are similar in all the models specified. These results are clear indications of basic facts that trade was not coordinated with the productive sector through value addition; and domestic investment was at its infant stage tied with various internal and external constraints of domestic investors characterized by weak linkages and rent seeking behaviors. This illustrates that the government is expected to do more on expanding trade related logistics that enable to strength the productivity and competitiveness of the productive sectors of the countries; enhancing the private sector development by providing competition based incentives; and catering effective coordination spillovers.

In addition, tax on profits, financial sector development, the institutional building process and government consumption have negative impact on the economic growth process; though it was insignificant. This demonstrates the inefficiency of the institutions in coordination and encouraging innovations in the economic process. Therefore, the government should focus on

innovative ways of financial support for private sector development and various domestic resource mobilization policies that can transform the tax administration and collection performances. Otherwise, this will hinder and dwindle the motivation and capacity of private investors that have a desire to participate in the host countries.

4.3. INTERACTION EFFECTS:

It is a most common discourse that outward oriented trade policies are considered as a factor essential to FDI to deliver its role in the growth process and the inverse is also true. On one hand, the inflow of FDI in the last 25 years in these countries did not positively promote trade to help it play positive role on the economic growth of these countries. This interaction of FDI with trade has a negative insignificant effect on the economic growth process of the countries (see table 3). This means FDI is not playing its role in creating marketing opportunities for the countries; and the quality of the FDI is under question in its ability to enhance export competitiveness of the countries. The other side of the coin also reinforces the above fact that the trade policy was not conducive to facilitate the significance impact of FDI.

The FDI influxes in the last 25 years in these countries, did not bring about significant impact on the crowding in of domestic investment to promote the privates sector development (see table 4). This implies that the FDI inflow has not been creating forward and backward linkage effect with the domestic investment. This further illustrates that the foreign investment concentrated in these countries had no qualities and driving power to bring the desired effective structural transformation in the productive sectors.

It is believed that a high quality FDI will promote good human right condition in a country that it resides in. This good marriage of FDI with favorable human conditions in turn expected to enhance the human capital development of a nation. However, this hypothesis could not be

proved by the findings in this research. The interaction of the two variables did not bring significant economic growth. This means that the FDI did not help the promotion of human capital in the region.

Table 4: interaction effects

	(1) Fixed Effect	(2) trade	(3) Human Capital	(4) Human Right	(5) Domestic inv.	(6) all
Ln_FDI	0.17	2.03	-0.15	-0.08	1.08	1.05
	(1.72)	(13.98)	(6.42)	(3.80)	(9.27)	(15.41)
Techno. gap	-0.61	-0.38	-0.74	-0.64	-0.56	-1.00
	(0.10)	(0.08)	(0.15)	(0.11)	(0.09)	(0.18)
trade	0.63	0.93	0.59	0.63	0.64	0.86
	(0.12)	(0.19)	(0.14)	(0.12)	(0.15)	(0.20)
Gov. con	-0.28	-0.25	-0.27	-0.28	-0.33*	-0.37*
	(0.27)	(0.30)	(0.30)	(0.27)	(0.32)	(0.36)
Domestic Inv.	0.13	0.14	0.12	0.13	0.54	0.48
	(0.11)	(0.13)	(0.12)	(0.11)	(0.51)	(0.43)
inflation	0.04	0.05	0.04	0.05	-22.38*	-21.58*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
tax	-0.20	-0.19	-0.19	-0.20	-0.34	-0.32*
	(0.12)	(0.13)	(0.11)	(0.12)	(0.21)	(0.18)
Gov. index	0.01	-0.03	0.01	0.02	-0.11	-0.06
	(1.58)	(2.01)	(1.60)	(1.65)	(2.34)	(2.04)
credit	0.05	0.09	0.09	0.06	0.22	0.37
	(0.12)	(0.13)	(0.12)	(0.12)	(0.16)	(0.21)
Labor growth	0.38	0.37	0.38	0.38	0.39	0.38
	(3.61)	(3.32)	(3.58)	(3.56)	(3.34)	(3.23)
Ln_FDI*trade		-2.13				-1.77
		(3.36)				(3.21)
Ln_FDI*tehno. gap			0.39			1.03
			(7.57)			(10.28)
Ln_FDI*Human right				0.24		0.66
				(4.36)		(5.33)
Ln_FDI*domestic inv.					-1.31	-1.13
					(3.91)	(3.73)
N	218	211	218	218	168	168

Standardized beta coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FDI is expected to fill the technological gap of the hosting countries; although cannot be observed in the finding of this paper. To prove this theory the interaction of FDI with technological gap was used as a measure of spillover effect of FDI in technological diffusion. However, the term is not significant, although it is positive. The result indicates the highly technologically sophisticated companies were not the main actors in the countries under consideration.

Ⅴ. POLICY RECOMMENDATIONS

As it has been learnt from the discussion of the above results, FDI inflow in the last 25 in to SSA has not brought significant effect on economic growth of the region. I believe that, the FDI attraction process of the SSA countries would become more effective, had it been aligned with the well identified development priorities and directions of the countries backed by performance based policy supports. In the coming years, these countries first should identify their industrial development orientations based on their comparative and competitive advantages. For these, continues assessments and dialogues with the active participation of all stake holders is required. Then after identifying this CA complying industrialization process, the laying of other foundations such as creating conducive investment policy environment; building institutions that coordinate the complementarities, spill overs and innovation; and integrating FDI with the industrialization through human capital building will become more relevant and easy.

