The Impact of Trade Balance on Economic Growth in West African Countries

Oyegun Gbenga, Oladele Friday

University of Delta, Agbor, Delta State, Nigeria

ABSTRACT

This study examined the impact of trade balance on economic growth in West Africa countries using panel data of fifteen countries from 2009-2023. It employed the mean group (PMG)/ARDL to explore the short-run and long-run relationship between economic growth proxied by real GDP per capita and trade balance, exchange rates, imports, and exports as independent variables based on the outcome of the diagnostic tests performed. The results showed that trade balance posed positive and significant impact on economic growth of the countries in the sub region in both short run and long run analyses. The study also found that exchange rate (EXRT), import demand (IMPY), and export (EXPT) fosters a positive and significant effect on economic growth in the long run in West Africa for the period covered in the study. It is also recommended that West African countries should pursue export promotion drives linked with credit economic stimulus policies such as investment promotion and value addition to the vast natural resources of the continent. spur economic growth and development.

INTRODUCTION

Trade balance is a critical component of Payments (BOP) and it plays a pivotal role in the economic landscape of any nation, influencing its economic stability and growth trajectory. The importance of trade balance lies in serving as an indicator of the international economic growth position of any country. It can also be used to appraise a nation's short-term international economic growth prospects, to evaluate the degree of its international solvency, and to determine the appropriateness of the exchange rate of country's currency.

Kennedy (2013) argues that a country's favourable trade balance does not necessary imply economic prosperity nor the unfavourable balance of trade is not a reflection of economic failure. A poor country may have a favourable balance of payments due to large inflow of foreign loans, foreign aids and equity capital. A developed country may have unfavourable balance of payments due to massive assistance given to developing countries. Thus, a deficit or surplus of balance of payments of a country per se should not be taken as a sign of economic growth or prosperity or failure of the country. However, the longer the balance of payments deficit continues, the more it would imply some fundamental problems in the economic growth of a country.

West Africa, a region known for its diverse economies and resource-rich nations, faces unique challenges and opportunities concerning its balance of trade. Understanding the relationship between balance of trade and economic growth in West Africa is essential for policymakers, economists, and stakeholders seeking sustainable development strategies (International Monetary Fund [IMF], 2016).

The current account position of countries within the West African sub-region should be a source of concern to policy makers. This is because their economy is external sector driven, which suggests the dependence of the economy on external sector to generate foreign exchange to import capital goods for increased economic activities in the real sector. Thus, the capacity of the government to provide good infrastructure, such as road network, railway and stable power supply, has a direct link on performance of the external sector of the economy.

In the event that a country runs a current account deficit, it means it needs to run a surplus on the capital account. Getting capital account surplus means foreigners have an increasing claim on the domestic assets, which they could desire to be returned at any time. There is also a risk that the countries best assets could be bought by foreigners; reducing long term income and increases the balance of payments deficit and its effect on economic growth.

Despite the economic potentials in West Africa, persistent trade imbalances, fluctuating exchange rates, and external debt issues have raised concerns about the impact of the balance of trade on the economic growth of individual countries and the region as a whole (IMF 2024).

Several factors affect trade balance and these differ across countries in West Africa. Thus, there is a need for a comprehensive understanding of the factors influencing the balance of trade and how they in turn affect economic growth in West Africa. The general objective of this study is to examine the impact of trade balance on economic growth in West Africa.

LITERATURE REVIEW

Conceptual Literature

Balance of Trade and Balance of Payments

Balance of trade is the difference between the value of the goods that a country (or another geographic or economic area such as the ECOWAS or the euro zone) exports and the value of the goods that it imports. Balance of payments is a statement of all transactions made between entities in one country and the rest of the world over a defined period, such as a quarter or a year. It summarizes all transactions that a country's individuals made within a defined period of time usually a year.

Economic Growth

Economic growth can be defined as a sustained increase in the output of goods and services of a country over a given period of time. In essence, it is an increase in the capacity of an economy to produce diverse goods and services in aggregate terms from one period to another. Growth can be measured in nominal or real terms (Singer, 2013; Feldstein, 2017). The real rate of growth measured in constant market prices is a more useful measure than the nominal GDP growth rate (measured in market prices prevailing in that year). Because it is measured in constant terms, it considers the effects of inflation which could impact actual growth rate. The real economic growth rate measures economic growth in relation to a country's aggregate output from one period to another expressed in real terms (adjusted for inflation). It is often expressed as a percentage in terms of rate of change for a country's aggregate production usually from year to year.

Exchange Rate

Exchange rate is the price of one country's currency expressed in terms of other currencies. It determines the relative price of the domestic goods, as well as the strength of external sector participation in the internal trade. Exchange rate regime and interest rate remain important issues of discourse in the international finance as well as in developing nations, and more in economics embracing trade liberalization as requisite for economic growth (Giwa et al 2020). Exchange rate plays a key role in international economic transactions because no nation can remain in autarky due to varying factor endowment. ices.

