Influence of Intra-Regional Trading on Uganda's Economic Progress

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Abstract

Purpose: The purpose of this study is to determine the trade impact of the EAC Customs Union and to analyze the impact of intra-EAC trade on Uganda's economic growth.

Methodology: The study employed serial data and a non-experimental study design. Regression analysis was used capturing causal relationships between variables and measuring the impact of trading and shaping within the EAC customs union.

Findings: The finding shows that after the formation of the custom union, the volume of trade in Uganda has increased proportionately by 0.9083 percent.

Conclusion: The effect of the custom union on Uganda intra-EAC trade, the EAC dummy coefficient was also found to be positive and statistically significant.

Recommendation: The study recommended the formation of the EAC Customs Union which is an important step in the process of deepening regional integration among its members.

Keywords: Regional Trade, EAC Trade, Economic Growth.
1.0 Introduction

1.1 Background of the Study

Regional integration agreements (RIAs) are a crucial component of the global trading system. East Africa, in particular, is not an exception to this tendency in Africa. The Organization for Economic Co-operation and Development (OECD) estimates that regional trade agreements account for more than half of all global commerce. Global trading under RIAs increased from 43% to 60% between 2012 and 2015 (Cazes & Saint-Martin, 2015). The majority of nations are members of at least one RIA, and at least one-third of global commerce is protected by RIA regulations, according to the World Bank (Mason & Asher 2010). According to the General Agreements on Trade and Tariffs (GATT) and World Trade Organization (WTO), there were a total of 61 Regional Trade Agreements (RTAs) as of June 2013.

All RTAs share the trait of being reciprocal trade agreements between two or more parties (World Trade Organization, 2015). Members of the East African Community have made radical changes to integrate trade into their national development plans. Trade policy in Uganda has developed via a number of unique approaches, including import substitution policies, structural adjustment policies for trade liberalization, and export-oriented policies that resulted in the establishment of export processing zones (EPZs). Through its connections with all other economic sectors and the creation of marketplaces that allow goods and services to reach consumers, trade significantly contributes to Uganda's economic growth and development. Strategies and plans for trade liberalization to maintain economic development while adhering to the principles of Vision 2030. These include promoting trade in both wholesale and retail, manufacturing, agriculture, financial services, information and communication technology (ICT), and implementing business process outsourcing. The establishment of the EAC Customs Union is therefore expected to play an important role in Uganda's economic growth through trade integration. Trade plays an important role in a country's economic growth development through links with all sectors of the economy. Trade is one of the pillars of a country, it supports the manufacturing and service industries by creating markets for goods and services to reach consumers, thereby creating channels for trade and economic growth.

Uganda’s economic growth has been fluctuating since independence. Uganda’s economic performance has been declining rather sharply since independence. Annual GDP growth rates have dropped from an average of 6.7 percent in the 1960s and 70s to an all-time low of 2 percent in the 1990s. The reasons that explain this progressive decline among other factors include the inappropriate choice of development strategies; collapse of infrastructure; unstable and conflicting macro-economic environment an overheated/uncertain institutional and political environment; decline in regional markets especially after the collapse of the East African Community and poorly managed policy transition (Christiaensen & Kaminski, 2015).

1.2 Statement of the Problem

Regional trade agreements are becoming an increasingly popular means of promoting and creating trade and boosting economic growth. Uganda's economic growth has fluctuated since independence. Uganda's average GDP growth remains below the expected 10%. The Government of Uganda, through the Ministry of East African Affairs, Trade and Tourism, is committed to promoting trade in the EAC region as one of its strategies to achieve 10% economic growth.
Vamvakidis (2010) found that rapid economic growth in developing countries opened markets to free international trade, stimulating the empirical and theoretical literature on the impact of trade. Kasekende (2011) found that regional integration increases intraregional trade, which leads to economic growth and development through economies of scale. McIntyre (2015) further confirmed that EAC members could benefit from trade by reducing common external tariffs and shaping regional integration. Opiyo (2012) further found that the EAC Customs Union had a positive impact on Uganda’s overall trade. Akello (2011) found that RTAs had a trade diversion effect between her EAC members, reducing trade between the EAC and the rest of the world. Buigut (2012) further found that individual countries in the EAC customs union had disproportionate effects on their import and export trade, although her EAC impact on individual countries was estimated empirically.

