

Impact of Openness, Foreign Direct Investment, Gross Capital Formation on Economic Growth in Kenya

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Abstract

The general objective of this study was to assess the impact of openness, foreign direct investment, and gross capital formation on economic growth in Kenya with the years under consideration being 1960 to 2010. There are many components of international trade that effect economic growth, but this paper examined the effect impact of openness, foreign direct investment, gross capital formation on Kenyan economic growth. World Bank data for these variables were analyzed in order to achieve the desired objectives. A multiple linear regression model, Barro growth model, was used to estimate the existing the relationship between variables then ordinary least square method was applied. From the findings, trade openness affect the Kenyan economic growth positively ($\beta_1 = 3.062$, $p < 0.05$), while foreign direct investment and gross capital formation had no significant effect on GDP growth rate. Thus, trade openness is major determinant of economic growth particularly in developing countries. This study recommended the policy makers and the government to emphasize trade openness being the robust determinants of economic growth.

Keywords: International Trade, Economic Growth, Trade Openness, Foreign Direct Investment, Gross Capital Formation

Background of the Study

Many researchers believe that participation in the international economy was the primary source of growth in many East Asian countries that have experienced fast economic development during the past 50 years (World Bank 1993 as cited in Andersen and Babula, 2008). Andersen and Babulal (2008) argues that there is likely to be a positive relationship between international trade and economic growth. Igberaese (2004) points out that without growth, development is impossible.

Theoretically, the linkage between foreign direct investment (FDI), trade openness, capital formation, and economic growth tends to be positive (Adhikary, 2011). The author in his study found that the volume of FDI and level of capital formation are have a significant positive effect on changes economic growth (measured as real GDP). The degree of trade openness unleashes negative but diminishing influence on GDP growth rates. the empirical literature on the linkage between FDI, trade openness, capital formation, and economic growth does not provide a consensus with its theoretical relationship as many authors document positive relationship between them while others do not trace it, or at best, report very week relationship. These wide differences basically result from authors' perspectives, sample selection, methodologies and analytical tools applied in their study (Chakrabarti 2001 as cited Adhikary, 2011). Moreover, economic growth rate in Kenya has been increasing and decreasing so often to warrant attention of why there has been unstable economic growth in Kenya, in addition, the country specific characteristics with respect to the economical, technological, infrastructural and institutional developments indeed matter a lot to analyze empirical relationship, the interest in this paper is to investigate the role played by trade openness, foreign direct investment, gross capital formation on economic growth. international trade has becomes the need of Less Developed Countries (LDCs), who have gained as well as suffered from international trade in the growth of their economies.

Openness on Economic Growth

The relationship between openness and economic growth has long been a subject of much interest and controversy in international trade literature. With regard to a theoretical relationship between openness and growth most of the studies provide support for the proposition that openness effects growth positively (Gries, and Redlin, 2012). Researchers have shown a positive relationship between openness and economic growth (Romer, 1993), Grossman and Helpman, 1991 and Barro and Sala-i-Martin, 1995). In his study Kaltani, Loayza (2005) opined out that openness promotes the efficient allocation of resources through comparative advantage, allows the dissemination of knowledge and technological progress, and encourages competition in domestic and international markets. On the contrary Rodrik and Rodriguez (2001) argue that the effect of openness on growth is doubtful. In developing countries only the long-run openness-led growth hypothesis holds, while growth seems to slow down openness in the long run (T. Gries and Redlin, 2012). Rodrik (1992) reports that economic

openness may bring macroeconomic instability by increasing inflation, depreciating exchange rates and inviting balance of payment crisis. Rodrik argument was supported by Levine & Renelt (1992) findings that a high degree of trade openness may increase inflation and lower the real exchange rates which may create negative impact on domestic investment. Thus, a liberalized trade regime may lead to a greater exchange rate depreciation which may reduce aggregate supply of inputs by increasing prices of the imported inputs used in the production. As a result, the volume of domestic output tends to be decreased (Adhikary, 2011)

H₀₁: Openness has not Significant Effect on Economic Growth

Foreign Direct Investment on Economic Growth

Foreign Direct Investment is defined as a cross-border investment in which a resident in one economy (the direct investor) acquires a lasting interest in an enterprise in another (the direct investment enterprise). By convention, a direct investment is established when the direct investor has acquired 10 percent or more of the ordinary shares or voting power of an enterprise abroad. FDI involves the creation of a new establishment or investment (Greenfield investments), joint ventures, or the acquisition of an existing enterprise abroad (cross-border mergers and acquisitions) OECD, 2001).