Exports

Exports are the goods and services that a country produces domestically, or within the borders of its own country, and sells to buyers in a foreign country. The opposite of exports are imports, which are goods and services that buyers in a country purchase from sellers in a foreign country. Exports and imports are components of international trade, which is the exchange of goods and services between countries. Trade barriers such as tariffs, taxes on imports, and subsidies, funding given to domestic businesses, can affect a country's flow of exports.

Imports

An import is a good or service bought in one country that was produced in another. Imports and exports are the components of international trade. If the value of a country's imports exceeds the value of its exports, the country has a negative balance of trade, also known as a trade deficit. Countries are most likely to import goods or services that their domestic industries cannot produce as efficiently or cheaply as the exporting country. Countries may also import raw materials or commodities that are not available within their borders. For example, many countries import oil because they cannot produce it domestically or cannot produce enough to meet the current demand.

Theoretical Review

Endogenous Growth Theories

Unlike the traditional growth theories which view economic growth as a result of exogenous factors, Paul Romer, Robert E. Lucas and Robert J. Barro independently came up with a new type of growth theory which endogenizes technical progress. This theory is known as Endogenous Growth Theory. The recent literature highlights the existence of a variety of channels through which steady state growth may emerge endogenously.

The new growth theory stressed the importance of innovation, human capital accumulation, the development of new technologies and financial intermediation as important determinants of economic growth. The experience of East Asian countries also provides several lessons on the impact of policies on economic growth. It is agreed that government intervention aimed at removing obstacles to market mechanisms or other sources of market failures is not harmful to growth (Agenor & Montiel, 1996). Salvadori (2003) points out that the aim of the endogenous growth theory is of two strands. First, to overcome the short comings of the neoclassical growth theory which does not explain sustained growth, and second, to provide a rigorous model in which all variables crucial for growth such as savings, investment and technology are the outcome of rational decisions.

Since the main objective of the endogenous growth theory is to develop economically meaningful accumulated factors, then the rate of interest should never be driven too low. This is considered as a necessary condition for perpetual growth (Hammond & Rodríguez-Clare, 1993). The accumulation of factors can be facilitated either by removing the scarcity of natural resources or by introducing technical progress. As far as the former is concerned, for example, labour has been straight forwardly transformed into a fully reproducible resource, human capital. As for technical progress, one of the main features of the endogenous growth theory is the capacity to endogenize the investment decision yielding technological progress which consists mainly in the introduction of new intermediate and/or final goods.

In general, it has been shown that there is continuity from classical to endogenous growth theories, partly through Keynesian theory concerning the fact that the steady state is conceived as endogenously determined by the model. By contrast, neoclassical economists see it as exogenously determined by factors considered outside the realm of economic explanation. There is also continuity between classical, neoclassical and endogenous growth theory as opposed to Keynesian theory, in terms of saving-investment relationship. While the former theories conceive saving as wholly transformed into investment, and therefore, growth being determined by saving itself, Keynesian theory conceived investment as the source of growth and no relationship between the former and the latter variable necessarily exists (Salvadori, 2003).

Theories on Balance of Trade

The Elasticity Approach

The elasticity approach focuses on the balance of trade. It studies the responsiveness of the variables in the trade and services account, constituting of imports and exports of merchandise and services relative price changes induced by devaluation. The elasticity approach to balance of payments is built on the Marshall Learner condition (Sodersten, 1980), which states that the sum of elasticity of demand for a country's export and its demand for imports has to be greater than unity for a devaluation to have a positive effect on a

country's balance of payments. If the sum of these elasticities is smaller than unity, then the country can instead improve its balance of trade by revaluation.

This approach essentially detects the condition under which changes in exchange rate would restore balance of payments (BOP) equilibrium. It focuses on the current account of the balance of payment and requires that the demand elasticity be calculated, specifying the conditions under which a devaluation would improve the balance of payments. Crockett (1977) sees the elasticity approach to balance of payments as the most efficient mechanism of balance of payments adjustments and suggests the computation of demand elasticity as the analytical tool by which policies in the exchange field can be chosen, so as to form the equilibrium. In contrast, Ogun (1985) is of the view that most less developed countries who are exporters of raw materials or primary products, and importers of necessities may not successfully apply devaluation as a means of correcting balance of payments disequilibrium, because of the low values for the elasticity of demand.

The assumptions underlying the derivation of the Marshall-Lerner condition implied that terms of trade changes were the only initial effects of devaluation, [see Mundell (1968), & Hallwood and MacDonald (1996)]. However, in other models, a change in terms of trade is seen as one of several possible effects of devaluation, rather than the initial effect on which all other results depend (Kemp, 1962). In this model, we assume away capital movements and the domestic price level varies inversely with respect to the world price level. In other words, the law of one price does not hold in this case.