2.0 Literature Review

2.1 The Gravity Model

Its origin goes back to the law of universal gravitation in physics which was developed by Isaac Newton in 1687. It predicts that the flow of people, ideas or commodities between two locations is positively related to their size and negatively related to the distance (Gosh & Yamarik, 2004). According to Ng’eno (2012), the model is specified in equation 1.

\[ \text{trade}_{ij} = A \left( \frac{\text{GDP}_i \times \text{GDP}_j}{\text{distance}_{ij}} \right)^{b_1} \]

Where \( \text{trade}_{ij} \) is the bilateral trade flows between country i and j, GDP\(_i\) and GDP\(_j\) are Gross Domestic Products (GDP) for country i and j respectively. Distance\(_{ij}\) measures the bilateral distance between the two countries and A is a constant of proportionality. The equation predicts that the volume of trade between two economies should increase with their size (proxied by real GDP) and decrease with transaction costs measured by the bilateral distance (Gosh & Yamarik, 2010). The study followed the following relationship:

\[ X_{ij} = A Y_i^\alpha Y_j^\beta \]

\[ D_{ij} \] .................................................................2

Where \( Y_i \) and \( Y_j \) are the respective GDPs for importing and exporting countries, D\(_{ij}\) is the distance and A is a constant. The value of (\( \alpha \)) refers to the elasticity of the exporting country’s GDP, (\( \beta \)) is the elasticity of the importing country’s GDP and (\( \gamma \)) is the elasticity of distance corresponding to the universal gravitation equation. The gravity model is an important empirical tool to help us understand trade and other economic flows in the world economy and have been used as a baseline model for estimating the impact of a variety of policy issues.

2.2 The Solow Growth Model

The Solow model also known as the Solow-Swan model was developed by Robert Solow (Solow, 1956) and T. W. Swan (Swan, 1956). The model focuses on four variables: Output (\( Y \)), Capital (\( K \)), Labour (\( L \)) and Knowledge or the effectiveness of labour (\( A \)) and follows the properties of the Cobb-Douglas production function, Halsmayer, (2014)

\[ Y_t = (KtAtLt) \] .............................................................................3
The model states that at any one time, the economy has some amounts of capital, labour and effectiveness of labour combined to produce output (Y). The model assumes that the function has a constant return to scale in production regardless of its starting point; the economy converges to a balanced growth path where each variable in the model is growing at a constant rate. The model also assumes that the long run growth of output per worker depends only on technological progress whereas short run growth results from either technological progress or capital accumulation Karras (2010).

2.3 Empirical Review

Both McIntyre (2011) as well as Othieno and Shinyekwa (2011) used simulation analysis. Useless As it is a real number, the results obtained may be inaccurate and cannot be used to draw conclusions or guidelines Recommendation. Anderson (2011) used a gravity model to compare the effects of various factors. Ugandan trade bloc. Buigut (2012) used panel data to estimate trade effects for each member. Countries in the EAC Customs Union. Gosh et al. (2011) provided a strong theoretical basis for the borrowed gravity model. This study analyzes the effects of EACCUs. Mjema et al. (2012) examined the determinants of trade a gravity model between Uganda and Kenya. Ng`ang`a (2016) Established RTAs between developing countries and found intra-block trade improved. Otinga (2009) found that international trade has a positive impact on Uganda's economic growth. Research is this is done using descriptive methodologies and recommended actions to facilitate transactions. From all the above studies there is confirmed evidence that RTA affiliation has an impact. Member States' trade patterns and economic growth. However, evidence is lacking a study on the effects of the East African Community Customs Union and EAC intra-regional trade on trade about economic growth in Uganda.

