

EFFECTS OF REGIONAL INTEGRATION ON ECONOMIC GROWTH OF EAST AFRICAN COMMUNITY

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Abstract

This study looks into regional integration and how economic growth has affected it. Regional integration enables partner states to come together and form a group where they could promote economic and political cooperation among themselves. African countries have evolved from colonized and struggling nations to a new phase of independence. In this paper, the researcher examined the history of regional integration in East African Community, what motivated it, the different initiatives that EAC governments had pursued to improve regional integration, the nature of the integration process, and the current challenges. This paper examines empirically whether and how regional integration has affected economic growth amongst the EAC partner states. Panel data was carried out over the period of 1977-2014 for all the EAC partner states. In the findings, Terms of Trade and Foreign Direct Investments had a significant positive correlation with Gross Domestic Product growth, Exchange Rate had a significant negative correlation with Gross Domestic Product growth and Inflation Rate had insignificant negative correlation with Gross Domestic Product growth.

Keywords: Regional Integration, Economic Growth, Terms of Trade, Foreign Direct Investments, Exchange Rate

INTRODUCTION

Regional integration is a basically the process in which two or more states come together and agree to co-operate and work closely (as one unit) together to achieve peace, stability and wealth. Africa has been acknowledged to be the home of burgeoning frontier markets which has a promising higher returns as well as greater risks for investors. However, having its long history since the 1960s, (which most nations gained independences) it has never been a smooth sailing. Some regional blocs have collapsed such as the East African Community (EAC) which collapsed in 1977 while others seem to bear fruits.

Leadership wrangles has been a common occurrence in Africa. The collapse was as a result of Kenya demanding for more seats than Uganda and Tanzania in decision-making organs, disagreements with Ugandan dictator who was then Idi Amin, who demanded that Tanzania as a partner State of the Community should not harbour forces fighting to topple a government of another partner State, and the disparate economic systems of socialism in Tanzania and capitalism in Kenya. The question researchers ask themselves is whether the circumstances leading to the collapse was addressed and what measures are being taken to avoid such an occurrence to happen again (Irungu, 2010).

Organization of African Unity (OAU) was established in 1963 which was inspired in determination to promote unity and strong synergy for African countries and coordinate their cooperation efforts for the achievement of improving living standards of its people. Regional cooperation and integration were also seen as important tool to safeguard the countries' independence (freedom), prevention of apartheid and overcoming the legacy of external exploitation and domination. Over the last forty years, the institutional framework for Africa's integration process has changed through a number of phases. The latest phase in development of regional cooperation and integration was African Union which was established in 2001. AU is expected to serve as vital instrument for the achievement of a rapid and sustainable development of Africa and the effective integration of the continent into the global economic and financial system.

Looking back, it is quite evident that colonialism played major role in Africa's lack of development, the policies adopted by postcolonial leaders as well as their practices in power which denied Africa any room for growth and development. Consider, for example, that the growth path of the post-colonial elite mostly took the form of import-substitution industrialization. Predicated on substituting domestically produced products for foreign imports and for preserving foreign exchange, this growth strategy constrained the full development of productive forces in most parts of the continent. It produced inefficient and uncompetitive economies, with stunted private sectors. Regionalization therefore helps economics of the countries prepare for

globalization and thus improve investment and growth in the region. It can also help countries overcome world's financial crises including recent financial crisis which started from Americas housing market and affected all worlds' financial markets in 2008.