Then based on this comparative advantage complying strategies and basis, attraction of relevant FDI with full utilizing of the scale economy should be given huge emphasis. Therefore, SSA countries become more effective when huge caution is given for the designation and implementation of industrial policies to attract quality FDI to achieve their CA complying advantages. When they implement their FDI related industrial policies and plans, they should utilize it with its full scale to minimize costs, and reap positive externalities and to create linkage effects with the domestic investment. This linkage and spillover effect will effectively lead to the next stage of value addition and modernization ladder through endogenizing the FDI in the growth process.

The result of this paper also indicates the importance and the significant roles that effectively built institutions can play in the economy. These institutions help to fill the gaps of the

coordination failure that could have been occurred due to ineffective involvement of government in coordinating the market. Therefore, these countries are highly recommended to build and strengthen efficient institutions that can create coordination and linkage spill overs; that are champion enough to be a model for the private sector; and can raise expectations and complementarities in the economy.

The insignificant result of the combined effect of FDI with technological gap(a proxy for human capital base) on the growth process clearly shows that promoting FDI attraction by itself is not the main source of growth and productivity. To maximize benefits gained from FDI led industrialization and growth, enhancing the development of human capital that can absorb the technological and skill diffusion from FDI is essential. This technological and human capital building process should take place in integration with the industrialization priorities. In addition, educational and research institutions also should concentrate on linking the human development with the quality FDI attraction process. These integrated approaches then should catalyze the emergency and development of efficient institutions that distribute government externalities based on performance rather than personal attachment. Therefore, this holistic approach helps to minimize deep-rooted rent seeking culture, attitude and practice through strong leadership and commitment.

Transformations in designation and implementation of investment policy capacities ought to be considered as an engine for quality FDI attraction. If properly executed, it will enhance the productivity level of the whole economy. In addition, it will generate a multiplier effect by attracting more investors both domestic and foreign. Then these results coupled with cautiously designed trade policies, the economy will get a spring board for effective FDI and export led industrialization and sustainable growth.

However, the above discussed policy designation process will become a simply collection of attractive words without the active involvement and participation of the concerned bodies and any linkage effect. Therefore, industrial and trade policies should be drafted with massive open dialogue with the private sector, research institutions, think thanks, academia and other stakeholders. All this efforted create a well-recognized common ground and path to implement the policies and strategies at a high level of nationalism feeling as witnessed by the most successful countries.

It is now the right time to think loud and start asking profound questions. The governments are confessing that they have prepared attractive industrial and trade related polices and implemented them properly to attract quality foreign investors. However, where are the incentives going on? Who are getting the incentives meant for the best achievers? The answer for these questions seems clear in SSA context. It is apparent that Many failed foreign investors are still functioning protected behind the wall of policies that are meant to incentivize the best performers. Therefore, the next phase should be clear and decisive; expose these investors for stiff external competition and measure and incentivize them based on the performance they register on practice. If they are not at the level of expectation, cult them from the scene and give the opportunity and the support only for the achievers.

The results of this paper witnessed that the foreign investors participating in the SSA countries are still at their infant stage, not able to breakthrough and achieve in the global competition. Therefore, it is the right time to revise incentive policies and their execution strategies in a well-disciplined manner. In addition, these FDI companies on the outset should be exposed to external competitions so that their performance is to be measured clearly; otherwise the fate of zero sum game is eminent only allocating finance to promote FDI without meaningful effects. If the trend

of attracting FDI without ensuring its performance by exposing it to competition continues, the governments will have no clear mechanisms of selecting and promoting successful industries to high level of value addition and value chain. The incentives will be misguided and miss-targeted towards unproductive sectors.

The other factor requiring huge consideration is that, the time is of stiff competition to attract quality FDI combined with a lot of regulations and standards. Quality in terms of human capital, labor supply and logistics provision are mandatory tasks to be fulfilled to remain competitive and not to be knock out of the scene. In addition, quality FDI companies will only work with governments that respect human rights of their citizens to minimize cost and keep their brand image. Thus, the SSA governments should orient their direction towards all aspects of development process to be competent with the emerging countries in attracting FDI.

Finally, the developing countries of sub Sharan region can learn from the success of Korean FDI related policies that help to incorporate the FDI in to the export led industrialization process. Sector identification and industrial policy designation and implementation in consultation with private sector both domestic and foreign; technological improvement through learning by doing principle rather than equity joint venture FDI that promotes dependency; incentives based on competition and performance; measuring the success of protection(industrial policy) and the health of the corporate by setting export requirement; discipline the winners towards export and culling of the losers; establishing fully autonomously functioning institutions and bureaucracy; creating a vibrant private sector through technological and market searching and using global value chain; vison based on logic and long run strategies; localization of production and linkage of different industries are best experiences that Korea implemented in its industrialization process with technological learning by doing principle from FDI firms.

