

Impact of International Trade on Economic Growth in Kenya

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Abstract

This paper investigates the impact of international trade on the economic growth of Kenya by using the autoregressive distributive lag model (ARDL) approach with long-run and short-run coefficients, bound tests, and an error correction model. The study further adopts significant exchange rate, export, import, and gross domestic product (GDP) effects on Kenyan economic growth. The augmented dickey Fuller (ADF) test for unit root revealed that the series was of a different order, differing at the level and first differing to check stationarity to meet the intended goals. Data sources included World Bank and IMF data from 1970 to 2019. The result revealed that the exchange rate and import are positively associated with the gross domestic product (GDP), the exchange rate is positive and statistically significant, and export is negatively related to the gross domestic product (GDP) and is statistically insignificant. To boost exports, Kenya must continue its bilateral, regional, and international trade activities; offer technical and funding provisions to micro, small, and medium-sized initiatives in value chains and companies manufacturing the identified talented export goods; and support the progress of market- and product-specific initiatives.

Keywords: GDP, exchange rate, import, export, Kenya's trade, ARDL model

1. Introduction

International trade is the exchange of commodities, and services across international borders or grounds when there is a need or want for goods or services. Eastern Africa continues to have the fastest-growing economies in Africa, with annual growth rates of 5.9 percent in 2018 and 6.2 percent in 2019. Ethiopia, Kenya, Tanzania, and Uganda lead the growing performance of the subregion with an average growth rate of 6 percent per annum, reinforced by infrastructure investments and an enhanced commercial situation. Strong essentials tolerate the growth of the Kenyan economy, with the services area increasing and infrastructure plans supporting development in the long term (Varnavskii, 2020).

Rising consumption and investment have increased demand for goods imports, but this has not been coordinated by an increase in exports. On the other hand, exports as a percent of the gross domestic product have failed since 2006 (World Bank Group, 2016). Kenya is preparing for the appearance of a challenge from regional players. In 2018, Kenya's "fast growth" in regional exports was being outstripped by the "exponential growth" of other increasingly competitive economies in East Africa. Inadequate access to finance and infrastructure holes limits the capacity of people and firms to buy digital technologies. Although larger companies in Kenya are in a better position to leverage new technologies, MSMEs are unable to do so, mostly due to their lack of affluence (Nganga & Mbithi, 2021).

Kenya is one of the area's top service exporters from sub-Saharan Africa. The government identifies a competitive advantage in the area and is aiming to spur economic growth by encouraging service exports. Approximately 44 percent of Kenya's exports arise from the services segment with tourism contributing about 20pe and Information and Communication Technology (ICT) contributing exports (ITC, 2019).

2. Literature Review

2.1 Theoretical Framework

The empirical analysis attempted to examine the universal trade and economic growth links of two types. Studies emphasize the fundamental affiliation between international trade and economic progress and the influence of global trade on economic growth. Nevertheless, there is still no overall consensus on how global trade can affect economic activities. The origins of these debates have been outlined in the theoretical expositions of Adam Smith and David Ricardo. Adam Smith first defined that a party can have no absolute advantage in everything; in that situation, no trade will happen with the other party. The capacity of a party (personal, firm, or nation) to produce better or worse than competitors while using a large number of resources is defined as the "code of absolute advantage." David Ricardo was opposed to tariffs and other limitations on global trade. Ricardo

developed an idea that is well known as the theory of comparative advantage (Henderson, 2006).

Harrod's observation that net investment indirectly that the capital stock would rise derived as fairly of a surprise to Keynes and the Circus. Although Keynes's approach, which ignored the consequence of this increment on the capital stock and focused on the effect of investment on the level of income through the multiplier, was adequate for an analysis of the short run, it was clearly deficient for the long run (McCombie, 1998).

2.2 Empirical Literature

Empirical evidence from many nations tends to show that developing nations with a successful track record of export development typically experience greater rates of national income growth. One would anticipate a positive link in terms of the correlation coefficient given that exports represent a part of total production. Nurkse recommended balanced growth, or "connected advancement," in farming and industry as a result of his empirical discovery that "growth by commerce" was no longer feasible. and diversity within the industrial industry "enough to overcome isolated development's disappointment. Without this fundamental assumption, balanced growth is impossible or futile (Crafts, 1973).

