Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

EXTERNAL DEBT IMPACTS ON MACROECONOMIC INDICATORS OF GDP, INFLATION AND UNEMPLOYMENT IN NIGERIA

OKONTA PATRICK ONOCHIE
Department of Economics, University of Nigeria, Nsukka.
*Correspondence Email: patrick.okonta@unn.edu.ng

AZU BENEDICT
PhD, Department of Economics, Delta University, Agbor, Nigeria. Email: benedict.azu@unidel.edu.ng

AGU CHUKWUMA
PhD, Institute for Development Studies, University of Nigeria, Enugu Campus.
Email: chukwuma.agu@unn.edu.ng

Abstract

All countries aim to expand and flourish economically, but this expansion depends on having sufficient resources. Emerging nations like Nigeria often lack these resources due to low domestic savings, reduced tax revenues, low productivity, and little foreign exchange profits. To address gaps between savings and investment needs, these countries turn to external funding. This reliance on foreign funds leads developing nations, including Nigeria, to accumulate significant external debt. High levels of such debt can directly slow economic expansion and inhibit sustainable development by diverting resources from productive investment toward debt servicing. In this context, a debt instrument remains a financial claim that requires the payment of interest, principal, or both in the future, whereas external debt represents the total current obligations to non-residents. The theoretical framework is based on the debt overhang hypothesis. Descriptive and econometric analyses reveal the average, minimum, and maximum values of key economic indicators: external debt, GDP, inflation rate, and unemployment. This research found a moderate positive correlation between external debt and GDP; as external debt increased, so did GDP. Positive coefficients for GDP and inflation rate indicate these variables tend to rise with external debt, while negative coefficients for unemployment show an inverse relationship, clarifying how each variable interacts within the model.

Keywords: External Debt, Macroeconomic Policy, GDP Growth, Inflation, Unemployment, Nigeria.

INTRODUCTION

All countries want to expand and prosper economically, but this requires having enough resources (Singh et al., 2024). In emerging nations like Nigeria, low domestic savings, reduced tax revenues, low productivity, and limited foreign exchange earnings restrict the ability to finance economic growth (Abate, 2022). For this reason, many emerging countries, including Nigeria, rely on external funding to bridge the gap between savings and investment needs.

As a result, several developing nations face significant external debt, which slows economic expansion and hampers sustainable development. An external debt instrument is a financial claim requiring the debtor to pay the creditor interest, principal, or both in the future. External debt represents the total amount owed by a country's residents to non-residents, either for principal repayments or interest payments, under current contracts. These liabilities include currency and transferable deposits, other deposits, short-term

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

bills and bonds, long-term loans, trade credit, and advances. The goal of such borrowing is to supplement local resources without draining them from other purposes, such as capital production or consumption (Musgrave, 1959; World Bank, 1988).

Gross external debt refers to the aggregate amount owed by residents of an economy to nonresidents at a specific point in time. While countries may finance substantial development initiatives and projects through foreign borrowing, excessive borrowing can be detrimental as it places strain on national finances and, in extreme instances, may lead to default. According to the debt overhang hypothesis and liquidity constraints, a high external debt burden has an adverse effect on economic growth and development. These factors underscore, in theoretical terms, how large external debt servicing obligations can impede development plans (Festus & Saibu, 2019).

Nigeria's external indebtedness originated in colonial times, marked by the World Bank (IBRD) loan of 1958, which was used to fund railway expansion with backing from the UK government (Robinson, 2022). Since the early 1980s, Nigeria has struggled to finance external transactions and repay foreign loans, relying more on external funds due to decreasing oil revenue. Nigeria's external debt grew rapidly from the 1970s, reaching a low of $985 million in 1977, and then surging to $42.5 billion by December 31, 2023 (Ekeruche et al., 2023; DMO, 2023). This mounting debt contributes to economic challenges: weakened sector performance, persistent budget deficits, failing infrastructure and services, higher prices, shortages, and declining living standards. Literature on "growth with debt" notes that foreign borrowing should boost output only if returns exceed borrowing costs, but this has not been realized in Nigeria due to misallocation and poor debt management. Recent trends in sub-Saharan Africa have also raised concerns about the impacts of significant debt accumulation.

Case studies like Mexico and Argentina in the early 1980s highlight the risks of excessive external debt, which can undermine financial stability and the broader economy (Mahmud and Ogwuzebe, 2021; Obisesan, Akosile, and Ogunsanwo, 2019). In emerging economies, high debt levels are thus widely viewed as a threat to financial institutions, borrowers, and overall economic stability, increasing vulnerability to downturns.