VI. CONCLUSION

FDI was not the main driving force in SSA growth process for the last 25 years. This revealed that the quality of the FDI that has been inflowing in to the region was low without direct and other spillover effects. On the other hand, this fact further implies that the technological absorptive capacity of the human capital accumulated in these countries found to be weak. This weakness coupled with the inefficient trade related policies and other policy related factor hindered the interaction effect of FDI to help the growth process. Its interaction with trade, human capital, human right and domestic investment was insignificant showing that FDI is not crowding in the private sector by creating linkages, and it was also not promoted the growth of the external sector. In terms of the determinants of FDI the role played by the availability of fixed telephone line was profound. The other factors such as macroeconomic policies, institutional building and policy environments remained insignificant. this fact exposed the fact that a lot should be done in the coming years.

The paper tried to discover efficient estimates on the impact of FDI using the most appropriate methods. It also tried to identify instruments both internal and external to control and at least minimize the bias that originate from all sources of endogeneity. In doing this, I believe that, the selection of investment freedom index, from the Heritage Foundation, as an instrumental variable is based on well-articulated justifications using the appropriate relevance tests. In terms of the availability of controlling variables in the model, the paper contributes a lot in the research on the field by including different categories of variables in the model such as, human capital, absorptive capacity, infrastructural, macroeconomic, institutional, human right and democracy variables all together on the mode. As far as my knowledge is concerned this paper is the first of this kind to incorporate all these types of controlling variable in one model and using

instrumental variable approach to control the endogeneity problem on the topic under consideration during the above specified period.

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ANNEXES

FIXED EFFECTS ESTIMATION

Number of groups = 45 Obs per group: min = 3
avg = 4.8
max = 5

First-stage regressions

FIXED EFFECTS ESTIMATION

Number of groups = 45 Obs per group: min = 3
avg = 4.8
max = 5

First-stage regression of lnFDI:

Statistics robust to heteroskedasticity
Number of obs = 218

lnFDI	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
invfre	.0184734	.0039579	4.67	0.000	.010658	.0262889
gap	.0047725	.0050297	0.95	0.344	-.0051593	.0147044
trade	.0082626	.0028946	2.85	0.005	.0025469	.0139782
govcon	-.0211044	.0175049	-1.21	0.230	-.05567	.0134613
gfc	.0231988	.009795	2.37	0.019	.0038575	.0425402
inflation	3.91e-08	2.22e-08	1.76	0.080	-4.72e-09	8.29e-08
tax	.0094806	.0090986	1.04	0.299	-.0084857	.0274468
govindex	.4919544	.2140937	2.30	0.023	.0691998	.9147091
labg	.0598232	.1353407	0.44	0.659	-.2074239	.3270703
credit	.011189	.009284	1.21	0.230	-.0071433	.0295213

F test of excluded instruments:
F(1, 163) = 21.78
Prob > F = 0.0000
Sanderson-Windmeijer multivariate F test of excluded instruments:
F(1, 163) = 21.78
Prob > F = 0.0000

IV (2SLS) estimation

Estimates efficient for homoskedasticity only
Statistics robust to heteroskedasticity

		Number of obs =	218
		F(10, 163) =	1.63
		Prob > F =	0.1023
Total (centered) SS	= 29139.33599	Centered R2 =	0.3410
Total (uncentered) SS	= 29139.33599	Uncentered R2 =	0.3410
Residual SS	= 19203.27198	Root MSE =	10.85

GDPg	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
lnFDI	2.872866	2.490194	1.15	0.250	-2.044334	7.790065
gap	-.1580011	.0937818	-1.68	0.094	-.343185	.0271828
trade	.1790325	.1236003	1.45	0.149	-.0650318	.4230968
govcon	-.4570413	.3217844	-1.42	0.157	-1.092445	.1783621
gfc	.1513589	.1624166	0.93	0.353	-.1693528	.4720706
inflation	3.60e-07	2.56e-07	1.41	0.161	-1.45e-07	8.66e-07
tax	-.2227581	.1188679	-1.87	0.063	-.4574775	.0119613
govindex	-.4006932	1.878457	-0.21	0.831	-4.10994	3.308554
labg	5.984381	3.270018	1.83	0.069	-.4726778	12.44144
credit	-.0007734	.1052667	-0.01	0.994	-.2086357	.2070889

Underidentification test (Kleibergen-Paap rk LM statistic): 16.751
Chi-sq(1) P-val = 0.0000

Weak identification test (Cragg-Donald Wald F statistic): 23.137
(Kleibergen-Paap rk Wald F statistic): 21.785
Stock-Yogo weak ID test critical values: 10% maximal IV size 16.38
15% maximal IV size 8.96
20% maximal IV size 6.66
25% maximal IV size 5.53
Source: Stock-Yogo (2005). Reproduced by permission.
NB: Critical values are for Cragg-Donald F statistic and i.i.d. errors.

Hansen J statistic (overidentification test of all instruments): 0.000
(equation exactly identified)

Instrumented: lnFDI
Included instruments: gap trade govcon gfc inflation tax govindex labg credit
Excluded instruments: invfre