EFFECTS OF BALANCE OF PAYMENT ON ECONOMIC GROWTH OF EAST AFRICAN REGION COUNTRIES

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ABSTRACT

This research study examined the effect of international trade balance on economic growth of East African region in view of trade imbalances in the region. In order to achieve the research objectives, a methodology framework of panel regression analysis was undertaken. For research purposes the study employed descriptive research design. The study focused was East African region and relied on secondary data obtained from the World Bank website, ADI and WDI website. A checklist developed based on the research questions of the study was used to collect data on the values of the variables in the corresponding period under study. The time series data ranged from 1995 -2020. The data was organized through excel and later imported to E-views 12 software for analysis. Regression, descriptive statistics and analytic statistical methods was employed in the analytical process and results presented in tables, graphs and figures for clarity and ease of understanding. The findings revealed a long-run relationship among all the variables. Moreover, all the variables under consideration were found to have long run significant impacts on economic growth in East African region. Time series properties were tested such as the presence of unit roots and co-integration of the variables to ensure that spurious results would not result. A part from the log of GDP which was stationary at level all the other variables under consideration were non-stationary at level but became stationary at first difference hence integrated of order one. The study findings led this research study to conclude that the contribution of trade to the economic growth of East African region countries is mainly a function of trade balance in merchandise, service trade balance and international financial transactions. For outward-oriented strategy to have much larger impact on economic growth, the region should modify the composition of trade by switching from exports of raw materials and semi-manufactured goods to high valued-added goods. Furthermore, trade policy should promote investments in capital intensive sectors and develop human capital that can absorb technologies coming from advanced countries. Finally, there is need for sustained financial development through digitization and adoption of new financial innovations risk detection mechanisms in order to ease trade and insulate respective economies from external financial shock.

Key Words: *Trade Balance, Visible Trade Balance, Invisible Trade Balance, International Financial Transactions, Economic Growth*

INTRODUCTION

The balance of trade is the difference between exports and imports of goods and services. It takes the form of surplus if exports exceed imports or deficit when imports are greater than exports. The trade balance is a major component of the balance of payment and a key indicator of a country's health. Its fluctuations are a major concern especially for developing countries facing chronic trade deficits. Therefore, examining its implication is important for creating an appropriate trade-led growth strategy.

The debate on trade-growth nexus is not new. The view that trade enhances economic growth and welfare has a long history dating as far back as the 16th century, Smith (1776) emphasized trade as a vent for surplus production and a means of widening the market. In the same vein, Marshall (1890) acknowledged that causes which determine economic progress of nations belong to the study of international trade. The topic has since remained a key subject of debate in research and policy discourses, leading to ample theoretical and empirical literature on the link between trade and economic growth. So why revisit the role of trade? The renewed interest in the role of trade is largely underpinned by the latest wave of globalization that has been characterized by not just intensive trade integration and trade openness, but has also been associated with technological revolution. International trade has grown steadily over the last three decades. On average, the value of world merchandise trade increased by more than 7% per year (fourfold increase in volume terms) between 1980 and 2011 (WTO, 2013). Advances in technology, telecommunications and transport have created opportunities for a reorganization of global production and distribution systems around "value chains". The other key feature of this evolving global landscape is the increased role of trade in services, which grew even faster than merchandise trade. It is believed that due to the challenges in recording services transactions, the traditional measures of services trade underestimate their importance in global trade (Subramanian and Kessler, 2013; WTO, 2013). The global trade topography has also been shaped by an increased participation of developing economies in international trade beginning with the industrializing East Asian Tigers who from as early as 1960s pursued an outward-oriented trade policy leading to export-led growth, followed by China and more recently by India. Developing economies' share of world exports increased from 34% in 1980 to nearly half (47%) of the total in 2011 (WTO, 2013). The quest for further trade expansion is partly exemplified by the increased proliferation of regional trade agreements and mega trading partnerships across the world. Given the fiscal constraint challenges that many countries are facing around the world, trade is envisaged to be a critical pillar of economic growth and development. A discussion of the global development agenda that fails to take cognizant of the global trade dynamics is, thus, bound to be incomplete. That notwithstanding, the differential trade impacts can easily get masked by the changing global dynamics and the general focus on the global picture. For instance, although in general the share of developing countries in world trade has been increasing, Africa as a continent still accounts for a very low share of world trade - only 2.8% of world's exports over the decade 2000 - 2010 (UNCTAD, 2013). The Least Developed Countries (LDCs), most of which are in Africa, remain particularly vulnerable - LDCs' share of the world exports is only about 1%, and as a group, LDCs have systematically recorded a trade deficit except for 2006–2008 cycle of high commodity prices (Escaith and Tamenu, 2013).

Statement of the Problem

Sustainable economic growth is a predominant concern to all economies and East Africa regions are no different. An effective tool for economic growth is comprehensive macroeconomic strategies on both private and public ventures to increase output, national income, generate wealth, reduce inflation, unemployment, and fund service delivery (Saunweme & Mufandaedza, 2013). However, this is not the case in the East Africa regions as countries

are unable to collect enough revenue to finance national budgets and trade imbalances with the region being net importer hence put a reliance on domestic and external debt to finance economy growth and expansion (Ali & Mustafa, 2009; Boboye & Ojo, 2012). This makes the region economic growth skewed and lagging because it is huge debt infrastructure financed driven in some countries while in others it is service sector driven.

The East Africa region continues to face various downside risks that undermine economic growth and development prospects. Major risks are agriculture's vulnerability to the vagaries of nature, heavy reliance on primary commodity exports, and in oil-importing countries rising oil prices. Another key risk is persistent current account deficits and related increases in external indebtedness.