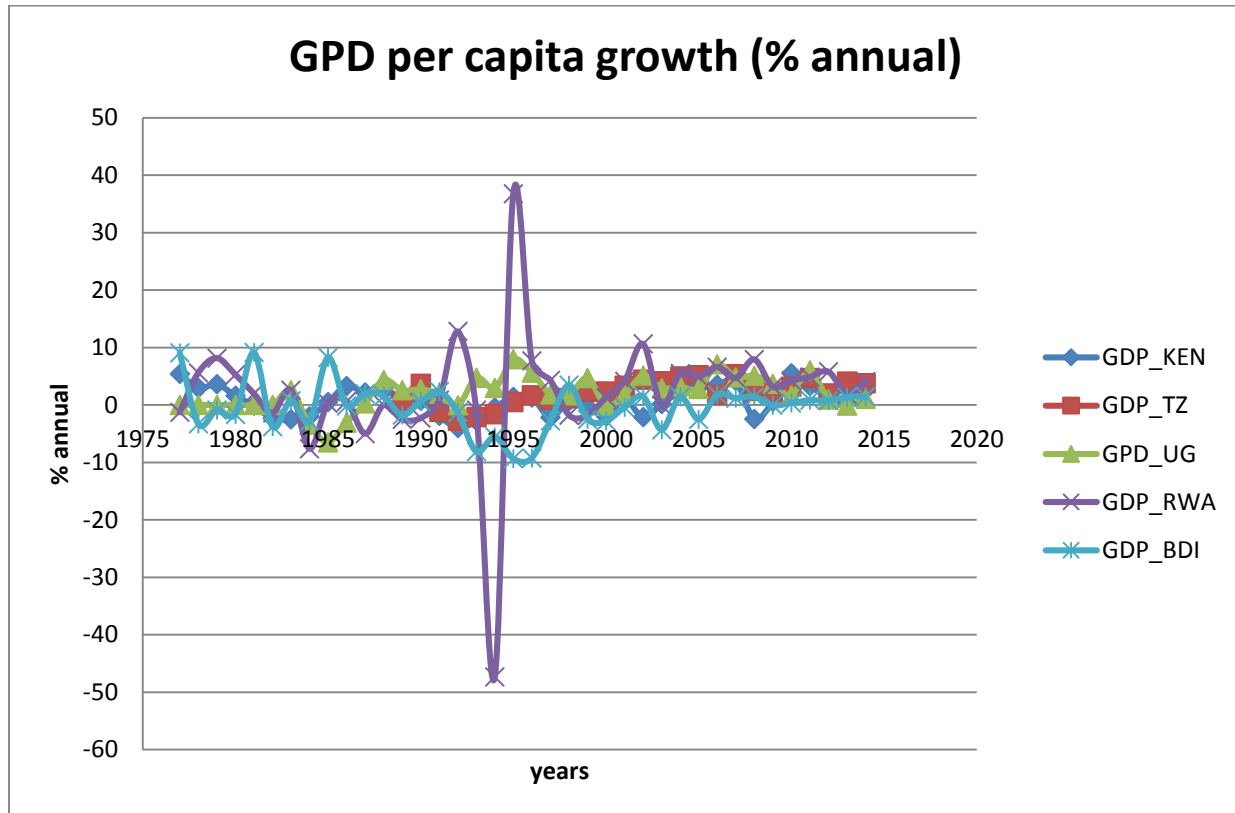
Leaders from African nations have somehow been able to view regional integration as an important tool for growth. For it to succeed there must be government support from ever state and also learn to cooperate. Since independence, they have tried to embrace regional integration as an important component of their development strategies. The European Union was Africa's most important trade, investment and development partner and governed by series of Lome conventions which granted African countries (excluding South Africa) unilateral preferential access to European Union markets. European Union and Africa concluded the Cotonou agreement which paved the way for the negotiation of World Trade Organization (WTO) compatible economic partnership agreements in 2002 (Hurt, 2003). The EU's has had the desire to encourage regional economic groupings viewing as potential trade partners in negotiating Economic Partnership Agreement (EPAs) under the Cotonou Agreement which implies that trade integration as well as functional co-operation will necessarily be an important policy instrument of African regionalism during the next decade. This has implications for those interested in promoting a food security dimension to these agreements. For example, food security is explicitly addressed in the Cotonou Agreement in the provision.

Gunning (1999) stated that Africa is termed the riskiest place to invest. Thus it is difficult for Africa to attract fair share of global investment in spite being rich in terms of natural resources. In addition to that, most African states have suffered from severe macroeconomic disequilibria, foreign debt service burdens, over-valued currencies, lack of trade finance, and a narrow tax base, with customs duties forming a substantial source of revenue. This has caused unfavourable to the development in terms of regional commitments (McCarthy, 1995).

Narendra (2014) states that Regional Economic Integration stimulates economic growth in countries and provides additional gains from free trade beyond international agreements such as General Agreement Tariffs and Trade (GATT) and WTO. Economic interdependence creates incentives for political cooperation and reduces potential for violent confrontation. The case against regional integration is trade creation and trade diversion, Trade creation occurs when low cost producers within the free trade area replace high cost domestic producers. Trade diversion occurs when higher cost suppliers within the free trade area replace lower cost external suppliers.

Some regions have successfully used their integration mechanisms to improve their economic welfare such as Angola. However, some countries lag behind with respect to GDP growth, per capita income, capital inflows, and general living standards.

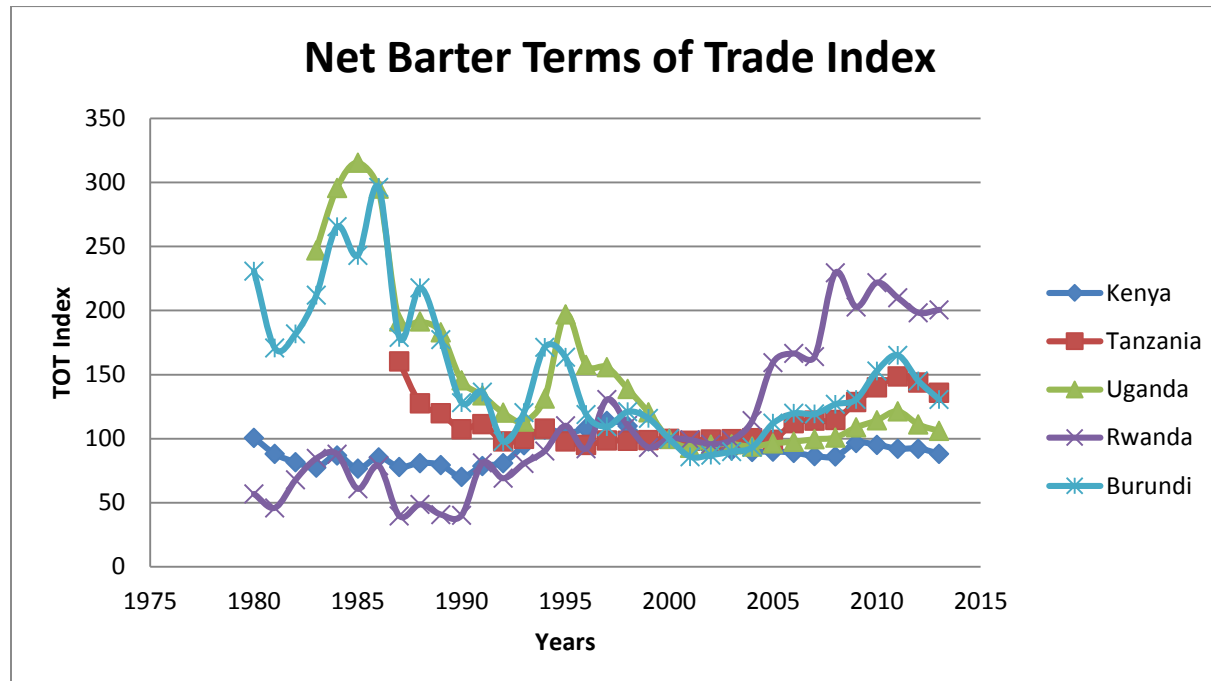
Figure 1. EAC and partner countries, GDP per capita growth (% annual)



