Inflation Threshold and Economic Growth: Evidence from West Africa Monetary Zone (WAMZ) Countries

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DOI: https://doi.org/10.51584/IJRIAS.2025.10030027

Received: 25 February 2025; Accepted: 01 March 2025; Published: 05 April 2025

ABSTRACT

Sustainable inflation rate is one of the most challenging macroeconomic objectives capable of fostering every pragmatic effort at achieving other macroeconomics goals if curtailed. In view of the above, the paper empirically examines the threshold inflation rate that is considered optimally reasonable for maintaining a sustainable economic growth. The study in specific terms employs a least square multivariate approach to estimate a threshold level of inflation. Furthermore, error correction modeling (ECM) approach was explored to identify the long run relationship among other major determinants of real GDP growth using a simple augmented production function. In addition, a pairwise granger causality test was conducted to explore the causal link between the inflation threshold and growth of real GDP. Interestingly, it was observed from the causality test that there was neither bidirectional nor unidirectional causality between the two but rather an independent relationship. The findings from least square estimation also established 10% threshold inflation level. The results from ECM confirmed the values of lagged of real GDP growth rates, investment, current inflation, population growth and terms of trade as important factors affecting growth rates of real GDP of the West Africa Monetary Zone(WAMZ) countries. Based on the outcome of the results it was therefore suggested that an identification of regional inflation thresholds in the inflation-growth relationship might provide useful information about the appropriate location and width of an inflation targeting band.

Keywords: Inflation thresholds, Economic growth (RGDP), WAMZ

INTRODUCTION

Nwogwugwu et al (2022) defined economic growth as an increase in the country's real output and per capital income over a long period of time. The increase in per capital income is the better measure of economic growth since it reflects the increase in the improvement of the living standards of the masses. Ogbora et al (2018) defined economic growth as a long-term expansion of the productive potential of the economy. The trend of growth could be expanded by raising capital investment spending as a share of national income as well as the size of capital inputs and labour supply, labour force and technological advancement. Economic growth is the increase of per capita GDP or other measures of aggregate income. Jhingan (2011) defined economic growth as a quantitative sustained increase in a country's per capita income which is a result of expansion in the labour force of a country's level of consumption, capital formation, and volume of trade.

Threshold inflation is a central banking policy that revolves around adjusting monetary policy to achieve a specified annual rate of inflation (CBN 2014). This is known as the target rate which is normally set at around 2% to 3%. The principle of inflation threshold is based on the belief that long-term economic growth is best achieved by maintaining stable prices which is achieved by controlling inflation. The concept of threshold inflation is linked to the level of inflation beyond which it becomes detrimental to economic growth. Threshold inflation can be compared with other central bank operating targets, such as price level targeting and nominal gross domestic product (GDP) targeting. It is the maximum acceptable target inflation rate above which policy makers consider it harmful to the economy and it is typically measure as a specific percentage rate (e.g 10% for Nigeria, Ghana, Sierra Leone, Guinea, Senegal and Ivory Coast).

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue III March 2025

Countries in the West Africa Monetary Zone (WAMZ) has witnessed series of rising and double digit inflation episodes right from post independent period to date. For instance, a five years average annual inflation rates shows that the selected countries in the West Africa Monetary Zone (WAMZ) inflation rate for most part of the periods have been in double digits. Inflation rate increased from 12.8 percent between 1980 to 1989. About the same periods, both the narrow and broad money growth also witnessed dramatic rise from their initial levels of 12.8 percent and 26.2 percent between 1980 and 1984 to 22.8 percent and 39.9 percent respectively from 1985 to 1989. This may be explained in part by austerity measure introduced by the then administration and this consequently engendered reduction in the expenditure patters of these economies. The situation could not be sustained as inflation peaked at 38.5 percent between 2000 and 2024 and later declined between 2008 and 2009. A policy shift regarding a change in the base years might be part of contributory factors for this. A great deal of success is however recorded in inflation movement as the rates hover around 15.6 and 12.2 percent during 2005 and 2009. The policy focus of single digit inflation by the respective governments have contributed to the achievement of this feat.

Growth of Real GDP on the other hand, which stood at 14.8 percent between 1980 and 1984 increased drastically to 6.2 percent during 1985 and 1989. A negative average annual growth rate of 5.92 percent was recorded between 1990 and 1994 while inflation rate rose to 20.3 percent from an average of 19.8 percent from the preceding period thus heading credence to an inverse relationship between the two from the theoretical standpoint. A slow growth rate of 4.32 percent was also observed during 1990 to 1994 and fell further to 2.30 percent between 1995 and 1999. But the countries achieved a greater feat between 2000 and 2004 with a growth rate of 8.16 percent from 2.80 percent between 1995 and 1999. In addition, government's fiscal operations, especially inflationary financing of large budgetary deficits by the central Banks (CBs) have continued to post serious challenge on monetary management. With the exception of surplus of 2.92 percent recorded between 2000 and 2020, the fiscal operations of the national governments resulted in deficits every year except in 1995 and 2000. The fiscal deficits were occasioned by credits through ways and means advances from the central banks (CBs). The consequences of deficit financing reflected in rapid growth of liquidity in the economy of these countries as both the M_1 and M_2 became heightened.

Statement of the Problem

The two major macroeconomic issues that have continuously bothered policy maker's world over, especially, with particular reference to the West Africa Monetary Zone (WAMZ) countries is on how to achieve high and sustainable economic growth as well as stable inflation rates at the same time. Evidence have shown that the two always move in an opposite direction most of the time. For this reasons and for quite sometimes, price stability and real output growth have been considered to be mutually exclusive policy objectives. As a result, the relationship between the two has been subjected to intence empirical investigations both by developed and developing countries alike. In spite of the enormous documented empirics on the relationship, the issue still largely remains contentious and unresolved in the literature. On the theoretical fronts, conventional macroeconomics theorists are divided in their explanations of the mechanics through which inflation growth affects each other. To some schools of thought, a better platform for attaining the much desired sustainable economic growth is predicated mainly on the achievement of low and stable inflation rates. As a consequents, they posit a negative relationship between the two. Empirical evidences abound confirming an inverse relationship between inflation rates and economic growth (Andres et al, 2020). To other schools of thought, they contended that sine money and capital are substitutes, an increase in inflation rate increases capital accumulation by shifting portfolio from money to capital thereby stimulating a higher level of economic growth (Tobin, 2021, Mundel, 2018).

On the whole, inflation has been seen as a major problem which can either impede or promotes sustainable economic growth. Therefore, it is generally believed that the attainment of every other macroeconomics goal depend on the maintenance of a stable and low inflation rate. The reasons for this harmful effects of inflation on the economy have been well documented in the literature. These include: imposition of welfare costs on society, distortion of market system efficiency, worsening terms of trade conditions, discourages long-term investment and uncontrollable tax system, reducing countries and disrupting competitiveness and disrupting borrowing and lending decisions. Even in it's extreme, it breeds greatest in equality, provokes social and political unrest as well as being hazardous to effective planning. In view of these identifiable costs of inflation,

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue III March 2025

it is apparent why attaining single digits as well as maintaining a threshold level of inflation have become the most popular policy objectives that are being pursued within the West African Monetary Zone (WAMZ) countries.

