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FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN SUB SAHARAN AFRICA: DO INSTITUTIONS AND HUMAN CAPITAL MATTER?

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ABSTRACT

This paper assesses the impact of Foreign Direct Investment (FDI) on economic growth in 31 sub-Saharan African countries. Different from previous studies, the paper attempts to uncover the channels through which FDI impacts on growth. The empirical results are motivated by an endogenous growth model in which FDI is considered as one of the major determinants of growth. Due to the endogeniety between FDI and growth, the paper uses a dynamic panel model in its analysis, hence uses the GMM estimator to obtain consistent and efficient estimates of the impact of FDI on economic growth. There is consistent finding that FDI has no direct impact on economic growth of the selected sample of SSA countries, but it has indirect impact on growth via human capital development and financial development.

When the sample is subdivided into "resource-rich" and "resource-poor" countries, the findings showed that FDI positively impacts on growth through human capital and infrastructural developments, among the resource-rich SSA countries, while in the resource-poor its impact is via good governance and bureaucratic quality.

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1.0: INTRODUCTION

The role of foreign direct investment (FDI) in economic growth has generated a lot of debate for the past three decades particularly for developing countries. One major view is that since most developing countries are entrapped in the vicious circle of poverty and lack capital resources, they face both the savings-investment gap and the trade gap. These two gaps act as constraints to development in developing countries such as sub-Saharan Africa (SSA) where in most cases, the trade balances are usually in deficits and the domestic savings are not sufficient enough to finance domestic investment hence requiring foreign capital inflows particularly FDI to fill both gaps.

Economic theory suggests that economic growth in a host country is likely to be enhanced through the various benefits that come along with FDI. These benefits can either be direct, such as increase in physical capital accumulation, employment generation and tax revenue, or indirect also known as spillover effects say through technological transfer, improvement in managerial and marketing skills. FDI can close the skills gap through technological transfer that can be assimilated by local firms through say training of labor or through learning by seeing such that upon forming own firms or joining domestic firms, it enhances the productivity of domestic firms as well. In addition, there could be improvements in quality of inputs supplied by the domestic firms to foreign firms (vertical spillovers). Other indirect benefits could arise from the need by large domestic firms to invest in better technology, engage in training so as to keep up with competition with the efficient foreign firms hence enhancing marginal productivity of resource inputs which in turn promotes economic growth (Wang and Blomstrom, 1992).

Although several studies have examined the impact of FDI on economic growth in developed, developing and transitional economies, there seems to be no consensus. Empirical studies have found a positive relationship for developed and transitional economies, but mixed results for developing countries. Specifically, studies on the impact of FDI on economic growth via spillover effects on domestic firms have found mixed results. Those that find positive spillover effects, emphasize that spillovers are not automatic but some local conditions have to be in place, (Blomstrom and Kokko, 2003). Among the initial conditions, Borensztien et al., (1998), and Baharumshah and Almasaied, (2009) emphasize the role of human capital: Literature has identified human capital as an important medium of transfer of international knowledge that is brought into a host country by foreign firms. Its absorption is accomplished through either learning by doing, observation or importation of better inputs which enhance productivity.

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On the other hand Omran and Bolbol, (2003); Alfaro et al., (2004); and, Baharumshah and Almasaied, (2009) look at the role of local financial development as a conduit of the contribution of FDI to economic growth. Studies have argued that a well functioning financial market, lowers the cost of doing business, ensures the efficient allocation of resources which in turn lead to higher rates of economic growth, (Goldsmith, 1969; McKinoon, 1973, Shaw 1973; Boyd and Prescott 1986 and Greenwood and Jovanovic 1990).The importance of financial development in growth is based on McKinnon, (1973) and Shaw's, (1973) theory of savings mobilization which is imperative for investment.

Economic theory suggests that host countries are likely to benefit from increased FDI inflow in several ways for instance, through the positive spillovers to domestics firms that arise from better technology, new process and new products, better management and marketing skills and human capital development. These benefits are expected to enhance domestic firms' productivity ultimately increasing economic growth. Theoretically however, for FDI to stimulate economic growth, it is necessary that either FDI has positive spillover effects to domestic firms or it is more efficient than domestic firms or both.

Different from previous studies, this study does not only examine the relationship between FDI and economic growth but also attempts to uncover the channels through which FDI impacts on growth. Particularly, we investigate whether countries' levels of financial development, human capital development, physical capital accumulation, infrastructural development, governance and trade openness may be an impediment to the growth impact of FDI. The interaction between FDI and these variables is aimed at determining the channels through which FDI impacts on economic development. For instance, the interaction between FDI and financial development is aimed at capturing the role of FDI in financial market development and it tests for the existence of positive externalities from FDI to the financial sector that enhances growth. Herms and Lensink (2003), Durham (2004) and Alfaro et al., (2004) provide evidence that countries with well developed financial markets benefit from FDI. Alfaro et al.(2004), argue that a poorly developed financial sector hinders the economy's ability to profit from the FDI spillovers.

Another contribution of this study is that it uses an estimation technique that takes into consideration endogeniety problems. Indeed studies that involve FDI and economic growth deserve special attention because on one hand economic growth is believed to be a strong determinant of FDI inflow and on the other hand increase in foreign investment leads to increase in capital stock (Greenfield investment) hence leads to economic growth. This means that there could be an endogeniety problem that exists in such a study. This is one major problem that several studies have not taken into consideration.

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For instance, Borenszetein et al. (1998), Assanie and Singleton (2001), and Lensink and Morrissey (2006) use instrumental variables and the 3SLS technique. The problem with this approach however, is that there is no clear variable that can instrument FDI. To go over this problem, we use the Generalized Methods of Moments (GMM) panel estimator developed by Arellano and Bond (1991), to obtain consistent and efficient estimates of the impact of FDI inflow on economic growth. The advantage of the GMM panel estimator is that it exploits the time-series variation in the data, it accounts for the unobserved country specific effects, allows for the inclusion of lagged depended variables as regressors and most important of all is that it controls for the endogeniety of all the explanatory variables. Therefore the study advances the literature on growth and FDI by examining the channels through which FDI impacts on growth in developing countries and uses the econometric technique that solves for simultaneity biases.

The main finding of this study is that FDI consistently has no direct impact on economic growth in SSA. However, it has an indirect positive impact on growth via financial development, human capital development and reduction in bureaucratic red tape. Economic growth is also significantly influenced by labor force growth rate, domestic investment and exports, but negatively impacted on by the rate of inflation. When the data was sub-divided into resource-rich and resource-poor, FDI still had no direct effect on growth but positively influences growth through human capital and infrastructural development among the former and through good governance among the latter.

The rest of the paper is organised as follows; section two reviews the theoretical and empirical literature, followed by the analytical framework in section three. Section four describes the methodology and section five discusses the empirical results. The last section concludes.