The challenge of external debt in Nigeria has become a significant concern, casting a considerable shadow over the international economic and political landscape. Foreign aids, once seen as an assistance instrument, are now wielded as a tool of oppression, suppression, and perpetual underdevelopment. A primary factor contributing to underdevelopment in Nigeria is the country's limited capital. Injecting funds into the system from other economies is crucial for sustaining growth. External financial institutions offer a viable source for such funds. Nigerian domestic debt is distinguished not only by its short-term nature but also by variations. Instead of purchasing government bonds, Nigerian investors and businesses often choose to invest their idle cash in treasury bills and company shares. It is acknowledged that economic growth is a long-term project. Given this, the significance of external debt as a dependable substitute for the frequently exorbitant interest rates associated with domestic debt—which typically

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

has a short duration cannot be overstated. In actuality, Nigeria's economic growth is not substantially financed by the dynamics of its external debt. External debt frequently accumulates as a result of principal and servicing obligations, which can have a detrimental impact on Nigeria's GDP, a key indicator of economic growth. Nigeria, as a developing country, has had its share of narratives on its external debt dynamics and bilateral aid inflows since gaining independence in 1960, in an attempt to foster economic growth and development. For example, from 1981 to 1985, the Nigerian external debt stood at 10.767 million Naira; it rose to 163 million Naira by the end of 1995. The negative trajectory continued from 2010 to 531 trillion naira, and then jumped to 1.4 billion in 2015. By 2023, the external debt of Nigeria had risen to $ 42 billion (DMO, 2023). Nevertheless, it is quite interesting to note that in relative terms, the quantum of external debt as a ratio of nominal gross domestic product downsized between the periods 1991-2005 by 10%, 8%, and 4% respectively. The economic quagmire of the 1980s, resulting from the oil glut and the subsequent introduction of the Structural Adjustment Programme by the General Babangida administration, led the country to excessive external borrowing during the period under review. Nevertheless, debt cancellation in 2005, which was vigorously pursued by the administration of Chief Obasanjo, reduced Nigeria’s external debt from 3.8 trillion (which is about 26.5% of the GDP to 531 million (which represents 1.3% of the GDP in 2010 (Jibir,Abdullahi, Abdu, Buba, & Ibrahim, 2018). Nevertheless, this increase in external debt persisted until 2021, when it stood at 32.86 trillion Naira, while the external debt percentage to GDP stood at 7.8 percent in 2020. From 2020 to 2023, it has been projected that the Nigerian government's external borrowing would rise to over 70 trillion naira (DMO, 2023). This implies that every Nigerian will owe #384,864 by the end of 2023. This upward trajectory in external debt has put severe pressure on the country's accruable revenue, with approximately 3.34 trillion spent on external debt servicing, which accounts for about 97% of the total revenue for the 2021 fiscal year (DMO, 2021; BudgIT, 2020). Many economic experts, such as KPMG, have expressed danger about Nigeria’s external debt accumulation, saying that the country may use the entire 2023 budget for external debt servicing. They posit that Nigeria’s external debt per capita, which stood at #217,138 in 2022, may rise #365,258 by the end of 2023, corroborating the position of BudgIT (2022). Similarly, according to data from the World Development Indicator and the Nigerian Bureau of Statistics, Nigeria's GDP increased from $ 59.32 million in 1999 to $ 295 million in 2010. This is regardless of any changes that may occur during this time. Similar to this, the GDP climbed to $414 million in 2011, $463 million in 2012, $ 520 million in 2013, $ 574 million in 2014, and $493 million in 2015. While it increased to $ 440.83 billion between 2016 and 2022 (WDI, 2021; NBS, 2019), this notable growth also occurred during a period of significant external debt accumulation. Similarly, the inflation rate peaked in 2005 at 17.8%, having increased from 6.6% in 1999. In 2006, it dropped to 8.2%, but between 2008 and 2016, it increased to 11.5% to 15.6%. From 2017 to 2021, the rate remained erratic, ranging from 16.5% to 16.9%, and then increased to 22.04% in March 2023 (NBS, 2023). In Nigeria, inflation has fluctuated between single and double digits. Nigeria experienced several episodes of high inflation, with rates above 25% between 1980 and 2018. By the end of 2023, inflation had climbed to 28.92% (NBS,

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

2023). Achieving a stable and lowered inflation rate alone through monetary policy will be difficult. When inflation is strong, fiscal and monetary policies become almost interwoven.

Nigeria, a major economic player in Africa, faces a complex challenge with profound implications for its economic stability and development the intricate relationship between external debt burden and the effectiveness of macroeconomic policy instruments.

High external debt levels create multiple challenges: they increase debt servicing pressures, limit the country's ability to implement fiscal and monetary policy, contribute to exchange rate volatility, expose the economy to global shocks, elevate the risk of debt distress, and constrain funding for development initiatives. Each of these factors links directly to core macroeconomic indicators.

High debt servicing diverts funds from productive investment, reducing GDP growth. Constraints on policy space and vulnerability to shocks can fuel inflation. Limited ability to invest in job creation and social services can drive unemployment higher. This study, therefore, focuses on how foreign debt specifically impacts key macroeconomic indicators GDP growth, inflation, and unemployment in Nigeria, aiming to provide an evidence-based understanding that can inform balanced policy.

Fig 1.0: DMO 2023 data and pilot graph by the authors)

From the above graph,it dipicted the astronomical increase of Nigeria's external debt borrowing from 1981 to 2022 in Naira.Although, it is expected that increase in external borrowing will improve macroeconomic goals of achieving economic growth, reduction in inflation and unemployment in Nigeria.