However, countries within the West African Monetary Zone (WAMZ) economic block have been eluded by low and stable inflation rates for a very long time. In Nigeria, Ghana, Sierra Leone, Guinea, Senegal and Ivory Coast which form part of West Africa Monetary Zone (WAMZ) economic block, inflation has continued and still posing a challenging threat to the realization of other crucial economic policy objectives given its oscillating behavior for over three decades. Further, it has been considered as a drag on the countries progress in the attainment of primary convergence criteria set by the West Africa Monetary Zone (WAMZ) for inflation rates as well as the Sustainable Development Goals (SDGs) targets: Thus, if inflation is a major obstacle in promoting economic growths, then it readily follows that policy makers should aim at a low rate of inflation. At this juncture, the pertinent issues are: if inflation constitutes an unavoidable evil in the economy, how them can it be minimized? What constitutes the optional level of inflation? What level of inflation thresholds is commensurate with sustainable level of economic growth? Attempts at solving the above raised issues largely depend on each country's economic policy option as well as a host of other intervening factors which vary from one economy to another.

Though a large number of empirical studies have been conducted on inflation-growth relationships and other inflation related issues in the West Africa monetary. Zone (WAMZ) countries. For instance, Omotor (2012) specifically examined the inflation and growth relationship. Mordi (2015), looked at inflation velocity and economic growth; Evidence from WAMZ countries to mention but a few. However, studies on inflation threshold in WAMZ are scanty at least to the best of our knowledge. We are only aware of Fabuyo and Ajilore (2018) who examined the existence of threshold effects in inflation-growth relationship using data for the period 1970-2018, Salami et al (2022) also determined the inflation thresholds for WAMZ using annual time series data spread over two periods 1970-2015 and 1980-2020. But the study did not conclude on non-linearity of the inflation threshold and economy growth. This study seeks to address the lacuna in the previous studies by employing time series data spanning from 1980 to 2023 and also examine the threshold inflation rate that is considered optionally reasonable for maintaining a sustainable economic growths by analyzing the significance of investment and population growth in explaining the threshold level of inflation and economic growth.

Recent notable studies on inflation threshold and economic growth including Andre et al (2020), Tobim, (2012), Mundel (2018), Omoto, (2012), Mordi, (2018), Fabayo & Ajilore, (2018) and Salami et al, (2019) have applied different econometric techniques and datasets. Nevertheless, these studies have yielded mixed results. A major deficiency in most of the forgone studies is that they generally ignored the test of times series properties of the variables used since most time series data are known to be plagued by unit root problems. In this case we expresses skepticism about the validity of the empirical results of most of these earlier studies and specify a more comprehensive empirical analyses of the impact of inflation on GDP growth in the West Africa Monetary Zone (WAMZ) countries augmented with some growth determining variables like investment, financial development indicators, degree of openness and population which earlier studies conducted for the West Africa Monetary Zone ignored. Furthermore, this study employed Engel-Gradnger (1987) two stage co-integration procedure to analyse the relationship between inflation threshold and economic growth as well as explores an interesting policy issue of what is the threshold level of inflation for in the West Africa Monetary Zone (WAMZ) countries.

The main objective of this study is to examine the inflation threshold and economic growth of the West Africa Monetary Zone (WAMZ) countries

However the following specific objective would also be achieved

- To examine the effect of population growth on the economic growth in the West Africa Monetary Zone (WAMZ) countries

- To ascertain the extend to which inflation rate affect the economic growth in the West Africa Monetary Zone (WAMZ) countries

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue III March 2025

- To investigate the effect of trade openness on the economic growth in the West Africa Monetary Zone (WAMZ) countries

Having identify issues bordering on the subject matter under investigation, the study seeks to provide answers to the following basic research questions.

- What is the effect of population growth performance on the economics of the West Africa Monetary Zone (WAMZ) countries?

- To what extend has inflation rate affected the economic performance of the West Africa Monetary Zone (WAMZ) countries?

- What effects does trade openness have on the economic performance of the West Africa Monetary Zone (WAMZ) countries?

REVIEW OF RELATED LITERATURE

Conceptual Framework

Concept of Inflation Threshold

The concept of threshold inflation is linked to the level of inflation beyond which it becomes detrimental to economic growth. However, since the theoretical framework for inflation is in terms of aggregate demand and supply, sometimes it gets unintentionally linked to the level of output rather than growth. This confusion arises because in the theory of income determination, introduction of aggregate supply side depends on the trade-off between inflation and unemployment, which is taken to be similar to trade off between the objectives of achieving low inflation and high growth. The Keynesian analysis of non-neutrality of money assumes that normal wages are more rigid than prices. Increase in money supply resulting in higher price levels, (Rangarajan, 2016). Threshold inflation is a central banking policy that revolves around adjusting monetary policy to achieve a specified annual rate of inflation (CBN, 2014). This is known as the target rate which is normally set at around 2 percent to 3 percent. The instrument used under the threshold inflation target are similar to those used by the central banks in pursuit of their monetary policy objectives under other framework. These instruments include monetary policy rate, reserve requirements, open market operation, discount window operations and the use of exchange rate to attain the policy goal.

Concept of Economic Growth

A nation's Real Gross Domestic Product (RGDP) is usually the means by which its economic growth is measured and compared because growth is inflation – adjusted terms, and hence government, investors and other stakeholders deduce the growth pattern of the economy. According to Schumpeter in Todaro and Smith sees economic growth as a gradual and steady change in the long-run occasioned by a gradual increase in the rate of savings and population which brings about increase in per capita income. Thus economic growth is related to the quantitative and sustained increase in the countries per capita output or income accompanied by expansion in its labour force, consumption level, capital and volume of trade (Godoo & Joseph, 2016). The increase in per capita income is the better measure of economic growth since it reflects increase in the improvement of the living standards of the masses an increase in the real national income.

Theoretical Literature

The Classical Growth Theory

Classical growth theory was championed by Adam Smith, laid the foundation for growth model using supply side driven model and production function argument. In the production function which includes land, labour and capital inputs. He argued that growth was self-reinforcing as it exhibited increasing returns to scale. He was able to link economy growth to investment that was created through savings. He also posited that profits decline – not because of

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue III March 2025

decreasing marginal productivity, but rather because the competition of capitalists for workers will bid wages up. Though it did not specifically state the linkage between inflation and economic growth but it was implicit since negative relationship was suggested as indicated by the reduction in firms' profits levels through increases in labour wage costs.

The Keynesian Growth Theory

Keynesian theory also provides an explanation on a possible link between inflation and economic growth through aggregate demand and supply framework. According to this model, in the short run, the aggregate supply curve is characterized by upward sloping trend rather than vertical. But if the aggregate supply curve were to assume a vertical line, it then means that any changes on the demand side will only result into price changes. However, if it is upward sloping, changes in aggregate demand affect both prices and output, (Dornbusch, et al, 1996). This is made possible because many factors drive the inflation rate and the level of output in the short-run. These include changes in: expectations; labour force; prices of other factors of production, fiscal and/or monetary policy. Monetary theory position on inflation –growth nexus was explicitly explained using the quantity theory of money which provides a link between inflation and economic growth by simply equating the total amount of spending in the economy to the total amount of money in circulation. Thus, inflation was the product of an increase in the supply or velocity of money at a rate greater than the rate of growth in the economy.