2.0: THEORETICAL OVERVIEW

Traditional literature on growth theory can be divided into three groups; first, the post-Keynesian models that emphasis the role of savings and investment in promoting growth; (Harrod, 1939; Domar, 1946; Chenery and Strout, 1966). These models emphasis the two-gap model of growth: The savings-investment and exports- imports gaps which act as hindrances to growth. Second, the neoclassical models which emphasis technical progress; that economic growth is driven by changes in technology which is assumed to be exogenous (Solow, 1957), and third, the new growth models which emphasis the role of R&D, (Uzawa, 1965; Romer, 1990); human capital accumulation, (Lucas, 1988; Mankiw, Romer and Weil 1992); learning by doing models, (Arrow, 1962; Griliches, 1979; Romer, 2001); and the role of externalities or knowledge spill-over, (Aghion and Howitt, 1992; Kremer, 1993).

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In all the three theories, FDI plays some part. For instance, in the first theory, FDI helps in the closing of the two gaps, by providing additional resources that complement the domestic savings and export revenue. In the second theory, FDI is seen as the major source of technical progress because multinational corporations are said to account for a substantial part of the world's research and development. Similarly, in the third theory, FDI indirectly impacts on growth through increased competition and technological spill-over or externalities to local indigenous firms.

Theoretically however, the effects of FDI on economic growth vary depending on whether the host country is following export promoting (EP) or import substituting (IS) strategy, and whether FDI has positive spill-over effects on domestic firms or negative externalities. According to Balasubramanyam et al. (1996), the magnitude of FDI on growth in IS countries is not as large as in EP countries because they are limited by character of the host country market. But in EP countries, FDI is likely to have a greater impact on growth because foreign firms operate in a distortion-free environment. Bhagwati (1978) contends that EP countries tend to attract greater volumes of FDI and enjoy greater production efficiency than IS countries. An IS oriented economy imposes several inefficiencies on foreign firms such as tariffs and quotas on trade, distortions in the factor and product markets, and encourages the adoption of techniques of production that widely vary with resource endowment in the country. Bagwati adds that IS economies provide opportunity for rent-seeking and un-productive profit seeking activities that instead lead to un-equal income distribution. But EP economies apply a neutral policy between imports and exports and allocate resources according to market forces hence basing on comparative advantage. The competition between foreign firms and domestic firms arising from free trade encourages R&D, innovations and investment in human capital. These, combined with specialization and economies of scale that results from comparative advantage, enhance economic growth.

Proponents of the impact of FDI on growth via spill-over effects argue that for FDI to stimulate economic growth, it is necessary that either FDI has positive spill-over effects on domestic firms or it is more efficient than domestic firms or both. Domestic firms could benefit from entrance of FDI, because foreign firms are assumed to posses non-tangible productive assets such as technological know-how, marketing and managerial skills, and export contacts, coordinated relationship with suppliers and customers, and reputation (Aitken and Harrison, 1999). Such knowledge is easily transferred from parental firms abroad through their affiliates to domestic firms in the host country, and through competition, local firms are forced to adopt new technologies so as to stay in the market which leads to increase in total factor productivity (Caves, 1996 and Kokko, 1996).

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However, according to Aitken et al., (1997), entrance of new foreign firms in the domestic market has two repercussions; either local firms are crowded out which might lead to a reduction in total factor productivity, or their productivities are enhanced. For instance, on one hand, firms within the same industry could experience intra-industry or horizontal spill-over effects through the following channels; first, some of the technology brought in by the FDI could diffuse into the local indigenous firms through demonstration and imitation effect. Second, interaction with foreign firms could provide learning opportunities for the domestic firms and therefore reduce their innovation costs thus improving total factor productivity. The third mechanism is through a combination of human capital accumulation and labour turnover, where workers employed by foreign firms accumulate knowledge but as they leave for domestic firms or form their own firms, they take with them the accumulated human capital that raises the productivity of the domestic firms.

Alternatively, positive externalities could also take place among industries through backward and forward linkages between suppliers (domestic firms) and buyers (foreign firms) of inputs. These inter-industry or vertical spillover effects could arise as a result of foreign firms establishing supportive linkages by providing technical assistance to local suppliers of inputs. Or, foreign firms could "force" domestic firms to become more efficient in order to become suppliers to foreign affiliates. Both of these mechanisms translate in efficiency improvements leading to increased productivity hence economic growth.

On the other hand however, since foreign firms are usually low-cost firms compared to their domestic counterparts, they may increase production and grab the market thus forcing domestic firms to reduce production. In addition, entry of foreign firms may crowd-out local firms both in the financial and labor markets. In the financial market, foreign firms tend to have easier access to credit than local firms; and in the labor market, foreign firms usually pay higher wages than their local counterparts, such that the prospective entrepreneur may choose to become a wage earner instead of establishing own business (occupational choice hypothesis). The process of crowding out of domestic firms could ultimately slow economic growth.

2.1: Empirical Overview

Findings on the impact of FDI on growth are mixed; some studies report a positive impact while others document that FDI has a negative impact on growth. For instance, in a panel study of 69 developing countries, and using an endogenous growth model that puts emphasis on human capital, Borensztein et al. (1998), find a positive relationship between FDI and economic growth. They argue that the effectiveness of FDI depends on the stock of human capital in the host country because according to their findings, FDI contributes positively to growth only in

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countries where human capital is above a threshold of 0.52. Lensink and Morrissey (2006), using an endogenous growth model and Instrumental variable technique, find that FDI has a positive impact on growth, whereas volatility of FDI has a negative impact on growth. But unlike Borensztein et al. (1998), their evidence for the positive effect of FDI on growth is not conditional on any other explanatory variable such as level of human capital. Instead, they emphasize the importance of volatility of FDI. They suggest that volatility of FDI may reflect the underlying political and economic uncertainty in a country which in turn is an important determinant of both growth and the productivity of investment.

In a cross-section study, Blomstrom and Kokko (1996) find a positive impact of FDI on growth of GDP per capita in the more advanced developing countries but not in the lower income countries. Similarly, using an endogenous growth model within a simultaneous equation framework on a panel of 67 countries, Assanie and Singleton (2001), find that FDI has a positive impact on growth in 43 middle income countries but has no impact on growth in 24 low income countries. Studies that find no effect or a negative effect of FDI on economic growth include among others Carkovic and Levine,(2002), Athukorala (2003), and Durham (2004). Some time-series study on developing countries document positive relationship between FDI and economic growth. For instance, Kokko et al., (1996) on Uruguay and Obwona, (2001) on Uganda.

In summary, empirical studies show that the contribution of FDI to growth strongly depends on the circumstances in the host country. For instance the effect is stronger in countries that pursue export promotion policies than those that pursue import substitution policies. Also initial conditions matter in the sense that countries with a stock of well trained human capital tend to benefit from FDI spillovers, (Borensztein et al., 1998); A well developed financial sector has also been cited as important channel for FDI's benefits, (Omoran and Bolbol, 2003; Alfaro, et al., 2004; Alfaro et al., 2009; and Baharumsha and Almasaied, 2009). And, FDI is more likely to positively impact on economic growth in countries with smaller technological gap (developed countries) than in those with a larger gap (developing countries).