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

REVIEW OF THE LITERATURE

Accumulation of external debt is worth pursuing if the borrowed funds are channeled to the purposes of building critical infrastructure and human capital development. However, it becomes anti-development to channel external borrowing to financing domestic consumption. According to the AFDB (2019), servicing external debt and its repayment are expected to yield a discounted return on external debt that must be higher than the cost of debt servicing. External debt is owed by nations to a variety of lenders, including banks, individual bondholders, other nations, their official lending institutions, and multilateral lenders like the World Bank. Countries can finance significant development initiatives and projects by borrowing money from abroad; however, borrowing too much can be detrimental, as it can strain a nation's finances to the breaking point and result in default. Due to the debt overhang hypothesis and liquidity constraints, a high debt load has a detrimental impact on economic growth and development. The development strategy could be negatively impacted by massive external debt servicing, as these reasons theoretically indicate. (Festus & Saibu, 2019).

According to Odili (2022), debt accumulation is considered advantageous if it fosters economic growth and the welfare of the populace. However, if loans are not adequately managed, the ensuing debt burden could be substantial and serve as a barrier to the country's development, with serious socioeconomic repercussions for future generations. The desire for leverage is theorized to stem from the financial and economic opportunities that governments in developing nations have to finance socially and economically desirable public sector initiatives, such as the provision of electricity and other forms of energy, transportation, and healthcare, among other infrastructure projects. These facilities are crucial for accelerating the growth of the public and private sectors of the economies of developing nations.

The importance of foreign debt in the development drive of most emerging nations cannot be overstated, especially when many developing countries are grappling with limited or scarce revenue to fund development programs. In light of the above, Soludo (2003) posits that countries borrow externally for two basic reasons: to finance significant investments in critical infrastructure or for greater consumption, and to overcome budgetary shortfalls. The key takeaway is that external borrowing stimulates economic growth and development. He, therefore, argued that caution should be applied when borrowing externally, as excessive external borrowing will expose recipient countries to a huge debt burden that will certainly crowd out investment, as a larger chunk of the country's revenue will be channeled to debt servicing. Several developing countries have accumulated a substantial external debt burden, which has hindered development and posed a barrier to poverty reduction and stable macroeconomic policies. A large debt burden harms economic growth and development due to the debt overhang hypothesis and liquidity constraints. These factors theoretically explain how huge external debt and debt services could squeeze investment (Arnone, Bandiera & Prebitero, 2005)

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

Additionally, external borrowing can be detrimental to an economy if it does not have the potential to generate greater economic benefits than the cost of borrowing (Mohsin et al. 2019, 2020a, 2021). In general, external borrowing has the ability to increase productivity and capacity, which makes the debt imaginative and believable (Farooq and Yasmin 2017).

One of the fiscal instruments that developing nations still frequently use as a source of development capital is external debt. One of the barriers to a nation's rapid development is a lack of funds for comprehensive development (Zuhroh & Pristiva, 2022). According to the theoretical framework, the management of external debt can contribute to higher economic growth. The Keynesian school of economic theory believes that directing capital through foreign debt toward the productive sector can significantly increase income. This may promote the development of production output, which will ultimately impact the acceleration of a nation's economic growth (Zuhroh &Pristiva, 2022b).

The nature, dynamics, and relationship between the accumulation of external debt and macroeconomic policy have continued to dominate the literature by professionals. Unavailability of funds for development programmes and projects has led many developing countries to resort to external debt and foreign aid assistance as a rational choice especially when there are low savings, However, when the stock of external debt as a percentage of GDP is beyond a certain threshold, the desire to achieve sustainable macroeconomic goals will be a mirage because a large chunk of the countries revenue will be used for debt servicing at the detriment of achieving economic growth and development that is sustainable over time. (Serhan & Amin, 2018)

Conversely, borrowing from the government is expected to yield economic prosperity to the benefiting country, and macroeconomic policies such as fiscal policy and monetary policy adopted will help in driving the objective. The three main macroeconomic concerns are national production, unemployment, and inflation; these are elements that can be changed through the application of macroeconomic policy. "Macroeconomic policy" refers to the actions taken by the government to control a nation's economic activities in order to promote strong and sustained economic growth. These are elements that are subject to change through the application of macroeconomic policy. Governments may also use macroeconomic policy, which encompasses fiscal and monetary policy to support economic stabilization and development. To increase or decrease the amount of currency in circulation, for instance, central banks adopt monetary policy. Monetary policy refers to the tools that a nation's central bank uses to control the total quantity of money in circulation, promote economic growth, and implement policies such as adjusting bank reserve requirements and changing interest rates. Monetary policy is commonly classified as either expansionary or restrictive. During downturns or recessions, an expansionary policy stimulates the economy. As interest rates decline, savings become less attractive while borrowing and consumer expenditures increase. A contractionary policy raises interest rates and reduces the quantity of money in circulation, aiming to slow growth and curb inflation, which is the increase in the price of goods and services in an economy that

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

erodes the purchasing power of money. Therefore, three major goals of monetary policy are to reduce inflation, Unemployment, and a stable exchange rate regime. Fiscal policy, on the other hand, controls how much money the government spends.