The majority of developing countries reported a rapid increase in the inflow of foreign direct investment (FDI) during the late 1980s and the 1990s. Along with the process of globalization and merging of national economies, these trends continued in the following decades with intensified cross-border investments triggering long debates among economists on the costs and benefits of FDI inflows (Djurovic, 2012).

The contribution of FDI to economic growth is enhanced by its interaction with the level of human capital in the host country. Levine and Renelt (1992) shows a robust relationship between economic growth, FDI and human capital. FDI may support the expansion of domestic firms by complementarity in production or by increasing productivity through the spillover of advanced technology. A one-dollar increase in the net inflow of FDI is associated with an increase in total investment in the host economy of more than one dollar, but do not appear to be very robust. Thus, it appears that the main channel through which FDI contributes to economic growth is by stimulating technological progress, rather than by increasing total capital accumulation in the host economy (Borensztein, De Gregorio and Leec, 1998). Inward FDI is attracted to developing nations with higher availability of educated labour, higher government spending and more efficient quality of governance (Djurovic, 2012).

Durham (2004), for example, failed to establish a positive relationship between FDI and growth, but instead suggests that the effects of FDI are contingent on the “absorptive capability” of host countries

H₀₂: foreign direct investment has not Significant Effect on Economic Growth

Gross Capital Formation on Economic Growth

According to Adhikary (2011) capital accumulation helps increase investment, investment creates employment through expanding production bases, additional employment generates higher savings which provide confidence in undertaking larger investment, and this chain effect ultimately influences economic returns positively.

Levine and Renelt (1992) revealed that capital formation influences the rate of economic growth in country. Similarly, Kendrick (1993) pointed out that the formation of capital alone does not lead to economic prosperity, rather the efficiency in allocating capital from less productive to more productive sectors influences economic growth. Blomstorm et al. (1996) also note a one way causal relationship between fixed investment and economic growth. They conclude that changes in capital formation rates do not have any significant influence on future growth rates.

H₀₃: Gross Capital Formation has not Significant Effect on Economic Growth

Theoretical Framework and Model Specification

The Models of Economic Growth

In the models of Lucas and Romer which did not follow the neoclassical approach towards technological change (Lucas, Robert, 1993) argued that in favor of the influence of new technological developments on the technical platforms, and further on the economic growth. New technical innovations are areas which require investments in areas with higher returns than usual. This explains why developed countries can sustain growth and why developing countries cannot (Romer 1986).

According to Djurovic (2012) technology and competence are universally recognized as factors with positive influence on the economic growth, thus, the argument by Barro and Sala-i-Martin, Mankiw et al. and Romer added knowledge to the standard inputs, as a crucial factor influencing productivity. For instance they acknowledged growth as being conditioned by the national economy’s level of human capital (Van den Berg, Hendrik (2001).

Ricardo in his study in 1817, notes that trade facilitates products output with a comparative advantage in a

country resulting to a higher level of national wealth. Recent empirical studies are less convincing relating to the causal relationship between exports and economic growth, because the main interest focuses on which methods are used for economic growth through trade expansion (Adamopoulos *et al*, 2006)

In the process, Foreign direct investments (FDIs), are recognized as a particularly significant vehicle of international technology transfer (Ferreira, Luisa and Vanhoudt, Patrick,2004).They bring capital, technology transfer and transfer of skills and knowledge to the host economy, hence affecting all three factors of the endogenous growth models. These transfers are more important for the host country development, than the capital addition, since exports and employment are positively affected and the level of human capital is increased. This further serves as a platform for attracting high value added foreign investments in the country.