This study investigates the factors that contributed to regional economic growth in Kenya's 47 counties between 2014 and 2017. the reduced Solow-Swan growth theoretical framework serves as the foundation for this study. Descriptive and inferential statistics were the analysis methods used in this investigation. When the LLC test for panel unit root was used, it was discovered that all target variables were stationary, with the exception of economic growth and power infrastructure. The long-run and error correction estimates of the ARDL regression were obtained by subjecting the model to diagnostic tests after cointegration was confirmed using the Kao test. This study has identified public savings, government consumption, energy infrastructure, the superiority of authority, and institutions as the key determining factors of regional development in the long run. alternatively, the result from the short-run regression equivalence has recognized social capital and budget operation as the main foundations of growth (Naftaly, 2021).

This study observed that African economic growth is impacted by the role the digital economy plays in global trade, according to a sample of 53 nations from 2000 to 2018. He divided the sample into five sub-regions, and the outcomes were estimated by POLS, random and static effects, and the GMM models. He found that international trade has only a positive influence on economic growth when inter- acted with the digital economy in the POLS approximations, and similarly Trade has a significantly positive influence on economic wealth without and with the collaborating period in the RE, FE, and the sys-GMM assessments productivity elasticities of capital and labor have positive and negative effects on economic growth, respectively. And He recommended focused efforts be directed towards emerging the digital economy to ensure international trade (Abendin & Duan, 2021).

The study investigates how global trade affects Kenya's economic growth. World development indicators from 1960 up to 2010 were the data's primary source. Several types of machinery in international trade influence economic growth. He observed the impact of exchange rates, inflation, and government consumption on Kenya's economic growth. A multiple linear regression model was used to evaluate the present affiliation among variables, and then the OLS method was conducted. He found that exchange rates have no impact on the Gross Domestic Product (GDP) growth rate, although inflation has a negative and important effect on GDP. Government consumption had a positive influence on the gross domestic product in Kenya. He advised the decision-makers to focus on measures that support exports, keep inflation rates low and stable, and boost government spending on development projects (Soi et al., 2013).

This study is to identify the impact of international trade on economic growth in Kenya. The data were analyzed using descriptive statistics and regression analysis. The model was estimated using the ARDL model. There was no long-run association between the variables, according to the ARDL bound test. He found that net capital flows and imports have a negative relationship with GDP and are significant at the 5 percent level of significance. Export has a negative relationship and is insignificant at a 5 percent level of significance. He recommended the government intensify its export promotion efforts by fostering the development of sectors with strong export potential. And also promote to achieve the country's economic growth (Yusuf et al., 2021).

This study examined the relationship between Kenya's exports, imports, and growth performance. Kenya's export growth has been modest, and exports are still heavily oriented towards basic agricultural items, notwithstanding trade liberalization and export promotion strategies that have been followed over time. The majority of the results point to import-led growth rather than export-led growth, indicating the economy's reliance on imports. It is essential for Kenya to overhaul the export-led growth approach by promoting export affordability, growing value addition, export divergence, and leveraging on regional and international worth shackles (Wamalwa & Were, 2021).

3. Research Methodology

This study investigates the Augment Dickey-Fuller (ADF) test for unit root and the Autoregressive Distributive Lag Model (ARDL) cointegration approach with an error correction model and short-run relationship estimation test, as well as the short causality test. Data for the study was collected from the World Development Indicators (WDI) and the International Monetary Fund from 1970 to 2019. to examine the effect of international trade on the economic growth of Kenya.