Fiscal policy is the process by which the government uses taxes and spending to influence the state of the economy. The process by which the government chooses what goods and services to purchase, how to allocate transfer payments, and how much money to collect is known as fiscal policy. Fiscal policy is regarded as tight or contractionary when revenue exceeds spending (i.e., the government budget is in surplus) and loose or expansionary when spending exceeds revenue (i.e., the budget is in deficit). The direct effect of fiscal policy is the change in the total demand for products and services. For example, there are two ways in which a fiscal expansion can raise aggregate demand. First, demand increases directly if government expenditure increases, but taxes remain constant. Second, households will spend more on consumption if their disposable income rises as a result of tax breaks or higher transfer payments. This increase in consumption will lead to an increase in aggregate demand. Furthermore, fiscal policy modifies the composition of aggregate demand (Soludo, 2003).

Taxes, expenditure, public debt, and a nation's budget are the main tools of fiscal policy.Changes to tax rates or government revenue levels are used to either encourage or hinder private spending on investment and consumption. The primary focus of fiscal policy is how the government receives and spends money. Economic policy and strategic external debt policies are crucial in the pursuit of long-term growth (Hung, 2021).

On the other hand, excessive foreign borrowing and fiscal instability brought on by the debt could expose the country to various economic challenges. Due to the influence on budget gaps and the quantity of debt, monetary regulators' capacity to raise interest rates and restrict the efficacy of fiscal programs for financial reasons has decreased (Shihab 2014). The employment rate in the economy, the transparency of the government, and the composition of government expenditure are some of the factors that demonstrate how fiscal policy influences the rate of economic expansion.

Additionally, Nursini (2017) found that short-term debt service payments, total factory output growth, and the central government's debt all have an impact on economic development (Mohsin et al., 2021).

Governments use spending and taxing indicators together to gauge the health of the economy, which is described by fiscal policy. To promote a strong and sustainable economic system and reduce poverty, governments often employ fiscal policy (Munir et al., 2019). The use of fiscal policy to achieve desired macroeconomic goals has increased in popularity over the years, particularly during the current economic downturn, as economies have implemented policies to stimulate growth and introduced stimulus packages to mitigate the negative effects of the downturn on the most vulnerable members of society. Similar to this, governments may respond to economic difficulties by implementing a stimulus triggered by the pandemic, which involves increased spending

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

or borrowing. This stimulus may heighten inflationary pressures, have an impact on foreign exchange reserves, and crowd out the private sector through excessive spending (Abdullah et al. 2019;)

According to the World Bank (1998), the primary objective of fiscal policy is to avoid long-term fiscal imbalances (deficits) and the growth of government obligations. The government's pursuit of effective demand management is the second objective, and increasing revenue for fiscal authorities is the third. These efforts aim to facilitate a reasonable and appropriate response to both internal and external macroeconomic disturbances. Therefore, it may be said that the government's inability to achieve some or all of the objectives of fiscal policy may be the source of fiscal fragility.

Sharaf (2022) examines the long-term causal effects of Egypt's external debt on economic growth in a Granger sense. This study examines the asymmetry and nonlinearity of the external debt-growth relationship in Egypt and their impact on economic growth. Egypt has relied on external borrowing for decades to cover its ongoing current account deficits, as it is perpetually constrained by low hard currency profits resulting from unfavorable terms of trade. Over the past decade, Egypt's external debt has skyrocketed to the point where it now holds the dubious distinction of having the MENA region's fastest-growing external debt growth rate. Its macroeconomic policies may fail if external debt rises above safe threshold levels, which has been seen as a threat to economic growth. There is fear that Egypt's level of external debt has reached economically unsustainable levels, which would force financial resources to be diverted from other productive purposes and used to service the debt burden.

Manasseh et al. (2022) investigated the impact of external debt on economic growth. The connections between governance, as represented by Kaufmann, and quality governance indicators, such as political stability, voice and accountability, government efficacy, regulatory quality, and corruption prevention, were also further investigated. Additionally, the relationships between governance, external debt, and external debt volatility were examined. This study selected thirty countries in Sub-Saharan Africa (SSA) and used annual time series data from 1997 to 2020. The estimating approach of the Dynamic System Generalized approach of Moments was applied, taking into consideration conventional drivers of economic growth. The study's empirical findings indicate that external debt and its volatility have a negative and considerable impact on the economic growth of SSA. Furthermore, the interaction between governance indices and the volatility of external debt benefited SSA's economic growth.

External borrowing is not an issue for a nation when its income exceeds its borrowing costs. It can, however, spiral out of control if improperly and irresponsibly managed. External borrowing would boost capacity and output growth, making the debt more productive and justified (Poirson et al., 2002; Pattillo et al., 2004). On the other hand, this debt can lead to excessive foreign borrowing and fiscal imbalances, making the country more vulnerable to shocks and crises. It reduces the efficacy of fiscal programs and limits the monetary authority's ability to raise interest rates for monetary policy objectives

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

because of its influence on the budget deficit and debt (Beetsma and Bovenberg, 2003). The relationship between foreign debt and economic growth has received considerable attention from scholars and policymakers since the early 1980s' global debt crisis..

The underlying causes of this crisis are the substantial accumulation of external debt and its sustainability, particularly in highly indebted poor countries (HIPCs) (Gunter, 2002; Easterly, 2002). For most of these countries, the debt crisis resulted in low or negative per capita GDP growth rates (Sachs, 1988; Lin and Sosin). Since then, several empirical studies have looked at the relationship between external debt and economic development, as well as the sustainability of such growth. Since most of these nations allocate the majority of their revenue to debt payments, several studies (Fosu, 1996; Iyoha, 1999; Clements et al., 2003; Pattillo et al., 2003) have demonstrated that external debt has a negative impact on growth in many HIPCs.