The Neo-classical theory

Neo-classical theory –The earliest neo-classical models was championed by Solow (1956) and Swan (1956). The variants of these models produce different conclusions on the nature of relationship between inflation-growth nexus. One such variants was articulated by Mundell (1963) who stated that an increase in inflation or inflation expectations immediately reduces people's wealth arising from a fall in the rate of return on individual's real money balances. Greater savings means greater capital accumulation and thus faster output growth. Tobin (1965) is another neoclassical economist, whose framework shows that a higher inflation rate permanently raises output level but the effect on output growth is temporary. Tobin effect suggests that inflation causes individuals to substitute out of money and into interest earning assets, which leads to greater capital intensity and promotes economic growth.

Empirical Literature

Existing empirical studies, just like theoretical models, reflect different views on the relationship between inflation and output growth. The emanated findings from these studies differ depending on data periods and countries, thus suggesting that the association between inflation and growth is not stable. Though, a vast amount of literature has attempted to offer explanations to what is considered to be an optimal inflation thresholds in different regions and countries but what is clear is that the outcome of their findings are largely mixed and somewhat inconclusive.

Fischer (2013) and de Gregorio (2014) have investigated the link between inflation and growth in time-series, cross section and panel data sets for a large numbers of countries. The main result of these works is that there is a negative impact of inflation on growth. Fisher (2013) argued that inflation hampers the efficient allocation of resources due to harmful changes of relative prices. Barro (2014) used a panel data for 100 countries over the period 1970-2000 and estimated growth regression using Instrumental Variables (IV) technique. He obtained clear evidence that a negative relationship exists only when high inflation data was included in the sample. He further submitted through his estimation that 10% of inflation reduces real GDP per capita by 0.2% per year. Sarrel (2015) found the evidence of structural break in interaction between inflation and growth. He used fixed effect technique to deal with panel data sample covering 87 countries over 21 years (1980-2001). The main result is that the estimated threshold level equals to 8 percent, exceeding which leads to negative, powerful and robust impact of inflation on growth.

Christoffersen & Doyle (2016) investigated the nonlinear relationship between inflation and growth for 22 transitional countries over the time period from 1980 to 2007. They used Sarrel's (2015) approach to modeling

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the kinked interaction between inflation level and economic growth. As a result, the authors found that threshold level is 13%. They did not find any evidences that output will be rapidly increased by high inflation for countries that keep inflation below this threshold level. This result showed that policy makers should keep inflation at some specific threshold level where the favorable impact of inflation on growth performance is the highest.

Khan & Senhadji (2019) investigated the inflation-growth interaction for both developing and developed countries applying the technique of conditional least squares. They used the panel data set on 140 countries (both industrial and developing) over the period 1970-2020. The authors employed the method of non-linear least squares to deal with non-linearity and non-differentiability of the inflation threshold level in growth regression. As a result, they obtained estimates of the threshold levels of 1-3% for developed and 11-12% for developing countries, which turned out to be very precise. The authors mentioned that the total negative effect of inflation may be underestimated due to the fact that they controlled investment and employment, so the main channel of impact is productivity. Nevertheless, this study asserted the idea that low inflation is a good thing for the economy because it has favorable influence on growth performance.

Kremer *et al.* (2022) provides new evidence on the effect of inflation on long-term economic growth for a panel of 63 industrial and non-industrial countries. The empirical results show that inflation impedes growth if it exceeds thresholds of 2% for industrial and 12% for non-industrial countries, respectively. The study, however, indicates that below these thresholds, the effects of inflation on growth are significantly positive. The result implies that the effects of inflation on growth are stronger as compared to the effects of inflation uncertainty and variability.

Identified Research Gap

In light of the above theoretical and empirical literature reviews, it can therefore be seen that the issue of inflation and economic growth is still ongoing as there are divergences in the level of inflation thresholds. However, there seems to be convergence of opinions as to the fact that low rates of inflation do not impact negatively on the long run rates of real economic growth. The reverse of the argument holds for countries that has been witnessing episodes of high rates of inflation.

The most empirical work on threshold inflation and economic growth covered the period till 2020. Having observed this empirical gap and methods of analysis used by previous authors, this study, therefore fill the gap in literature by focusing on the selected countries in the West Africa Monetary Zone (WAMZ) and also widen the scope of the study to 2023.

RESEARCH METHODOLOGY

Model Specification

This section presents the specification of the relationship between inflation and growth in a production function growth framework. Also the description and measurement of variables used in the empirical analysis presented. Finally we expound on the adopted Autoregressive Distributed Lag Model (ARDL) of Bound Testing Approach. The choice of variables in this study is informed by the theoretical framework on which the study is premised. The study, therefore introduced the investment rate and population growth into the model to examine the relationship between threshold level of inflation and economic growth in the West Africa Monetary Zone (WAMZ) countries.

The paper employs two economic models to achieve the empirical results: the first one examines the short-run and long-run relationship between real GDP and inflation as well as control for other variables like investment, population, degree of trade openness and financial development index, by applying the Engle – Granger (1987) two stage co-integration procedure and the associated Error Correction Model (ECM). As a prelude to the main estimation, the unit roots of concerned time series variables are tested for since economic date are known to have unit root problems. This study adopts a simple production function of the form specified below:

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Q = AKL - - - - - - - - - (1)

Where

Q = Output

A = Measure the level of technical advancement

K and L = represent quantities of capital and labour used in the production of Q.

The long-run growth regulation function for the selected countries in the West Africa Monetary Zone (WAMZ) is specified as follows:

$RGDP = \beta_0 + \beta_1 INF + \beta_2 INV + \beta_3 POP + \beta_4 TOT + \beta_5 OPN + \mu$ - - (2)

Where RGDP= real GDP, INF=inflation, FI=financial development index, OPEN=openness, POP=population and is random error term or residual. In the second stage, the Error Correction Model (ECM) is employed to see whether the economies are approaching equilibrium in the long-run or not and the short-run dynamics of the co-integrated time series variables. The ECM is internally consistent if the two time series variables are co-integrated of the same order or if they are stationary (Greene, 2003: 654). Engle and Granger (1987) show that if two variables are co-integrated, i.e., there is a valid long-run relationship, and then there exists a corresponding short-run relationship. This is popularly known as the *Granger's Representation Theorem.* Hendry's (1979, 1995) *general-to-specific* approach has been applied in this case where the model (i.e., ECM) is used in the following form:

$$\Delta LNGDP1 = \theta 0 + \sum_{1\text{-}t}^{n} \theta_{1t}\, \Delta LNGDP_{t-1} + \sum_{1\text{-}t}^{n} \theta_{2t}\, \Delta INF_{t-1} +$$
$$= \sum_{1\text{-}0}^{n} \theta_{3t} \Delta LNINV_{t-1} + \sum_{1\text{-}0}^{n} \theta_{4t}\, \Delta LNPOP_{t-1} + \sum_{1\text{-}0}^{n} \theta_{5t}\, \Delta FI_{t-1}$$
$$= \sum_{1\text{-}0}^{n} \theta_{3t} \Delta LNTOT_{t-1} + \sum_{1\text{-}0}^{n} \theta_{7t}\, \Delta LNPOP_{t-1} - \theta ECM_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where, Δstands for the difference operator, ECM_{t-1} is error correction term lagged one period, $\varepsilon_1$is the random disturbance term, shows the number of lag lengths determined by the Akaike's information criterion (AIC).