In figure 1, Rwanda reached its lowest GDP growth rate of -47.3142% as compared to the rest. This is due to the political instability (genocide) that took place in 1994 affecting its GDP growth rate. However, in the following year it recorded the highest among the EAC with 36.76702%.

Africa is known to have a high rate of poverty and rising rate of population (Potts, 1995). It has been the desire for all nations to have a strong synergy and seek best ways to co-operate and collectively achieve growth and development so as to help their people. That is creating job opportunities and encouraging foreign and also domestic investments. However, over the years, leadership wrangles and corruption in regional blocks have been an issue up to date thus making it difficult to fulfil that. Hausmann (2006) stated that successful integration is important in the sense that countries that grow fast also have very fast growth in exports. However it has not been the case since some countries have difficulty in co-operating or rather trying to implement initiatives. In spite of the inflow of a huge amount of foreign aid, East African countries are suffering from stagnant economies and low living standards despite increase in real growth rate in some partner states (Figure 1), which affects the economic growth and development.

Figure 2. Net Barter Terms of Trade index sourced from World Economic outlook Database, 2015



In figure 2, it shows the net barter terms of trade in the five countries. It has been fluctuating over time. After EAC revived, there has been an expansion of trade between the five partner countries, especially with the Customs Union which brought together Kenya, Tanzania and Uganda in 2004, and later on in 2008 joined by Rwanda and Burundi. According to the EAC Development Strategy for 2011/12 to 2015/16, intra-EAC trade grew by 40 percent between 2005 and 2009. Tanzania's exports to Kenya increased from US\$ 95.5 million to US\$ 300 million, while Uganda's exports to Kenya increased from US\$ 15.5 million in 2004 to US\$ 172 million in 2009 over the same period. Common Market enabled the facilitation of growth in exports which came into force in July 2010. According to Barnabas (2013), the projected increase in trade and investment among the EAC partner states should improve prospects for economic growth and development. However, this expectation falls within on-going debates in policy making agencies, such as the World Bank, regarding the validity of the trade-economic growth nexus in developing countries.

The mechanism such as tariff reduction and harmonization, financial sector and labour market reforms, legal and regulatory reforms, investment incentive and tax system harmonization, rationalization of payments systems among others encourages and enables countries to pool in their resources and take full advantage of regional institutional and human resources. For enhancement of regional cooperation and integration to progress, African

countries must deal effectively with their internal challenges that they are facing. The challenges may include livestock diseases, viruses such as Ebola, HIV/Aids, environmental pollution which do not respect borders, research and technology development which have significant economies of scale and are too costly for individual African countries and the development of basic economic infrastructure (transport, communication and power). Africa also needs not only greater and stronger regional cooperation but also a stronger voice to engage the rest of the world who have discriminated them so as to reshape the global economic, financial and political systems.

Limitation of the study

Due to time and resource constraints, only five variables were used to estimate the research question. This doesn't mean that they are the only factors that relate to the dependent variable. This gives room for more research to investigate more factors.

THEORETICAL FRAMEWORK AND MODEL SPECIFICATION

Theoretical Review

The empirical studies on the effects of regional integration on economic growth in east African community has been inconclusive considering that the EAC is still at an early stage of integration. Several studies have been conducted in various regional blocks to find out whether regional integration has an effect on economic growth. For instance, the study by Mitsuo and Nguyen (2008) on regional integration in East Asian Community found out that there is indeed a positive effect on growth which in turn improved income distribution and poverty reduction. Another study by Willem (2011) observed that regional integration increases trade and FDI which promotes growth in developing countries as opposed to Mehdi, Toros and Seyed (2012) who said that role of domestic investments are more important on economic growth more than foreign investments. Neo-functionalism is among the theories which provide a good starting point for analysis. The core of Neo-functionalism is the use of the concept of spill-over. The process of spill-over refers to situations when an initial decision by governments to place a certain sector under the authority of central institutions creates pressures to extend the authority of the institutions into neighbouring areas of policy, such as currency exchange rates, taxation, and wages. Integration under neo-functionalism is said to only occur where economic, social, technical and to a small extent political activities exist in common. This core claim meant that European integration is self-sustaining. The consequence of joint action by the states to upgrade their common interests under the guidance of a supranational organization progression of the integration leads to a shifting of loyalties from the state to the supranational organization.