The primary objective of economic policy in many developing countries is to achieve sustainable economic growth while lowering unemployment and poverty. Nonetheless, the government must accept financial assistance from the outside world, typically in the form of debt, if it is unable to meet its growth needs. (Tareque& Dey, 2020). The threat that public debt trends pose to macroeconomic stability worries policymakers, especially in developing nations where monetary authorities are weak and dependent, and must set and implement monetary policies. The relationship between public debt and inflation is therefore worthwhile to investigate given its importance in the process of macroeconomic and inflationary stabilization in the' stability.

Building up external debt can have a negative impact on the economy's overall price level, potentially leading to inflation. Many low-income countries rely on foreign funding to achieve their development targets. External borrowing is used in conjunction with savings to enable an economy to participate in investment activities. It is expected to provide the necessary funding for investments in productive economic activities and infrastructure, thereby fostering macroeconomic stability and economic growth. The government is compelled to create new currency to cover most of its deficits due to a substantial accumulation of public debt, which has led to a sharp rise in the money supply and severe inflation.

Karakaplan (2009) examined how the level of financial market development affects the impact of foreign debt on inflationary pressures, utilizing a hypothesis akin to that presented by Neyapti on the relationship between budget deficits and inflation rates. This study examines the precise relationship between external debt and inflation, suggesting that this relationship may not always be favorable and may depend on the degree of financial market development within the nation. Particular tests are conducted on the hypothesis that, in the case of a well-developed financial sector, debt may have minimal or even no inflationary effects. His second objective is to assess the results' resilience to variations in the primary characteristics of the various countries. If there are differences in the relationships between the inflation determinants and inflation rates among various

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

countries, then the coefficients of the inflation determinants should also change in terms of sign and magnitude.

Enongene & Etape (2023) use World Bank data from 1980 to 2020 in Cameroon to study the impact of external debt stocks on inflation. The study employs non-linear ARDL to investigate both positive and negative changes in the stocks of external debt and their impact on inflation. The findings indicate that external debts have an inflationary asymmetry effect that fluctuates over time. In the long run, only the positive and important coefficient of positive external debt stock on inflation exists, whereas in the short run, the effects of positive and negative external debt stocks on inflation are respectively negative and positive.

The nature of the link between the total public debt and inflation in the Gambia from 1978 to 2019 was investigated by Aimola & Odhiambo (2022) using the nonlinear autoregressive distributed lag (NARDL) approach. The analysis, whether conducted in the short or long term, reveals an unbalanced link between inflation and the overall amount of public debt. A positive variation in the total public debt of the Gambia has an inflationary effect, as demonstrated by the statistically significant coefficient of a positive shock in both the short and long terms. Conversely, in the short and long terms, the effects of a negative shock are not statistically significant. These results validate the need for the government to proceed cautiously when increasing the national debt to minimize inflation volatility.

Helmy (2021) examines the impact of Egypt's external debt on its pricing level—a topic that scholars have mostly ignored. However, as inflation is a multifaceted issue, this study proposes several models that integrate monetary and fiscal policies with other internal and external factors that influence inflation, utilizing monthly data from 2000M1 to 2020M1. By utilizing Egypt's wholesale pricing index to account for inflation and employing ARDL cointegration analysis on monthly time series variables, the research concludes that foreign debt raises prices in both the short and long run. Furthermore, it was found that while the money supply and interest rates temporarily reduce prices, they raise prices over time. Finally, while a fall in the value of the local currency exacerbates inflation in both the short and long terms, increases in the price of primary goods on the international market drive domestic prices in both the short and long term. According to the research, reducing Egypt's foreign debt could also help lower inflation there, as external debt contributes to inflation and has a cascading effect on various other factors that contribute to inflation.

Using Brazil as a case study for nations in Latin America, Saadoun &Samah (2021) highlight a fundamental issue regarding the consequences of external debt on inflation rates, with the problem of inflation being one of the major issues that macroeconomic policymakers in Brazil face. The research began with the premise that high external debt raises inflation rates and exacerbates this issue. It aimed to assess the impact of external debt on Brazil's inflation rate from 1990 to 2019. Additionally, the impact of debt on inflation rates was examined. The research produced a number of findings, the most

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

significant of which was that rising foreign debt levels led to rising inflation rates, a dynamic that has since become integral to and associated with the economies of Brazil and the majority of Latin American nations.

Similarly, Ghaly (2023) examines the relationship between Egypt's external debt and inflation, as well as the manner in which these variables interact in particular, the mutual impulse response. A vector error correction model (VECM) was used to evaluate the following variables: foreign debt stocks, net trade in goods and services, final consumption expenditure, consumer price index, broad money, and gross capital formation. Data were employed between 1976 and 2020.Positive results from the cointegration test using "Johansen's approach" validated the application of VECM technology. The main conclusions indicate that the impact of rising inflation on external debt is decreasing, and both short- and long-term increases in inflation initially lower external debt. The findings also suggest a long-term equilibrium between foreign debt and inflation, as well as a bidirectional causal relationship.