The second model estimated in this paper utilizes threshold regression model developed by Khan and Senhadji (2013) to estimate the threshold level of inflation for WAMZ above which inflation affects economic growth negatively. The equation to estimate threshold level of inflation has been considered in the following conditional form:

$= GDP_t\ \theta_0\ \theta_1\, INF_t + \theta_2$ D (INF -) + Xη + ε_t …… (4)

Where, K is the threshold level of inflation. The dummy variable D is defined in the following way:

$D = \{ {}^{1}_{0}\ if\ {}^{INF>K}_{INF\leq K}$

The variable X is a vector of control variables which include the gross domestic investment, population and degree of openness and financial development index.

As per the definition in Mubarik (2015) the parameter K (that is the threshold inflation level) has a property that the relationship between economic growth and inflation is given by: (i) (θ_1) represents low inflation; (ii) (θ_1+ θ_2) represents high inflation. The high inflation means that when the long-run inflation estimate is significant then both coefficients (θ_1+ θ_2) would be added to see their impact on growth and the threshold level

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of inflation. By estimating regressions for different values of k which is chosen in an ascending order (that is 1, 2, 3 so on), the optimal value of k is obtained by finding the value that maximizes the R2 from the respective regressions. In other words, the optimal threshold level (k*) is that which minimizes the Residual Sum of Squares (RSS). The lack of knowledge of the optimal number of threshold points and their values complicates estimation and inference. Though the procedure is widely accepted in the empirical literature, it is tedious since several regressions have to be estimated. Khan and Senhadji (2014) discuss the details of the estimation procedure and the computation methods.

Nature and Source of Data

The annual time series data set were collected from the World Bank Development indication (2014) and the Central Banks of Nigeria, Ghana, Sierra Leone, Guinea, Gambia and Liberia statistical Bulletin 2014. The period covered 1980-2023 which was due to the availability of data. All the variables were log transformed so that the problem of heteroskedasticity can be reduced since it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two variables to a twofold (Gujarati, 1995). In addition all he nominal variables are also converted to real values.

Estimation Techniques

The study employed a least square multivariate approach to estimate a threshold level of inflation. This is aimed at examining the short-run and long-run relationships between real GDP and inflation as well as control for the independent variables. To achieve this, the panel unit roots of concerned time series variables are tested for since economic data are known to have unit root problem. The Error Correlation Model (ECM) was also employed to identity the long-run relationship among other major determinants of real GDP growth using a simple augmented production function by applying the Engle-Granger (1987) two stage co-integration procedure. Based on the specifications of Fabayo et al (2018) the long-run elasticity based adopted Autoregressive Distributed Lag Model (ARDL) Bound Testing Approach – ECM for this study is specified as thus

$$\Delta RGD_{Pt} = \beta_0 + \beta_1 INF_{t-1} + \beta_2 INV_{t-2} + \beta_4 Fi_{t-4} + \beta_5 TOT_{t-5} + \beta_6 OPN_{t-6} + \varepsilon u_{t=1} \quad 5$$

Presentation and Interpretation of Results

Presentation of Results

This section begins with correlation matrix so as to ascertain that the variables are not highly correlated and after which the unit root tests are conducted in order to test for the time series properties of the variables.

Correlation matrix results depict the level of association among the variables concerned. It is clear from table 1 that there seems to be weak positive correlation between the real GDP and inflation as indicated by the value of 0.2563. This outcome further lends credence to the results of pairwise granger causality test in table 2 below that presents an independent relationship between the two.

Apart from the real GDP and term of trade which bear positive relationships with inflation, other variables carry negative signs. This in effect implies that any increase in any of the variables (like INV, POP and FI) will have declining impacts on the growth rate of real GDP. Thus, with the nature of relationship which subsists among these variables, it becomes apparent that the problems of multicollinearity that may likely stem from estimated results have been avoided.

Table 1: Correlation Matrix

	INF	LNGDP	LNINV	LNPOP	LNFI	LNTOT	LNOPN
INF	1						
LNGDP	-0.2563	1					
LNINV	0.1356	0.4436	1				

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LNPOP	-0.0055	-0.3203	0.5504	1			
LNFI	-0.0335	0.6094	0.0834	0.2141	1		
LNTOT	-0.2099	0.3319	-0.4307	0.3799	0.5505	1	
LNOPN	-0.3754	0.5432	-0.3452	0.2132	-0.2321	-0.2872	1

Granger Causality Test Results

This test is normally performed in order to measure the linear causation between inflation and economic growth. It is basically concerned with the use of past information in a variable to be able to predict the value of the other. The study applies causality test developed by Granger (1969). The study therefore specifies pairwise causality test of the form:

$$INF_t = \delta_0 + \sum_{1=1}^{T_1} \delta_{1t} INF_{t-1} + \sum_{1=1}^{T_2} \delta_{21}\ RGDP_{t-1} + \varepsilon_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(6)$$

$$RGDP_t = \varsigma_0 + \sum_{1=1}^{m_1} \varsigma_1\ RGDP_{t-1} + \sum_{1=1}^{M_2} \varsigma_{21}\ INF_{t-1} + \varepsilon_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

WhereT_1, T_2 m_1 are the optimal lag length, ε_{1t} and ε_{2t} are white noise error terms which are identically and independently normally distributed with mean zeros and constant variance. The results in table 2 shows that the null hypothesis that inflation does not granger cause real GDP cannot be rejected thus suggesting that inflation does not lead to growth of real GDP. Similar argument holds from real GDP to inflation. Hence, they are both independent as they do not causes each other. This by implication suggests that information on past values on either of the variable cannot be used to predict their future values. This outcome is consistent as well as further confirms the earlier findings by Salami et al (2022) for WAMZ

Table-2. Pairwise Granger Causality Test Results

Sample: 1970-2023 Null Hypothesis	**F-Statistics**	**Probability Value**
INF does not granger cause RGDP	2.43212	0.32949
RGDP does not granger cause INF	0. 7820	0.62403

Source: Estimated with E-views

UNIT ROOT TEST RESULTS

In order to test for the stationarity of the data used in this study, the Augmented Dickey-Fuller (ADF) and Phillip Perron tests are used. These tests examined the null hypothesis that each of the variables has a unit root (non-stationary) versus the alternative hypothesis that the variable is stationary. The ADF and Phillip perron test results presented in Table 3 clearly reveal that all the variables under investigation are integrated of order 1, they become stationary after first differencing. Both tests did not produce any significant different results. The results depict that all the variables are first difference stationary.