With respect to the link between trade openness and economic growth, the endogenous growth theory (Romer 1986, Lucas 1988 as cited in Adhikary, 2011) state that a more open trade regime allows a country to reorient factors of production in sectors that have comparative advantages. As factor endowments are better utilized due to trade openness, the endogenous theory also underlines that a higher equilibrium growth rate can be achieved in the long-run through increasing specialization and lowering cost of inputs (Romer 1989). In addition, Grossman & Helpman (1991), and Barro & Sala-I-Martin (1995) opined that in a country where there is higher degree of openness there is a greater ability to absorb technological developments generated in the leading nations, and this absorption capability leads them to grow more rapidly than a country with a lower degree of openness. However, Edwards (1998) asserts that the equilibrium rate of growth in the poorer countries does not solely depend on openness rather on its initial stock of knowledge and the cost of imitations. Edwards (1998) also argues that if the imitation cost of innovation in the poorer countries becomes lower than the cost of innovation in technologically advanced economies, the poorer countries will grow faster than the advanced one, and there will be a tendency towards convergence.

Regarding the link between gross capital formation and economic growth. Both the classical and neo-classical growth model postulates that capital is crucial for economic growth.the two models argues that if there is no capital, there is no investment and no growth. The rationale to this argument is that capital accumulation helps expand productive capacity of different economic sectors by increasing number of firms. When a number of firms engage into production or business activities, internal resources of a country are better utilized through increasing competition and efficiency. As a result, the productivity of factor endowments is increased and a low production cost can be achieved through greater economies of scale as well as standardization of products (Adhikary, 2011). The author adds that the proponents of endogenous growth theories argue that FDI can play a substantial role in building capital formation by increasing funds and supplying of needed technology and skills, which, in general, promote economic growth

Research Method

The study is explanatory design, it is a causal relationship. It is based on descriptive and inferential statistical analysis based on quantitative data collected from secondary sources. Data is gathered from World Bank World Bank from year 1960 to year 2010 and policy reports prepared by OECD. A positivism philosophy is chosen as an applied research philosophy reflected in the deductive study and the scientific approach.

Research Model

This paper examined the impact of trade openness, foreign direct investment and gross capital formation on economic growth in Kenya using a model consistent with Barro (1990, 1995). This model has been used in earlier studies by Edwards (1998) Obadan (2008) and Obadan and Elizabeth (2010) though with some modifications. Barro growth model is expressed as follows:

$$Growth_t = \alpha + \beta_t \{Finance\} + \gamma_t \{CV\} + \varepsilon_t \dots \dots \dots (1)$$

Where;

Growth – Growth rate of gross domestic product

Finance – Denotes a set of independent variables

CV – Denotes conditional variables

ε_t – Error term

Obadan and Elizabeth (2010) adopted this model and presented it in the form:

$$GDPGR_t = \beta_0 + \beta_1 Open_t + \beta_2 EXRT_t + \beta_3 FDI_t + \beta_4 DINV_t + \beta_5 Post_t + \mu_t \dots \dots \dots 2$$

Where:

GDPGR – denotes Growth rate of gross domestic product, *Open* – The degree of trade openness, *EXRT* –

Exchange rate, *FDI* – Foreign direct investment, *DINV* – Domestic investment, *Post* – Political

Stability and μ – Error term

This study modified a Barro growth model and was thus expressed in the form:

$$GDPGR_t = \beta_0 + \beta_1 Open_t + \beta_2 FDI_t + \beta_3 GCF_t + \mu_t \dots \dots \dots 3$$

Where:

$GDPGR$ – Denotes Growth rate of gross domestic product, $Open$ – The degree of trade openness, FDI – Foreign direct investment, GCF – Gross Capital Formation

t denotes the time period that is $t = 1, 2, \dots, T$

ε_t denotes the white noise error, β_0 is the constant term while the other β 's are the coefficients of the independent variables.

Measurement of Variables.

Table 1 Variable, Their Symbols and Their Measurements

Variables	Symbols	Measurement
Openness	GDP	(imports + exports)/GDP
gross capital formation	GCF	Secondary school enrolment
foreign direct investment	FDI	Real FDI values

Empirical Evidence

Descriptive Statistics

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDPGR	50	1.278	4.569	-10.598	17.929
Openness	49	0.558	0.232	0.266	1.289
FDI	33	5.76	1.19	-1.803	6.92
GCF	51	1.69	1.5	1.2	6.21

Where GDPGR denotes GDP growth rate, , FDI denotes foreign direct investments, GCF denotes gross capital formation, and Obs is the number of observations.