Agyapong &Bedjabeng (2020) conducted research on the effects of external debt and foreign direct investment on the financial development of Africa. Annual data on foreign debt, foreign direct investment, and financial development were sourced from the World Bank's World Development Indicators between 2002 and 2015. The generalized method of moment estimation methodology and the dynamic panel were employed in the causal study design to analyze the data. Based on the findings, there is a considerable positive correlation between foreign direct investment, external debt, and the financial development of African states. Since foreign direct investment is beneficial to the expansion of the global economy, the governments of the sampled economies should take action to promote high levels of this kind of investment.

Aimola, et al(2021) examined the relationship between Nigeria's total public debt and inflation using the Autoregressive Distributed Lag (ARDL) approach. The co-integration regression results demonstrate evidence of a stable long-run relationship between inflation, trade openness, money supply, interest rate, economic growth, and private investment, despite the presence of structural discontinuities. Empirical results indicate that the relationship between public debt and inflation is statistically insignificant, regardless of whether the regression is conducted in the short or long term.

Akingbade & Odhiambo (2021) utilize annual data from 1983 to 2018 to investigate the impact of public debt on inflation in Ghana. They estimate their linkage using an error correction model and the autoregressive distributed lag (ARDL) bounds testing technique for cointegration. In the face of a structural break, the cointegrating regression results indicate a consistent long-run relationship between inflation and the explanatory variables. The results also demonstrate a considerable and favorable effect of public debt on inflation. Regardless of whether the regression was run in the short term or the long term, these results were found to hold. The study supports the existence of inflationary consequences of public debt in Ghana and recommends that the government exercise

ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

caution when evaluating increases in public debt to reduce inflation volatility and the associated risks to the economy.

Di & Zongxin (2022) examined the average treatment effect of inflation targeting on the likelihood of financial crisis using a large panel of countries covering the years 1980–2017. They solve inflation targeting self-selection using propensity score matching. When financial crises are categorized into their various subtypes, the effects of the stock market crash, banking crisis, inflation crisis, and external debt crisis are the most pronounced. Consistent evidence from many matching estimators suggests that inflation targeting has significantly reduced the likelihood of a financial crisis. Their findings remained largely unchanged when they took into account factors such as fiscal balance, debt-to-GDP ratio, central bank independence, legal antecedents, governance quality, financial development, and capital account transparency.

Cham (2023) concentrated on the factors that led to public debt reversal and inflation in the economies of the West African Monetary Zone (WAMZ). He identified several key characteristics, including poor institutions, high government expenditure, the impact of external shocks, and improper revenue mobilization, that influence public debt reversal and inflation. It was also looked at how these factors affected the economies of the WAMZ. These nations experience severe inflationary pressures, rising borrowing rates, and sluggish economic expansion. To address these issues, the policies and other strategies of the WAMZ economies were assessed. The study examined the difficulties these countries have in adopting the recommended policy measures to discuss the relationship between inflation and public debt reversals and found that there is a strong relationship between the WAMZ economies' external debt burden and inflationary pressure.

Akingbade & Odhiambo (2023) provide a comprehensive analysis of scholarly publications regarding the connection between inflation and public debt. They reviewed, summarized, and critically evaluated previous studies on the relationship between public debt and inflation, both theoretically and empirically. A correlation between state debt and inflation was found in the literature review. The literature assessment indicates that, depending on the country, public debt and inflation have a positive or negative link. In most of the literature, however, the relationship between inflation and public debt is beneficial. This outcome is most noticeable in debt-ridden countries with higher levels of public debt and less established financial systems. The study found no consensus about the existence of a positive or negative relationship between public debt and inflation.

Similarly, Imaogwu et al(2023) investigated the impact of growing external debt on Nigeria's currency rate using yearly data from 1980 to 2021. They based their study's logic on incorporating government spending and inflation rates into the accepted analysis of currency rate volatility in Nigeria, using data from the CBN statistical bulletin, DMO, and WDI. The stabilization and diagnostic tests, the Autoregressive Distributed Lag (ARDL) method, and the Augmented Dickey-Fuller (ADF) unit root test were used to analyze the collected data. Nigeria's foreign debt has a minor but negative impact on the

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

country's exchange rate, according to the results of the preliminary research. Furthermore, external debt has a favorable and considerable impact on Nigeria's inflation rate.

Shuaibu et al. (2021) examined the impact of Nigeria's external debt on unemployment and inflation from 1985 to 2020. It uses annual data spanning 36 years to do multiple econometric tests. The Autoregressive Distributive Lag (ARDL) model's Error Correction Model (ECM) is used in the data analysis. Granger causality tests and unit root tests were also used to assess the model's efficacy and predictive capacity. The study's findings show a sustained relationship between unemployment and Nigeria's public debt. It shows that while unemployment rises in tandem with government debt, it is more pronounced in the case of external debt than in the case of domestic debt. Nonetheless, the cointegration study's findings show that there is no relationship between public debt and inflation.