Table-3. Unit Root Test Results

	Augmented Dickey Fuller		**Phillip Perron**	
Intercept with no trend	**Intercept with time trend**	**Intercept with no trend**	**Intercept with time trend**	
Level				
INF	-2.8097	-2.7589	-2.5802	-2.5210
LNRGDP	-2.6653	-2.1267	-2.8334	-2.5242
LNINV	-2.6013	-2.3549	-2.6013	-2.3907
LNGRPOP	-2.3496	-2.3496	-1.9742	-2.2687
LNFI	-2.0587	-2.0654	-1.8346	-1.8956

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue III March 2025

LNTOT	-2.6971	-1.5065	-2.7344	-1.4842
LNOPN	-1.9817	-1.8538	-2.2122	-1.7623
First Difference				
ΔINF	-7.1088***	-7.0683***	-15.6803***	-15.2851***
ΔLNGDP	-5.5986***	-5.9954***	-5.5649***	-6.4301***
ΔLNINV	-7.0732***	-6.9801***	-7.8607***	-7.6980***
ΔLNPOP	-4.1766***	-7.8293***	-6.2374***	-5.4641***
ΔLNFI	-3.2092**	-4.6488***	-4.7147***	-3.2549**
ΔLNTOT	-6.4317***	-7.2226***	-6.4298***	-7.2020***
ΔLNOPN	-5.0119***	-6.6117***	-6.0515***	-6.0515***

Note: *** and ** denote the rejection of the null hypothesis of unit root at the 1% and 5% level of significance, respectively. The lag order for the series was determined by the Akaike Information Criterion. The symbol of is the first difference. Δ

Applying ordinary least square (OLS) to equation (2) yields the long run regression results reported in Table (4).

Table-4. Estimates of Long-run Real GDP model

Dependent variable: LN RGDP		
Regressors	Parameter estimates	T-ratio
Intercept	2.008673	24.89385***
INF	-0.002383	-0.216229
LNINV	-0.017249	-1.284843
LNPOP	0.002456	1.653904
LNTOT	0.041168	2.145172**
LNFI	0.058519	2.205577**
LNOPN	0.036593	2.432123**
R^2	0.887170	
$AdjR^2$	0.874633	
F-Statistics	7.923218	
D.W	1.3101693	

Table 4 reveals that inflation carries a negative sign but statistically insignificant, thus implying that an increase of one percentage point in inflation rate is associated with 0.002 percentage point reduction in the level of economic activity, albeit negligible when compared to the percentage change in the prices of goods and services. The negative sign on coefficient of investment variable contradicts earlier studies as it reduces the level of economic activities though not statistically significant. This may be explained, in part, by the deteriorating nature of public infrastructural investment. Examples include bad and poor feeder roads, epileptic power supply, incessant communication network failure by the service providers etc. countless number of studies in WAMZ have documented the crowding out effects of the WAMZ regional government investment on businesses and consequent retardation on economic growth. The population variable though bears the expected sign of positive relationship with economic growth but it is insignificant in the long-run. It is not implausibly to attribute this to the fact that the advantage inherent in population growth does not seem to be translated into any meaningful progress in the context of the WAMZ countries economies. Unemployment and underemployment are two major phenomena that have characterized the WAMZ countries economies experience. In effect, majority of people are without jobs even those that are fortunate enough were seriously underutilized.

In addition, term of trade, financial index and degree of openness variables have the expected hypothesized signs and statistically significant at the conventional levels of 5%, implying that an increase in any of these

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variables will lead to an increase in the overall economic growth. For instance, the financial reforms that were adopted and implemented by this countries have had positive impact on growth. This has been validated by so many empirical studies like Osikoya, 2013; Fowowe, et al 2018 etc. The same is applicable to the degree of openness which engendered technological diffusions and ease capital mobility between and /or among the trading partners. All of these serve to facilitating effective human and material developments and consequently promotes economic growth. In addition, for robustness, the high 2 *R* is suggestive of the fact that the total variations in the growth of economy can be attributed majorly to the explanatory variables to the tune of 89%. A dynamic modeling using the variable at their levels would results in spurious regression as it is confirmed by the test in the static regression shown in Table (4).

Cointegration Test

Having established unit root problems in the variables; the next step is to test whether a long run relationship exists among the variables of equation (2). The Engle-Granger Two-Step procedure and the Johansen Maximum Likelihood procedure were applied. The below shows that there is cointegration between real GDP and its regressors of the model as the residual is found to be stationary at all levels of significance. The stationarity is observed from both the Augmented Dickey Fuller and Phillip Perron tests.

Table-5. Residual of the co-integration test Using Engle-Granger Two Step Procedure

Variable	**Test Statistics**			
Residuals from the static long run of growth model	**Augumented Dicken Fuller**		Philip-Perron	
	With intercept	With intercept and Time Trend	With intercept	With intercept and Time Trend
	-5.7493	-5.7621	-5.7529	-6.4808
Critical values				
1%	-3.615588	-4.219126	-3.615588	-4.219126
5%	-2.941145	-3.533083	-2.941145	-3.533083
10%	-2.609066	-3.198312	-2.609066	-3.198312

Before undertaking the Johansen-Juselius Maximum Likelihood cointegration test, we first of all specify the relevant order of lags (*p)* of the VAR model. We select 2 for the order of the VAR since the sample size is relatively small (See Pesaran and Pesaran, 1997). On the basis of the foregoing, the Johansen and Juselius (1990) is applied to determine whether any combinations of the variables are cointegrated.

Table-6. Johansen-Juselius Maximum Likelihood Cointegration Tests

Maximal eigenvalue test				Trace test			
Null	Alternative	Statistics	95% critical value	Null	Alternative	Statistics	95% critical value
$r = 0$	r =1	68.94	39.37	$r = 0$	$r = 1$	157.03	94.15
$r \leq 1$	r =2	34.24	33.46	$r \leq 1$	$r = 2$	88.09	68.52
$r \leq 2$	r =3	21.52	27.07	$r \leq 2$	$r = 3$	53.85	67.21
$r \leq 3$	r =4	15.05	20.97	$r \leq 3$	$r = 4$	32.33	39.68
$r \leq 4$	r =5	12.32	14.07	$r \leq 4$	$r = 5$	17.28	25.41
$r \leq 5$	r =6	4.96	3.76	$r \leq 5$	$r = 6$	4.96	5.76

Note: 1 stands for the number of cointegration

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Maximal eigenvalue test Trace test

Starting with the null hypothesis of no cointegration ($r = 0$) among the variables, the maximal eigenvalue statistic is 68.94, which is above the 95% critical value of 39.37. Hence it rejects the null hypothesis $r = 0$in favour of the alternative hypothesis $r = 1$. As can be observed from the table also, the null hypotheses of, $r \leq 2$, $r \leq 3$, $r \leq 4$and $r \leq 5$cannot be rejected at a 5% level of significance. Consequently, we conclude that there are only two cointegrating equations at the 5% level.