3.0 Methodology

The purpose of this study was to analyze the impact of intra-EAC trade on Uganda’s trade and economic growth. This study employed serial data and a non-experimental study design. Regression analysis was used capturing causal relationships between variables and measuring the impact of trading and shaping within the EAC customs union.

3.1 Theoretical Framework

The research methodology was based on the theory of gravity model and Solow growth model to address the research objectives. A gravity model was used in the study to estimate the impact of the East African Community Customs Union on Ugandan trade.

\[
trade_{ij} = A \left( \frac{GDP_i GDP_j}{distance_{ij}} \right)^{b_1} \text{………………………………………………………………………………………………………………………….} 4
\]

Where \(trade_{ij}\) is the bilateral trade flows between country \(i\) and \(j\), \(GDP_i\) and \(GDP_j\) are Gross Domestic Products (GDP) for country \(i\) and \(j\) respectively, distance \(ij\) measures the bilateral distance between the two countries and \(A\) is a constant of proportionality. Based on the Newton’s Law of gravity, the equation predicts that the volume of trade between two economies should increase with their size (proxied by real GDP) and decrease with transaction costs measured by the bilateral distance (Gosh et al., 2004). The Solow growth model theoretical foundation was used to analyze the effect of Uganda’s intra-EAC trade on its economic growth. The model also assumes that an economy will always work itself to a steady state where each variable in the model will
grow at a constant rate and it follows the properties of the Cobb-Douglas production function (Romer, 2006) as shown in equation 5.

\[ Y = f (K, L, A) \]  

Where \( Y \) is the output, \( K, L \) and \( A \) is the level of capital, labour and effective of labour or knowledge respectively. The model also assumes that countries that are below their steady state level of the GDP per capita should grow faster and countries that are above the steady state level of GDP should grow slower so as to approach the steady state (Feenstra, 2004).

### 3.2 Empirical Model

This study incorporates and extends the model of Mjema et al. (2012) included other variables affecting bilateral trade flows to determine and analyze the Ugandan trade effects of the establishment of the EAC Customs Union in log-linear form. The probabilistic form of the equations presented in equation 6 was used to address one of our research objectives.

\[ \ln(TD_{ij}) = \beta_0 + \beta_1 \ln(Y_K) + \beta_2 \ln(Y_B) + \beta_3 \ln(Y_U) + \beta_4 \ln(Y_T) + \beta_5 \ln(EAC_{ij}) + \mu_{ij} \]  

Where \( TD_{ij} \) is the volume of trade between Uganda and the EAC member states, \( Y_U \), \( Y_B \), \( Y_K \), \( Y_T \) are the GDPs for Burundi, Kenya, Tanzania and Rwanda respectively. An EAC dummy variable is introduced to capture the two periods before and after the formation of the custom union. \( EAC_{ij} \) variable takes the value zero when the period is the year 2000 to 2004; period before the custom union and one when the year is 2005 to 2013; the period after which the custom union came into effect, the \( \epsilon_{ij} \)represent the error term. The dummy variables are usually introduced to take into account other factors that affect bilateral trade, to avoid perfect collinearity and also to capture the time fixed effect (Buigut, 2012). To answer the second objective, the study used the model developed by Seetenah (2008) and extended it to include other factors that affect the formation of the EACCU in its log-linear form as follows:

\[ \ln(Y_t) = \alpha_0 + \alpha_1 \ln(EDU) + \alpha_2 \ln(LAB) + \alpha_3 \ln(TRADE) + \alpha_4 \ln(XMGDP) + \alpha_5 \ln(EAC) + \mu_{ij} \]  

Where \( Y_t \) is the GDP at time \( t \) for Uganda measured in real gross values, \( \alpha_0 \) is the constant term, \( \alpha_1, \alpha_2, \alpha_3 \) represent the elasticity of output relative to education (EDU), labour(LAB), XMGDP represents the ratio of export plus import to GDP and volume of trade (TRADE) to EAC member states and the \( \mu_{ij} \)represent the error term. The value of XMGDP measures the openness and the dummy EAC captures time effects of the formation of the EACCU.