Table 1. Dependent and independent variables as well as data sources

Variable	Abbreviation	Sources
Gross Domestic Product	GDP	World bank Data
Exchange rate	EXR	(IMF)
Export	EXP	
Import	IMP	

3.1 Model Specification

Purposeful form of the model of the current study is expressed as follows:

$$GDP = f(EXR, EXP, IMT, E) \quad (1)$$

Stand for

GDP: Real Gross Domestic Growth

EXR: Exchange Rate

EXP: Exports (Exports as GDP ratio)

IMT: Imports (Imports as GDP ratio)

3.1.1 Transforming of Natural Logarithm of the formula (1)

A data transformation technique known as “log transformation” substitutes each variable, such as GDP, with a log (GDP). According to the goals of statistical modeling, the analyst is often free to choose the logarithm basis. It's conceivable. In this study, we logged the variables such as gross domestic product, exports, and imports since log-transforming depend on distributions and normality in predictors, which is not an assumption of regression. However, log-transforming does make data more uniform and less susceptible to outliers.

$$LGDP_t = \beta_0 + \beta_1 EXCH_t + \beta_2 LogEXPT_t + \beta_3 logIMPT_t + \varepsilon_t \quad (2)$$

Where;

β_0 is an intercept, β_1 , β_2 and β_3 are the coefficients of the explanatory or related variables. ε is the stochastic or random error term that captures the effect of other variables not included in the model (properties of zero mean and non-serial correlation).

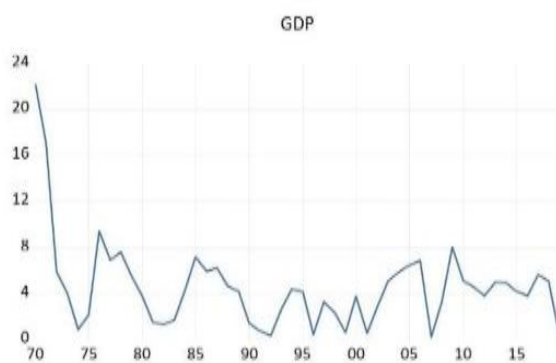


Figure 1. GDP at first differencing (0)

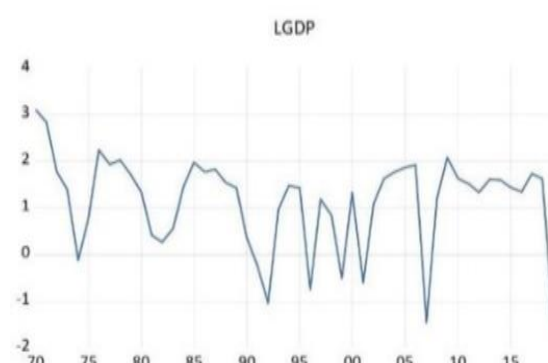


Figure 2. LGD at first differencing I(1)

In this recent study of the Augmented Dickey-Fuller (ADF) tests, which were once used to check stationarity and for assisting evidence, the ARDL bounds examine the variables primarily based on the assumption that they are varying at level or first varying. So, earlier than making the practice of this test, we decide on the instruction of integration of all variables through the use of the unit root tests (An et al., 2010).

4. Result

Table 2. Unit Root Test at level

Variables	ADF test	Critical Value 5%	T	Decision
LGDP	Constant	-2.929734	-1.007105	at level, non-stationary
LGDP	Trend& intercept	-3.515523	-2.227130	at level, non-stationary
EXCHT	Constant	-2.922449	0.063962	at level, non-stationary
EXCHT	Trend& intercept	-3.504330	2.313506	at level, non-stationary
LEXPT	Constant	-2.922449	-0.392941	at level, non-stationary
LEXPT	Trend& intercept	-3.504330	-1.858500	at level, non-stationary
LIMPT	Constant	-2.922449	-2.828581	at level, non-stationary
LIMPT	Trend& intercept	-3.504330	-3.545418	Stationary at level

Note. According to Table 2 ADF unit-root test, if there is stationary at the level and statistically significant at the 5% level.

The augmented Dickey-Fuller (ADF) test for unit roots was conducted for all the time series used for the study. Table 2 displays the outcome of unit root tests using the ADF unit root test at the level. In Table 2, the outcome of the ADF test demonstrates that all the data series are nonstationary at this level.