Turning to the trace test, the null hypothesis of no cointegration ($r = 0$) is rejected at 5% level of significance in favour of the alternative hypothesis $r = 1$. However, the test fails to accept the null hypothesis of $r \leq 1$, $r \leq 2$, $r \leq 3$, $r \leq 4$and $r \leq 5$. Like maximal eigenvalue, we conclude that there are two cointegrating equations at the 5% level.

Estimation of an Error-Correction Model

Once a cointegrating relationship is established, then an ECM can be estimated to determine the short-run dynamic behaviour of the real GDP growth equation. This is further supported by Engle and of Granger representation theorem which states that the existence of the cointegrating relationship among a set of variables that are not stationary in levels, implies there will be a short - run error correction relationship associated with them. Following Hendry's (1995) general-tospecific modeling approach, we include 3 lags of the explanatory variables and of the error correction term and then gradually eliminate the insignificant variables until parsimonious error correction model is obtained. The results of which is presented in what follows:

The table below shows that the lag values of growth of real GDP have declining impacts on the current real GDP and this increase progressively from first to third lags. This can be attributed mainly to the high level of corruption and rent-seeking behaviour which had pervaded those vested with political powers in the WAMZ countries. Most times, the political office holders see national resources as resources to be shared but not to be used for any developmental projects. Also, the current and previous values of inflation do not have any negative impact on the growth of real GDP as they both co-moved together at least in the short run. By implication, they both bear positive relationship with each other in the short term. Albeit, the relationship between the two is negative in the long run as can be observed in table.4 because the impact of long run negativity far outweighs that of short run positivity. The two -year lag value of investment has a negative and statistically significant impact on real GDP growth. This can partly be attributed to poor and lack of maintenance culture on the part of the citizenry in maintaining public investments which aid in the further production of goods and services. In addition, obsolete and dilapidated infrastructural facilities can possibly be held accountable as a factor responsible for the observed result.

Interestingly however is the effect of population growth on real GDP growth rate. The impacts of lag values are found to be mixed while at the same time, are statistically significant at a conventional level of 1% . The likely explanation for this may be likened to frequency with which capital is being substituted for labour services due to emergence of information technology in spite of a growing population. Further, the current term of trade variable and its third year lag value is found to have increasing effects on the growth of real GDP. This can largely be attributed to favourable trade policies which have been instituted as well as positive government disposition towards both bilateral and multilateral trade agreements with other trading partners within and outside the WAMZ. The financial index (FI) measured by financing deepening indicator is insignificant at the current period but its lag value seems to impact negatively on real GDP growth as indicated by both t-statistics and probability values. A plausible explanation is that of shallowness and undeveloped nature of WAMZ financial system in the pre-reformed era which was largely repressive in nature. In addition, a measure of degree of openness is also insignificant on the growth of real GDP in the short run. This can, in part, be explained by repatriation of profits by foreigners doing businesses in the WAMZ countries to their home country. The table also shows the disequilibrium errors accumulated in the previous period that are corrected in the current period. The speed of adjustment of the real GDP growth to the long run equilibrium path is low. Specifically, only about 42% of the disequilibrium errors that occurred in the previous year are corrected in the current year.

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Table-7. Estimated error-correction model

Dependent variable Δ(LRGDP)		
Regression	**Parameter estimates**	**T-ratio**
Intercept	0.015[0.035]	3.288***
Δ (LNRGDP(-1))	-0.216[0.117]	-1.637
Δ (LNRGDP(-2))	-0.361[0.007]	-3.017***
Δ (LNRGDP(-3))	-0.495[0.002]	-3.518***
Δ (LNINF)	0.011[0.039]	2.201**
Δ (LNINF(-1))	0.009[0.187]	1.363
Δ (LNINV(-2))	-0.016[0.050]	-2.072
Δ (LNPOP(-1))	4.891[0.000]	5.699***
Δ (LNPOP(-2))	-8.884[0.000]	-6.019***
Δ (LNPOP(-3))	5.214[0.000]	6.180***
Δ (LNTOT)	0.060[0.003]	4.375***
Δ (LNTOT(-3))	0.039[0.012]	2.756**
Δ (LNFI)	0.047[0.127]	1.588
Δ (LNFI(-1))	-0.055[0.063]	-1.961*
Δ (LNOPN)	0.002[0.973]	1.637
Δ (LNOPN(-1))	0.005[0.732]	1.343
ECM(-1)	-0.117[0.022]	-2.187**
R^2	0.76	
$AdjR^2$	0.59	
D.W	2.163	
S.E	0.022	
Diagnostic Statistics		
Normality	0.381	
Serial Correlation	1.082	
ARCH LM test	1.731	
Heteroscedasticity	2.411	
Ramsey reset test	8.897	

Note: The figures in parentheses are t-statistics and all variables are defined earlier.

The diagnostic tests of the estimated ECM model suggest that the model passes the tests of serial correlation, functional form misspecification, normality and heteroscedasticity.

Estimation of Threshold Level of Inflation

Table 8 presents the optimal level of Inflation that is necessary for propelling sustainable economic growth in the WAMZ countries. From the estimated results, it can be observed that at low threshold inflation levels below 9%, there is a statistically insignificant relationship between the dummy of threshold level of inflation and economic growth. As threshold begins to increase starting from 9% upward, a statistically significant relationship is observed between economic growth and the dummy of threshold level of inflation which continues up to 14% inflation rate. However, in the estimation process, the threshold level of inflation is observed at 9% level where the value of *R2* is maximized i.e. RSS is minimized. While inflation below this threshold level has no significant effect on economic growth (i.e. statistically insignificant), inflation rates above it, has a significant negative effect on economic growth. Therefore, the empirical analysis suggests that if inflation rate is above 9-%, then the economic growth performance of the WAMZ countries economies might experience a declining situation.

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Table-8. Parameter Estimates of Threshold Model