This theory was having mainly developed to explain European integration. Regional integration started in Europe in 1950s with the European Coal and Steel Community (ECSC) in 1952. It was the first attempt of theorizing the new form of regional cooperation that emerged at the end of Second World War

Some neo-functionalists tried as much as possible to modify the theory to take account of the events in Europe in the mid-60s. This included Lindberg and Scheingold in *Europe's Would-Be Polity* (1970). Later in the 1990s Andrew Moravcsik developed 'liberal intergovernmentalism' to explain the process of integration in Europe, suggesting the combination of a liberal theory to explain national preference formation and an intergovernmental theory of interstate bargaining to explain substantive outcomes (Moravcsik, 1991, 1993).

Andrew Moravcsik's liberal intergovernmentalism (Moravcsik, 1993 and 1998) is known for big decisions which he refers to as grand bargains. It is a series of bargains between the heads of states/governments. Its main assumption is that integration takes place within domestic politics. Intergovernmentalism puts a lot of emphasis on heads of government ignoring other players such as civil society and private sectors that actually make us regional integration. According to Moravcsik three factors are likely to determine the outcomes of interstate bargaining: The value of unilateral policy alternatives, the value of alternative coalitions and the opportunities side-payments (Moravcsik, 1998).

Rational choice institutionalists assume that actors have fixed preferences and that they behave instrumentally to maximize the attainment of preferences. They view politics as a series of collective action dilemmas. They also emphasize the role of strategic interaction in the determination of political outcomes and they explain the existence of institutions by reference to the functions those institutions perform (Hall and Taylor, 1996, pp. 944-45). With such a definition Moravcsik would qualify as a rational choice institutionalist. However, Moravcsik does not assign much importance to Community institutions in the grand bargains. At first sight it can look surprising that an approach called 'liberal intergovernmentalism' which includes 'institutional choice' as an important part should end up assigning a relatively unimportant role to institutions in major EU reforms. After all, 'credible commitments' are said to require 'pooling and delegation' of sovereignty. But, in the process of making the 'grand bargains' in the history of European integration the EC institutions were not assigned an important role. Those bargains were made by the partner states.

However, when it comes to implementing the bargains the Community institutions are considered important. The theory of the second-best was formalized by Lipsey and Lancaster (1956). They came to the conclusion that the general theorem for the second-best optimum

states that if there is introduced into a general equilibrium system a constraint which prevents the attainment of one of the Paretian conditions, the other Paretian conditions, although still attainable, are, in general, no longer desirable

The primary focus of the theory is on what happens when the optimum conditions are not satisfied in an economic model. The received wisdom from this is that, in the presence of distortions in one or more sectors, welfare can be improved by intervening appropriately in other sectors of the economy. It challenges the application of policy aimed at increasing the domain over which the conditions of competitive equilibrium pertain

Suppose an economy consists of a private monopoly, a set of competitive firms, and a publicly owned firm, which has to decide how to price in the “public interest” if it behaves competitively, it produces more output, relative to the monopolized good, than required by Pareto optimality if it behaves monopolistically, it increases excess of competitive goods relative to both itself and the monopoly typical second-best situation: any policy makes some things worse and some better; no policy by publicly owned firm can restore Pareto optimality due to existence of the monopoly publicly owned firm must aim at a second-best policy, designed to achieve best that remains open to the economy - in general terms, impossible to be more definite than this.

In providing a substantive illustration of second-best theory in action, Paul and Joseph Rubin (2014) explain that second-best theory can be used to justify the use of the Export-Import Bank to subsidize American firms engaging in international trade. They recognize that a superficial look would recommend abolition of the Bank because private banks will be able to make better judgments about profitability than a governmental bank.

Yet Rubin and Rubin (2014) also explain that the American government through its Foreign Corrupt Practices Act makes it illegal for American businesses to pay bribes, which places those businesses at a competitive disadvantage in many parts of the world. An inefficient subsidy might be warranted in light of the inefficiency that arises from restricting the competitive ability of American firms. Following the spirit of second-best theorizing, the injection of a new margin of inefficiency might mitigate the inefficiencies that other policies create along other margins. Though, Lipsey and Lancaster's conclusion has important implications for the understanding of trade policies it was not entirely new, however, second-best reasoning having been prevalent in various areas of applied welfare Economics. The early ‘second-best’ results were developed in public finance, e.g. Ramsey (1927), but Lipsey and Lancaster really put the argument into perspective.