The elasticity condition popularly called the Marshall-Lerner condition is stated notionally as:

$$e_x + e_m > 1 \qquad\qquad (2.1)$$

The above relation can be written as

$$e_x + e_m - 1 > 0 \qquad\qquad (2.2)$$

Where e_x is the elasticity of demand for exports and e_m is the elasticity of demand for imports. The balance of payments in domestic currency can be written as

$$B = P_x.X - E.P_m.M \qquad\qquad (2.3)$$

Where;

B = Balance of trade.

$P_x.X$ = Revenue from exports (price per unit of export multiplied by quantity of exports).

$P_m.M$ = Revenue from imports (price per unit of import multiplied by quantity of imports).

E = Exchange rate (units of domestic currency per foreign currency).

With a variation of exchange rate, export demand becomes

$$X = \frac{dX/X}{dE/E} \qquad\qquad (2.4)$$

From the above equation, an increase in exchange rate leads to an increase in exports, while a fall in exchange rate will lead to a fall in exports. Import demand is represented by;

$$M = \frac{-dM/M}{dE/E} \qquad\qquad (2.5)$$

The above equation posits that an inverse relationship exists between import demand and the exchange rate. Thus, the higher the exchange rate, the lower the demand for imports and the lower the exchange rate, the higher the level of imports. However, if the sum of demand elasticities is less than one, the Marshall-Lerner

condition can still be satisfied if supply conditions are right and if none of the demand elasticities is zero. Suppose the elasticity of demand for exports is zero, it follows that exports in domestic currency are the same as before devaluation. But if the demand for imports has zero elasticity, the value of imports will rise by the full percentage of devaluation. For devaluation to improve the balance of payments, the sum of the elasticity of demand for imports and exports must be greater than one, so that the value of import falls and the value of exports will expand by more than the percentage of devaluation.

The Absorption Approach

This approach is due to Alexander in 1955. The approach summarily postulates that devaluation would only have positive effects on the balance of trade if the propensity to absorb is lower than the rate at which devaluation would induce increases in the national output of goods and services. It therefore advocates the need to achieve deliberate reduction of absorption capacity to accompany currency devaluation. The basic tenet of this approach is that a favourable computation of price elasticity may not be enough to produce a balance of payments effect resulting from devaluation, if devaluation does not succeed in reducing domestic expenditure (Machlup, 1955).

The approach dwells on the national income relationship developed be Keynes and it tries to find out its implication on balance of payments. Recall the national income identity;

$$Y = C + I + X - M \qquad (2.6)$$

Where   Y   =   Income

C   =   Consumption

X   =   Exports

M   =   Imports

Let $C + I = A \qquad (2.7)$

Where;

A   =   Absorption (expenditure)

The balance of payments equation is given as

$$B = X - M \qquad (2.8)$$

Where B = balance of trade.

Rewriting the national income identity using equations (2.7) and (2.8), we have

$$Y = A + B \qquad (2.9)$$

Equation (2.9) states that the national income equals absorption plus trade balance. Alternatively,

$$B = Y - A \qquad (2.10)$$

Expressing equation (2.10) in terms of changes yields;

$$dB = dY - dA \qquad (2.11)$$

From equation (2.7), $A = C + I$ and both C and I are functions of Y. Then,

$$dA = cdY - dD \qquad (2.12)$$

Where;

c   =   marginal propensity to absorb

dB   =   direct effect of devaluation on absorption

Equation (2.12) captures how a change in income affects absorption. Substituting (2.12) into (2.11) gives

$$dB = (1-c)dY - dD \qquad\qquad (2.13)$$

The relation (2.13) implies that a change in the balance of payments is a function of the marginal propensity to spend out of the change in income plus the direct effect of devaluation on absorption.

Empirical Review

Some of the empirical findings for the various theoretical framework are given below: While a number of studies (Oyovwi, 2012; Odili, 2015; Adaramola, 2016; Isola, Oluwafunke, Victor, & Asaleye, 2016) have tried to establish the relationship between exchange rate and economic growth, others (Akosah, 2014; Ogbonna, 2015), have also examined the import demand–economic growth nexus.

In the empirical assessment on the efficacy of monetary policy in balance of payment adjustment in Nigeria from 1981-2012 using quarterly data by Sede and Ohiomu (2015), the empirical results suggest that money supply played significant role in determining balance of payments in Nigeria employing Co-integration and error correction model (ECM) techniques. The study opined other fiscal variables such as import and export duties should not be excluded in the exercise of balance of payment disequilibrium correction in Nigeria. As part of their recommendation, policies that will reduce price volatility should be pursued. Such policies include appropriate targeting of inflation rate to ensure that domestic price level does not diverge significantly from the rates existing in the world market.