Notwithstanding the variation across countries, the region's fiscal deficit remained low, at an estimated 4.1 percent of GDP in 2019, and dropped to 3.7 percent in 2020 (East Africa Economic Outlook 2019). But current account deficits remained high, and two patterns are emerged. First, since almost all countries depend on primary commodities for exports, falling global commodity prices have negatively affected their terms of trade. Second, the region's growth is achievable through high investment, which is above domestic savings. The internal investment–savings gap is strongly associated with the persistent current account deficit (or external gap).

The average share of manufactured exports - about 14.6 percent- is an indication of the region's lack of structural transformation. Lack of complementarity in trading, low competitive position of countries to supply goods in the region (which is related to lack of structural transformation, low productivity, and a wide infrastructure gap), institutional capacity weakness to advance regional integration, and failure to address political issues related to regional integration are a major challenge to trading among member countries thus hampering the economic growth contribution of cross-border trade.

Informal cross-border trade, estimated to be as high as 50 percent of formal trade in Africa, informal cross-border trade is a diverse source of livelihood for millions of people (East Africa Economic Outlook 2019). High tariff and nontariff barriers, excessive regulation, ease of infrastructure in border towns, and distortion in the official market or sectors are usually mentioned as major factors behind informal cross-border trade. So, addressing trade costs, harassment and corruption, infrastructure deficiency, excessive regulation, and excessive requirements at border customs posts and formalizing the informal sector are important policy directions to support informal cross-border trade and enhance regional integration and subsequent individual countries economic growth.

For such countries, Kim and Lin (2009) suggest selective protection. If such a nonlinear relationship exists, we should be able to estimate the threshold at which the sign of the relation between trade and growth switches. This study reexamines the role of trade and contributes to the literature by empirically analyzing the threshold effects of balance of trade on economic growth based on panel data for East African region countries. The empirical evidence was based on a dynamic growth model using data for East African countries covering 1995 to 2020.

Objectives of the Study

This main objective of the study was to establish the effect of trade balance on the economic growth of East African region countries. The study was guided by the following specific objectives;

- To examine the effect of visible trade balance on economic growth of East Africa region countries.

- To assess the effect of invisible trade balance on economic growth of East Africa region countries.

- To examine the effect of international financial transactions on economic growth of East African region countries.

LITERATURE REVIEW

Theoretical Review

The theoretical underpinning of this study is that; an increase in the volume of exports or a countries continuous participation in international trade stimulates her economic growth. Some of the theories related to this study include;

Cumulative Causation Theory

The theory of cumulative causation developed by Kaldor (1970) views regional growth as determined by the growth of demand for a region's exports. Kaldor's first law is that there exists a strong causal relation between the growth of manufacturing output and the growth of GDP. His second law of growth (1966) states that the manufacturing sector is subject to substantial increasing returns to scale. The central point of this law not only provides support for the hypothesis that the manufacturing sector is the 'engine of growth', but also sets the basis for the cumulative causation models of growth. According to Verdoorn's law (1949), a positive correlation exists between the growth of productivity, measured by the rate of growth of output per employee and the growth rate of employment. Later Kaldor (1967) modified this reasoning by replacing employment growth by output growth. The resulting relationship became known as the Verdoorn-Kaldor law, which suggests that growth of productivity in manufacturing is an endogenous result of the growth of output, because of static and dynamic economies of scale. Economies of scale can be divided into two groups: economies resulting from large-scale production (static economies of scale); and economies of scale derived from 'the insight that the spatial concentration of economic activity can produce externalities' (dynamic economies of scale) (Malecki and Varaiya, 1986). The latter consists of cumulative advantages that originate from the growth of industry itself, like learning-by-doing, and the development of skill and know-how, the opportunities for easy communication of ideas and experience, and the opportunity of ever-increasing differentiation of process and of specialization in human activities (Kaldor, 1970). Kaldor's third law states that there exists a strong positive causal relation between the growth rate of the manufacturing sector and that of productivity outside the manufacturing sector, because the diminishing returns in agriculture and the small service sectors will supply excessive labour to the industrial sector. If the marginal product of labour is below the productivity in these sectors, the productivity will rise as employment is contracting. According to Thirlwall (2002: 42), Kaldor's arguments on the driver of growth in the manufacturing sector come from demand in agriculture in the early stages of development, and export growth in the later stages. In the later stages, a fast growth of exports and output may set up a virtuous circle of growth with rapid export growth leading to rapid output growth, and rapid output growth leading to fast export growth through the favorable impact of output growth on competitiveness.

New Trade Theory

According to Ezeala-Harrison (1999: 22), the new trade theory (NTT) emanates from the new growth theory (NGT) that emerged within the international trade and economic growth and development literature during the early 1990s. The NGT emphasizes technological progress (and the determinants of technological progress) as well as the externalities that the development and application of new knowledge confers, as explicit variables that determine economic growth. Apparently, it posits that innovations take place more in some countries than others because of, among other things, differences in the development of science in the countries, the relative levels and quality of their research institutions, and the relative levels and quality of their educational systems. The central point of this theory is the diffusion of knowledge between firms as knowledge is given as a key factor of production. Therefore, the main fundamental nature of NGT is its implications that firms should invest more in knowledge, as much as in other capital resources in order to be

productive or maintain productivity. The association between the NGT and the NTT lies in their common magnitude of technology and the diffusion of knowledge in the relative flow of the gains from trade to trading countries. These theories are regarded as 'new' as they derive from the traditional neoclassical trade theories based on the principles of comparative advantage, which emphasizes the differences between nations' resource endowments (Ezeala-Harrison 1999). The NTT was developed to explain high levels of intra-industry trade and the large proportion of world trade that takes place between similar countries (Dicken 1998; Poon 1997). It suggests that the existence of increasing returns to scale and imperfect competition provides reasons for specialization and trade, even when countries are similar in factor endowments (Krugman 1979; Helpman and Krugman 1985).