### 4.0 Data Analysis, Findings and Discussion

#### 4.1 Stationarity Test

To determine if the series was stationary, this study employed the Augmented Dickey-Fuller (ADF), Philips-Perron Tests, and Kwiatkowski-PhillipsSchmidt-Shin (KPSS). The series are referred to be integrated of order one I since \( \ln(TRADE), \ln(GDP_U), \ln(GDP_T), \ln(GDP_R), \ln(GDP_K), \ln(EDU), \ln(TRADE), \) and \( \ln(XMGDP) \) were determined to be stationary at first difference (1). The series are referred to as being integrated of order I (0) since \( \ln(GDP) \) and \( \ln(LAB) \) were discovered to be stationary at level. \( \ln(GDP_B) \) was discovered to be stationary at lag two. To address the study's goals, the stationary series was calculated.
4.2 Diagnostic Tests

Equations 6 and 7 in chapter three illustrate how two equations were calculated. Equation 6 was approximated to ascertain the impact of EACCU. Equation 7 was approximated to evaluate the impact of intra-EAC trade on Uganda’s economic development. The equations were estimated using the Ordinary Least Square method. Several tests were run to assess the model’s dependability before providing the regression findings. The model was subjected to serial correlation tests, heteroskedasticity tests, RESET, and stability testing. To assess the parsimony, stability, and dependability of the applied model, adjusted R-squared and F-statistics were used (Barro, 2009).

4.2.1 Heteroskedasticity Test Results

The test is often conducted when there is cause to think that the error terms will exhibit a certain variation at any given point in a series. This was examined using the Autoregressive Conditional Heteroskedasticity (ARCH) test. Accepting the alternative and rejecting the null hypothesis that the error terms are homoscedastic results from a probability value of less than 5%.

Table 1: ARCH test

<table>
<thead>
<tr>
<th>Specification Model</th>
<th>Observed R-squared</th>
<th>Probability Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>2.518191</td>
<td>0.6756</td>
</tr>
<tr>
<td>Model 2</td>
<td>2.241915</td>
<td>0.326</td>
</tr>
</tbody>
</table>

4.2.2 Serial Correlation Test Results

The Ordinary Least Squares (OLS) estimators and their standard errors may be sensitive to little changes in the data if Multicollinearity is present. Despite the strong overall measure of fit (R-squared), it may also cause the t-statistic of one or more coefficients to be statistically insignificant (Elena, 2012). This feature was tested for in this study using the Breusch-Godfrey LM test. The null hypothesis of serial correlation is accepted and the alternative of no serial correlation is rejected when the probability value is less than 5%.

Table 2: Breusch-Godfrey serial correlation LM test

<table>
<thead>
<tr>
<th>Specification Model</th>
<th>Observed R-squared</th>
<th>Probability Chi-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>0.514134</td>
<td>0.5092</td>
</tr>
<tr>
<td>Model 2</td>
<td>2.523372</td>
<td>0.2832</td>
</tr>
</tbody>
</table>

4.2.3 Stability Test

This option depicts the cumulative sum together with the 5% critical lines. The CUSUM test is based on the cumulative sum of the recursive residuals. If the cumulative total leaves the region between the two crucial lines, the test detects parameter instability (Saharuddin, 2017).
Figure 1: Cumulative sum plots for model I

Source: Extracted from estimate equation

Figure 2: Cumulative sum plots for model 2

Source: Extracted from estimate equation
4.2.4 Omitted Variables Test

Regression Specification Error Test (RESET), was used this property. The null hypothesis states that there is no misspecification in the model. A small probability value of less than 5% of the test leads to the rejection of the null hypothesis.

