INVESTIGATING THE IMPACT OF FDI ON ECONOMIC GROWTH IN ZAMBIA: 1980 - 2012

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ABSTRACT

This study was conceived to investigate the impact of foreign direct investment on economic growth in Zambia. Data used was obtained from the World Bank's world development indicators for the period 1980 to 2012. A unit root test was used to determine whether or not the data was stationary. The Johansen cointegration test was then used to test for cointegration. Additionally the Granger causality procedure was used to test the direction of causality between foreign direct investment and economic growth. It was revealed that all the independent variables were non-stationary in level form but were all found to be stationary after first differencing them. Further, the variables were integrated of order one, I (1) and also that there existed a long run relationship among the variables for the period 1980 to 2012. In the same manner, the results showed that FDI does not granger cause economic growth in Zambia . Therefore, unless the Government of the Republic of Zambia considers reforming its existing policies, foreign direct investments will not serve as the prelude for desired economic growth.

Keywords: Stationarity, cointegration, and foreign direct investment.

INTRODUCTION

Foreign direct investments (FDI) are the net inflows of investment to acquiring long lasting management interest in an enterprise operating in an economy other than that of the investor (World Bank, 2014). Many reasons have been given for the importance of FDI inflows, including employment creation, enhanced competition as well as the transfer of skills through training. For these reasons, developing countries have been strongly on foreign direct investment as a source of external finance. Accordingly, many governments have developed policies to encourage inward FDI flows. Furthermore, FDI gives developing countries the opportunity to reduce dependence on foreign aid, thereby boosting the state's sovereignty from donor policies.

Across Africa, many developing countries have been committed to reaching the millennium development goals (MDGs). by the year 2015. As pointed out by Adewumi (2006) referring to United Nations (2005), most developing countries across Sub-Saharan Africa are off track and this has left them desperate for significant levels of foreign investments to restore them to their earlier economic status. It is believed that most of these developing countries are lagging because of inadequate resources to finance long term investments and this has proved to be a big setback to economic growth. According to Adams (2009), the direction and volume of FDI across countries and regions suggest that its attractiveness depends on institutional and country-specific factors. Some of these factors include the host country's openness to trade as well as macroeconomic, political and social stability. Due to economic, political and social differences across developing countries, the growth effects of FDI will not carry the same effects.

Zambia is among the developing countries in sub-Saharan Africa that has received significant amounts of FDI for development projects. Most of Zambia's FDI inflows has been in the mining, construction, infrastructure, manufacturing, textiles, electrical, agriculture and health sectors.

LITERATURE REVIEW

The widely held view is that FDI is good for economic growth. However, conclusive evidence supporting the widely held view that developing countries should court on FDI to enhance economic development need to be empirically tested remains surprisingly hard to come by. Several theories have been used by researchers to evaluate the relationship between FDI and economic growth.

Adams (2009) pointed that endogenous growth theorists have based their arguments on economic growth requires investment in capital and regard FDI as important for developing countries. According to Nunnenkamp and Spatz (2003), the effects of FDI on economic growth depend on economic and technological conditions in the host country. It is argued that host countries with better endowment in human capital are supposed to benefit more from FDI in the form of technology spillovers from foreign enterprises to local enterprises. Thus when foreign enterprises set up companies in developing countries, they introduce more efficient technologies to the local markets. Through contact in the market place, local producers might imitate the advanced practices used by their foreign counterparts, causing increased production through the use of more efficient technology. FDI's projected role as an important factor in the transfer of technology or knowledge suggests that this might have a direct effect on growth. However, it appears that developing countries have to reach a certain level of development in education and or infrastructure before they are able to capture the potential benefits associated with FDI. The larger the technology gap between the host and the home country, the smaller is the impact of FDI on economic growth. This is to say that countries that are less technologically advanced may have a limited FDI impact on economic growth (Nunnenkamp and Spatz, 2003). This may be especially worrying for a country like Zambia that has been experiencing very slow economic growth rates.