Thirlwall's theory

Thirlwall's theory was advanced by Anthony Thirlwall in 1979. (Thirlwall, 1979) proposed that the rate of economic growth of a specific country is restrained by the current account as the economy cannot grow faster than the current account equilibrium or at least consistent with a sustainable deficit in the current account. The basic idea of this model is that export performance and import behavior play a huge role in determining long term economic growth. This model was based on three assumptions; trade balance is in equilibrium in the long run, price effects are negligible and do not affect equilibrium long run growth rates and foreign income growth positively affects domestic income.

(Soukiazis et. Al., 2012) found that increasing foreign exchange revenue from exports is the only way to finance increasing imports caused by expanding economic activity. The interpretation of this is that current account deficits restrict the rate of economic growth to a level that is consistent with a sustainable position in the external sector (Andersen, 1993). (Sun and Heshmati, 2010) found strong evidence that international trade has a positive impact on economic growth by facilitating

capital accumulation, modernization of industrial structure, technological and institutional progress. (Wagner, 2007) proposed that promoting exports fosters more intense competition and therefore improved productivity risk. (Thirlwall and Hussain, 1982) later extended this model to allow for the influence of foreign capital flows on economic growth. (Kvedaras et. Al., 2020) contributed to this analysis by decomposing economic growth rates and a cyclical growth term caused by net capital inflows. In recent years, (McCombie and Thirlwall, 1994) and (Moreno, 2003) further revised this theory to ensure that the economy's long run growth is consistent with a sustainable path of foreign indebtedness.

The implication of this theory is that East African region trade balances affects economic growth. This theory is therefore relevant to this study in that it recognizes the fact that trade balance deficits affect economic growth. It proposes that East African region rate of growth is restrained by the trade imbalance. East African region economy cannot grow faster than what is consistent with the current account equilibrium and in the case where current account deficits are inevitable, it cannot grow unless sustainable deficits are maintained.
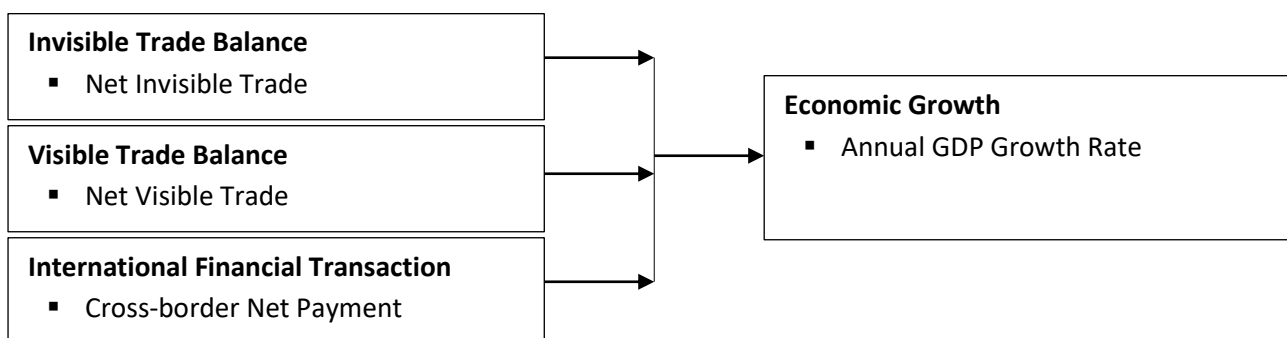
Heckscher-Ohlin Theorem

This theorem states that a capital-abundant country will export a capital-intensive good and a labour-abundant country will export a labor-intensive good. Consider two countries, the US and Mexico in the example above and recall that the assumptions applied to the Heckscher-Ohlin theory include a similarity in production functions (identical technology) and aggregate preferences across the two countries. The difference in resource endowments between two countries is sufficient to generate different PPFs, such that equilibrium price ratios would be different in autarky In general, the arguments in favour of trade liberalization are often based on the Heckscher-Ohlin theory. The idea that opening a nation to trade, and thereby allowing its economy to specialize according to its relative endowments is beneficial, was fundamental to the

liberal trade position of the US after World War II (Goldstein, 1993). More recently, the notion that free trade provides more benefits to participant countries is supported by advanced countries, or organizations and trade blocs such as GATT (WTO), EU, AFTA etc.; although several studies suggest that the distributional impacts of such measures are likely to be highly uneven (Conroy and Glasmeier 1993; Glasmeier and Leichenko 1996). While liberalization of trade may lead to one-time gains in economic efficiency, the growth of exports actually occurs as the result of growth in a country or a region labour or capital supplies. Growth of exports thus follows from the growth of a country or region economy (Leichenko, 2000). However, problems

with the Heckscher-Ohlin theory appeared in the late 1950s based on Leontief's input-output studies of the US economy. His empirical studies suggest that US exports require a higher proportion of labour to capital than US imports, and thus the US is not capital-abundant compared with the rest of the world as normally supposed. Also, from the early 1960s, there has been a growing volume of world trade with similar factor endowments occurring between advanced countries. Furthermore, much of this trade particularly after 1980 was either intra-industry trade or intrafirm trade, neither of which can be explained by the Heckscher-Ohlin theory (Dicken, 1998).