3.0: THEORETICAL FRAMEWORK

Neoclassical theory suggests that FDI contributes to economic growth of a host country in two ways; directly through capital factor accumulation and indirectly via improvements in total factor productivity. The direct effect of capital accumulation, leads to increased industrial output, manufactured exports, employment generation and tax revenue to the host country. These revenues in turn could be used for infrastructural development that further enhances growth. The indirect effects are generally referred to as spillover effects, which occur in different forms such as technological transfer, introduction of new commodities and new efficient production

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techniques, better managerial skills, and new markets. Further benefits may accrue from forward and backward linkages between FDI and domestic firms (Alfaro et al., 2009).

However, the effectiveness of FDI on economic growth is said to depend on the initial conditions of the host country such as, the level of financial development, education, infrastructure, the technological gap in host country among others. For instance, Borensztien et al., (1998) estimate the threshold level of human capital to be 0.52. FDI may also lead to development of the financial sector and human capital development in institutions of higher learning which further encourages more capital inflow and economic growth. These channels are expressed as interactions with FDI and are aimed at investigating any complementarity with FDI. For instance the interaction between FDI and education measures the complementarity between FDI and human capital. That is, FDI contributes to economic growth through human capital development. Similarly, the interaction between FDI and financial development captures the role of FDI on growth through financial markets and tests the importance of financial development in enhancing the positive externalities that can be linked to FDI inflows, (Baharumshah and Almasaied, 2009).

3.1: The Model

To examine the role of FDI in economic growth in SSA economies, we develop a model which is a variant of those of Feder, 1982; Levin and Rault 1997; Zhang 2001 and Hoang et al., 2010. The modification is aimed at examining the channels through which FDI impacts on growth. Specifically we make modifications so as to test for the complementarity between FDI and TFP enhancing factors such as human capital, financial depth, trade openness, governance, technological gap and whether FDI crowds in or complements domestic investment. The modifications also cater for the neoclassical and endogenous growth theories and follows empirical growth models such as Romer, (1990), Markiw, Romer and Weil, (1992), Borensztien et al., (1998), Barro and Sala- i Martin (1995).

Consider an aggregate production function of the form,

$$Y_{it} = A_{it} K_{it}^{\alpha_1} L_{it}^{\alpha_2} \qquad \text{..} .1$$

where Y, K and L denote GDP, domestic capital and labor respectively. i and t represent country and year respectively, while A measures the technical change per period when input factors are held constant. A refers to the overall efficiency factor comprising two components namely;

a) The state of the economy measured by key policy variables such as trade openness, inflation, financial development, human capital development, infrastructure and political,

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social and economic institutions such as protection of property rights and political stability or governance.

b) Other factors that are not captured by the model but influence technical progress such as the direct and indirect effects of FDI. FDI directly influences technical progress through changes in physical capital and labor employment and indirectly through externalities arising from say improvements in human capital skills, technological transfer to domestic firms and through improvement in financial development.

We can therefore represent A as; $A = f(FDI, X)$, where X is a vector of policy variables.

Assuming that the production function is linear in logarithms, then the production function could be represented as,

$$InY_{it} = A_{it} + \alpha_1 InK_{it} + \alpha_2 InL_{it}$$

……2.

Next we take the first difference to obtain the growth rates and thereafter introduce the components of the efficiency factor, i.e. FDI and the policy variables. We also introduce the initial level of per-capita income inline with the convergence theory; we therefore obtain a model for estimation as;

$$\dot{Y}_{it} = \beta_0 + \beta_1 InY_{it-1} + \beta_2 \dot{L}_{it} + \beta_3 \dot{K}_{it} + \beta_4 FDI_{it} + \delta i \sum_{1}^{n} X_{it} + \varepsilon_{it}.$$

……3.

But from the preceding discussion, we note that the impact of FDI on economic growth could be via some policy variables particularly financial development, trade, human capital and technological transfer to domestic firms. Therefore to complete our model, we include the interaction term such that the model for estimation becomes;

$$\dot{Y}_{it} = \beta_0 + \beta_1 InY_{it-1} + \beta_2 \dot{L}_{it} + \beta_3 \dot{K}_{it} + \beta_4 FDI_{it} + \delta i \sum_{1}^{n} X_{it} + \gamma \sum_{i}^{m} X_{it} FDI_{it} + \varepsilon_{it}, \quad 0 < m \leq n$$

…… 4

3.2: Variable Definition and Measurement

In our estimation equation, the dependent variable $\dot{Y}$ stands for growth rate of real GDP, its data is obtained from Economic Intelligence Unit. Y_{t-1} stands for the initial real GDP per capita. It is intended to capture the role of the "catch up" effect of a country, in other words it controls for pre-existing economic and institutional conditions in each host country. In line with the

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convergence theory, we expect this variable to be negatively related to GDP growth. $\dot{L}$ represents the rate of growth of labor, following Zhang (2001), we measure this variable using the growth rate of population and inline with economic theory, we expect a positive relationship with growth. $\dot{K}$ is the growth rate of domestic capital. Preferably, we would need to use the growth rate of the stock of domestic capital, but due to measurement problems for the stock of capital and also due to unavailability of data on stock of capital, following previous studies, (Zhang, 2001; Hoang, 2010), we instead use the ratio of gross fixed capital formation to GDP (GFCF).

The current stock of FDI might have an impact on future growth of an economy just like previous stocks on current GDP growth rates. So ideally it would be imperative to use the growth rate of the stock of FDI to measure the variable *FDI* - in our estimation. However, there is lack of time-series data on stock of FDI in SSA. But since according to Hoang et al., (2010), measurement of the stock of FDI involves the perpetual inventory method which uses annual investment data that accounts for the rate of depreciation, we therefore use the ratio of inward FDI to GDP because there is no loss of generality. In any case the ratio of FDI to GDP would measure the reaction of investors in terms of increase in inflows to change in policy reforms, (Vadlamannati and Tamazian, 2009). We expect a positive correlation with the endogenous variable.

The variable X as mentioned earlier, is a vector of policy variables that includes inflation, financial development, trade, infrastructure, human capital and institutional variable. *Inflation* is used as a proxy for macroeconomic stability and it is measured by the annual rate of change of consumer price index; it is expected to be negatively related with growth. Traditionally, *financial development* is measured by the ratio of liquid assets to GDP (M2/GDP). Other studies use the ratio of commercial bank credit to GDP (Carkovic and Levine, 2002). In this study however, we use either the ratio of M2 to GDP or the lending interest rates. Movements in the interest rates describe the competitiveness and development of the financial sector. If the financial sector is less risky, interest rates tend to be low; hence more credit is disbursed leading to economic growth. For openness to *trade*, most studies measure this variable using the ratio of trade (sum of exports and imports) to GDP (Carkovic and Levine, 2002; Omran and Bolbol, 2003; Vadlamannati and Tamazian, 2009). The inclusion of imports as a determinant of growth may be confusing. Whereas some imports particularly intermediate inputs and machinery are growth enhancing, most SSA countries import consumption goods and arms that may instead hinder economic growth. Therefore, following Yao et al., (2008), Baharumshah and Almasaied, (2009), Hoang et al., (2010), we use the ratio of exports to GDP. This is mainly because of the export led

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growth hypothesis, (Feder, 1982; Balassa, 1985; Salvatore and Hatcher, 1991; and Greenaway and Sapsford, 1994).