Suriaganth and Mohamed (2021) examined the impact of foreign trade on economic growth of India. Using OLS method, they found that export and import have the significant positive impact on GDP while economic openness has a negative impact on GDP in India. The results confirm the importance of foreign trade on expansion and growth of Indian economy. Although economic openness is negatively related with GDP, the overall impact of trade on economic growth represented by export is positive and highly significant Their study also indicates that post liberalization era has certainly helped India in achieving high growth in the economy as there has been a rapid growth of imports of capital goods and technical raw materials to meet the requirement of industrialization and growing imports of petroleum products for meeting industrial and consumption requirement. It is also found that though import has a negative influence on economic growth, the volume of trade reflected by economic openness has a positive impact on the economic growth of India and its magnitude is increasing continuously.

Adelegan and Abraham (2022) carried out a country specific study to investigate empirically investigated the determinants of balance of payments in Nigeria from 1981 to 2019. The Autoregressive Distributed Lag Model (ARDL) was used in the investigation. Long-term results from the ARDL regression showed that the exchange rate coefficient was negative, whereas short-term results showed a positive value. Also, the coefficients of FDI, GDP growth, interest rates, and crude oil prices were positive and significant. A strong case was made for government intervention to improve economic productivity, as evidenced by this study. Specifically, government should make incentives to prospective foreign investors in order to attract FDI inflows into the country.

Elakkad and Hussein (2023) investigated the impact of real imports on economic growth together with determining the main economic variables that affect the demand of imports using an Autoregressive Distributed Lag (ARDL) bounds estimation technique applied on annual observations in Egypt since launching the open-door policy in 1974 till 2021. The results of the ARDL bounds tests model confirm the existence of a cointegrated long-run relationship between the dependent and the independent variables. After confirming the

long-run relationship, the short-run coefficients have been estimated by ARDL error correction model (ECM) to find that in Egypt, it takes a period of less than two years to adjust any shock in economic growth.

Ajayi, Ochinyabo & Adebagbo (2024) examined monetary policy regimes and the balance of payment in West Africa from 2001 – 2021 using ex-post facto research design and data from WDI and IMF databases on panel ARDL model. The result showed that the various monetary policy regimes in West Africa had conflicting effects on the balance of payments. Based on the findings, the paper concluded and recommends that to achieve a balance of payment equilibrium in West Africa, the monetary policy rate is an effective tool, this is because it is significant in explaining the changes in the balance of payment in the countries in West Africa

Gaps in Literature

The diverse factors regarding trade balance in West Africa in relation to balance of payments and economic growth is the primary motivation for this research. These were explored varyingly by the reviewed works. At the methodological level, most previous studies have relied on traditional panel estimation methods that assume cross-country homogeneity in the slope coefficients of the trade balance relationship with real exchange rate, domestic and foreign income. Accordingly, this study makes use of the Mean Group (MG) estimator suggested by Pesaran and Smith (1995) and the group mean versions of Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS) estimators suggested by Pedroni (2001). It is expected that the effects of real exchange rate, domestic and foreign income on the trade balance differ across countries.

METHODOLOGY

Theoretical Framework

The Solow (1956) Growth Model and its extensions is the framework for economic growth employed in this study. The model posits that the economy will converge to a steady state growth determined by population growth rate and rate of technological change.

The model explains further that capital is germane in the short-run and that steady state growth rate will be attained at a higher level of output. It also accounts for the attainment of long-term economic growth rate through the accumulation of factor inputs such as physical capital (K) and labour (L) with a provision for technical progress (A) which drives capital intensity ratio (k) to converge over time in the direction of equilibrium ratio (Solow, 1956).

In essence, the long-run per capita growth rate depends entirely on the exogenous rate of technical progress (TP) or total factor productivity (TFP).The model postulaterising levels in saving rate will lead to a temporary increase in capital-labour ratio (k) and that both return to a steady-state of growth at higher levels of output per capita.

The Solow growth model in its general form is given as;

$$Y(t) = f[A(t), K(t), L(t)] \tag{3.1}$$

Where; Y represents output; A indicates technical progress; K connote the capital stock; L denote the amount of labour; t is the time trend.

The model as indicated by the relation (4.1) relates output (Y) to technical change (A), labour (L) and capital stock (K). It is pertinent to note that, time (t) does not enter the production function directly, but through K, L and A. This means that output variation over time is subject to changes in inputs.