Conceptual Framework


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┌─────────────────────────────────────┐
│ Invisible Trade Balance              │
│   ▪ Net Invisible Trade              │
├─────────────────────────────────────┤        ┌──────────────────────────┐
│ Visible Trade Balance                │  ───►  │ Economic Growth          │
│   ▪ Net Visible Trade                │        │   ▪ Annual GDP Growth    │
├─────────────────────────────────────┤        │      Rate                │
│ International Financial Transaction   │        └──────────────────────────┘
│   ▪ Cross-border Net Payment         │
└─────────────────────────────────────┘
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Independent Variables   **Dependent Variable**

Figure 1: Conceptual Framework

METHODOLOGY

Research Design: The study employed a cross sectional research design. The design is widely used in research studies in Kenya to examine the relationship between various variables in different fields. For instance, Muthoni and colleagues (2019) used correlational design to examine the relationship between farmers' access to credit and their agricultural productivity in Kenya. The study found a positive correlation between the two variables, indicating that farmers who had better access to credit had higher agricultural productivity.

Target Population: Population is the set of all the individual of interest in a particular study (UN, 2009). The target population for this study was be the entire economic performance data for the

variables under study for the 13 East African region countries. The study captured the annual economic variable data for the period 1995 to 2020. In total 26 observations were recorded for each of the variables under consideration.

Sampling Design and Sampling Size: Gay (1992) describes sampling as a process of selecting a number of individuals for a study in such a way that the individuals represent the larger group from which they are selected.

Sampling Technique: In this study a non-probabilistic sampling technique was employed. A convenience non-probabilistic sampling was the most suitable considering the nature and time frame of the research. According to Mugenda and Mugenda (2003), purposive sampling allows a

researcher to use cases that have the required information with respect to the objectives of the study. Out of 13 countries six were sampled: Kenya, Sudan, Seychelles, Ethiopia, Tanzania and Djibouti

Research Data: This study employed annual time series data for the variables under consideration from 1990 to 2020. All the series were procured from the world development indicator [WDI]. The variable of interest includes economic growth as dependent variable, invisible trade, visible trade, openness to trade and trade finance.

Table 1: Operationalization/Measurement of Study Variables

Variable	Type	Operationalization	Measurement	Hypothesis Direction
Economic growth	Dependent variable	• GDP	• % Annual growth rate	+/-
Invisible trade balance	Independent variable	• INVTD	• Net % of invisible trade	+/-
Visible trade balance	Independent variable	• VTRD	• Net % of visible trade	+/-
Internal financial transactions	Independent variable	• IFT	• % Cross-border net payments	+/-

Data Collection Methods: Data collection is gathering empirical evidence to gain insights on phenomena to answer questions that prompt undertaking of the research. In this study, secondary data was collected to analyze and meet the requirements of the specific research objectives.

The main method of collecting data was the desk study. A checklist was designed to collect data for the study variables. The checklist structure particulars were; number of years, the variables and their corresponding data for each year as shown in the index.

Data Processing: The collected data was checked for accuracy and completeness, summarized in form of tables and graphs to tell the drifts of variables development overtime. Secondary data gathered was organized in Ms Excel spread sheets for the purpose of analysis. The data was then analysed and models fitted using statistical data analysis software; E-views 12.

Data Analysis: The study tested for time series properties such as the presence of unit roots and co-integration before estimation so as to guarantee meaningful regression results. Panel ordinary least squares method was employed to establish the relationship between the variables under consideration.

The data analysis findings were then be organized in tables and graphs. For a significant and robust result of this study, econometric problems such as multi-collinearity, heteroscedasticity and autocorrelation were checked for and eliminated.

Panel cointegration tests: After confirming the order of integration, the second stage of the analysis tests for evidence of long-run cointegration among GDP growth and the independent variables by conducting the Pedroni (1999, 2004) and Kao (1999) panel cointegration tests.

Redundant fixed effect test and Hausman test: Redundant fixed effect test and Hausman test were done prior to conducting diagnostic test on the study model. This was to enable the researcher to identify whether either pooled OLS model, fixed effect model or random effect model are better for the study. The redundant fixed effect test was performed and qualified fixed effect as the better

model to pooled. However, Hausman test qualified random effect model as the better model to fixed effect.

Diagnostic Checking

Panel unit root tests: The initial step in this empirical approach was to identify the order of integration in the data. This is important since in order to estimate the model there was need to ensure that the variables in the regression are either integrated of order zero I (0) or at most integrated at order one I (1). This is because in the presence of integrated of order two I (2) variables the bounds testing approach fails to provide robust results.

Empirical Model: Based on the theoretical work and empirical literature, the model below was used to assess the effect of trade balance on the economic growth within East African region.

$$Y_t = \alpha + \beta X_t + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\text{ eq 1}$$

Where: Y_t is the dependent variable denoting GDP growth at time t; t denotes the time period, t = 1990… 2020; X_t denoted a vector of independent variables, β are coefficients estimated, α is a constant term, and ε_t is a composite error term.