Threshold Levels	Variables	Coefficients	Standard Error	T- Statistics	R-Squared	Residual Sum of Square(RSS)
1%	C	2.533183	0.236998	10.68864	0.848	0.027
	INF	-0.026542	0.014482	-1.332747		
	D(INF-K)	-0.001163	0.000776	-1.497682		
	INV	0.010979	0.010883	1.008844		
	GRPOP	0.237512	0.217182	1.093609		
	FI	0.022757	0.032533	0.699494		
	TOT	0.029785	0.019150	1.555337		
	OPN	0.137701	0.098871	1.310237		
	AR(1)	0.856436	0.063834	13.41671		
2%	C	2.532020	0.237052	10.68128	0.848	0.027
	INF	-0.026542	0.014482	-1.332747		
	D(INF-K)	-0.001163	0.000776	-1.497682		
	INV	0.010979	0.010883	1.008844		
	GRPOP	0.237512	0.217182	1.093609		
	FI	0.022757	0.032533	0.699494		
	TOT	0.029785	0.019150	1.555337		
	OPN	0.137701	0.098871	1.310237		
	AR(1)	0.856436	0.063834	13.41671		
3%	C	2.530858	0.237109	10.67381	0.848	0.027
	INF	-0.026542	0.014482	-1.332747		
	D(INF-K)	-0.001163	0.000776	-1.497682		
	INV	0.010979	0.010883	1.008844		
	GRPOP	0.237512	0.217182	1.093609		
	FI	0.022757	0.032533	0.699494		
	TOT	0.029785	0.019150	1.555337		
	OPN	0.137701	0.098871	1.310237		
	AR(1)	0.856436	0.063834	13.41671		
4%	C	2.531290	0.237209	10.67113	0.848	0.027
	INF	-0.026138	0.014337	-1.323086		
	D(INFK)	-0.001145	0.000771	-1.485690		
	INV	0.011145	0.010918	1.020759		
	GRPOP	0.237484	0.217281	1.092979		
	FI	0.022622	0.032554	0.694903		
	TOT	0.029774	0.019164	1.553625		
	OPN	0.137701	0.098871	1.310237		
	AR(1)	0.856176	0.063968	13.38449		
5%	C	2.532129	0.237328	10.66932	0.844	0.028
	INF	-0.025625	0.014153	-1.810528		
	D(INF-K)	-0.001123	0.000764	1.470064		
	INV	0.011340	0.010964	1.034299		
	GRPOP	0.237400	0.217413	1.091932		
	FI	0.022458	0.032581	0.689300		
	TOT	0.029752	0.019181	1.551109		
	OPN	0.113321	0.098871	1.213037		
	AR(1)	0.855888	0.064122	13.34771		
6%	C	2.534828	0.237362	10.67916	0.849	0.028
	INF	-0.024934	0.013837	-2.801978		
	D(INF-K)	-0.001091	0.000749	-1.457065		

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	INV	0.011269	0.010965	1.027756		
	GRPOP	0.238253	0.217694	1.094436		
	FI	0.022673	0.032590	0.695704		
	TOT	0.029289	0.019142	1.530120		
	OPN	0.113321	0.098871	1.213037		
	AR(1)	0.856219	0.063793	13.42190		
7%	C	2.538324	0.237383	10.69297	0.848	0.028
	INF	-0.024091	0.013420	-1.795199		
	D(INF-K)	-0.001053	0.000729	-1.444846		
	INV	0.011045	0.010940	1.009595		
	GRPOP	0.239591	0.218044	1.098821		
	FI	0.023120	0.032595	0.709330		
	TOT	0.028641	0.019085	1.500700		
	OPN	0.113321	0.098871	1.213037		
	AR(1)	0.856837	0.063255	13.54566		
8%	C	2.541014	0.237683	10.69075	0.848	0.028
	INF	-0.022856	0.012910	-1.770322		
	D(INF-K)	-0.001996	0.000706	-1.411182		
	INV	0.010650	0.010907	0.976465		
	GRPOP	0.240093	0.218548	1.098582		
	FI	0.023404	0.032633	0.717191		
	TOT	0.028226	0.019077	1.479555		
	OPN	0.113321	0.098871	1.213037		
	AR(1)	0.857540	0.062880	13.63768		
9%	C	2.543308	0.238148	10.67951	0.852	0.025
	INF	-0.031385	-0.012344	-2.732443		
	D(INF-K)	-0.020932	0.000685	-2.361857		
	INV	0.003902	0.010893	0.945765		
	GRPOP	0.059883	0.219135	2.894680		
	FI	0.023394	0.032695	0.715515		
	TOT	0.028106	0.019116	1.470322		
	OPN	0.065432	0.098871	1.212113		
	AR(1)	0.858090	0.062753	13.67408		
10%	C	2.545282	0.238506	10.67179	0.850	0.026
	INF	-0.041076	0.011788	-2.703131		
	D(INF-K)	-0.039878	0.000664	-2.322504		
	INV	0.004017	0.010881	0.920589		
	GRPOP	0.049640	0.219591	2.791301		
	FI	0.023304	0.032743	0.711729		
	TOT	0.028073	0.019153	1.465752		
	OPN	0.003421	0.098871	1.432167		
	AR(1)	0.858512	0.062683	13.69599		
11%	C	2.546769	0.237798	10.70980	0.850	0.026
	INF	-0.042812	0.011275	-2.757080		
	D(INF-K)	-0.038897	0.000647	-2.386180		
	INV	0.002968	0.010831	0.920321		
	GRPOP	0.041926	0.219064	2.604360		
	FI	0.023212	0.032659	1.710740		
	TOT	0.028271	0.019112	1.479233		
	OPN	0.003421	0.098871	1.432167		
	AR(1)	0.857966	0.062718	13.67971		
12%	C	2.547495	0.236991	10.74936	0.837	0.029

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	INF	-0.069595	0.010804	-2.813690		
	D(INF-K)	-0.051922	0.000632	-3.858507		
	INV	0.009965	0.010782	0.924265		
	GRPOP	0.044010	0.218340	2.717569		
	FI	0.023024	0.032564	0.707053		
	TOT	0.028640	0.019078	2.501180		
	OPN	0.083421	0.098871	1.510037		
	AR(1)	0.857195	0.062880	13.63213		

Source: Estimated with E-views

The results which emanate from the above are consistent with the findings of Fischer (2013), Barro (2024) and Christoffersen & Doyle (2016). The empirical results further lend credence to Kremer et al (2022) findings that put industrial and non-industrial countries threshold levels within the range of 2% and 12%. The result shows that if inflation increases beyond 10%, economic growth is estimated to reduce by 0.05%. The percentage reduction in the growth rate of an economy increases progressively as the level of threshold increases. However, the negative effect of inflation on growth trajectory though statistically significant but not as much as expected. What this implies in effect is that inflation does not wield pervasive and damaging impact on growth as far as the WAMZ countries cases are concerned. This result further corroborates our earlier assertion that neither inflation nor economic growth granger causes each other. The probable reasons for this development may be likened to the structure of the WAMZ countries economies which is largely monocultural in nature. Thus, the WAMZ countries economic growth could be said to bode well on account of oil industry which remains the main driven engine for these countries.

It is also discernable from the results some key important determinants of economic growth in the WAMZ countries. Factors like investment, growth rate of population, financial development index, term of trade and degree of openness bear the expected signs but with varying levels of statistically significance. Investment is found to be statistically insignificant. This result is not unexpected given the prevalence of infrastructural decay which has characterized every facet of the region's economic lives. To the extent that most blue-chip companies have left the shores of the region for more infrastructurally- stable regions. The growth rate of population has significant impact on the region's economic growth as indicated by t-value of 3.895. What this portends for development is that the region has been able to tap on its labour potentials. The result shows that a unit increase in population will raise the rate of economic growth by 0.02% when 10% threshold level is maintained. The index of financial development does not seem to be statistically significant in explaining the WAMZ countries economic growth. The measure of financial deepening variable used shows that it could not translate into growth. This explains why financial sector reforms (which are still ongoing) have been instituted to be able to put sanity into the operational modalities of banking system in the WAMZ countries. In addition, both terms of trade and openness were also not significant.

The likely excuse for these might be likened to continually trade deficits posture of the countries public-private investment crowd-out by foreign investment whose profits are usually remitted back to their home country.