According to Younus et al (2014), trade openness has also been considered to be another important channel through which positive effects of FDI can be exploited by a host nation, and in this regard, developing countries are encouraged to continue trade liberalization in order to gain more from foreign investment. Nunnenkamp and Spatz (2003) support trade openness as being important for growth effects of FDI by pointing out that foreign direct investors use complex integration strategies that require unrestricted imports of intermediate goods at all stages of the production process.

Despite the benefits of FDI, other researches have noted that it can also bring some negative impacts through its crowding out effects. For instance, activities of foreign firms can displace local firms that can't cope with the competition from foreign firms thereby reducing the growth of local firms. According to Dogan (2014), several governments and local firms of less developed countries are not able to make costly investments, afford expenditure on research and development (R&D) or extract enough natural resources because of the high fixed cost. It is further argued that many developing countries simplified their regulations on FDI by offering serious tax reductions and subsidies to attract more FDI. Therefore, in order for FDI to positively impact economic growth, it needs to serve as a complement rather than a substitute for local firms.

All over Africa, countries compete to attract FDI and each country is interested in presenting the best investment atmosphere. However, as pointed out by Adewumi (2006), this sometimes leads to a situation where the incentives could be more than the gain from foreign investment and this can leave a country worse off than it was before the investment. With Zambia mentioned as a specific example, it was argued that there is no real evidence that FDI brings development, noting that the aim of any multinational enterprise is to make profit not to provide development. If these claims are anything to go by, developing countries including Zambia should approach and introduce FDI with caution.

Given the conflicting theoretical views, many empirical studies have been conducted to examine the relationship between FDI and economic growth in developing countries. Some researchers have preferred country specific investigations while others have carried out investigations on a broad cross-section of countries and their studies have varied in application and approaches. Using different data and methodologies, most studies have found that FDI tends to have positive impacts on economic growth, while others have found that FDI tends to have non-significant or even negative impacts on economic growth in host countries.

Moyo (2013) carried out a study on the impact of FDI on economic growth in Zimbabwe. In that study, Moyo (2013) used a multiple regression model that linked FDI as well as other macroeconomic variables such as government expenditure and private saving to gross domestic product, it was found that foreign direct investment had a very significant positive impact on economic growth in the country.

A study was carried out by Barua (2013) on the dynamics of co-integration between FDI, Growth and exports in the Indian economy for the period 2000 to 2012. By framing simple and multiple regression models, the results of the study found that FDI, GDP and exports were positively correlated.

Other Studies that confirm that FDI has a positive effect on economic growth have gone on to argue that its impact depends on some factors in the economy such as the levels of human capital, trade openness in the host country as well as the ability to absorb technology by the host country. Li and Liu (2004) studied 84 countries using an endogenous growth model and found that not only does FDI directly promote economic growth by itself but also indirectly through its interaction terms. It was argued that the interaction of FDI with human capital exerts a positive effect on economic growth in developing countries, while that of FDI with the technology gap has a significant negative effect. The results of Li and Liu (2004) support the endogenous growth theories, as they confirm that inward FDI tends to positively impact economic growth in host countries with better endowments in human capital and better technology-absorptive ability. Similarly, in a study by borensztein et al (1998) on FDI inflows from industrial countries to 69 developing countries using an endogenous growth model, it was found that FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment. However, it was further argued that the higher productivity of FDI holds only when the host country has a minimum threshold stock of human capital. Thus, FDI contributes to economic growth only when a sufficient absorptive capability of the advanced technologies is available in the host economy.

A number of other studies support human capital as important for positive impacts of FDI on economic growth. As pointed out by Simeo (2004) on the impact of FDI on economic growth

and savings in Zambia used a conventional growth model and found that FDI can have a positive impact on economic growth particularly when the host country has a highly educated workforce to exploit FDI spillovers. It was found that FDI spillovers are greatest in richer countries, while in poorer countries the technologies being used are often less accustomed to the needs of the economy thereby limiting the benefits from technological spillovers. It was also pointed out by Simeo (2004) that Zambia is classified as one of the poorest and heavily indebted countries in sub Saharan Africa thus has very low levels of capital, per capita income and education of its workforce.