Model Specification

We estimate the following equations on a cross-section time-series analysis over a period of thirty eight years (from 1977 to 2014). The study was modified a Barro growth model and was thus expressed in the form of;

$$(GDP_{it}) = \beta_0 + \beta_1(TOT_{it}) + \beta_2(FDI_{it}) + \beta_3(ExR_{it}) + \beta_4(Inf_{it}) + \varepsilon_{it}$$

Where $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the multiple regressions co-efficients, β_0 is the value of the dependent variable when all independent variables assume the zero value. i is the number of countries and t is number of time periods

The dependent variable (GDP_{it}) is the Gross domestic product growth in % annual for countries at a given time t , while the independent variables are; (TOT_{it}) is the Terms of Trade which is the difference between the total exports and total imports (total Exports of goods and services (annual % growth) - total Imports of goods and services (annual % growth)) for countries at given time t , (FDI_{it}) is foreign direct investments net inflow (% of growth) for countries at given time t , (ExR_{it}) is Exchange Rates (%) for countries at a given time t , (Inf_{it}) is Inflation Rates, GDP deflator (annual %) for countries at a given time t and ε_{it} is the error term.

METHODOLOGY

This research, the study adopted secondary data obtained from the World Bank and International Monetary Fund. The preliminary data analysis suggested that the variables may not be having constant moments. In particular, descriptive statistics suggested some unexpected results as per the expectations. None of the variables showed any kind of normality as both the components of skewness, kurtosis and jaque-berra statistics were not within the required standards. According to correlation matrix however, the variables showed no sign of strong correlation hence permitted all of them to be included in the same model of analysis. Unit root result by Haussmann Test permitted to use the fixed effects model and random effects model.

EMPIRICAL RESULTS AND DISCUSSIONS

Descriptive Summary

The result in appendix 7 shows that the Gross Domestic Product for the EAC countries grew at an average of 4.424587%. The maximum GDP growth experienced was by Rwanda in 1995 was 35.22% while the minimum GDP growth was -50.25% in 1994 which was experienced in Rwanda as well. This was the year the genocide took place resulting to a negative decline to growth. The spread of variables (standard deviation) is 6.19% while its skewness is -3.44 which is moderately skewed to the left around its mean with kurtosis (leptokurtic) of 39.98. Its Jarque-Bera probability is 0.000 (which is less than 0.05) indicates that GDP is not normally distributed. Referring to the same table, Terms of Trade for the EAC partner states were at -1.351634%. The maximum TOT was 67.07126 experienced by Uganda in 2008 while the minimum TOT was -91.89139% experienced by Rwanda in 1991. The median was at -0.849710 while the spread of the variables (standard deviation) was 21.55462. TOT was moderately skewed to the left around the mean with -0.597851 with kurtosis (leptokurtic) of 5.370563. Its Jarque-Bera probability was 0.0000 indicating that TOT is not normally distributed.

According to the same table again, Foreign Direct Investments for the EAC countries was at 1.245914%. The maximum FDI was 6.479821% experienced by Uganda 2006-2007 while the minimum FDI was -0.137301 experienced by Uganda in 1990. The median was at 0.468829 while the spread of the variables (standard deviation) was 1.595945. FDI was moderately skewed to the right around the mean with 1.499589 with kurtosis (leptokurtic) of 4.360613. Its Jarque-Bera probability was 0.0000 indicating that FDI is not normally distributed. Exchange Rates for the EAC countries was at 14.62387%. The maximum EXR was 574.8326% experienced by Uganda in 1980 while the minimum EXR was -100.00 experienced by all EAC countries in 2014. The median was at 5.421801 while the spread of the variables (standard deviation) was 53.52919. EXR was moderately skewed to the right around the mean with 6.3638901 with kurtosis (leptokurtic) of 65.82973. Its Jarque-Bera probability was 0.0000 indicating that EXR is not normally distributed.

Inflation Rates for the EAC countries was at 15.55785%. The maximum INFL was 189.9751% experienced by Uganda from 1988 while the minimum INFL was -9.187609 experienced by Rwanda in 1999. The median was at 9.466779 while the spread of the variables (standard deviation) was 25.76516. INFL was moderately skewed to the right around the mean with 4.732035 with kurtosis (leptokurtic) of 28.32105. Its Jarque-Bera probability was 0.000 indicating that INFL is not normally distributed.

Correlation of Variables

Correlation tests for the strength of association between variables.

Table 1: Correlation Matrix

	GDP	TOT	FDI	EXR	INFL
GDP	1				
TOT	0.328	1			
FDI	0.195	0.100	1		
EXR	-0.292	-0.016	-0.205	1	
INFL	-0.025	0.012	-0.145	0.636	1

In table 1, it shows the results for Multicollinearity using the Correlation Matrix. Multicollinearity exists when the variables are more than 0.8. Therefore, no multicollinearity was found.

Tests for Panel Unit Root

Unit root tests can be used to determine if trending data should be first differenced or regressed on deterministic functions of time to render the data stationary. The main reason for carrying out the unit root test is that if we use the data without checking their stationarity properties, the results derived from the regression models would produce the so called spurious results (Datta and Kumar, 2011). Im, Pesaran, and Shin (2003), ADF Fisher Chi-square and PP Fisher Chi square tests for individual unit root process under the null hypothesis of unit root while Levin, Lin & Chut tests for a common unit root process under the null hypothesis of a unit root (see appendix 4). The table 2 is a summary of the tests of ADF fisher chi square and Levin, Lin & Chut.