Table 3. The results of the ADF unit root test at Stationary I(1)

Variable	ADF Test	Critical Value 5%	T Statistic	Decision
LGDP	Constant	-2.929734	-5.209249	Stationary at I (1)
LGDP	Trend& intercept	-3.515523	-5.138757	Stationary at I (1)
EXCHT	Constant	-2.923780	-6.330604	Stationary at I (1)
EXCHT	Trend& intercept	-3.506374	-6.303771	Stationary at I (1)
LEXPT	Constant	-2.923780	-6.575381	Stationary at I (1)
LEXPT	Trend& intercept	-3.506374	-6.688238	Stationary at I (1)
LIMPT	Constant	-2.923780	-9.209586	Stationary at I (1)

Note. The null hypothesis of nonstationary is achieved at the 1%, 5%, and 10% significance levels Table 2 denotes that there is stationary at 1st difference and statistically significant at the 5% level.

Table 3, the result of the ADF test, illustrates that all the data series are stationary at first differencing. However, the result of the ADF test on the first difference strongly supports that all data series are stationary after the first difference at the 5%, significance level. The ADF results show that all the variable series were integrated in order of first difference.

4.1 ARDL Bounds Testing Procedure

the ARDL method to cointegration comprises estimating the conditional error correction (EC) form of the ARDL model for international trade and its factors:

$$\Delta LGDP_t = \beta_0 + \sum_{i=1}^p \beta_1 \Delta LGDP_{t-i} + \sum_{i=1}^p \Delta \beta_2 EXRT_{t-i} + \sum_{i=1}^p \Delta \beta_3 LEXPT_{t-i} + \sum_{i=1}^p \Delta \beta_4 LIMPT_{t-i} + \beta_5 LGDP_{t-1} + \beta_6 EXRT_{t-1} + \beta_7 LEXPT_{t-1} + \beta_8 LIMPT_{t-1} + \mu_t$$

where L (GDP), EXRT, L (EXPT), and L (IMPT) are the real gross domestic product, exchange rate, export increments, and imports, respectively. GDP, exports, and imports are moved to the natural logarithm; the first difference is operative, P is the optimum lag length and shows long-run coefficients and short-run coefficients

Table 4. Bound Test Outcomes

F-Bound Test	Value	Lower bound	Upper bound
K	3		
F-statistics	5.06	3.23	4.35

Note. ** Please make a statistically significant donation of 5%. K represents the number of regressors.

Table 4 determines the computed F-statistic is equivalent to 5.06 and is higher than the lower bound critical value of 3.23 and the upper bound critical value of 4.35 at a 5% level of significance, thus indicating the existence of cointegration between the variables in the model. The calculated outcomes illustrate that F statistics exceed the upper bound; the null hypothesis of no cointegration can be rejected.

Table 5. Bound test

T Statistic	Values	Significant Level	Lower Bound I (0)	Upper Bound I (1)
F statistic	K=3	5%	2.79	3.67

Table 5 illustrates that the outcome of Eviews, K , is standard for the number of explanatory variables such as exchange rate, export, and import) hence, K is equal to 3. All the lower bound and upper bound critical standards are found.

Table 6. Long-run coefficients

Variable	Coefficient
EXCHT	0.0202
LEXPT	-1.1367
LIMPT	3.39030

Note. **Donote statistically significant amounts at the 5% level.

Source: own calculations.

Table 6 contributes to the summary of the outcomes of the long-run ARDL model for international trade. All the variables in the model have significant long-term effects on economic growth. This promotes that a 1% gratitude of the Exchange rate will bring a 0.001% Rise in economic growth. The Kenyan exchange rate is important. This outcome is also consistent with economic theory.

According to experts, there was a negative relationship between exports and gross domestic product in the long run Exports have an insignificant impact on output in the long run. A 1% increase in the grade of export would lead to around 0.12 percent in the economic growth of Kenya. Exports do lead to economic growth in Kenya. Import shows 3.3 that there was a strong positive relationship Between Import and Export in the long run. A 10% rise in imports will bring about a 13% enhancement in the level of economic growth. and highly significant suggesting that Gross domestic product (GDP) rises by 6 percent of the growth in the long run. Kenya's imports have an influence on economic growth continued by a higher impact level of imports compare to little export.