Equation 3.1 expanded to obtain equation 3.2 which was used for estimation.

$$RGDP_t = \beta_0 + \beta_1 INVTDB_t + \beta_2 VTRDB_t + \beta_3 IFT_t + \varepsilon_t$$

$RGPD_t$: **GDP** growth rate at time t.
$INVTDB_{it}$ is invisible trade balance at time t.
$VTRDB_t$ is visible trade balance at time t.
IFT_t Net International financial transactions at time t.
ε_t Represent error term

FINDINGS AND DISCUSSION
Descriptive statistics
Table 2: Summary Statistics

Variables	LNRGDP	LNINVTDB	LNVTRDB	LNIFN
Mean	2.683440	2.971307	3.740861	3.781301
Median	2.67217	3.004387	3.700431	3.888976
Maximum	3.09751	5.619767	5.077114	4.747077
Minimum	2.34525	0.865826	2.797049	1.821754
Std. Dev	0.21251	1.022629	0.538708	0.668946
Skewness	-0.970061	0.062529	0.908356	-0.037141
Kurtosis	4.518693	2.291909	3.335291	3.417988

The descriptive statistics for the variables used in the study are presented in Table 2. It can be observed that the mean and median of virtually all the variables are close in values, which implies that their distributions are nearly symmetrical. The variables seemed to be normally distributed since their skewness were either more or less than zero.

The variables RGDP, and international financial transactions were negatively skewed while variables visible trade balance and invisible trade balance were positively skewed. Additionally, the variables seemed to have a relatively peaked distribution since their kurtosis were positive.

Correlation Analysis

TABLE 3: Correlation Matrix

Covariance Analysis: Ordinary
Date: 11/23/21   Time: 21:01
Sample: 1995 2020
Included observations: 156

Correlation t-Statistic Probability	LNRGDP	LNINVTRDB	LNVTRDB	LNIFT
LNRGDP	1.000000			

LNINVTRDB	-0.144476	1.000000		
	-1.811909	-----		
	0.0719	-----		
LNVTRDB	-0.016450	-0.075756	1.000000	
	-0.204174	-0.942818	-----	
	0.8385	0.3473	-----	
LNIFT	0.001452	0.088197	-0.207790	1.000000
	0.018031	1.098784	-2.636142	-----
	0.0185	0.2736	0.0092	-----

All the variables under consideration are not exact or linearly dependent on one another. The correlations between the variables are presented in Table 3. All the variables had a perfect correlation with themselves as was expected. Invisible trade balance and visible trade had a negative statistically insignificant correlation with GDP with balance international financial transactions having a significant positive. Since most of the correlations were not statistically significant, multicollinearity was likely not to be a problem in the data.

Optimal Lag selection

Before estimating the model, the study determined the optimal lag length (K). This was to ensure that the model specified have the "right" number of lags included. This is because including too many lags would lead to loss of degrees of freedom and in case of too few lags then the model will be imprecise. The information criteria like Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC), Likelihood ratio (LR), and Final Prediction Error (FPE) were employed to choose and affirm the appropriate lag length. The results for the lag length selection are in Appendix I. From the results on VAR Lag Order Selection Criteria, AIC selected 1 lag as the optimal.

Unit Root Test

Table 4: Unit Root

ADF - Fisher Chi-square						
Variables	Level (trend & intercept)			1st Difference(intercept)		
	T-Stats	Prob	Status	T-Stats	Prob	Status
LNRGDP	28.9584	0.0040	Stationary			
LNINVTDB	11.6833	0.4714	Non-Stationary	52.6939	0.0000	Stationary
LNVRTDB	3.1634	0.9943	Non-Stationary	36.4850	0.0003	Stationary
LNIFT	5.7699	0.9272	Non-Stationary	49.5608	0.0000	Stationary

It is necessary to carry out unit root tests on the variables in order to understand the order of integration of the variables involved. In order to identify the stationarity and order of integration of the variables, Augmented Dickey-Fuller (ADF) unit root test was conducted as shown in Table 4. The tests were carried out in the level form and first difference of the series. The variables were assumed in level with a constant and linear trend, whereas assumed only a constant in first difference.

Moreover, the lag length of ADF test using Akaike Information Criterion (AIC) with a maximum lag length of 1 was employed. The results in Table 4 showed that only log of GDP growth is stationary at level at 5% significance level. However, the rest of the log form of the variables are stationary at first difference at 5% significance level. In conclusion, the stationarity of the variables is found in ADF tests, besides there is no I (2) variables in the test. Therefore, can proceed to the model estimation.

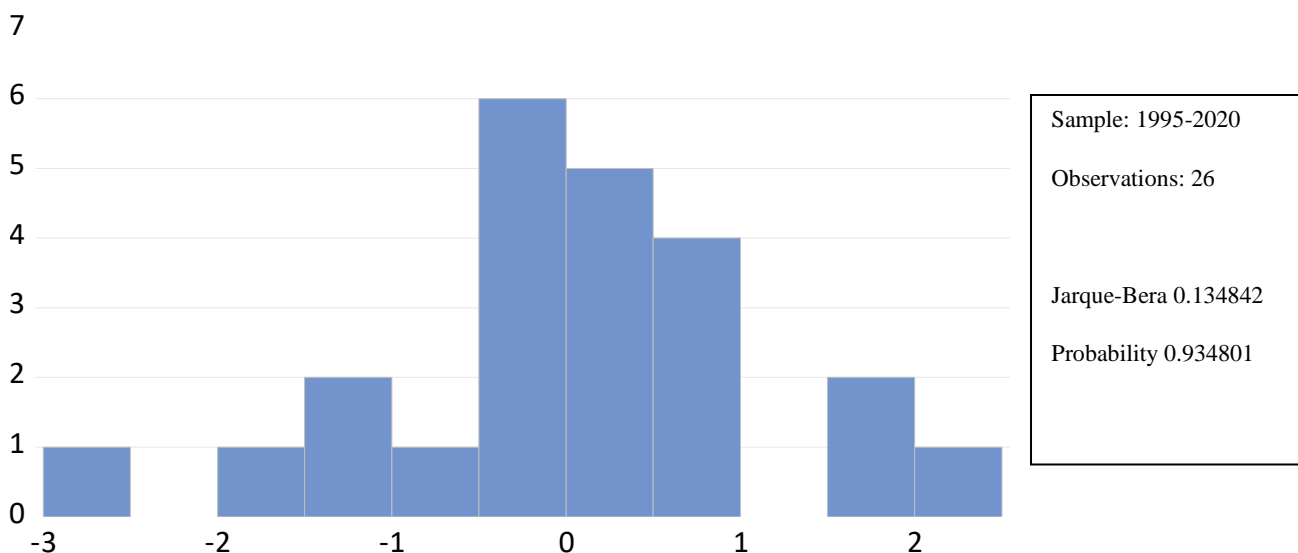**Diagnostic Checks**
Normality Test
Normality Test