Table 2: Unit root test for ADF fisher chi square and Levin, Lin & Chut

VARIABLES	ADF FISHER CHI-SQUARE	LEVIN, LIN &CHUT	CONCLUSION
GDP	58.3583 (0.0000)	-6.35632 (0.0000)	Stationary At Level
TOT	95.7797 (0.0000)	-10.1608 (0.0000)	Stationary At Level
FDI	54.3477 (0.0000)	-4.56038 (0.0000)	Stationary At Level
EXR	114.330 (0.0000)	-8.224556 (0.0000)	Stationary At 1 st Difference Level
INFL	67.5856 (0.0000)	-6.19039 (0.0000)	Stationary At Level

NOTE: The figures in brackets are the probabilities of each variable.

In ADF fisher chi-square and Levin, Lin and Chut, the variables are significant at 5% level. Therefore we reject the null hypothesis of a unit root in the panel for GDP, TOT, FDI, and INFL and accept the alternative that the variables are stationary. EXR is significant at 1st difference.

Test of FEM and REM

It is of the assumption that fixed effects model looks at individual group/time that have different intercept in the regression equation while random effects assumes that individual group/time have different disturbance. Thus the panel regression estimation techniques (FEM and REM) results are summarized in models below (see appendix 2).

Table 3: Model 1.1

Variables	FEM		REM	
	Coefficient	t-statistics	Coefficient	t-statistics
Constant	4.743967	4.684988**	4.370287	5.886163**
TOT	0.085854	3.882623**	0.088579	4.051365**
FDI	0.256258	0.549213	0.440373	1.472813
EXR	-0.129725	-4.450285**	-0.123055	-4.371929**
INFL	0.072287	2.432228**	0.076120	2.685888**
R^2			R^2	0.241761
DW	0.254366		DW	2.121940
Prob(F-statistics)	2.141377		Prob(F-statistics)	0.000000
	0.000004			

*Shows significance at 1% level

**Shows significance at 5% level

***Shows significance at 10% level

In the above model, it shows that the coefficients EXR is negative in fixed effects model while others are positive. TOT, EXR and INFL was found to be significant at 5% level while constant and FDI are insignificant.

In random effects model, EXR has a negative coefficient while the constant, TOT, FDI and INFL have positive coefficients. However, TOT, EXR and INFL were found to be significant at 5% level while constant and FDI are insignificant.

The DW was 2.141377 and 2.121940 for fixed and random effects model respectively which shows the models have no problem with autocorrelation. F statistics are significant at 5% level for both fixed and random effects model thus implying that the independent variables can be jointly regressed. The R^2 was 25.4366% and 24.1761% for fixed and random effects model

respectively meaning that the independent variables jointly explain 25.4366% and 24.1761% changes in the dependent variable GDP.

Hausman Test

A common approach to check whether to use fixed effects models or random effects model is to employ the Hausman test, which is intended to tell the researcher how significantly parameter estimates differ between the two approaches. Hausman Test therefore examines the null hypothesis that REM is appropriate versus the alternative hypothesis that FEM is appropriate (see appendix 3).

Hausman test will reject the random effects model if $p < 0.05$.

Table 4: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.231433	4	0.6933

From our test the p value is greater than 0.05. Therefore, we accept the alternative hypothesis which is random effect model is appropriate.

Panel Regression Analysis

Table 5: Regression Model

Dependent variable: GDP

	COEFFICIENT	T-STATISTICS
TOT	0.080241	3.701831**
FDI	0.598905	2.067106**
DEXR	-0.131046	-5.226439**
INFL	-0.027189	-1.226726
C	4.210216	5.789544**

R^2 0.284349

F statistics 13.31050

Prob (F statistics) 0.00000

DW 2.035296

*Shows significance at 1% level, ** Shows significance at 5% level

***Shows significance at 10% level

The model estimation is:

$$\text{GDP} = 4.210216 + 0.080241 (\text{TOT}) + 0.598905 (\text{FDI}) - 0.131046 (\text{EXR}) - 0.027189 (\text{INFL})$$

Discussions and Interpretation of Results

The DW is 2.035296 indicating that the model has no problem with autocorrelation. F statistics are significant at 5% level implying that the independent variables can be jointly regressed. The R^2 is 28.4349% meaning that the independent variables jointly explain 28.4349% change in the dependent variable GDP.

The coefficient of Terms of Trade is 0.080241 which means that the % change in terms of trade leads to 0.080241% (increase) change in GDP growth. TOT also has a t-value of 3.701831 and a p value of 0.0003 which implies that it is statistically significant at 5% level of significance. This is in line with the finding by Willem (2011) who found terms of trade to be significant to GDP. Barro (1998) showed a significantly positive coefficient on the terms of trade. According to Barro, Terms of trade stimulates an expansion of domestic output.

The coefficient of Foreign Direct Investment is 0.598905 which means that the % change in foreign direct investments leads to 0.598905% (increase) change in GDP growth. FDI has a t-value of 2.067106 and a p value of 0.0406 which implies that it is statistically significant at 5% level of significance. The findings on FDI and GDP agree with those of Ndambendia and Njoupounigni (2010) who found strong evidence of positive but low impact of foreign direct investment on economic growth, Shimul et al (2009), Aizenman et al (2011), Sukar and Ahmed (2011), Seetanah and Khadaroo (2007). Michalowski (2012), however, find mixed evidence regarding FDI impact on economic growth.