Egbo et al. (2011) analyzed a granger causality test of foreign direct investment and economic growth in Nigeria. The study used annual time series variables covering a period of 27 years from 1981 to 2007 and found that there exists a positive relationship between FDI and GDP which implied that FDI stimulated economic growth in Nigeria during the period covered in the study.

Alkhasawneh (2013) analyzed the granger causality relationship between foreign direct investment and economic development in the state of Qatar in the period 1970-2010. It was found that foreign direct investment in the short-run was affected mainly by gross domestic product and government spending. It was further implied that the Qatar government should continue its efforts to create an economic environment that is attractive to foreign direct investment. The findings confirmed a strong and positive relationship between economic growth and FDI inflows in Qatar.

Also, study by Roy and Van den Berg (2006) on FDI inflows into the United States supported the notion that most FDI occurs between developed economies. Applying time series data to a simultaneous-equation model, it was found that FDI had a significant, positive and economically important impact on economic growth in the United States. It was further found that gains from FDI are very substantial in the long run and the sustainability of the U.S. current account deficit was enhanced by FDI's positive effect on productivity.

Another important factor that has been pointed out as a means of gaining positive effects of FDI is a host country's openness to trade. As discussed by Li and Liu (2004) while referring to Balasubramanyam et al. (1996) on a study of the role of FDI in the growth process of 46 developing countries using a modified production function, it was found that FDI is more important for economic growth in export-promoting countries than in import substituting countries. This implies that the impact of FDI varies across countries and that trade policy can affect the role of FDI in economic growth.

Contrary to studies that stress the importance of human capital in obtaining positive effects from FDI, Adefabi (2011) conducted a study that examined the effects of FDI and human capital on growth in 24 sub-Saharan African countries using a fixed effect estimation technique and it was found that there existed a weak but positive effect of FDI on economic growth in sub-Saharan Africa. The study also found that a weak complementary effect of FDI and human capital in economic growth for sub-Saharan Africa countries. Empirical evidence revealed that FDI can affect growth positively but not through accumulation of human capital. This was attributed to the fact that the bulk of FDI flows in sub Saharan Africa moved mostly to the extractive industries (resource seeking) with little or no spillovers to other sectors such as manufacturing and services.

Several other studies have argued that the contributions of FDI to economic growth are not always positive but rather depend on the sectors of the economy where FDI is introduced in the host country. This is supported by Nunnenkamp and Spatz (2003) after they ran a multivariate regression model for a number of developing countries, pointing out that efficiency seeking FDI in the manufacturing sector is most likely to lead to economic growth due to the spillover of technology and know-how. On the other hand resource seeking FDI in the primary sector might not lead to economic growth because it tends to be concentrated in areas dominated by foreign affiliates with few linkages to the local product and labor markets. This is despite the benefits involved such as large upfront transfers of capital, technologies know-how and generation of foreign exchange earnings. Market seeking FDI in the services sector can benefit host countries by introducing new services through the modernization of local and increasing the levels of competition. However, fiercer competition may also lead to crowding out of local competitors.

While some studies find that FDI contributes positively to economic growth, others have found that FDI has a non-significant or even negative effect on economic growth. The differences in these results show the importance of regional and country specific studies.

METHODOLOGY

Data and its Sources

This study uses time series annual data from 1980 to 2012. Secondary data on economic growth, foreign direct investment, gross capital formation and merchandise trade is collected from the World Bank's "World development indicators". A multiple regression model is applied to the data. The model is adapted from a study by Barua (2013) on the impact of FDI inflows on exports and growth of the Indian economy. The model by Barua (2013) is based on multiple regression analysis to determine the dependence of economic growth on FDI and Exports. The independent variables in this study include gross capital formation, merchandise trade and FDI inflows as shares of GDP. The model is specified as follows:

$Y = \beta_0 + \beta_1 FDI + \beta_2 GCF + \beta_3 MER + \mu$
Y= Economic growth
FDI= Foreign direct investment inflows as a share of GDP
GCF= Gross capital formation as a share of GDP
MER= Merchandise trade as a share of GDP
β = Coefficient
μ = the error term

The dependent variable in this study is economic growth measured as the percentage growth of GDP. The independent variable is FDI inflows as a percentage of GDP. Also included is gross capital formation which is used as a proxy to measure domestic investment. Merchandise trade is used as a proxy to measure trade openness. The signs of the variables in relation to economic growth according to economic theory as discussed in the literature are given below.

Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP. It is used to measure the degree of trade openness. Gross capital formation consists of expenditure on additions to the fixed assets of the economy plus net changes in the level of inventories.

RESULTS AND DISCUSSION

Unit Root Tests

Before an estimation of the model is done, this study investigates the time series properties of economic growth (Y), foreign direct investment (FDI), gross capital formation (GCF) and merchandise trade (MER). Non-stationarity in the data is often considered a problem in empirical analysis and as such it needs to be checked in order to prevent ending up with misleading results. Therefore, it is worthwhile to point out that statistical properties of least squares hold only when time series variables involved are stationary. This study uses the augmented dickey fuller (ADF) test to detect the presence of unit roots in the time series. Table 1 below shows the results of unit root tests in levels and first difference.

Table 1: Unit root tests: Levels and first differences

Variables	Model specification	ADF Level		ADF First difference		Order of integration
		t-statistic	Results	t-statistic	Results	
Y	Intercept	-3.926 (-2.957)	stationary	-5.385 (-2.972)	stationary	I(0)
	Intercept & trend	-5.446 (-3.563)	stationary	-5.316 (-3.581)	stationary	I(0)
	None	0.765 (-1.610)	Non stationary	-8.237 (-1.952)	stationary	I(1)
FDI	Intercept	-1.563 (-2.972)	Non stationary	-5.969 (-2.972)	stationary	I(1)
	Intercept & trend	-6.894 (-3.563)	stationary	-6.106 (-3.582)	stationary	I(0)
	None	1.323 (-1.953)	Non stationary	-9.132 (-1.952	stationary	I(1)
GCF	Intercept	-2.152 (-2.957)	Non stationary	-7.134 (-2.960)	stationary	I(1)
	Intercept & trend	-3.666 (-3.558)	stationary	-7.224 (-3.563)	stationary	I(0)
	None	-0.432 (-1.952)	Non stationary	-7.241 (-1.952)	stationary	I(1)
MER	Intercept	-0.746 (-2.964)	Non stationary	-6.693 (-2.964)	stationary	I(1)
	Intercept & trend	-1.359 (-3.568)	Non stationary	-6.888 (-3.568)	stationary	I(1)
	None	0.651 (-1.952)	Non stationary	-6.707 (-1.952)	stationary	I(1)

Source: Authors' compilation and values obtained from eviews.
NB: Figures in parentheses represent the critical values at 5% level of significance.

The null hypothesis of the unit root test is given as H_0: non stationary for both level and first difference while the alternative hypothesis is given as H_1 stationary. The results above show that economic growth, Y series, is stationary at level. The test statistics are more negative than the critical values at 5% level of significance without trend (intercept only) and with trend. Therefore, the null hypothesis that Y has unit root is rejected with 95% confidence level. However, Y is found to be non-stationary when tested with no trend and no intercept (none). To establish stationarity, Y is differenced once and thus is integrated of order 1.

Foreign direct investment, FDI series, is found to be stationary when tested with trend and intercept. The test statistic is more negative than the 5% critical value. However, FDI is found to be non-stationary when tested with intercept only and when tested with neither intercept nor trend (none). The null hypothesis that FDI has unit root cannot be rejected in this case.

The FDI series is differenced once and thus has order of integration 1. Similarly to the FDI series, GCF series is found to be stationary when tested with trend and intercept. However, the series is found to be non-stationary when tested with intercept only and when tested with neither trend nor intercept (none). Therefore, just like the FDI series, the null hypothesis that GCF has unit root cannot be rejected. The series is differenced once and it is found that it has an order of integration of 1. Merchandise trade, MER series, is found to be non-stationary at level when tested with intercept only, intercept and trend, and when tested with neither intercept nor with trend (none). The test statistics are found to be less negative than the critical values at 5%. The null hypothesis that MER has unit root cannot be rejected. Therefore, the series is differenced once to establish stationarity. Thus the MER series has an order of integration of 1.