Although the most productive type of human capital is that with tertiary education, because this type of labor force can easily cope up with new skills that are introduced by the foreign firms, in this study, we use secondary school enrollment as a percent of gross enrollment because time-series data for the former are not easily obtainable. For *Infrastructure*, as is standard in the literature we use the number of telephone lines per 1000 people to proxy physical infrastructure development. The assumption is that countries where a large percentage of the population own telephones, are more likely to have better infrastructure in the form of, internet access, better roads and modern airports, (Morisset, 2000; Asiedu, 2003; Assanie and Singleton, 2001; Onyeiwu, 2005). We use governance to proxy the institutions index. The World Bank defines governance as the manner in which public officials and institutions acquire and exercise the authority to shape public policy and provide public goods. The index is a sum of three subcomponents; corruption, bureaucratic quality and rule of law, each with a minimum of zero points and with a varying maximum of six points for corruption and law and order, and, four points for bureaucratic quality. Bureaucracy quality is considered to be a cushion that tends to minimize revisions of policy when governments change. In low-risk countries, bureaucracy is somewhat autonomous from political pressure. Law and order is necessary for protection of property rights, and corruption is considered as a deterrence for foreign investment especially efficient-seeking FDI that are regarded to be the most economic growth stimulating FDI unlike resource-seeking ones. The governance indicator therefore, ranges between 0 (very high risk) and 16 (very low risk). We expect a positive relationship between governance, its interaction term and economic growth, because FDI tends to be attracted to countries with good governance.

To determine if there are some complementarity between FDI and some variables in stimulating economic growth, we include some interaction terms with variables such as human capital, trade, financial development, domestic investment, governance and infrastructure development. The interaction with human capital is based on the argument that the adoption of higher technology and skills that are introduced into the host country by FDI, require a certain threshold level of human capital, such that the higher the level of education of the labor force in the host country, the greater the effects of FDI on economic growth. This hypothesis is based on the arguments by Borensztien et al., (1998) that a highly educated workforce is essential in the exploitation of FDI spillovers. We use the ratio of secondary school enrollment to gross enrollment to proxy human capital and we expect a positive coefficient for the interaction term. The interaction of FDI with financial development is based on the assumption that a well developed financial sector efficiently allocates capital and enables movement of capital flows at lower costs hence stimulating economic growth. Alfaro et al., (2003) find that FDI promotes economic growth in

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economies with well developed financial sectors. We interact FDI with the ratio of M2 to GDP and we expect a positive sign. The interaction with exports is based on several empirical findings that FDI is more effective in countries that adopt export promotion policies as opposed to those that adopt import substitution strategy. In support of this hypothesis, Balasubramanyam et al., (1996) argue that trade openness is vital for achieving growth effects of FDI.

The interaction of FDI with domestic investment is intended to assess whether the level of domestic capital influences the growth-FDI relationship (Hoang et al., 2010). This interaction therefore assesses the impact of the relationship between these two types of investments on economic growth. The relationship between FDI and domestic investment could be of different forms and with different impacts on the economy. For instance, if FDI crowds out domestic investment, the sign of the interaction term could be negative and could lead to a fall in economic growth. This is common with market seeking FDI which tend to outperform their domestic counterparts. Alternatively, the coefficient of the interaction term could be positive if FDI stimulates domestic investment through forward and backward linkages also known as vertical spillover which involves purchase of local inputs or supply of intermediate inputs to local firms, (Agosin and Mayer, 2000; Borensztien et al., 1998). A positive term could also be due to the positive spillovers from FDI to domestic firms by adoption of new technology and skills (horizontal spillover) through learning by doing, training of workers who later choose to work for domestic firms. Alternatively the positive interaction could be as a result of knowledge or information about a market obtained by foreign firms from successful local firms.

Economic theory postulates that FDI tends to move to countries with well developed infrastructure base, such as good roads and railway networks and good telephone and internet networks. A well developed infrastructure network reduces the investment costs hence increases profitability. Some types of FDI particularly resource-seeking which are predominant in SSA contribute to the development of infrastructure base. Also several SSA countries have attempted to improve their infrastructure particularly internet networks in a bid to attract more FDI. In order to examine the impact of FDI on growth via infrastructure, we interact FDI with the traditional measure of infrastructure- number of telephone lines per 1000 people (FDI*TEL). Theory further suggests that some form of FDI particularly market-seeking FDI prefer investing in politically stable countries to unstable ones. They also tend to operate in countries that have respect for rule of law which in turn guarantees protection of property rights. Accordingly, there is a tendency that FDI could influence governance issues in the host countries for the purpose of increasing investment which would lead to economic growth. We therefore interact FDI and governance index in order to assess the influence of FDI on growth via governance.

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There is a consensus that under developed countries are also technologically backward. Blomstrom and Kokko (1996) argue that since poor countries are technologically backward, they do not have the capacity to achieve the growth benefits from FDI. We measure the technological gap using real GDP per capita. So we interact FDI with real per-capita GDP to measure the role of the technological gap in influencing the achievement of the FDI- growth benefits.

3.3: Data Source

The study uses data collected on 31 sub-Saharan countries[1], which have time-series data on ratio of FDI to GDP and real GDP growth rates over the period 1996-2013. Most of the data were obtained from the World Bank's *World Development Indicators*; those on governance and bureaucratic quality were obtained from *Political Risk Service* published by the PRS Group, while real GDP growth rate were obtained from *Economic Intelligence Unit*.

4.0: ECONOMETRIC RESULTS

This study investigates the effects of FDI on economic growth, specifically it examines the possible channels through which FDI influences growth. The study controls for other growth determinants and uses an econometric model –GMM dynamic panel estimator that generates consistent and efficient estimates because it accounts for the potential biases that could be induced by country specific effects and endogeniety between the dependent variable –economic growth rate and explanatory variables particularly FDI. To minimize problems associated with time-series data and existence of outliers, we consider the average values over a three year period. The dependent variable in all the regressions is the real per capita GDP growth rate. From the results, the Sargan test- a test for over-identification, the Wald test and the serial correlation tests (AR1 and AR2) do not reject the econometric specification of the model.

Table1 shows the regression results for the full selected SSA sample. The first regression is the basic growth model; a model that indicates the traditional growth determinants. Other specifications are built on the basic model, for instance in the second regression, we use the ratio of public expenditure to GDP as an alternative measure of infrastructure development. In the third, fourth and fifth regressions, we introduce lending interest rates, credit as ratio of GDP and ratio of liquidity to GDP respectively as the different proxies of financial sector development. In the sixth regression we add net official development assistance to the basic model. In the seventh and eighth regressions, we introduce our key explanatory variable-FDI. In all the estimations, FDI does not exert a significant impact on economic growth. Comparing the seventh regression

[1],Angola, Benin, Botswana, Burundi, Cameroon, Congo Rep., Cote d'Ivoire, DRC, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Namibia, Nigeria, Rwanda, Senegal, Swaziland, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda and Zambia.