The coefficient of Exchange Rate is -0.131046 which means that the % change in exchange rates leads to -0.131046% (decrease) change in GDP growth. EXR has a t-value of -5.226439 and a p value of 0.0000 which implies that it is statistically significant at 5% level of significance. This is however contradicts to Soi (2012) findings, who found that EXR is statistically insignificant with a p value of 0.837.

The coefficient of Inflation Rate is -0.027189 and has a t-value of -1.226726 and a p value of 0.2221 which implies it is insignificant at 5% level of significance. This is in contrast with Bick (2010) who found that inflation rates have a significant positive effect on growth only on the 10% significance level. The results from the specification are in line with those by Khan and Senhadji (2001), despite that, similarly to Fisher (1993), low inflation rates has a significant positive effect on growth. Bruno and Easterly (1998) confirm the finding of a negative effect for high inflation rates. Gujarati (2004) found that inflation on economic growth is statistically significant at 5% level.

CONCLUSION

For the sample period selected some countries were missing at least one or two data values for the various variables under study. The country with complete data was Kenya. Missing data may lead to incorrect results and therefore wrong conclusions but within the limits of the available data.

Regarding the first objective which was to find out the effect of terms of trade on economic growth in the EAC partner countries, TOT had a significant positive correlation with GDP. Therefore, we accept the null hypothesis that term of trade has an effect on economic growth in the EAC partner states.

The second objective was to investigate the effects of foreign direct on economic growth in the EAC partner states. FDI had a significant positive correlation with GDP hence accepting the null hypothesis that FDI has a positive effect on economic growth in EAC partner states.

The third objective sought to determine the effects of Exchange rates on economic growth in the EAC partner states. EXR had a significant negative correlation with GDP thus accepting the null hypothesis that EXR has a negative effect on economic growth in the EAC partner states.

Last but not least, the fourth objective was to examine the effects of inflation rates on economic growth in the EAC partner states. INFL had insignificant negative correlation with GDP. Therefore, we reject the null hypothesis that there is no effect of inflation rate on economic growth in the EAC partner states.

POLICY RECOMMENDATION

This study found out that an increase in Terms of Trade and Foreign Direct investments will boost the economic growth in the EAC partner states. However, an increase Exchange rate will be detrimental to sustainable economic growth.

These results have important policy implications for both domestic policy makers and development partners, implying that controlling exchange rates at a low rate and encouraging terms of trade and foreign direct investments will be a necessary condition for promoting economic growth. The EAC partner states should therefore create a business environment so as to attract both domestic and foreign investments

The government should also encourage specifically exports of goods and services from their countries and import goods and services within themselves. This will also strengthen the synergy and also result to political stability within regional block.

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APPENDICES

APPENDIX 1: COUNTRIES USED IN THE MODEL

- KENYA
- TANZANIA
- UGANDA
- RWANDA
- BURUNDI

APPENDIX 2: FEM VS REM

FEM

Dependent Variable: GDP

Method: Panel Least Squares

Sample: 1977 2014

Periods included: 38

Cross-sections included: 5

Total panel (unbalanced) observations: 141

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOT	0.085854	0.022112	3.882623	0.0002
FDI	0.256258	0.466592	0.549213	0.5838
EXR	-0.129725	0.029150	-4.450285	0.0000
INFL	0.072287	0.029721	2.432228	0.0163
C	4.743967	1.012589	4.684988	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.254366	Mean dependent var	4.825245
Adjusted R-squared	0.209176	S.D. dependent var	6.359918
S.E. of regression	5.655767	Akaike info criterion	6.364930
Sum squared resid	4222.376	Schwarz criterion	6.553149
Log likelihood	-439.7276	Hannan-Quinn criter.	6.441416
F-statistic	5.628809	Durbin-Watson stat	2.141377
Prob(F-statistic)	0.000004		

REM

Dependent Variable: GDP

Method: Panel EGLS (Cross-section random effects)

Sample: 1977 2014

Periods included: 38

Cross-sections included: 5

Total panel (unbalanced) observations: 141

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOT	0.088579	0.021864	4.051365	0.0001
FDI	0.440373	0.299002	1.472813	0.1431
EXR	-0.123055	0.028147	-4.371929	0.0000
INFL	0.076120	0.028341	2.685888	0.0081
C	4.370287	0.742468	5.886163	0.0000

Effects Specification		S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		5.655767	1.0000

Weighted Statistics			
R-squared	0.241761	Mean dependent var	4.825245
Adjusted R-squared	0.219460	S.D. dependent var	6.359918
S.E. of regression	5.618872	Sum squared resid	4293.755
F-statistic	10.84073	Durbin-Watson stat	2.121940
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.241761	Mean dependent var	4.825245
Sum squared resid	4293.755	Durbin-Watson stat	2.121940

APPENDIX 3: HAUSMAN TEST

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.231433	4	0.6933

WARNING: estimated cross-section random effects variance = 0

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
TOT	0.085854	0.088579	0.000011	0.4095
FDI	0.256258	0.440373	0.128306	0.6072
EXR	-0.129725	-0.123055	0.000057	0.3790
INFL	0.072287	0.076120	0.000080	0.6685