Analysis of the dynamic relationship between the time series data is done using causality testing. It goes to show whether or not a time series is useful in forecasting additional events. The study uses the Wald test to control the short-run causality among the variables.

Table 7. Short-run Casualties

Variable	F-statistic	Pro
EXCHT	4.346850	0.0440*
LEXPT	2.145540	0.0815
LIMPT	3.261347	0.0791

Source: The author's valuations.

Table 7 shows from the outcomes above, that there is a short-run causality running from the exchange rate to the GDP. However, the table displays that there is no short-run causality between the imports and exports and the gross domestic product (GDP).

Table 8. Error correction model

Variable	Coefficient	T-Statistic
EXCR	0.012	-0.0341
DLEXPT (-1)	-0.8391	-0.523
DLIMPT (-1)	1.542	1.0915
CointEq (-1)	-0.733	-4.778

Note. The author's valuations are the source of this information.

Table 8: The outcome of the ECM is fairly reliable between short-run and long-run relationships The short-run outcome of exports on the gross domestic product (GDP) is negative at 5% of the level of significance. The effect of exchange rate and import in the error-correction model is positive and remains insignificant in the short-run and long run at a 5% level of significance. The coefficient of ECM is negative (-0.73) and, however, is very high, which suggests that it will take a short time to restore steady-state, or the speed of adjustment (73%), if the system is distributed. The estimated model displays a fair level of goodness of fit.

5. Diagnostic Tests Results

To satisfy the classical linear regression (CLRM) assumptions, normality is required, apart from stationarity tests, heteroscedasticity, serial correlation, multicollinearity, and functional shape tests. We did this in the previous section. In this section, we tested whether the data were normally distributed. Furthermore, the CLRM assumption hypothesizes that the error term is normally distributed. The hypothesis assumes that the error terms are normally distributed, but the alternative hypothesis is that the error terms are not normally distributed.

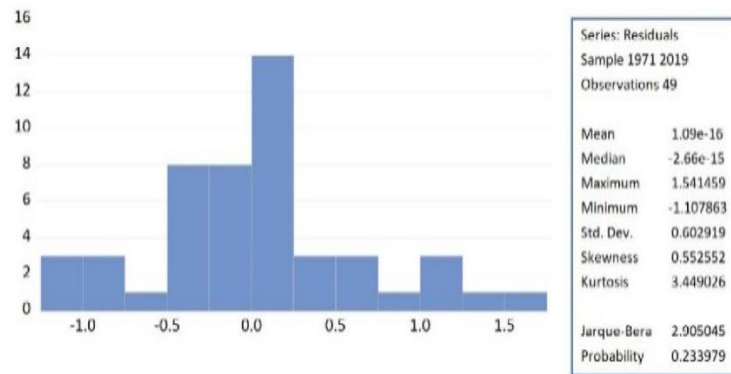


Figure 3. Normality distribution

After blacking out the outliers now, the Jarque-Bera test is insignificant; this value is greater than 0.05. which means that the residuals follow normality; these residuals are almost normally distributed.

Table 9. The Breusch-Godfrey serial correlation LM test

F-Statistic	0.0780	Pro.F(2,33)	0.9251
Obs*R-squared	0.2306	Prob.Chi-Squared	0.8911

Source: Authors' Calculations.

These p-values (0.925 and 0.881) are observed as R-squared and Chi-squared; they are statistically insignificant, so Table 9 shows that there is no serial correlation of these residuals.

Table 10. The heteroskedasticity test: Bresuch-pagan-Godfrey

F-Statistic	1.4910	Pro.F(13,35)	0.1698
Obs*R-squared	17.4649	Prob.Chi-Squared (13)	0.1789
Scaled explanation: SS	10.91125	Prob.Chi-Squared (13)	0.6183

Source: Authors' Calculations.