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with the first one, domestic investment becomes insignificant and exports become less significant when FDI is introduced in the model. But even when these two variables are dropped, FDI remains insignificant (not shown).

Table 1: GMM Growth Regressions for SSA Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre
LD.rgdpgre	-0.427***	-0.418***	-0.409***	-0.409***	-0.407***	-0.434***	-0.222***	-0.273***
	(-6.848)	(-6.655)	(-5.777)	(-6.391)	(-6.760)	(-6.975)	(-3.132)	(-3.387)
Lag GDPPC	-0.00162***	-0.00156***	-0.00148***	-0.00147***	-0.00111***	-0.00170***	-0.00121***	-0.00110***
	(-3.700)	(-3.537)	(-3.166)	(-3.319)	(-2.601)	(-3.883)	(-2.945)	(-2.631)
POPGR	0.800*	0.848**	0.962**	0.810*	0.992**	0.920**	0.969***	0.838**
	(1.915)	(2.037)	(2.069)	(1.923)	(2.464)	(2.178)	(3.032)	(2.474)
GFCF	0.166***	0.183***	0.210***	0.202***	0.202***	0.154***	0.0728	0.124*
	(3.003)	(3.131)	(3.401)	(3.272)	(3.505)	(2.785)	(1.269)	(1.912)
Education	3.359	2.801	2.994	3.253	8.096**	5.028	5.497	1.647
	(0.835)	(0.744)	(0.646)	(0.795)	(2.029)	(1.217)	(1.581)	(0.418)
Exports	4.250**	4.656**	4.288*	3.627*	4.063**	4.511**	2.703*	2.735
	(2.202)	(2.371)	(1.788)	(1.793)	(2.109)	(2.337)	(1.673)	(1.419)
Telephone	-0.259		0.673	-0.210	0.198	-0.529	-0.333	1.208
	(-0.277)		(0.625)	(-0.221)	(0.219)	(-0.560)	(-0.384)	(1.140)
Inflation	-0.114**	-0.114**	-0.111	-0.112*	-0.120**	-0.0981*	-0.0976**	-0.0929*
	(-2.001)	(-1.983)	(-1.577)	(-1.952)	(-2.209)	(-1.709)	(-2.164)	(-1.732)
Pub Invest		-0.0733						
		(-0.622)						
Interest rate			-3.073					-3.636
			(-1.125)					(-1.523)
Credit				-1.617				
				(-1.045)				
Liquidity					-13.23***			
					(-4.342)			
NET ODA						-0.217*		
						(-1.692)		
FDI							0.0117	0.158
							(0.134)	(1.618)
Constant	0.271	0.206	-0.00527	0.296	0.421	0.375	0.260	-0.170
	(0.837)	(1.221)	(-0.0148)	(0.904)	(1.352)	(1.140)	(0.928)	(-0.545)
Observations	216	219	160	210	210	216	192	137
Number of pid	31	31	23	31	31	31	29	21

Z-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

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The initial per-capita GDP is negative and significant, hence it is in accordance with the conditional convergence theory. Among the control variables, labor growth rate (POPGR), domestic investment (GFCF) and exports are robust with the theoretically expected positive signs. On average, a unit percentage increase in labor force growth rate raises GDP by 0.85 percent, while a unit percentage increase in domestic investment raises growth by 0.18 percent. Exports seem to have the greatest impact on growth, such that a unit percentage increase in exports on average leads to an increase in GDP growth of over 3 percent. Although the theoretical expectation is that financial development would lead to economic growth, the regression results however, shows a negative impact. The anti-growth effects of inflation manifest itself significantly in all specifications. On average, reducing inflation by 10 percent would lead to an increase in the per capita growth by 1percent. However, although considered to be one of the key variables, human capital is insignificant in most regression probably because it is of low quality, hence contrasting previous findings by Borensztein et al., (1998), and Lensink and Morrissey (2006).

Since the impact of FDI on domestic firms and on the economy at large may differ depending on the strategic logic of the FDI's establishment, i.e. whether market seeking, efficiency seeking or resource seeking, we divided the sample into 'resource rich[2]' and 'resource poor[3]' countries. The grouping is based on World Bank classification. According to the World Bank, a country is considered to be rich in hydrocarbons (Petroleum oil) and/ or mineral resources on the basis of the following criteria: (i) an average share of hydrocarbon and/ or mineral fiscal revenues in total fiscal revenue of at least 25 percent during the period 2000-05 or (ii) an average share of hydrocarbon and/ or mineral export proceeds in total export proceeds of at least 25 percent.

Table 2 shows regression results for resource poor countries. The model specifications are similar to those of the full SSA sample. Apart from the rate of inflation which is insignificant, the rest of the results are not different from those of the full SSA sample. For instance, Lagged GDP growth rate, labor force growth rate, domestic private investment and exports are all robust, while FDI and human capita are insignificant.

[2] Resource rich countries; Angola*, Botswana**, Cameroon*, Congo Republic*, DRC**, Equatorial Guinea*, Gabon*, Ghana**, Guinea**, Mauritania**, Namibia**, Nigeria*,Sierra Leone**, South Africa**, Sudan* , Zambia**.(Key: * Oil-rich country; ** Mineral- rich country)

[3] Resource poor countries; Benin, Burundi, Cote d'Ivoire, Gambia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Rwanda, Senegal, Tanzania, Togo, Swaziland, Uganda.