Cross-section random effects test equation:

Dependent Variable: GDP

Method: Panel Least Squares

Date: 09/28/15 Time: 20:20

Sample: 1977 2014

Periods included: 38

Cross-sections included: 5

Total panel (unbalanced) observations: 141

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.743967	1.012589	4.684988	0.0000
TOT	0.085854	0.022112	3.882623	0.0002
FDI	0.256258	0.466592	0.549213	0.5838
EXR	-0.129725	0.029150	-4.450285	0.0000
INFL	0.072287	0.029721	2.432228	0.0163

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.254366	Mean dependent var	4.825245
Adjusted R-squared	0.209176	S.D. dependent var	6.359918
S.E. of regression	5.655767	Akaike info criterion	6.364930
Sum squared resid	4222.376	Schwarz criterion	6.553149
Log likelihood	-439.7276	Hannan-Quinn criter.	6.441416
F-statistic	5.628809	Durbin-Watson stat	2.141377
Prob(F-statistic)	0.000004		

APPENDIX 4: PANEL UNIT ROOT TESTS

Panel unit root test: Summary

Series: GDP

Sample: 1977 2014

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic selection of lags based on SIC: 0 to 2

Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.35632	0.0000	5	165
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.86499	0.0000	5	165
ADF - Fisher Chi-square	58.3583	0.0000	5	165
PP - Fisher Chi-square	62.0962	0.0000	5	167

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: TOT

Sample: 1977 2014
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.1608	0.0000	5	144
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-10.1352	0.0000	5	144
ADF - Fisher Chi-square	95.7797	0.0000	5	144
PP - Fisher Chi-square	107.134	0.0000	5	144

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: FDI

Sample: 1977 2014
Exogenous variables: Individual effects

Automatic selection of maximum lags
 Automatic selection of lags based on SIC: 0
 Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.56038	0.0000	5	154
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.40436	0.0000	5	154
ADF - Fisher Chi-square	54.3477	0.0000	5	154
PP - Fisher Chi-square	54.8427	0.0000	5	154

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
 Series: INFL

Sample: 1977 2014
 Exogenous variables: Individual effects
 Automatic selection of maximum lags
 Automatic selection of lags based on SIC: 0 to 5
 Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross- sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-6.19039	0.0000	5	162
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-7.13838	0.0000	5	162
ADF - Fisher Chi-square	67.5856	0.0000	5	162
PP - Fisher Chi-square	48.8336	0.0000	5	167

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: EXR

Sample: 1977 2014

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic selection of lags based on SIC: 0

Newey-West bandwidth selection using Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	1.78106	0.9625	5	185
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.82807	0.0023	5	185
ADF - Fisher Chi-square	30.9297	0.0006	5	185
PP - Fisher Chi-square	31.3893	0.0005	5	185

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary

Series: D(EXR)

Sample: 1977 2014

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic selection of lags based on SIC: 0

Newey-West bandwidth selection using Bartlett kernel

Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.24556	0.0000	5	180
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-11.8386	0.0000	5	180
ADF - Fisher Chi-square	114.330	0.0000	5	180
PP - Fisher Chi-square	109.853	0.0000	5	180

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

APPENDIX 5: REGRESSION MODEL

Method: Panel EGLS (Cross-section random effects)

Sample (adjusted): 1978 2014

Periods included: 37

Cross-sections included: 5

Total panel (unbalanced) observations: 139

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOT	0.080241	0.021676	3.701831	0.0003
FDI	0.598905	0.289731	2.067106	0.0406
DEXR	-0.131046	0.025074	-5.226439	0.0000
INFL	-0.027189	0.022164	-1.226726	0.2221
C	4.210216	0.727210	5.789544	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	2.08E-07	0.0000
Idiosyncratic random	5.535753	1.0000

Weighted Statistics

R-squared	0.284349	Mean dependent var	4.812314
Adjusted R-squared	0.262986	S.D. dependent var	6.389153
S.E. of regression	5.485057	Sum squared resid	4031.504
F-statistic	13.31050	Durbin-Watson stat	2.035296
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.284349	Mean dependent var	4.812314
Sum squared resid	4031.504	Durbin-Watson stat	2.035296

APPENDIX 6: REGRESSION MODEL

	GDP	TOT	FDI	EXR	INFL
Mean	4.424587	-1.351634	1.245914	14.62387	15.55785
Median	4.872824	-0.849710	0.468829	5.421801	9.466779
Maximum	35.22408	67.07126	6.479821	574.8326	189.9751
Minimum	-50.24807	-91.89139	-0.137301	-100.0000	-9.187609
Std. Dev.	6.192471	21.55492	1.595945	53.52919	25.76516
Skewness	-3.435391	-0.597851	1.499589	6.363901	4.732035
Kurtosis	39.98184	5.370563	4.360613	65.82973	28.32105
Jarque-Bera Probability	10139.86 0.000000	43.76425 0.000000	73.21280 0.000000	32534.11 0.000000	5236.856 0.000000
Sum	761.0290	-201.3934	201.8380	2778.536	2675.951
Sum Sq. Dev.	6557.286	68762.98	410.0735	541555.6	113517.2
Observations	172	149	162	190	172