Figure 2: Normality

Hypothesis:

H_0: Error term is normally distributed.

H_1: Error term is not normally distributed.

Significance Level: α = 5% or 0.05

Decision Rule: Reject H_0 if p-value is less than α. Otherwise, do not reject H_0. The results in Figure 2 showed that p-value (0.934801) is greater than 5%.

This implies that the null hypothesis of error term is not normally distributed is rejected at 5% significance level. Looking at the skewness, it's evident all the variables are negatively skewed and all close to zero which a firms JB test findings that the error term is normally distributed. Examining the kurtosis; all variables had their entire kurtosis coefficient >0 which shows that they are leptokurtic.

Heteroskedasticity

Table 5: Heteroskedasticity

Panel Cross-section Heteroskedasticity LR Test
Equation: UNTITLED
Specification: LNGDPC INVTD VTRD TRDF OPN C
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	47.94484	6	0.2119

LR test summary:

	Value	df
Restricted LogL	30.41305	151
Unrestricted LogL	54.38546	151

Heteroskedasticity transpires when the variance of the residuals in a model is not constant. LR test was employed to test for the presence of heteroskedasticity. The null hypothesis for the test, H_0: Variance is constant (homoscedasticity). If the probability value (p-value) is greater than 5 percent, the null hypothesis is not rejected.

Since the probability value is greater than 5 percent, the null hypothesis of variance is constant is not rejected, concluding there is no problem of heteroskedasticity.

Cross-Section Correlation

Table 6: Cross-section dependence

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: Untitled
Periods included: 26
Cross-sections included: 6
Total panel observations: 156
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	10.50365	15	0.1380
Pesaran scaled LM	4.656309		0.2192
Pesaran CD	5.727284		0.1205

Serial correlation is present if residuals of one period are related to the residuals of the previous period. Breusch-Godfrey Serial Correlation LM test was employed in the study to test for the presence of cross-section correlation. The null hypothesis for the cross-section correlation test was stated as, H0: There is no cross-section correlation. If the probability value (p-value) is greater than 0.05, the null hypothesis is not rejected. The results on Breusch-Godfrey cross-section Correlation LM Test

are presented tables above confirmed that there was no evidence of cross-section correlation as the probability of the observed R-squared is greater than 0.05 hence the study accepts the null hypothesis of no cross-section correlation.

Autocorrelation

Serial correlation is present if residuals of one period are related to the residuals of the previous period. Breusch-Godfrey Serial Correlation LM test was employed in the study to test for the presence of serial correlation. The null hypothesis for serial correlation test was stated as, H0: There is no serial correlation. If the probability value (p-value) is greater than 0.05, the null hypothesis is not rejected. The results on Breusch-Godfrey Serial Correlation LM Test are presented in table 7.

Table 7: LM-Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 1 lag

F-statistic	0.916095	Prob. F(1,18)	0.3512
Obs*R-squared	1.210734	Prob. Chi-Square(1)	0.2712

Table 7 confirmed that there was no evidence of autocorrelation as the probability of the observed R-squared is greater than 0.05 hence the study accepts the null hypothesis of no serial correlation.

Multicollinearity test

Table 8: Multicollinearity test

Date: 11/19/21   Time: 02:21
Sample: 1995 2020
Included observations: 120

Variable	Coefficient Variance	Uncentered VIF
LNIVTD	0.029922	2.617846
LNVTRD	0.018352	4.584021
LNIFIT	0.018177	5.594161

The research applied the Variance Inflation Factor to determine the level of collinearity between the predictor variables. All VIF factors that were between 1 and 10 were adopted since they indicated zero multicollinearity.

The findings above indicated that the VIF values for the variables; log of invisible trade balance *(VIF= 2.617846)*, log of visible trade balance *(VIF= 4.584021)* and log of international financial transactions *(VIF= 5.594161)*. This indicated there was zero correlation problem in the research since all the VIF values were below 10.

Model Estimations
Fixed effect model vs Pooled Regression model
Table 9: Results of POLS

LNRGDP	Coefficients	Std Error	t-Statistics	Prob.
LNINVTDB	-0.472319	0.035345	11.808234	0.0233
LNVTRDB	-0.033581	0.057196	9.328991	0.0013
LNIFT	0.621574	0.045525	13.653467	0.0325
C	2.730583	0.252153	10.829080	0.0000

Table 10: Results of FEM

LNRGDP	Coefficients	Std Error	t-Statistics	Prob.
LNINVTDB	-0.472319	0.035345	11.808234	0.0233
LNVTRDB	-0.033581	0.057196	9.328991	0.0013
LNIFT	0.621574	0.045525	13.653467	0.0325
C	2.949552	0.365467	8.070628	0.0000

Redundant fixed effect test

Table 11: Redundant fixed effect test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.140770	(5,146)	0.0101
Cross-section Chi-square	15.936951	5	0.0070

At 5% significant level, from the test results of redundant fixed effects the null hypothesis of POLS is appropriate than FEM is rejected since the p- values of 0.0101 & 0.0070 are less than 0.05 and conclude FEM is better.