Several studies (see Romer, 1990 and King and Levine, 1993) have attempted to endogenize growth which Romer, Mankiw and Weil (1992) and Barro and Sala-i-Martin (1995) have termed the *conditional convergence* model. McCallum (1996) opines that the endogenous growth models are more realistic than the neoclassical model when an economy wants to be on a balanced growth path. He adjudged the adoption of continuing growth in the stock of existing productive *designs* with the entire stock facilitating the creation of additional

designs that are produced in response to private rewards such as Romer's (1990). Romer (1990) adopts a production function endogenizing technology which is expressed as:

$$\Delta A = f(K_A, H_A, A) \qquad (3.2)$$

Where; ΔA = increasing technology; f = the production function for technology; K_A= amount of capital invested in producing the new technology; H_A= the amount of human capital (labour) employed in research and development; A = existing level of technology.

The relation (3.2) posits that the production of new technology (knowledge) can be increased via physical capital, human capital and existing technological level. The production function endogenizes technology and that when more human capital is employed or more capital is invested, then technology also increases by a large amount. The existing level of technology also leads to the production of new technology.

Model Specification

Based on theoretical foundation, the Solow Growth model provides the basis for the empirical model specification for this study. In empirical analysis, the modification of the basic Solow growth model results in its augmented form wherein the rate of growth of an economy depends not only on technical change, labour and capital but also on variables such as balance of trade, exchange rate, import, money supply and inflation rate (see Easterly & Levine, 2001; Iyoha, Ighodaro & Adamu, 2012; and Orji, Uche & Ilori, 2014). The endogenous growth model also provides an understanding of the importance of exchange rate and import demand in economic growth which are not captured in the neoclassical model.

In accordance with the study by Iyoha, Ighodaro and Adamu (2012), we augment the basic Solow model by incorporating the variables of interest, through the total-factor-productivity. It is stated as follows;

$$\Delta A = f(bop, exrt, impy, expt) \qquad (3.3)$$

Thus, from the standard form of the Solow model in equation (3.1), the panel data model for this study can be functionally represented as:

$$Y = f(bop, exrt, impy, expt) \qquad (3.4)$$

The estimable (econometric) form of the panel data model explaining growth is specified as:

$$RGDPPC_{it} = \beta_{0i} + \beta_{1i} TBA_{it} + \beta_{2i} EXRT_{it} + \beta_{3i} IMPY_{it} + \beta_{4i} EXPT_{it} + U_{it} \qquad (3.5)$$

Where; $RGDPPC_{it}$=real GDP per capita for country i in the period t; β_i's=coefficient (for all i = 1, 2, . . . , 15); TBA = Trade Balance account, EXRT= exchange rate; IMPY =import demand, measured as imports as percentage of GDP; EXPT=exports as a percentage of GDP; i=each country; t=time period; U_{it}=error term which consist of unobserved individual specific effects and observed specific errors.

The *a priori* expectations are: $\beta_1> 0$, $\beta_2> 0$, $\beta_3< 0$, $\beta_4< 0$.

Equation (3.5) can be further condensed as;

$$y_{it} = f(X_{it}, Z_{it}) \qquad (3.6)$$

$$y_{it} = \beta_{0i} + \beta_{1i} X_{it} + \beta_{2i} Z_{it} + U_{ii} \qquad (3.7)$$

where X = vector of variables of interest; Z = vector of other control variables (such as exchange rate (exrt) as percentage of GDP, inflation (inf) (GDP deflator, annual percentage) reflecting the level of macroeconomic stability).

Method of Data Analysis

The study employed the pooled mean group (PMG) estimation and panel Pooled ordinary least squares estimator for estimation of the model specified in section (3.2). The choice of this estimator is informed by the fact that estimates obtained are consistent and efficient long run coefficients of a cointegrating model. In addition, it is also designed to correct the problems of endogeneity (peculiar with cointegrated regressors), serial correlation and heteroskedasticity associated with cross sectional data.

Data Sources

Annual secondary data on trade balance, exchange rate, export, import and economic growth (proxied by real gross domestic product per capita) covering the period 2009 to 2023 was utilized for this study using pool mean group/ARDL for a panel of fifteen-member West African countries since the data for Liberia was not readily available. The empirical data is sourced from World Bank Development Indicators (various issues).

RESULT PRESENTATION AND EMPIRICAL ANALYSIS

Descriptive Statistics

The descriptive statistics of the variables of the study are shown in Table 4.1. The key statistics of interest are the mean, skewness, kurtosis and the Jarque-Bera (JB) statistic to ascertain the normality of the series used for analysis.

Table 4.1 Descriptive Statistics of the Variables

	RGDPPC	TBA	EXRT	IMPY	EXPT
Mean	1240.998	-11.17425	762.7703	36.29277	32.24175
Median	830.4052	-11.57627	482.5030	34.58746	27.37682
Maximum	3667.057	18.56081	9565.082	82.46795	117.1918
Minimum	419.1732	-53.09644	1.052275	8.233875	0.023039
Std. Dev.	798.6275	9.223219	1733.780	11.81084	18.46122
Skewness	1.253368	-0.388377	3.907800	0.417970	1.946639
Kurtosis	3.598165	4.698803	17.32403	3.530133	8.129191
Jarque-Bera	60.32722	31.69429	2418.541	8.900171	376.6515
Probability	0.000000	0.000000	0.000000	0.011678	0.000000
Sum	270537.5	-2435.986	166283.9	7911.824	7028.702
Sum Sq. Dev.	1.38E+08	18459.71	6.52E+08	30270.62	73957.22
Observations	218	218	218	218	218

Source: Author's Estimation using EVIEWS 9.