Table 3 Normality Tests

	Chi Square	Prob > Chi Square
Breusch-Pagan / Cook-Weisberg test	0.15	0.6978
Lagrange Multiplier (LM)	0.512	0.4743
Breusch-Godfrey LM test	9.565	0.0084

From the 2, the standard deviations are less than the means, reflecting a small coefficient of variation. The range of variation between maximum and minimum is also reasonable. Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity had a Chi square of 0.15 with a P value of 0.6978 implying the rejection of the alternative hypothesis of Heteroskedasticity. This means that variance of the error term is constant. Heteroskedasticity (ARCH) using the LM test for autoregressive conditional Heteroskedasticity (ARCH) reported a Chi Square of 0.512 with a P value of 0.4743 implying the acceptance of the null hypothesis of no Auto-Regressive Conditional Heteroskedasticity. Breusch-Godfrey LM test for autocorrelation reports a Chi Square of 9.565 with a P value of 0.0084 implying the acceptance of the null hypothesis of the first order serial autocorrelation. Since the first order serial autocorrelation is present in the data, we use the robust standard errors which account for the presence of autocorrelation. Thus, the normality of the distribution is ensured in the study.

Table 4 Test for Stationarity

Variables	Lag	Level		First difference	
		Intercept	Intercept + Trend	Intercept	Intercept + Trend
GDPGR	0	-6.906 ***	-7.313***	-10.694***	-10.539 ***
	1	-4.902***	-5.244 ***	-8.662***	-8.543 ***
OPENNESS	0	-2.303	-2.203	-6.701***	-6.721 ***
	1	-2.248	-2.169	-5.216***	-5.267**
FDI	0	-2.096	-2.337	-2.895**	-2.901
	1	-2.338	-2.721	-3.199 **	-3.180 ***
GCF	0	2.152	0.256	-5.426***	-5.872***
	1	1.433	-0.266	-3.653**	-4.058**

(***), (**) and (*) denotes 1%, 5% and 10% significance level respectively.

Where GDPGR denotes GDP growth rate, FDI denotes foreign direct investments and GCF denotes gross capital

formation.

Finally we conducted the unit root test for all the variables using the Augmented Dickey Fuller (ADF) test shows that GDP growth rate, openness and FDI are stationary in levels since At first differencing, the calculated ADF and PP tests statistics clearly reject the null hypothesis of unit root both at the 1 per cent and 5 per cent significance levels when compared with their corresponding critical values. Clearly, the ADF and PP tests decisively confirm stationarity of each variable at first differencing under both constant and constant plus trend level, and depict the same order of integration.

Table 5 Test of Multicollinearity.

	openness	Foreign direct investment	Gross capital formation
openness	1		
Foreign direct investment	0.0179	1	
Gross capital formation	-0.0695	0.664	1

To test for multicollinearity, this study uses the correlation matrix of the explanatory variables and the variance inflation factor. From the correlation matrix results, it is evident that Openness, foreign direct investment and gross capital formation had correlation of less than 0.8 amongst themselves implying that there is no severe multicollinearity

Estimation

Table 6 Regression Results

Variable	Coefficient	Robust Std. Err.	t	P	95% Conf. Lower & Upper Interval	
Openness	3.062	1.698	1.8	0.044	-0.442	6.567
FDI	-7.6	2.13	-0.36	0.725	-5.16	3.64
GCF	1.8	1.77	1.02	0.319	-1.85	5.44
Constant	1.091	0.856	1.27	0.215	-0.677	2.858
R-squared	0.4865					
Root MSE	1.9569					
ANOVA F (7, 24)	13.65					
Prob > F	0					

Table 6 above presents the OLS regression result where the F statistic is 13.65 with a P value of 0.0000 which is a measure of goodness of fit imply that trade openness, foreign direct investment and gross capital formation can significantly predicts GDP growth rate. The R squared is 0.4865 and a root mean standard error of 1.9569 imply that 48.65 percent of the variations in the GDP growth rate is explained by the joint contribution of trade openness, foreign direct investment and gross capital formation.

Hypothesis Testing

Hypothesis 1 states that trade openness has no significant effect on economic growth. Results from table 5 indicated that trade openness recorded a coefficient of 3.062, with p value = 0.044 < 0.05, this implies that hypothesis was rejected. Trade openness has high effect on GDP growth rate in Kenya.