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Table 2: Growth Regressions for Resource-Poor SSA Countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre
LD.rgdpgre	-0.252***	-0.265***	-0.242**	-0.266***	-0.283***	-0.253***	-0.242***	-0.222*
	(-2.677)	(-2.873)	(-2.132)	(-2.777)	(-3.029)	(-2.694)	(-2.611)	(-1.915)
Lag GDPPC	-0.000649	-0.000512	-0.000581	-0.000592	-0.000577	-0.000679	-0.000527	-0.000503
	(-1.524)	(-1.290)	(-1.356)	(-1.416)	(-1.397)	(-1.606)	(-1.403)	(-1.150)
POPGR	0.697**	0.607*	0.725*	0.690*	0.798**	0.785**	0.862**	0.918**
	(1.971)	(1.744)	(1.846)	(1.938)	(2.272)	(2.126)	(2.392)	(2.203)
GFCF	0.211***	0.259***	0.181**	0.229***	0.226***	0.216***	0.197**	0.167
	(2.907)	(3.220)	(1.967)	(3.091)	(3.178)	(2.996)	(2.556)	(1.627)
Education	1.620	2.148	2.334	1.046	2.155	2.919	4.321	6.613
	(0.385)	(0.521)	(0.490)	(0.245)	(0.521)	(0.662)	(0.953)	(1.131)
Exports	5.431**	5.974***	4.418*	5.170**	5.039**	5.990***	7.536***	6.226**
	(2.480)	(2.703)	(1.646)	(2.299)	(2.331)	(2.610)	(3.160)	(1.970)
Telephone	-0.496		0.0797	-0.718	-0.667	-0.540	-1.013	-0.115
	(-0.470)		(0.0527)	(-0.679)	(-0.646)	(-0.510)	(-0.975)	(-0.0685)
Inflation	-0.0669	-0.0815	-0.0790	-0.0672	-0.0673	-0.0592	-0.0669	-0.0744
	(-1.190)	(-1.453)	(-1.232)	(-1.189)	(-1.219)	(-1.038)	(-1.144)	(-1.074)
Pub Invest		-0.181						
		(-1.612)						
Interest rate			-0.0472					-1.899
			(-0.0163)					(-0.466)
Credit				-1.382				
				(-0.695)				
Liquidity					-6.552*			
					(-1.908)			
NET ODA						-0.121		
						(-0.829)		
FDI							0.0771	0.157
							(0.502)	(0.781)
Constant	0.0641	-0.0852	-0.0212	0.197	0.327	0.0870	0.153	-0.0362
	(0.171)	(-0.495)	(-0.0425)	(0.493)	(0.844)	(0.231)	(0.415)	(-0.0689)
Observations	107	110	80	107	107	107	95	68
Number of pid	15	15	11	15	15	15	15	11

Note; Z-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

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Table 3 shows regression results for the resource rich SSA countries. The results show that domestic private investment is significant and positive in most of the specifications. Human capital is significant and positive in only one specification, but FDI is insignificant.

Table 3: Growth Regressions for SSA Resource-Rich Countries

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre
LD.rgdpgre	-0.462***	-0.457***	-0.491***	-0.403***	-0.363***	-0.469***	-0.160*	-0.160
	(-5.150)	(-4.996)	(-4.584)	(-4.204)	(-4.073)	(-5.216)	(-1.744)	(-1.314)
Lag GDPPC	-0.00183**	-0.00182**	-0.00198**	-0.00143*	-0.000466	-0.00190***	-0.000313	-0.000365
	(-2.522)	(-2.471)	(-2.289)	(-1.888)	(-0.619)	(-2.604)	(-0.452)	(-0.421)
POPGR	-2.037	-1.553	-2.950	-2.331	-1.911	-2.010	-0.759	-1.103
	(-0.848)	(-0.649)	(-1.102)	(-0.952)	(-0.837)	(-0.839)	(-0.588)	(-0.717)
GFCF	0.147*	0.161*	0.174*	0.268**	0.339***	0.131	-0.00813	0.0302
	(1.708)	(1.836)	(1.666)	(2.480)	(3.385)	(1.502)	(-0.111)	(0.302)
Education	5.691	2.540	6.265	6.584	12.74*	6.356	3.893	1.891
	(0.781)	(0.388)	(0.694)	(0.865)	(1.778)	(0.877)	(0.870)	(0.295)
Exports	1.118	1.318	2.773	1.646	3.425	1.102	-0.727	0.332
	(0.443)	(0.510)	(0.766)	(0.575)	(1.304)	(0.439)	(-0.460)	(0.142)
Telephone	-0.668		-0.761	-0.113	0.608	-0.777	0.450	0.790
	(-0.482)		(-0.461)	(-0.0765)	(0.443)	(-0.562)	(0.401)	(0.528)
Inflation	-0.0529	-0.0304	-0.0413	-0.0784	-0.0584	-0.0433	-0.0263	-0.0692
	(-0.489)	(-0.274)	(-0.215)	(-0.680)	(-0.557)	(-0.398)	(-0.395)	(-0.597)
Pub Invest		0.163						
		(0.642)						
Interest rate			-4.694					-2.880
			(-1.037)					(-1.086)
Credit				-2.501				
				(-1.441)				
Liquidity					-17.57***			
					(-3.880)			
NET ODA						-0.170		
						(-0.834)		
FDI							0.0554	0.0509
							(0.663)	(0.508)
Constant	0.490	0.331	0.344	0.211	0.249	0.532	0.0690	-0.172
	(0.838)	(0.811)	(0.483)	(0.340)	(0.433)	(0.909)	(0.156)	(-0.322)
Observations	109	109	80	103	103	109	97	69
Number of pid	16	16	12	16	16	16	14	10

Note: z-statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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A quick look at the results for the resource-poor and resource-rich SSA countries shows that on average, a unit percentage increase in domestic private investment raises economic growth by 0.22 and 0.18 respectively. This seems to suggest that resource poor SSA countries rely more on domestic private investment than their counterparts the resource-rich counties. Similarly, labor growth rate is a key factor in the economic growth of SSA resource-poor countries, but it is insignificant in the resource rich countries. In all the cases FDI is insignificant, financial development measured by ratio of M2 to GDP is significant but with a wrong negative sign. Do these findings attempt to imply that FDI has no impact on economic growth in SSA? The next set of results attempts to explore the possible channels through which FDI could impact on economic growth.

We next assess whether the impact of FDI on economic growth in SSA is influenced by levels of financial development, human capital, trade openness, infrastructure development and governance. We achieve this by interacting FDI with some of the variables in the model. But, to avoid using the interaction term as a proxy for FDI or the variable with which FDI is interacted, we include both variables together with their interaction term in the model.

Table 4 shows SSA sample regression results with interactions. In the first regression, we examine whether the impact of FDI on economic growth is enhanced by trade openness. Since we use ratio of exports to GDP to proxy openness to trade, the interaction term between FDI and exports could also implicitly test for the existence of efficiency-seeking FDI, which refers to those FDI that invest in a country due to low cost of production in the host country but export the products to the international markets. The results show that all the coefficients of exports, FDI and their interaction term are strongly significant, but the interaction term has unexpected negative sign. This counter intuitive result could suggest that FDI is growth enhancing in countries with low export revenues. The results could also suggest that FDI to SSA is not efficiency- seeking but instead of another form say market seeking.

As earlier noted, economic theory suggests that, FDI could impact on economic growth by augmenting domestic capital accumulation through spillover effects to domestic firms to a host country. But this can only be achieved if FDI does not crowd out domestic investment particularly in the labor and financial sector markets. We therefore developed an interaction term FDI*GFCF, to assess whether the effects of FDI on economic growth are channeled through its effects on domestic investment. Results in regressions 2 show that domestic investment, FDI and their interaction term, are all insignificant. These findings are contrary to those of Chang (2010) who finds a positive influence of FDI on growth via domestic investment, and also contrary to those of Hoang et al., (2010) who find a crowd out effect of FDI on domestic investment.