Table 4.1 shows that real per capita income growth rate of the West African sub-region between 2009 and 2023 averaged US$1240.99 billion, and ranged between a minimum of US$419.17 and US$3667.06 (maximum). The coefficient of skewness of 1.25 indicates that the distribution of the series is positively skewed, while the Kurtosis indicates the series is leptokurtic (since it is greater than 3). The Jarque-Bera statistic with p-value less than 0.05 rejects the null hypothesis of normality at the 5% level implying that the variable is not normally distributed.

Balance of trade (TBA) in the sub-region within the period under consideration stood at -11.17% on the average. Within the period, TBA ranged between -53.09% and 18.56%. The series does not follow a normal distribution as indicated by coefficient of Kurtosis and the Jarque-Bera statistics.

The exchange rate descriptive statistic shows that the currencies of countries in the sub-region averaged 762.77 for the period of study. The exchange rate series is also not normally distributed as indicated by the skewness, kurtosis and the p-value of the Jarque-Bera statistics.

Imports as a percentage of GDP averaged 36.29% within the period under review, and ranged between 8.23% and 82.47%. The variable is not normally distributed as indicated by the coefficients of skewness, kurtosis and the p-value of the Jarque-Bera statistic which rejects the null hypothesis of normally distribution at the 5% level.

Exports series averaged 32.24%, and ranged between 0.02% and 117.19%. The p-value of the Jarque-Bera which is less than 0.05 indicates that the distribution of the series is not normal. The non-normality is corroborated by the skewness and kurtosis statistic.

Correlation Analysis

Table 4.2 shows the Pearson's pair-wise correlation coefficients between pairs of the variables used for the study. These coefficients indicate the direction of movements of the variables and do not indicate causation or effects.

Table 4.2: Correlation Matrix

	RGDPPC	TBA	EXRT	IMPY	EXPT
RGDPPC	1.000000				
TBA	0.264733	1.000000			
EXRT	-0.178382	-0.250226	1.000000		
IMPY	0.075791	-0.668147	0.331092	1.000000	
EXPT	0.557905	-0.087882	-0.126596	0.290263	1.000000

Source: Author's Computation using E-VIEWS 9

The correlation matrix indicates that TBA, IMPY and EXPT are positively related to RGDPPC. This suggests that the variables move in the same direction with RGDPPC: increase (decrease) in TBA, IMPY and EXPT is associated with an increase (decrease) in RGDPPC and vice versa. EXRT is negatively correlated to RGDPPC. In other words, the variables tend to move in reverse direction: increase in EXRT is associated with decrease in RGDPPC and vice versa.

EXRT, IMP and EXPT are all negatively correlated with TBA. In essence, the variables tend to move in opposite direction. The pair of variable IMPY and EXRT and EXPT and IMP are positively correlated. A negative and weak correlation exists between EXPT and EXRT, suggesting that both variables move in reverse direction.

Unit Root Test

The stationarity properties of the panel data was determine by means of homogenous panel unit root tests [Levin, Lin & Chu (LLC)] and heterogenous panel unit root tests [Im, Pesaran and Shin(IPS)]. Both test results are presented in Table 4.3.

Table 4.3: Panel Unit Root Tests

Homogenous Unit Root Process						
Variables	Level			1st Difference			Integration Order
	LLC Statistics	Prob.	Inference	LLC Statistics	Prob.	Inference	
RGDPPC	-2.5798	0.0049	S	-	-	-	0
TBA	-1.44383	0.0744	NS	-3.27354	0.0005	S	1
EXRT	-1.65622	0.0488	S	-	-	-	0
IMPY	-2.50068	0.0062	S	-	-	-	0
EXPT	-0.56939	0.2845	NS	-8.91745	0.0000	S	1
Heterogeneous Unit Root Process						
Variables	Level			1st Difference			Integration Order
	IPS Statistics	Prob.	Inference	IPS Statistics	Prob.	Inference	
RGDPPC	-0.66749	0.7478	NS	-3.72743	0.0001	S	1
TBA	-0.66022	0.2446	NS	-5.54860	0.0000	S	1
EXRT	1.77668	0.9622	NS	-6.45499	0.0000	S	1
IMPY	-1.58769	0.0562	NS	-4.96764	0.0000	S	1
EXPT	0.64543	0.7407	NS	-6.01870	0.0328	S	1

Source: Author's Estimation using E-VIEWS 9.