Hypothesis 2 stipulates that foreign direct investment has no significant effect on economic growth. foreign direct investment beta coefficient was -7.6 with p value of 0.725 > 0.05, suggesting that hypothesis 2 is accepted, this imply that, foreign direct investment had no effect on GDP growth rate suggesting that increase or decrease of FDI will have no impact on Kenya's GDP growth rate.

Hypothesis 3 states that gross capital formation has no significant effect on economic growth. From table 5, gross capital formation beta coefficient was 1.8 with p value = 0.319 > 0.05 hence, hypothesis 3 accepted inferring that gross capital formation had no effect on GDP growth rate in Kenya.

Discussion of Findings

From the study findings it is evident that trade openness is high determinant of country GDP growth rate ($\beta = 3.062$), with one increase in openness, GDP growth rate increases with 3 units. This study findings support the findings of other researchers (Gries, and Redlin, 2012, Romer, 1993, Grossman and Helpman, 1991 and Barro and Sala-i-Martin, 1995). Openness promotes the efficient allocation of resources through comparative advantage, allows the dissemination of knowledge and technological progress, and encourages competition in domestic and international markets (Kaltani, Loayza, 2005). However, in developing countries only the long-run openness-led growth hypothesis holds, while growth seems to slow down openness in the long run.

Foreign direct investment and gross capital formation had no impact on GDP growth rate. The findings that FDI had no impact had no contribution on GDP growth rate contradict Levine and Renelt (1992), Borensztein, De Gregorio and Leec (1998) and Djurovic, (2012) findings that FDI had robust contribution on country's GDP growth rate. However, the findings coincide with that of Durham (2004), who failed to establish a positive relationship between FDI and growth, but instead suggests that the effects of FDI are contingent on the "absorptive capability" of host countries. In addition, findings that gross capital formation had no relationship contrast Adhikary (2011), Levine and Renelt (1992) and Blomstorm et al. (1996) findings, the authors argue that capital contribution contribute positively to the GDP growth rate.

Conclusion Remarks

The volume of FDI and level of capital formation reveal no effects on changes in real GDP. This result disapproves our theoretical linkage between them, and favors international finance and neoclassical growth theories. Thus, the theories might not be in developing countries like Kenya. In contrast, trade openness shows significant positive effect on the rates of economic growth. This result approves our theoretical positive relationship hypothesis between them. In Kenya, the positive association between the trade openness and economic growth rates perhaps due efficient allocation of resources through comparative advantage, allowing the dissemination of knowledge and technological progress, and encouraging competition in domestic and international markets and positive trade balance position. The impulse response function reveals a mild positive influence of the response variables on the GDP growth rates of Kenya. Finally, FDI and the level of capital formation are less important in changing GDP growth rates. The policy implications of this study that the trade openness being the robust determinants of economic growth should be encouraged, it is expected that the government of Kenya should provide more emphasis on trade openness to increase its economic growth. Side by side, the government should formulate export led fiscal and monetary policies to increase its exports as well as rates of GDP growth.

References

- Andersen.L., and Babula.,2008, The Link Between Openness and Long-Run Economic Growth, journal commerce and economics.
- Barro and Sala-i-Martin 1995; Mankiw et al. 1992; Romer 1986; Van den Berg, Hendrik (2001): Economic Growth and Development, Boston Mass.: McGraw-Hill.
- Dritsakis.,N., Varelas.E., and Adamopoulos1.A.,2006, the main determinants of economic growth: an empirical investigation with granger causality analysis for Greece.
- Ferreira, Luisa and Vanhoudt, Patrick (2004) "Catching the Celtic tiger by its tail", European Journal Of Education, vol.39,no.2, pp. 209-236;
- Obadan & Elizabeth "An Empirical Analysis of the Impact of Trade on Economic Growth." Journal of Economics, 2010.
- Obadan, M. I. (2008), "Economic Globalization, Markets and National Development: How Sensibly do the Poor Countries (Nigeria Included) Stand?" Inaugural Lecture Series 98, University of Benin, Benin City
- Organisation for Economic Co-operation and Development (OECD), (2001) Glossary of Statistical Terms: Foreign Direct Investment, November, 2001, <http://stats.oecd.org/glossary/detail.asp?ID=1028> (20.07.2011).
- T. Gries, M. Redlin,2008, Trade Openness and Economic Growth: A Panel Causality Analysis, University of Paderborn, Germany

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