Table 3: Specification model Ramsey RESET test

<table>
<thead>
<tr>
<th>Specification Model</th>
<th>Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>F-statistic</td>
<td>0.7223</td>
</tr>
<tr>
<td></td>
<td>Likelihood Ratio</td>
<td>1.7007</td>
</tr>
<tr>
<td>Model 2</td>
<td>F-statistic</td>
<td>1.3188</td>
</tr>
<tr>
<td></td>
<td>Likelihood Ratio</td>
<td>3.0032</td>
</tr>
</tbody>
</table>

4.3 Empirical Results

4.3.1 Effect of East African Community Customs Union on Trade in Uganda

Equation 6 from chapter three was approximated to evaluate the impact of EACCU on commerce in Uganda from 2000 to 2013. The variables in the model are the Gross Domestic Products (GDPs) for EAC member countries, which are represented by GDPU, GDPK, GDPB, GDPT, and GDPR for Uganda, Kenya, Burundi, Tanzania, and Rwanda, respectively, as the independent variables. The dependent variable in the model is the volume of trade (Y TD). The regional integration dummy has a value of one from 2005 to 2013 and a value of zero from 2000 to 2004. The equation is estimated using a method known as Ordinary Least Squares.

Table 4: Regression results for the effect of East African Community Customs Union on trade in Uganda

<table>
<thead>
<tr>
<th>Dependent variable: Log TRADE</th>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>Z</th>
<th>P-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>First difference Log of GDPB</td>
<td>-3.0915**</td>
<td>-2.59</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>First difference Log of GDPU</td>
<td>2.3705**</td>
<td>2.46</td>
<td>0.014</td>
<td></td>
</tr>
<tr>
<td>First difference Log of GDPT</td>
<td>10.8159**</td>
<td>-7.94</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>First difference Log of GDPR</td>
<td>5.7140**</td>
<td>3.16</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>EACDUMMY</td>
<td>0.9083**</td>
<td>2.83</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.0039**</td>
<td>0.8</td>
<td>0.43</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.551172</td>
<td>F-statistic</td>
<td>4.991077</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson statistic</td>
<td>2.241661</td>
<td>Probability(F-statistic)</td>
<td>0.000031</td>
<td></td>
</tr>
</tbody>
</table>

*The asterisk shows the level of significance: (**) 5% (*** 1%)

*Source: Extracted Estimated output response equation*
The value of adjusted R square is 0.5512 which shows that 55 percent of the variations are explained within the model and the remaining 45 percent of the volume of trade variations is explained by exogenous variables. The probability of F-statistic is 0.00003; therefore the null hypothesis that the coefficients are equal to zero is rejected. The Durbin Watson Statistic (2) shows that the variables do not suffer from serial correlation. The coefficient of the EAC dummy variable was found to be positive and statistically significant showing that after the formation of the Custom Union in the year 2005, volume of trade in Uganda has increased proportionately by 0.9083 percent. The findings were consistent with Buigut (2012) which found out that volume of trade in Uganda increased due to the formation of the EAC Custom Union. Othieno et al. (2011) also found out that to realize more trade in the region effective elimination of non-tariff barriers was necessary to promote trade in the region.

4.3.2 Effect of Uganda’s Intra EAC Trade on Its Economic Growth

Equation 7 from chapter three was approximated to evaluate the impact of intra-EAC trade on economic development in Uganda from 2000 to 2013, and the results are shown in table 5. Gross Domestic Product (GDP) for Uganda is the dependent variable, whereas EDU, LAB, TRADE, XMGDP, and EAC dummy are the independent variables utilized in the estimate.

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>Z</th>
<th>P-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of EDU</td>
<td>2.1724**</td>
<td>-6.53</td>
<td>0.000</td>
</tr>
<tr>
<td>Log of LAB</td>
<td>11.9048**</td>
<td>2.42</td>
<td>0.016</td>
</tr>
<tr>
<td>Log of XMGDP</td>
<td>1.2238***</td>
<td>2.02</td>
<td>0.049</td>
</tr>
<tr>
<td>Log of TRADE</td>
<td>0.9961**</td>
<td>25.64</td>
<td>0.000</td>
</tr>
<tr>
<td>EACDUMMY</td>
<td>0.6214**</td>
<td>2.67</td>
<td>0.008</td>
</tr>
<tr>
<td>Constant</td>
<td>1.4657**</td>
<td>-2.62</td>
<td>0.043</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.651841</td>
<td>F-statistic</td>
<td>7.954066</td>
</tr>
<tr>
<td>Durbin-Watson statistic</td>
<td>2.057281</td>
<td>Probability(F-statistic)</td>
<td>0.000000</td>
</tr>
</tbody>
</table>