Yeboa (2022) examined whether factors such as inflation, unemployment, and external debt impact economic growth, with the aim of establishing a causal relationship that would be beneficial to policymakers. The outcome demonstrated that inflation was stable at the level, in contrast to foreign debt, GDP, and unemployment, which were non-stationary and integrated at the first-order difference. Selected variables showed a long-run association in the Johansen co-integration test, however only foreign debt has a long-term beneficial effect on economic expansion. However, there was a negative impact from inflation and unemployment. The regression study indicates that while unemployment and inflation have a negative effect on growth, external debt and GDP growth in Ghana are positively related. The findings also demonstrate that while GDP reduced inflation, external debt raised it, and unemployment had little impact on either.The outcome further indicates that while external debt had a positive effect on the jobless rate, GDP had a negative one.

Additionally, Osakwe et al (2022) looked into how Nigeria's external debt increased between 1990 and 2020.They used the Vector Auto Regressive Distributive Lags test for data analysis, the Augmented Dickey Fuller (ADF) unit root for stationarity testing, and an ex post facto research technique. The test involved external debt as the independent variable and the exchange rate, GDP growth rate, and inflation rate as the dependent variables. The findings indicated that foreign debt impedes economic growth, which exacerbates the exchange rate and leads to a rise in inflation, both of which further impede economic growth.

Muhammad et al. (2021) employed the Autoregressive Distributed Lag technique to examine the relationship between public debt and Nigeria's inflation rate for the years 1985 to 2020. The study's ex post facto research design makes use of time series secondary data, and the findings show that both the domestic and external debts were stationary at the first difference, with the exception of the inflation rate, which was stationary at the level. The study uses both domestic and foreign debt to quantify national debt, and the consumer price index is used to calculate Nigeria's inflation rate.According to the analysis, local debt significantly lowered Nigeria's inflation rate, but external debt

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

had no appreciable effect. Based on these results, the study concludes that domestic debt in Nigeria has an inflationary effect The level of prices rises as domestic debt increases. External debt has grown to be a significant source of funding for budget deficits. In Nigeria, rising government debt has a tendency to raise inflation.

There are many studies on external debt dynamics and its effects on unemployment across different climes. However, a critical review of these studies has revealed variations in variables, methodological approaches, general outcomes, and conclusions. Studies like Festus & Saibu (2019), in their investigation of the consequences of external debt on Nigeria's economy, opined that external debt stimulated economic progress and development in most advanced countries in providing some critical infrastructures, such as power, education, and poverty reduction. However, they were quick to point out that excessive accumulation of external debt poses a significant danger to development as a substantial amount of government expenditure and foreign receipts will be devoted to the service and the repayment of the debt with colossal opportunity cost for the incoming generation, and cause a clog in the quest for sustainable development, unemployment and poverty reduction which many developing countries yearn for.

Nwokoye et al. (2016) examined the impact of Nigeria's external debt on unemployment through the lens of investment. The study employed a system of equations approach, treating unemployment and investment as two stochastic equation model variables that are mutually dependent on one another. The indirect least squares method was used to estimate the model. The results demonstrate that, indirectly through domestic investment, the stock of external debt had a negative but considerable impact on unemployment. The major takeaway from this is that a high level of external debt has a negative impact on the Nigerian economy, as it discourages local investment by crowding out funds for debt servicing obligations.

The empirical model of foreign debt, exchange rates, and unemployment in a few ASEAN countries between 1980 and 2017 is examined by Cahyadin & RatwianiNngsih (2020). Among the countries were the Philippines, Malaysia, Thailand, and Indonesia. The World Bank's publications provided the information. The ARDL-ECM and the Granger Causality Test (GCT) were both employed to address the study objectives. The findings demonstrated the short-term impacts of each empirical model, foreign debt, currency rate, and unemployment. The stability test proved the models were reliable and accurate. The GCT results show that foreign debt, exchange rates, and unemployment especially in Indonesia are causally related. Additionally, there were co-movement relationships between unemployment, exchange rates, and external debt in a few ASEAN countries. Governments are therefore expected to focus on macroeconomic policies, such as those that support exchange rate stability, manage the risks associated with external debt, and support the poor.

In a similar vein, Alnaa &Juabin (2023) use data from 25 countries to analyze the dynamic relationship between external debt and unemployment in Sub-Saharan Africa. According to the report, there is a direct link between foreign debt and unemployment that can be

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

attributed to inefficient borrowing practices and the incorrect application of discretionary fiscal policy decisions. Additionally, evidence suggests a nonlinear relationship between unemployment and external debt in all the nations examined.

Arshed, et al(2022) examined the fundamental goal of external debt, which is to finance poverty reduction and advance a nation during a crisis, rather than burdening the economy. They noted that although numerous empirical studies have investigated the concept of optimal debt, they often incorporated specific nonlinear assumptions. Therefore, they examined the impact of both long-term and short-term external debt on living standards in 23 high-debt Asian nations from 1980 to 2020. The Two-Step Panel Quantile ARDL model is used to evaluate the quadratic effects of external debt. To ensure a robust debt effect on living standards, this model accounts for unobserved heterogeneity, serial correlation, misspecification, and non-normality. The study found that external debt has diminishing returns, meaning that beyond a certain point, it would start to lower people's level of life. The estimated model also suggests the advantages of efficient, modest debt-based policy actions.