Cointegration test

This study uses the Johansen cointegration test to ascertain for cointegration among the variables. The test has two forms, namely, the trace statistics test and the maximum Eigen value test. The two tests will be used to determine the number of cointegrating vectors that are present. The null hypothesis for the trace statistics test shows that there are no cointegrating vectors present while the alternative hypothesis confirmed that there is ≤ 1cointegrating vector present. The null hypothesis for the maximum Eigen value offers that there are no cointegrating vectors present while the alternative hypothesis states that there is 1 cointegrating vector present. Table 2 below shows the results obtained from the Johansen cointegration test.

Table 2: Johansen cointegration test results (trace statistic and maximum Eigen values)

Hypothesized No of Ce(s)	Eigen Value	Trace Statistics	0.05 critical value	Maximum Eigen value	0.05 critical value
None*	0.826471	78.01996	47.85613	54.29372	27.58434
At most 1	0.412736	23.72624	29.79707	16.50070	21.13162

Source: Authors' compilation and values obtained from E-views.
NB: * denotes rejection of the null hypothesis at the 0.05 level.

The results show that both the trace statistic and maximum Eigen value tests indicate at least one cointegrating relationship at the 0.05 level of significance. Thus the null hypothesis is rejected at the 5% level of significance. This implies that a long run relationship does exist among the variables.

Granger Causality Test

After determining that the variables are cointegrated, an analysis of the causal links among the variables is carried out using the granger causality test. The F-statistics and the P-values are used in the test.

Table 3: the results for granger causality test.

Null hypothesis	F-statistic	Probability	Type of causality
GCF does not granger cause FDI	0.26313	0.7707	No causality
FDI does not granger cause GCF	1.69997	0.2024	No causality
MER does not granger cause FDI	0.57724	0.5685	No causality
FDI does not granger cause MER	0.55601	0.5802	No causality
Y does not granger cause FDI	1.62111	0.2170	No causality
FDI does not granger cause Y	1.70555	0.2014	No causality
MER does not granger cause GCF	0.73452	0.4894	Uni-directional
GCF does not granger cause MER	3.38529	0.0494	Uni-directional
Y does not granger cause GCF	2.27572	0.1228	Uni-directional
GCF does not granger cause Y	4.87790	0.0159	Uni-directional
Y does not granger MER	3.73934	0.0374	Unidirectional
MER does not granger cause Y	2.51864	0.1000	Unidirectional

Source: authors' compilation and values obtained from E-views.
Decision rule: reject H_o if p-value < 0.05.

Table 3 shows that the test confirms the need to reject the null hypothesis that "FDI does not granger cause Y". This implies that past values of FDI do not significantly contribute to the prediction of economic growth. It is also indicated in the table that Y does not granger-cause FDI and thus no causal link exist between Y and FDI in Zambia for the period 1980-2012. Furthermore, Table 3 also shows that FDI does not granger-cause GCF as the test fails to reject the null hypothesis at the 0.05 level of significance. GCF does not granger-cause FDI and thus no causal link exists between FDI and GCF. Also, no causal link exists between FDI and MER because FDI does not granger cause MER and vice versa as the test failed to reject the two null hypotheses.

However, table 3 also shows a uni-directional causal relationship between MER and GCF. The null hypothesis that GCF does not granger-cause MER was rejected and thus the alternative hypothesis that GCF granger-causes MER is accepted at the 0.05 level of significance. This implies that past values of GCF significantly contribute to the prediction of current MER even in the presence of past values of MER. On the other hand, while GCF granger-causes MER, no reverse causality is observed because the test fails to reject the null hypothesis that MER does not granger cause GCF.

Additionally, a uni-directional causal relationship is found to be present between Y and GCF. The null hypothesis that GCF does not granger-cause Y is rejected at the 0.05 level of significance yet the null hypothesis that Y does not granger-cause GCF is not rejected. Thus, GCF granger-causes Y, but Y does not granger cause GCF in Zambia for the period 1980-

2012. Lastly, also shown in the table is a uni-directional causal relationship between Y and MER. Y granger causes MER while MER does not granger cause Y at the 0.05 level of significance. Given the granger causality test results in the table above, few linkages between the series are recognized in line with economic theory and notions.