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Table 4: Growth Regressions for SSA with Interactions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependen	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre
LD.rgdpgre	-0.235***	-0.223***	-0.241***	-0.252***	-0.212***	-0.230***	-0.217***	-0.230***
	(-3.370)	(-3.130)	(-3.410)	(-3.646)	(-2.679)	(-2.839)	(-3.034)	(-3.231)
Lag GDPPC	-.00132***	-.00114***	-.00121***	-.00118***	-.000547	-.000441	-.00111***	-.00120***
	(-3.253)	(-2.740)	(-2.983)	(-2.965)	(-0.581)	(-0.459)	(-2.669)	(-2.923)
POPGR	0.987***	0.924***	0.941***	1.020***	-0.349	-0.873	0.950***	0.929***
	(3.137)	(2.871)	(2.973)	(3.281)	(-0.253)	(-0.615)	(2.947)	(2.898)
GFCF	0.0582	0.151	0.0846	0.0855	0.0611	0.0249	0.0579	0.0801
	(1.024)	(1.433)	(1.482)	(1.452)	(0.590)	(0.231)	(0.996)	(1.391)
Education	4.571	4.870	2.719	6.374*	6.198	5.965	4.865	4.873
	(1.325)	(1.373)	(0.750)	(1.859)	(1.603)	(1.510)	(1.387)	(1.396)
Exports	4.234**	2.604	3.015*	3.223**	7.625***	7.599***	3.004*	2.757*
	(2.512)	(1.603)	(1.878)	(2.049)	(3.863)	(3.852)	(1.838)	(1.705)
Telephone	-0.208	-0.384	-0.638	0.387	-0.378	-0.501	-0.159	-0.562
	(-0.244)	(-0.442)	(-0.734)	(0.449)	(-0.345)	(-0.447)	(-0.181)	(-0.640)
Inflation	-0.0918**	-0.104**	-0.0934**	-0.101**	-0.0753	-0.0615	-0.0949**	-0.0933**
	(-2.066)	(-2.271)	(-2.090)	(-2.287)	(-1.229)	(-0.997)	(-2.086)	(-2.064)
FDI	1.440***	0.231	-2.804**	-0.661	-0.00393	-0.357	-0.153	-0.316
	(2.681)	(0.862)	(-2.306)	(-1.567)	(-0.0110)	(-1.601)	(-1.362)	(-1.427)
FDI*Export	-0.368***							
	(-2.675)							
FDI*GFCF		-0.00962						
		(-0.874)						
FDI*EDUC			0.627**					
			(2.319)					
M2GDP (FD)				-9.326***				
				(-3.454)				
FDI*FD				0.229*				
				(1.765)				
Governance					0.824*			
					(1.740)			
FDI*Governance					0.00333			
					(0.0780)			
Bureaucracy						0.114		
						(0.0767)		
FDI*BUREAU						0.271*		
						(1.802)		
FDI*GDPPC							3.98e-05**	
							(2.332)	

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D.FDITEL								0.0769
								(1.602)
Constant	0.215	0.255	0.359	0.283	0.0157	-0.0336	0.165	0.243
	(0.781)	(0.909)	(1.281)	(1.023)	(0.0356)	(-0.0753)	(0.579)	(0.868)
Observations	192	192	192	191	137	137	192	192
Number of pid	29	29	29	29	21	21	29	29

Z-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Regression 3 examines the impact of FDI on growth via human capital. The results show that human capital is insignificant, FDI is significant but with a wrong negative sign, while their interaction term is significant and positive. This could imply that FDI and human capital do not have an exogenous effect on economic growth on their own, but FDI combined with human capital enhance economic growth in SSA. This could imply that countries with well developed human capital tend to benefit from FDI inflows because foreign investors would want to work with educated people but also there is a possibility of spillover effects. Also, the level of bureaucracy in SSA does not impact on growth on its own but when interacted with FDI, it is significant and positive (regression6). This could imply that foreign investors influence local policy makers in reducing the bureaucratic procedures which could hinder investment. Regarding governance issues, regression5 shows that foreign investors do not have any influence on governance issues in SSA, instead governance has a direct influence on growth, implying that SSA countries that have respect for rule of law are likely to grow faster.

Previous studies find that the benefits of FDI to economic growth are stronger in countries with well developed financial markets than in their counterparts with weaker markets. Regression 4 assesses the impact of FDI on growth through financial development. We include the interaction term FDI*FD to capture this impact. We use the ratio of money supply to GDP to proxy financial development. The results show that financial development on its own enters significantly in the model but with a wrong negative sign. However its interaction term is positive and significant at 10percent. This validates one of the study's key hypotheses. Regression 7 examines the impact of technological gap on achieving the FDI-growth benefits. The interaction term FDI*GDPPC is positive and significant. This finding validates the hypothesis that countries with a small technological gap (high income countries) benefit from the FDI inflows. But regression 8 shows that neither FDI nor infrastructure nor their interaction term is significant.

To determine whether there is a differential impact of FDI via the various channels between the resource rich and poor SSA countries, we analyze these two samples separately. Tables 5 and 6 show the regression results for resource-rich and resource- poor respectively. From Table 5, the findings show that FDI impacts on economic growth of SSA resource-rich countries mainly

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through its impact on human capital development, technological gap and infrastructure development.

Table 5: Growth Regressions for Resource Rich with Interactions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre
LD.rgdpgre	-0.148	-0.164*	-0.214**	-0.186**	-0.194**	-0.209**	-0.172*	-0.187**
	(-1.626)	(-1.779)	(-2.347)	(-2.043)	(-1.991)	(-2.110)	(-1.887)	(-2.054)
Lag GDPPC	-.000427	-.000455	-.000645	-.000619	-.000730	-.000822	-.000660	-.000500
	(-0.620)	(-0.631)	(-0.941)	(-0.890)	(-0.980)	(-1.078)	(-0.943)	(-0.729)
POPGR	-0.746	-0.974	-1.343	-1.235	-1.047	-1.056	-1.425	-1.477
	(-0.584)	(-0.734)	(-1.051)	(-0.955)	(-0.753)	(-0.750)	(-1.091)	(-1.126)
GFCF	-0.0356	-0.0660	0.0499	0.0591	-0.0521	-0.00543	-0.00415	-0.0153
	(-0.477)	(-0.614)	(0.674)	(0.633)	(-0.537)	(-0.0528)	(-0.0568)	(-0.212)
Education	2.385	4.671	-0.463	5.268	3.125	2.855	3.135	2.010
	(0.526)	(1.013)	(-0.101)	(1.127)	(0.677)	(0.601)	(0.703)	(0.448)
Exports	0.365	-0.609	0.446	0.416	0.433	0.685	0.104	-0.547
	(0.214)	(-0.382)	(0.281)	(0.249)	(0.226)	(0.359)	(0.0647)	(-0.351)
Telephone	0.656	0.436	0.351	0.795	0.513	0.595	0.673	0.543
	(0.586)	(0.387)	(0.319)	(0.709)	(0.440)	(0.502)	(0.601)	(0.491)
Inflation	-0.0175	-0.0296	-0.0602	-0.0558	-0.0738	-0.0766	-0.0542	-0.0291
	(-0.265)	(-0.443)	(-0.913)	(-0.827)	(-1.067)	(-1.090)	(-0.811)	(-0.446)
FDI	0.912*	-0.177	-3.421***	-0.357	0.116	-0.264	-0.165	-0.372*
	(1.669)	(-0.544)	(-3.341)	(-0.798)	(0.323)	(-1.140)	(-1.413)	(-1.754)
FDI*Export	-0.228							
	(-1.586)							
FDI*GFCF		0.0101						
		(0.739)						
FDI*EDUC			0.780***					
			(3.406)					
M2GDP (FD)				-5.663*				
				(-1.718)				
FDI*FD				0.146				
				(1.043)				
Governance					0.221			
					(0.527)			
FDI*Governance					-0.0141			
					(-0.330)			
Bureaucracy						-3.043		
						(-1.314)		
FDI*BUREAU						0.194		
						(1.249)		