Random Effect Model vs Fixed Effect Model

Table 12: Results of REM

LNRGDP	Coefficients	Std Error	t-Statistics	Prob.
LNINVTDB	-0.472319	0.035345	11.808234	0.0233
LNVTRDB	-0.033581	0.057196	9.328991	0.0013
LNIFT	0.621574	0.045525	13.653467	0.0325
C	2.709410	0.292291	9.269575	0.0000

Hausman Test

Table 13: 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	5.030953	4	0.2841

In this case the p-value (0.2841) is greater than 0.05 thus the null hypothesis of REM is better than FEM is accepted and conclude that the Random Effect Model is the appropriate model.

Panel Regression Results

Long-run regression Equation:

$$RGDP_{it} = 2.709410 - 0.472319INVTDB_{it} - 0.033581VTRDB_{it} + 0.621574IFT_{it} + \varepsilon_t$$

As shown in Table 12, the average economic growth is affected by the trade balance. The results of multivariate regression analysis show that the trade balances (visible and invisible trade balances) have

statistically significant effect on economic growth. The trade balance ratio has a negative impact on economic growth, i.e., 1 percent increase in trade balance ratio (trade deficit grows or trade surplus decreases) reduces economic growth by about -0.472319 and -0.033581 percent on average respectively. The constant value which is known as the Y intercept, is 2.709410. The altitude of the regression line when it touches the Y axis is explained by the value of constant in a model. If all the regressors are assumed to be zero, it's the projected value of real GDP growth. The results show that all the variables have significant impact on GDP growth. Invisible trade balance and visible trade balance showed significant negative impact on GDP growth while international financial transactions had a significant positive impact.

The validity of the REM results shows that the value of the overall coefficient of determination (0.854262) – (Appendix VIII) is high enough, meaning that the regressors explained about 85 percent of the variations in the East African region countries' economic growth during the study period and the remaining percentage (about 15 percent) (Appendix VIII) is explained by other unobservable random factors captured by the error term that also affect economic growth. The F-value (11.19) (Appendix VIII) is also high and passes the overall significance test at the 5 percent significance level. This result tells us that the null hypothesis of no systematic linear relationship between the dependent and the vector of the right-hand side variables of equation is rejected. On the basis of the p-values, the estimated equation produced four significant explanatory variables at the 5 percent significance level.

The Durbin-Watson (DW) test statistics for the model also depicted that the model did not suffer from autocorrelation problem, i.e., the DW for REM is 2.265.

Discussion of Findings
Effect of visible trade balance on economic growth
The findings show that visible trade balance had a coefficient of -0.033581 with a probability of 0.0013.

This indicates that visible trade balance has a negative and significant effect on economic growth in the East African region. These results are interpreted as a 1% increase in merchandise trade balance ratio (trade deficit grows or trade surplus decreases) reduces economic growth by 3.35%. This research findings were in line with Hassan and Roba (2009) that found in Djibouti, trade in manufactured goods was visibly one of the determinants of overall growth in the economy through the improvement of the balance of trade. However, this finding contradicts Nyokabi & Munyua (2017), while investigating the impact of trade balance on economic growth of Knya, pointed out that primary exports do not offer knowledge spillovers and other externalities as manufactured exports and in general, higher share of primary exports is associated with lower economic growth through trade deficit.

Effect of invisible trade balance on Economic growth
The findings show that invisible trade had a coefficient of -0.472319 with a probability of 0.0233. This indicates that visible trade has a negative and significant effect on economic growth in the East African region. These results are interpreted as a 1% increase in service trade will balance ratio (trade deficit grows or trade surplus decreases) reduces economic growth by 4.72%. This study finding conforms with that of Thomas, (2016) who observed the impact of services exports on India's economic growth, by evaluating the most recent legitimately available input-output table of India for 2008-2015 with that of 1990-2000. The study concluded that a surplus in services trade balance will push Indian economy to achieve higher balance of payments equilibrium and also twin objective of economic growth and external stabilization simultaneously. The finding however does not support, Sulaiman & Abdul-Rahim (2014) test of J-curve pattern on Thailand's trade in tourism with the rest of the world. The study employed the bounds test within the ARDL framework using data spanning from 1970 to 2010. The results showed no evidence of the J-

curve pattern in Thailand's trade in tourism. The long-run results show that Thailand's national income improved its trade balance while foreign income, exchange rate and tourism policy caused trade balance to deteriorate.

Effect of international financial on economic growth

The findings show that international financial transactions had a coefficient of 0.621574 with a probability of 0.0216. This indicates that international financial transactions have a positive and significant effect on economic growth in the East African region. These results are interpreted as a 1% increase in international financial transactions will lead to a 6.21% increase in economic growth in the long run. The positive relationship and statistically significant relationship between international financial transactions and GDP growth are consistent with a prior expectation and economic theory and this finding conforms with the findings by Michael Bordo and Peter Rousseau (2012) study the linkages between financial development, international trade, and long-run growth with a particular interest in the evolving role of trade in growth as financial systems emerge and mature. Using data from seventeen "Atlantic" economies between 1880 and 2004, they find that financial development is strongly linked to growth throughout the period, but that the link between trade and growth emerges primarily in the period after 1945.