CONCLUSION

This study investigates the impact of FDI as well as other economic growth variables in Zambia during the period 1980 to 2012. The Augmented Dickey-Fuller (ADF) test was used to inspect the presence of unit root in the variables involved. The test was based on annual time series data for four variables. The study then proceeded to find out whether there existed any long run relationships among the variables using the Johansen cointegration test. The test revealed that there exists a one unique cointegrating vector, implying that there is one unique long-run relationship among the variables. The study then used the Granger causality test to examine the causal relationships among the considered series. The results indicated that there is no causal relationship between FDI and economic growth. Accordingly, this means the null hypothesis of this study which states that "FDI has no impact on economic growth in Zambia" cannot be rejected. Thus, the Zambian economy has not benefited from the inflow of foreign investment into the country during the period under consideration.

As pointed out in the literature, positive effects of FDI are anything but guaranteed. The absence of a positive effect of FDI on economic growth in Zambia could be caused by failure to meet some of the preconditions of ensuring successful use of FDI as outlined in the literature. In order to benefit positively from foreign investment, this paper recommends that the Zambian government implements policies that create a stable economic and political environment to instill confidence in foreign investors. Such policies could be implemented through good governance with fiscal and monetary accountability as well as transparency and reducing corruption.

REFERENCES

Adams, S. (2009). Foreign Direct Investment, Domestic Investment and Economic Growth In sub-Saharan Africa. *Journal of policy modeling* 31(6), page 939 - 949.

Adefabi, R. A. (2011). Effects of FDI and human capital on economic growth in sub Saharan Africa. *Pakistan journal of social sciences* 8(1), page 32 - 38.

Adewumi, S. (2006). The impact of FDI on Growth in developing countries: an African experience, 1970 – 2003 (unpublished Masters' thesis). Jonkoping international business school, Sweden.

Alkhasawneh, M. F (2013). The granger causality relationship between foreign direct investment and economic development in the state of Qatar. *Applied mathematics and information sciences: an international journal* 7(5) pages 1767-1771.

Barua, R. (2013). A study on the impact of FDI inflows on exports and growth of an economy: evidence from the context of Indian economy. *Journal of arts, science and commerce* 3(1), page 124 – 131.

Borensztein et al. (1998). How does foreign direct investment affect economic growth? *Journal of international economics* 45(1), page 115 – 135.

Dogan, E. (2014). Foreign direct investment and economic growth in Zambia. *International journal of economics and finance* 6(1), page 148 – 153.

Egbo et al. (2011). Foreign direct investment and economic growth in Nigeria: a granger causality analysis. *International journal of current research* 3(11), pages 225-232.

Li, X. and Liu, X. (2004). Foreign direct investment and economic growth: an increasingly endogenous relationship. *Journal of World development* 33(3), page 393 – 407.

Moyo, T. (2013). The impact of foreign direct investment on economic growth: the case of Zimbabwe (2009 – 2012). *International journal of economics, finance and management sciences* 1 (6), page 323 – 329.

Nunnenkamp, P. and Spatz, J. (2003). Foreign direct investment and economic growth in developing countries: how relevant are host countries and industry countries? *Kiel working paper* 1175, page 3 – 38.

Roy, A. G. and Van den Berg, H. F. (2006). Foreign direct investment and economic growth: a time series approach. *Global economy journal* 6(1), page 1 – 13.

Simeo, F. (2004). Foreign direct investment and its impact on economic growth and gross domestic savings – the case of Zambia, 1970 – 2000 (unpublished masters' thesis). University of Zambia, Zambia.

Solow, R. (1956). A contribution to the theory of economic growth. *Quarterly journal of economics* 70(1), page 65 – 94.

World Bank (2014). World development indicators. Washington DC, USA.

Younus et al. (2014). Impact of foreign direct investment on economic growth in Pakistan. *World journal of economics and finance* 1(1), page 02 – 05.