The fact that the probability value of the F statistic and the probability value of the observed R-squared are both greater than 0.05% shows that no evidence of heteroskedasticity exists in this model.

Table 11. Heteroskedasticity test: ARCH

F-Statistic	0.8231	Pro.F(1,46)	0.3690
Obs*R-squared	0.8438	Prob.Chi-Squared (1)	0.3583

Source: Authors' Calculations.

The Arch test was also used in the study to confirm the Arch impact. The test information is an LM number with a worth of the observed R-square and Chi-square associated values is 0.3690 and 0.3583 implying that the null hypothesis of no Arch effects in the data is rejected.

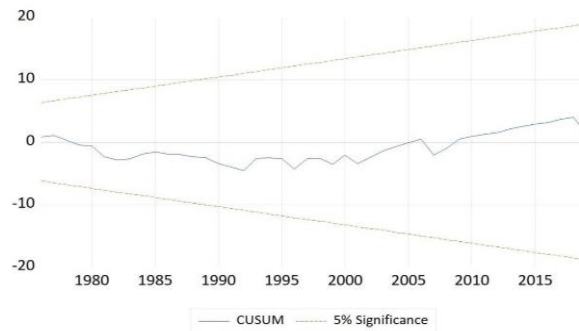


Figure 4. Cumulative sum test

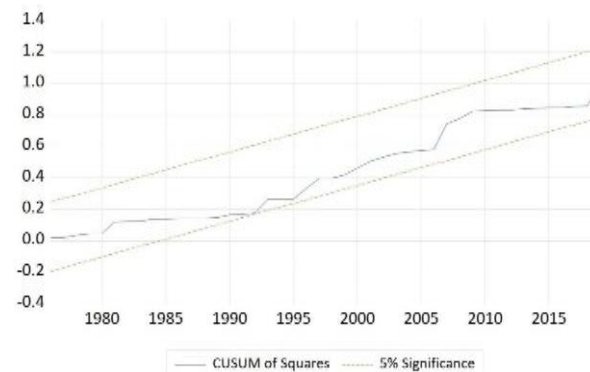


Figure 5. Cumulative Sum of square test

Figure 4 showed from the Cusum test that the blue line lies within 5 percent of the critical line, so the model is stable and there is nothing to worry about. On the other hand, figure 5 shows the Cusum Squares test after converting the data log from the residual variance as becoming stable. The blue line lies within 5 percent of the critical line, so the model becomes stable.

6. Discussion and Conclusion

Kenya has limited natural resources, but it has a large pool of talented young people who, with the right encouragement, can create ways to benefit from global trade. Unfortunately, this is frequently hampered by a variety of Kenyan poverty-related causes. These include a lack of or slow rate of economic growth, income inequality, unequal access to land and other productive resources, natural disasters like drought, floods, and fire, low access to basic social services, particularly those related to education and health, and poor implementation of development initiatives. Lack of infrastructure is one of the main challenges for the export of goods and services. The study makes it obvious that there is overdependence on other nations in Kenya's economy.

For Kenya to prosper, it is necessary to develop its capability to invest capital to manufacture goods, but today Kenya, like most emerging economies, is deeply reliant on imported intermediate and capital goods. Higher national income encourages advanced growth in imports compared to exports. The main problem that causes the decline of the Kenyan economy is Uncertainty and violence during the elections; corruption; the weakness of the government institutions; deteriorated consumer expenditure (primarily due to increasing unemployment and poverty); furthermore, lower public investment; and fiscal austerity

The outcomes display that the exchange rate and imports are positively linked to the gross domestic product, although exports are negatively linked. In terms of GDP, these results are consistent with Conteh et al. (2002). Suggesting that Kenya is productively regulatory trade opening, particularly imports of consumer goods, and growing economic growth through international trade.

It recommended too much effort into the agricultural sector (such as tea, coffee, cut flowers, and vegetables), which is the main export revenue source in Kenya. It is suggested that Kenyans crop or export rendering to meet their industrial needs; therefore, the state will reap the benefits.

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