CONCLUSION AND RECOMMENDATIONS

The general objective of this study was to establish the effects of trade balance on economic growth of East African region countries. The real inspiration of this study was based on the fact that there have been continuous calls by region leaders and other players for more integration and intra-trade among countries within the region and Africa at large in a bid to boost trade volumes and consequently generate more growth within this region through various channels such as increased productivity which would translate to increased local jobs and thus more disposable income and more revenue to

the regions states through tax revenue as well as foreign exchange reserves. To achieve the objectives of the study a methodology framework of panel regression is undertaken to investigate on year period from 1995 to 2020. The study was out to answer the following research question: What is the effect of visible trade balance on economic growth of East African region? What is the effect of invisible trade balance on economic growth of East African region? What is the effect of international financial transactions on economic growth of East African region? Descriptive correlation research design is used. Secondary data collected from the World Bank website, Statista website and WDI website is employed. Data analysis is done using the E-views 12 software and results presented in form of tables. The findings reveal all the variables have a significant impact on economic growth.

The study sought to determine the effect of visible trade balance on economic growth in East African region. This variable was supported by theory of cumulative causation which states that balance of trade deficits restricts economic growth. The findings from this study indicated that balance of trade deficits have a negative and significant relationship with economic growth in East African region in the long run. The findings show that visible trade balance had a coefficient of -0.033581 with a probability of 0.0013. This implies that the East African region had a visible trade balance deficit which is has a negative significant effect on economic growth in the region.

The study sought to determine the effect of invisible trade balance on economic growth in East African region. This variable was supported by Thirlwall's theory which argues that trade balance deficits will have a negative effect on growth. The findings from this study indicated that invisible trade had a coefficient of -0.472319 with a probability of 0.0233. This meant that East African region had a deficit visible trade balance which has a negative significant effect on economic growth in the region.

The study sought to determine the effect of international financial transactions on economic

growth in East African region. This variable was supported by the new trade theory which argues that financial development contributes positively to economic growth. The findings show that international financial transactions had a coefficient of 0.621574 with a probability of 0.0216. This indicates that international financial transactions have a positive and significant effect on economic growth in the East African region.

The study established that economic growth proxied by GDP growth responds differently to various components of trade balances. The study findings led this research study to conclude that the contribution of trade to the economic growth of East African region countries is mainly a function of trade balances in merchandise, service trade and international financial transactions. This implies that the East African region countries can drive their respective national economic growth by fully investing in the production and value addition of those baskets of goods and services that they have both absolute and comparative advantage in.

By doing so they would increase their respective volumes of merchandise trade and the service sector within the region and beyond which would translate to increased productivity thus creating more productive economic activities that generate more income to the local citizens who will spur economic growth through their increased disposable income. The tax revenue generated from exports of finished products and imports by the governments will equally contribute to the GDP growth of the individual countries and the region at large. It is also worth noting exports of finished products will help improve the balance of trade since value addition translates to local products fetching better prices in the export market unlike exports of raw products.

International financial transactions were found to have a positive and significant effect on GDP growth confirming that effective foreign trade is a by-product of financing of trade related economic activities to make the purchase of imports and the production of exports a reality since trade finance both leads and lags trade.

The results of the study validate the trade-led growth hypothesis in East African region countries. However, heavily dependence on international trade may be detrimental to fiscal sustainability and economic growth under the Prebisch–Singer law of decline in the terms of trade. East African region countries exports mainly primary products, which prices are unstable and determined on the international market.

In light of the results and conclusions, the government and policymakers in East African region countries should consider the following recommendations to improve trade balance and consequently economic growth. First, the governments should establish and adopt an optimal balance between merchandise trade, service and international financial transactions to maintain steady economic growth. More resources need to be mobilized and strategically channeled to the efficient utilization of those resources and economic sectors that individual countries are comparatively endowered with. This will translate into more productivity which will spur GDP growth through employment and revenue generation through taxes on good and services traded locally or externally through imports and exports.

However, for outward-oriented strategy to have much larger impact on economic growth, the East Africa region countries should modify the composition of trade by switching from exports of raw materials and semi-manufactured goods to high valued-added goods. Furthermore, trade policy should promote investments in capital intensive sectors and develop human capital that can absorb technologies coming from advanced countries.

International financial transactions both leads and lags trade and thus need for sustained digital innovations in the international financial transactions space in order to close the trade finance gaps and thus open doors for new sources of growth, increase efficiency and reduce cost and

risk. Such measures support a fundamental increase in trade and thus growth. However, the extent to which this potential is realized relies on both clarity and efficient cohesion in related regulatory standards, and the commitment of multiple stakeholders to support related development in this area.

Finally, there is need for sustained financial development through digitization and adoption of new financial innovations in order to ease trade and increase international financial transactions.

Areas for Further Research

Despite the promising results, this study suffers from some limitations. First, the empirical analysis has been conducted using some aggregate components of trade. An area of fruitful future research would be to analyze the trade composition in terms of specific goods or services and its impact on economic growth. Such an analysis provides useful information about what underpins the positive impact of trade on economic growth.

It will throw light on whether the trade-led growth in East African region is due to agricultural exports or non-agricultural imports. Second, the estimation method used here may be subject to the problem of potential omitted variable bias and endogeneity of some regressors.

Therefore, another useful extension of this research would be to include other relevant variables in a system of equations where trade components are also determined by other economic variables. This helps disentangle the channels through which trade affects economic growth.

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