The LLC panel unit root test result indicates that RGDPPC, EXRT and IMPY variables are stationary at levels (that is they are integrated of order 0) but TBA and EXPT are both stationary at first difference (that is, it is integrated of order 1). The IPS panel unit root test (which is a heterogeneous unit root test process) results however indicates that all the variables are integrated of order 1; that is, they are stationary at first difference.

Panel Cointegration

The cointegration test was performed using the Kao cointegration test. The result of the test is presented in Table 4.5.

Table 4.5: Kao Residual Cointegration Test

Series: GDPPC TBA EXRT IMP EXPT				
Date: 03/28/25 Time: 18:29				
Sample: 2009 2023				
Included observations: 225				
Null Hypothesis: No cointegration				
			t-Statistic	Prob.
ADF			-2.418960	0.0078

Source: Author's Estimation using EVIEWS 9.

The test result indicates that the null hypothesis of "No cointegration" is rejected by the t-statistic at the 5% level as the p-value is less than 0.05. This further confirms the outcome of the cointegration test and establishes its robustness. Thus, a long run relationship exists between the variables.

Model Estimation Results

The specifications of the model were estimated using the panel least squares approach for estimation of a panel fixed effect model (which corrects the bias resulting from omitted variables), and the extended generalized least squares estimator for estimation of a random effect model (which corrects the problem of heteroskedasticity) (White & Lu, 2014). The results of the estimations are presented in table 4.6.

Table 4.6. Fixed and Random Effects Models

Dependent Variable: RGDPPC		
Sample: 2009 to 2023		
Regressor	Fixed Effect	Random Effect (EGLS)
C	5.8531 (54.8994)	5.9868 (40.6672)
TBA	0.0038*** (3.6151)	0.0040*** (3.7815)
EXRT	0.1104*** (9.1698)	0.1008*** (8.2265)
IMPY	0.0017* (1.6068)	0.0019* (1.7225)
EXPT	0.0042** (6.1103)	0.0045** (6.5810)
N	15	15
R^2	0.9851	0.3871
Adj. R^2	0.9838	0.3756
F-stat.	731.6621	33.6295

Source: Author's Estimations using E-views 9.

* = significant at 1%, ** = significant at 5%, *** = significant at 10%

The outcomes of estimation of the fixed effect and the random effect models regression showed that Trade balance, exchange rate, import demand and exports are positively and significantly related to real per capita income. The pooled mean group (PMG) regression was estimated to examine not just the long run effects of the included explanatory variables on the dependent variable but also the short run effects. The result of the estimation of the PMG is presented in table 4.7.

Table 4.7: Pooled Mean Group Regression

Dependent Variable: D(RGDPPC)			
Method: PMG/ARDL			
Selected Model: ARDL(1, 1, 1, 1, 1)			

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
	Long Run Equation			
TBA	0.010496	0.014757	7.112556	0.0081
EXRT	0.623889	0.059681	10.45381	0.0000
IMPY	0.059340	0.010220	5.806166	0.0000
EXPT	0.032148	0.006055	5.309364	0.0000
	Short Run Equation			
COINTEQ01	-0.003370	0.007283	-0.462680	0.0443
D(TBA)	0.001559	0.001138	1.369948	0.1731
D(EXRT)	-0.035984	0.053319	-0.674882	0.0009
D(IMPY)	0.001226	0.001186	1.033828	0.3030
D(EXPT)	-0.002090	0.001469	-1.422265	0.1572
Mean dependent var	0.017122	S.D. dependent var		0.041048
S.E. of regression	0.028046	Akaike info criterion		-4.039501
Sum squared resid	0.109332	Schwarz criterion		-2.813009
Log likelihood	519.3056	Hannan-Quinn criter.		-3.544103
*Note: p-values and any subsequent tests do not account for model selection.				

Source: Author's Estimations using E-views 9.

The estimated long run equation of the PMG regression result revealed the coefficient of exchange rate (EXRT) to be positive and statistically significant at the 1% level, unlike the previous results where it turned out to be negative. On this premise, it can be inferred that an increase in exchange rate has the potential to positively influence economic growth in the long run in the ECOWAS sub-region. This is not unexpected considering that countries within the sub-region are mainly in their developmental stage and thus require foreign exchange for trade to aid their development.

As already obtained, trade balance, imports and exports are positively and significantly related to economic growth in the long run in the sub-region. Another deviation from the previous result is balance of trade which has turned to be insignificant in explaining economic growth in the long run for the countries within the sub-region.

An examination of the short run equation reveals that the error correction term (COINTEQ01) has the expected negative sign, and it is statistically significant at the 5% level. It further confirms that the variables incorporated in the model are cointegrated. The speed of adjustment to equilibrium stands at -0.003370 as indicated by the size of the coefficient which indicates that about 0.34% of the short run deviation from equilibrium is adjusted (corrected) annually to restore equilibrium.