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FDI*GDPPC							6.26e-05***	
							(2.691)	
D.FDITEL								0.103**
								(2.186)
Constant	0.0438	0.0641	0.0429	0.0944	0.112	0.0419	-0.0709	-0.0718
	(0.0997)	(0.144)	(0.0985)	(0.212)	(0.241)	(0.0886)	(-0.160)	(-0.163)
Observations	97	97	97	96	89	89	97	97
Number of pid	14	14	14	14	13	13	14	14

Z-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

But corruption, law and order or rather governance issues together with bureaucracy seem not to matter for the operation of foreign firms in resource rich countries, because their interaction terms with FDI are insignificant. These findings are quite fundamental in the sense that they demonstrate that FDI operations in mineral rich countries tend to require well trained human capital because their operations require special skills such as oil and mineral extraction. In addition the findings confirm that resource rich countries, tend to be less bureaucratic, corrupt and with poor governance; attributes that favor investors in oil and mining sector.

However, from Table 6, the negative and significant coefficient of FDI and domestic investment (FDI*GFCF) seems to suggest that FDI crowds out domestic firms in this subsample. Indeed from regression 2, since the coefficient of FDI is greater than that of domestic investment (GFCF), it implies that FDI is more efficient in stimulating growth in resource poor SSA countries. Since resource –poor countries receive mainly market-seeking FDI, governance and bureaucracy; do matter for economic growth in these countries. This is supported by the positive and significant interaction term of FDI with governance and bureaucracy shown in regressions 5 and 6 respectively. Probably due to poor infrastructure and higher technological gap in resource-poor countries, the interaction of FDI and infrastructure (FDI* TEL) is insignificant.

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Table 6: Growth Regressions for Resource-Poor countries with Interactions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre	D.rgdpgre
LD.rgdpgre	-0.248***	-0.269***	-0.240**	-0.273***	-0.558***	-0.550***	-0.241**	-0.243***
	(-2.685)	(-2.909)	(-2.554)	(-2.857)	(-4.657)	(-4.796)	(-2.563)	(-2.599)
Lag GDPPC	-0.000514	-0.000468	-0.000520	-0.000485	0.00423	0.00510	-0.000475	-0.000512
	(-1.377)	(-1.258)	(-1.369)	(-1.263)	(0.700)	(0.887)	(-1.241)	(-1.333)
POGGR	0.841**	0.745**	0.864**	0.844**	9.893**	8.088*	0.885**	0.861**
	(2.346)	(2.063)	(2.382)	(2.315)	(2.339)	(1.673)	(2.418)	(2.371)
GFCF	0.167**	0.412***	0.191**	0.202**	0.222	0.230	0.186**	0.198**
	(2.116)	(3.135)	(2.344)	(2.527)	(1.295)	(1.423)	(2.372)	(2.546)
Education	5.210	2.749	4.316	3.836	9.109*	13.25**	4.593	4.608
	(1.146)	(0.605)	(0.946)	(0.833)	(1.774)	(2.373)	(0.998)	(0.970)
Exports	7.799***	6.451***	7.638***	6.776***	17.97***	16.79***	8.034***	7.525***
	(3.281)	(2.671)	(3.120)	(2.749)	(5.822)	(5.990)	(3.283)	(3.133)
Telephone	-0.979	-1.064	-1.050	-0.832	-1.974	-1.944	-0.895	-1.068
	(-0.948)	(-1.036)	(-0.990)	(-0.783)	(-0.927)	(-0.929)	(-0.846)	(-0.992)
Inflation	-0.0646	-0.0877	-0.0663	-0.0696	0.0672	0.0250	-0.0635	-0.0663
	(-1.110)	(-1.494)	(-1.125)	(-1.168)	(0.732)	(0.285)	(-1.069)	(-1.124)
FDI	1.415	0.645**	-0.664	0.152	-1.273	-0.487	-0.0898	-0.00605
	(1.509)	(2.010)	(-0.187)	(0.164)	(-1.632)	(-1.149)	(-0.447)	(-0.0146)
FDI*Export	-0.335							
	(-1.446)							
FDI*GFCF		-0.0235**						
		(-2.008)						
FDI*EDUC			0.163					
			(0.209)					
M2GDP (FD)				-5.924				
				(-1.379)				
FDI*FD				-0.00984				
				(-0.0368)				
Governance					-0.796			
					(-0.998)			
FDI*Governance					0.192**			
					(1.971)			
Bureaucracy						-0.560		
						(-0.280)		
FDI*BUREAU						0.616**		
						(2.151)		
FDI*GDPPC							3.07e-05	
							(1.314)	

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FDI*TEL								0.0195
								(0.217)
Constant	0.105	0.140	0.158	0.291	-0.189	-0.365	0.0804	0.146
	(0.285)	(0.383)	(0.426)	(0.732)	(-0.209)	(-0.432)	(0.213)	(0.390)
Observations	95	95	95	95	48	48	95	95
Number of pid	15	15	15	15	8	8	15	15

Z-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

5.0: CONCLUSION AND POLICY RECOMMENDATIONS

This paper contributes to the literature on FDI and growth both theoretically and empirically. The estimation technique (GMM) is consistent with the model specification for it generates consistent and efficient estimates. Virtually in all specifications, there is consistent finding that FDI on its own does not significantly impact on economic growth in SSA. This finding is in agreement with previous studies on developing countries. However, FDI indirectly impacts on economic growth in SSA through several channels such as human capital development, financial sector development, improvement in bureaucratic quality and reduction in technological gap.

Another major finding is that the anti-growth factors such as macroeconomic instability, trade openness, labor force, domestic investment and governance, significantly influence economic growth in SSA region. Generally therefore, if SSA countries are to achieve the FDI- growth benefits, there is need for increase in quality labor force, strive to increase the level of exports by emphasizing export competitiveness, achieving macroeconomic stability through reduction of inflation, improving the financial and infrastructural sectors, improving governance issues through reduction in corruption, protection of property rights and reducing bureaucratic red tape.

Given that most SSA countries are developing countries, where the largest contribution to GDP comes from the primary sector particularly agriculture, while some few countries depend on minerals and oil, there is need to explore sectoral contribution to economic growth and also to determine in which sectors do FDI impact positive spillovers to domestic firms with a view of promoting FDI in those sectors.

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