CONCLUSIONS AND POLICY RECOMMENDATIONS

This study examines the inflation thresholds and economic growth in the WAMZ countries as well as explores the determinants of such growth using a simple augmented production function. Inflation threshold of 10% is considered as optimal because beyond which it exerts a negative effect on growth but below which there exists an insignificant relationship between inflation and output growth. The result is consistent with khan and Senhadji (2014) who put the threshold inflation level between 2% and 12% for developing countries. The study also explores error correction model to empirically establish the determinants of real growth rates in countries in the WAMZ. Factors like financial index, terms of trade and degree of openness are found to have significant impacts on growth of real GDP in the long run. In addition, the pairwise granger causality test result depicts an independent relationship between inflation and economic growth.

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The emanated outcomes of estimated models have important policy implications.

- First, like other developing regions, since inflation is inimical to growth, hence should be targeted not to exceed the threshold level of 10% at every point in time. This is because the identification of country-specific inflation thresholds in the inflation-growth relationship might provide useful information about the appropriate location and width of an inflation threshold band.

- More importantly is that, attention needs be focused on other important indicators of growth.

- Government should not rest on its bans in sustaining reforms programmmes which is currently ongoing in financial sector since it has positive impact on growth in the long run. Policies that might continue to improve favourable terms of trade should be instituted and

- lastly, unfettered access of foreigners and their products into the country all in the name of liberalization should be completely discouraged.

REFERENCES

1. Andres J. and I. Hernando (2012). Does inflation harm Economic Growth? Evidence for the OECD, Banco de Espana Working Paper 9706.
2. Ayyoub,.M; I.S. Chaudhry and F. Farooq (2014) Does Inflation Affect Economic Growth? The case of Pakistan , Pakistan Journal of Social Sciences (PJSS) Vol. 31, No. 1 pp. 51-64
3. Bruno, M. and W. Easterly. (2015). Inflation Crises and Long-Run Growth, World Bank Policy Research Working Paper No.1517.
4. Christoffersen, P. and P. Doyle (2016) From Inflation to Growth, Eight Years of Transition, IMF Working Paper No. WP/98/100.
5. De Gregorio, J. (2014). Inflation, Growth and Central Banks: Theory and Evidence, Ministry of Finance Paper, Santiago Chile.
6. Dornbusch, R., S. Fischer and C. Kearney. (2013) Macroeconomics. The Mc-Graw-Hill Companies, Inc., Sydney.
7. Drukker, D., Gromis, P. and Hernandez, V. P. (2015). ―Threshold Effects in the Relationship between Inflation and Growth: A New Panel-Data approach‖, Working Paper, Presented at the 11th International Conference on Panel-Data, Texas A&M University, College Station, Texas.
8. Engle, R. F. and Granger, C.W.J. (1987). Co-integration and Error Correction: Representation, Estimation and Testing. Econometrica, Vol. 55, pp. 1-87.
9. Fabayo, J. A. and O.T. Ajilore (2018**).** Inflation: How Much is too much for Economic growth in Nigeria‖, vol. 41, Issue 2, pp. 129-147.
10. Fischer, S. and F. Modigliani (2016) ―Towards and Understanding of the Real Effects and Costs of Inflation,‖ Weltwirtschaftliches Archiv, Vol.114, No.1978, pp. 810-833.
11. Greene, W. H (2013). Econometric Analysis. 5th ed. New Jersey: Prentice-Hall (2003).
12. Gujarati, D. N., (1995): ―Basic Econometrics,‖ 3rd ed., New York: McGraw-Hill.
13. Harris, R. I. D (1995) Using Co-integration Analysis in Econometric Modeling, London: Prentice Hall, Harvester Wheatsheaf (1995).
14. Hussain, M., (2019). ―Inflation and Growth: Estimation of Threshold Point for Pakistan‖.Pakistan Bank Review, vol.17, No 3, pp. 1-15.October,2020.
15. Khan, M. S. and Senhadji, A. (2019). Threshold Effects in the Relationship between Inflation and Growth, IMF Staff Papers, 48:1
16. Kremer, S., Bick, A. and Nautz, D. (2022). ―Inflation and Growth: New Evidence from a Dynamic Panel Threshold Analysis‖, SFB 649, Discussion Paper No. 036, Economic Risk, Berlin.
17. Mubarik, Y. A (2015). ―Inflation and Growth: An Estimate of the Threshold Level of Inflation in Pakistan,‖ State Bank of Pakistan – Research Bulletin, Vol.1, No. 1-2 (2015), pp. 35-44.
18. Mundell, R. ―Growth, Stability and Inflationary Finance,‖ Journal of Political Economy, vol. 73 (2019), pp. 97-109.

ISSN No. 2454-6194 | DOI: 10.51584/IJRIAS |Volume X Issue III March 2025

19. Nduka E. K., Chukwu J. and Nwkaire O. N. (2016). Trade openness and economic growth. A comparable analysis of the pre and post structural adjustment programme (SAP) Periods in Nigeria. Asian Journal of Business and Economics,3(3-4).
20. Okonkwo O.N. Ajudua E. I. and Alozie S. T. (2017). Empirical analysis of money demand stability in Nigeria. Journal of Economics and Sustainable Development,5(14).
21. Omanukwe P. N. (2012). The quantity theory of money. evidence from Nigeria: CBN Economic and Financial Review, 48(2), 95-127.
22. Omotor, D. G. and Omotor, P. E. (2015). Structural breaks, demand for money and monetary policy in Nigeria. A cointegration analysis using the Gregory and Hansen Procedure (Processed).
23. Omotosho, B. S. (2015). Is real exchange rate misalignment a leading indicator of currency crises in Nigeria? CBN Journal of Applied Statistics, 6(1), 153-179.
24. Onokoya A. B. and Yakubu M.M. (2018). The stability of money demand function. renewed evidence from Nigeria. Yobe Journal of Economics (YOJE), 3(1) 2016.
25. Opoku, E. (2017). Determinants of money demand in Ghana International Journal of Economics & Management Sciences,^6(6), 91-134
26. Owoye O, Onafowora O. A. (2017). M2 targeting, money demand and real GDP Growth in Nigeria. Do Rules Apply? Journal for Business and Public Affairs, 1(2), 34-59
27. Pigou, A. C. (2017). The value of money: Quarterly Journal of Economics, Vol. xxxii, (November) pp 38 - 65.
28. Saidu S. E. and Dickey D. A. (2015). Testing for unit roots in autoregressive-moving average models of unknown order, Biometrika 7(3), 599-607.
29. Saxena, S.P. and Bhadauriya, S. (2013). Co-integration analysis of the determinants of inflation in India Indian Journal of Economics and Research, 2(2), 4-12.
30. Sriram S.S. (2013). Demand for M2 in an emerging-market economy: An error-correction model for Malaysia.IMF Working Paper, WP/99/173.
31. Sriram, S.S. (2019). The Gambia: Demand for broad money and implications for monetary policy conduct. International Monetary Fund Working Paper, NO. 192.
32. Tule M. K., Okpanachi U.M, Ogiji P.and Usman N. (2023). A reassessment of money demand in Nigeria-CBN Journal of Applied Statistics,9(1), 47-75, June.