In the short run, growth effects of trade balance and import demand are positive, but not statistically significant. By implication, there is no enough inflow of goods and services into the economies of the countries within the sub-region. The effect of exchange rate on economic growth is negative in the short run

but statistically insignificant. The same can be said for exports in the short run. Considering that the long run effect was found to be positive, this suggests validation of the J-curve hypothesis of the exchange rate–TBA relationship. Currency depreciation adversely affects growth in the short run, but in the long run, its effect could be positive.

Test of Hypotheses

The hypotheses formulated for the study are tested here using the t-ratios of the estimated model parameters from Pooled OLS in Table 4.6 and pooled mean group in Table 4.7

Ho_1:   **Trade Balance has no significant impact on economic growth in West Africa.**

This null hypothesis was rejected based on the observed t-ratios of the estimated coefficients as in the long run PMG regression. Thus, a relationship exists between trade balance and economic growth in ECOWAS countries.

Ho_2:   **Exchange rate has no relationship with economic growth in West Africa.**

Based on the t-ratios of the estimated coefficient of exchange rate in the long run PMG regression estimated model we strongly reject this null hypothesis at the 1% level. Thus, exchange rate significantly impacts on economic growth in the countries within the West African sub-region.

Ho_3:   **Imports does not significantly impact economic growth in West Africa.**

The t-ratio of the IMPY coefficient in the long run PMG regression output easily passes the test of statistical significance at all levels. As such, we reject this null hypothesis and conclude that import does significantly influence economic growth in the countries that subsist within the West African sub-region.

Ho_4:   **Export does not significantly impact economic growth in West Africa.**

This null hypothesis is rejected on the strength of the observed t-ratio of the estimated coefficients as in the long run PMG regression model at the 1% level. Thus, a relationship exists between exports and GDP growth in countries within the West African sub-region.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The study examined the effect of trade balance on the economic growth of West Afria, using panel data spanning from 2009 to 2023. The variables used in the study are balance of trade (TBA), exchange rate (EXRT), import demand (IMPY), and exports (EXPT). The study used Pooled Ordinary Least Square (POLS) for the analysis of the data. The robustness of the results of panel pooled OLS estimation of the specified model is checked using alternative estimation techniques such as the pooled mean group robust least squares estimation (m-estimation). The inherent problems of heteroskedasticity and cross-sectionally correlated residuals in panel dataset are corrected by the extended generalized least squares (EGLS) estimator.

The study found that trade balance (TBA), exchange rate (EXRT), import demand (IMPY), and export (EXPT) fosters a positive and significant effect on economic growth in the long run in West Africa for the period covered in the study.

Conclusion

This study has analyzed the influence of trade balance on economic growth in West Africa. Bearing in mind the macroeconomic objectives of economic growth, most West African economies are trying to grow their economies. Trade Balance has been identified as important indicator to propel economic growth for the dwindling West African economies, especially as they are recovering from covid-19 crisis. However, empirical

investigations from this study found that trade balance (TBA), exchange rate (EXRT), import demand (IMPY), and exports (EXPT) fosters a positive and significant effect on economic growth in the long run in West Africa for the period covered.

In conclusion, the study highlights the need for the government of these countries to initiate policies that will guide against economic instability and ensure favourable balance of trade. Again, findings revealed that sound financial policies could help to strengthen the trade balance position in these economies and the exchange rate must be influenced in the foreign exchange market to achieve the desired long-run growth of economies of the sub-region.

Policy Recommendations

Based on the findings from the study, the following recommendations are made.

(i)   The result of the study found that TBA has a significant positive effect on economic growth in West Africa for the period of the study. It is important for ECOWAS countries to recognize that the unfavorable balance of trade phenomenon cannot be entirely due to exchange rate disadvantages but the relative value of the exports vis-a-vis imports especially when trading with much more industrialized countries. It is recommended therefore that ECOWAS countries should pursue rigorous economic restructuring policies towards a reverse in the chronic deficits in their trade balance.

(ii)   The significant effect of import demand on economic growth in the long run calls for imposition on restrictions or controls on some categories of commodities especially for which these countries are at a comparative disadvantage and which when produced domestically cannot compete globally. This can be achieved by creating the right macroeconomic, social and political ambiance for investment opportunities to thrive in these countries.

(iii)   Since export impacts the economic growth positions of these countries, it is important for African countries to pursue export promotion drives linked credit economic stimulus policies such as investment promotion and value addition to the vast natural resources of the continent.

(iv)   Considering that exchange rate adversely affects economic growth in the short run and positively affects it in the long run, there is need for occasional governments' intervention in the foreign exchange market to influence the exchange rate to achieve desirable levels of output.

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