The asterisk shows the level of significance: (***) 5% (***) 1%

Source: Extracted Estimated output response equation

The adjusted R squared value is 0.6518, meaning that 65% of the fluctuations in GDP are accounted for by the model and the remaining 35% are accounted for by exogenous factors. There is no serial correlation between the variables in the model, according to the Durbin Watson statistic (1). The null hypothesis that the coefficients are not jointly equal to zero is rejected because the probability of F-Statistic is 0.0000. It was discovered that the EAC dummy's coefficient was positive and statistically significant. This indicates that Uganda's GDP has grown proportionally by 0.6214 percent since the creation of the EAC custom union. The results are in line with those
of (Kamau, 2010) who came to the conclusion that joining an RTA is advantageous for member countries and will promote economic growth through the formation of a united economic bloc.

5.0 Summary, Conclusions and Recommendations

5.1 Summary

The volume of trade (YTD) was the dependent variable and the GDPs for EAC member countries, which were represented by GDPU, GDPB, GDPK, GDPT, and GDPR for Uganda, Burundi, Kenya, Tanzania, and Rwanda, respectively, and the EAC dummy as the independent variables, were used to determine the impact of the EACCU on trade in Uganda. The regional integration dummy has a value of one from 2005 to 2013 and a value of zero from 2000 to 2004. The conclusion that the EACCU is significant in promoting commerce is based on the evidence that the amount of trade in Uganda increased following the creation of the custom union. Uganda's GDP served as the dependent variable in a linear model designed to analyze the impact of intra-EAC trade on economic growth in Uganda. Secondary enrollment rate, labor participation rate, Ugandan trade volume, the imports plus exports to GDP ratio, and the EAC dummy were the explanatory variables utilized. The Ordinary Least Squares (OLS) method was used to estimate time series data for the years 2000 to 2013. According to the estimation, Uganda's GDP volume increased as a result of the creation of the custom union. Uganda's trade volume inside the EAC had also risen.

5.2 Conclusions

The study found that Uganda's trade and economic growth had benefited from the creation of the EAC custom union. The results also demonstrate that Uganda's intra-EAC trade volume grew following the creation of the custom union, which improved economic development. Therefore, the study draws the conclusion that Uganda's economic growth has been boosted by intra-EAC trade. The study also discovered that Uganda's economic development is influenced by the labor force participation rate and educational attainment levels. The research also revealed that Ugandan commerce has greatly improved after the creation of the custom union. Therefore, the study comes to the conclusion that the EAC customs union is a crucial step in the development of commerce.

5.3 Recommendations

On the basis of the findings of this study, Uganda government through the Ministry of East African Affairs, Commerce and Tourism needs to strengthen its economic partnership with the EAC member countries and increase its trade volume in the region. Based on the findings, it’s expected that after the formation of the custom union, trade between Uganda and the member countries has improved significantly and led to economic growth through economies of scale. The Uganda government should therefore continue to play its key roles in the promotion of the EAC objectives trade being one of them. The government through the Ministry of Industrialization should promote its local manufacturing sector and put more resources in the small and medium enterprises to increase its output thus creating goods for export. The Uganda government should also improve on its level of education intake; knowledge is an asset to economic growth.
5.4 Suggestion for Further Research

The study has shown that the EAC custom union has a favorable impact on trade, and that intra-EAC trade has boosted Uganda's economy. The impact of trade tariffs on commerce in Uganda following the creation of the EAC custom Union may also be studied further.

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**Conflict of Interest**

The authors declares no conflict of interest.

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