Siddiqa (2021) utilized data from ten specifically chosen developing countries for the years 2000-2019 in his examination of the factors influencing unemployment in developing nations. The study found that while the population and external debt have a positive effect on unemployment, GDP, inflation, remittances, exchange rates, and education spending have a negative effect. Developing countries need to manage their populations, eliminate balance of payments deficits, control inflation, increase their GDPs, lower unemployment, and earn favorable exchange rates through increased exports. The Augmented Dickey-Fuller (ADF) test was used to determine whether all variables, except for inflation, were stationary at the first difference. Findings from the application of the Generalized Method of Moments (GMM) model demonstrate that all variables are statistically significant. They must also increase foreign remittances and allocate more funds for education spending. According to Soukaina &Hammami (2021), a bidirectional relationship exists between unemployment and external debt among the six nations that comprise the Eurozone.

Igberi et al. (2016) assessed the impact of rising public debt on unemployment in Nigeria from 1980 to 2015 using the autoregressive distributed lag model and the Wald test econometric analytical techniques. The study's results suggest a long-term relationship between the independent and dependent variables. The ARDL long-run test predicts that a 1.6% increase in the unemployment rate will follow an average 1% increase in public debt. A 1% increase in the average GDP growth rate will lead to a 0.12% decrease in the unemployment rate, according to the results of the ARDL long-run test. On the other hand, it has been shown that unemployment decreases by 0.2% for every 1% increase in inflation. Thus, the analysis concludes that public borrowing in Nigeria has not produced the anticipated economic effects, and consequently, the increase in public debt has not led to a reduction in unemployment. Furthermore, the impediment to the execution of new development-oriented initiatives is the quickly increasing debt payment obligations, which

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

exacerbate the state of unemployment in the economy. The study recommends that capital projects with the potential to create jobs should be the only uses of public borrowing. Second, initiatives in the economic sector should have positive internal rates of return that exceed the cost of borrowing, and the government should promote high levels of transparency in public expenditure and procurement procedures.

The relationship between public debts, poverty, and unemployment in Nigeria was examined by Okoye & Obi (2022) using secondary data from the National Bureau of Statistics and the Central Bank of Nigeria statistical bulletin for the years 1981–2021. These sources were used to calculate public debt (measured by both internal and external debts), unemployment rates, and poverty rates. The study employed an unrestricted vector autoregression model and found that while debt, both external and internal, had an impact on unemployment rates in Nigeria, it had no discernible effect on poverty. It is implied that most of the governmental loans accumulated during the investigation period were not growth-oriented. This fact, in addition to the fact that most borrowings were utilized to cover trade deficits mostly involving consumer goods,

In a separate study, Ekong et al (2019) examined the impact of fiscal policy on unemployment in Nigeria from 1990 to 2018, aiming to assess the effectiveness of fiscal policy tools in addressing unemployment. In the study, the unemployment rate served as the dependent variable, and the inflation rate and exchange rate served as the control variables. Tax income, capital expenditure, recurrent expenditure, and external debt served as substitutes for fiscal policy. The Johansen Co-integration test was used to determine the short- and long-term relationships between the co-integrating equations, and the Augmented Dickey-Fuller and Phillips-Perron Tests were employed to examine the variables for stationarity. They used the OLS estimate to look at the relationship between the independent and dependent variables. Only tax income was found to have a long-term adverse association with the unemployment rate. Capital spending, recurrent expenditure, foreign debts, inflation rate, and currency rate all had positive relationships with unemployment over the long term. However, in the near term, tax income, inflation, and exchange rates were all positive, while the unemployment rate decreased due to capital, recurrent, and external debts.

Olaoye (2023) noted that prior debt relief initiatives only had a minimal impact on regional economic growth in his examination of Sub-Saharan Africa's expanding governmental debt stock. The study found that corruption has a detrimental impact on the effectiveness of debt relief in achieving the anticipated economic outcomes. The study also discovered that the economies of sub-Saharan Africa appear to have migrated away from China-dominant market-based lenders and toward more conventional sources of concessional funding. By examining the distinct effects of domestic and foreign loans on macroeconomic variables, including economic growth, inflation, unemployment, and the exchange rate, the study contributes to the growing body of literature on public debt. In particular, the government should manage its external debt effectively because it is a

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

direct contributor to declining GDP and rising unemployment. To lower unemployment in the economy, GDP growth should also be encouraged.

Limitations of Previous Studies and Value Addition

Numerous empirical studies have employed various methodologies to examine the correlation between the accumulation of external debt and macroeconomic objectives. In addition to the obvious methodological heterogeneity and measurement problems that the conceptual clarity flaws in these earlier studies exacerbated, misspecification and endogeneity bias in the estimated models stand out. Additionally, the conclusions drawn from the empirical studies' results and findings are either inconsistent with one another or contentious, and remain so. Specifically, while some debt growth studies such as (Iwuoha, 2020; Yeboah, 2022; Holongwane, 2023;Alnaa andMatey, 2023;Okoye and Obi 2022; Cahyadin and Ratwianingsih, 2020; FolawewoandAdepoje, 2017; NyaandOnyimadu,2019; Attamah,2019; EkeandAkujuobi,2021; Essienetal,2016; Idris and Alijara, 2023, Aladejare 2023, Alli-Momoh, Akinsanmi ,Oladele and Alabi2022, Igudia 2021, Oloke et al 2022, Arshed et al 2022) and others find both negative and positive significant effect of external debt on macroeconomic goal of affecting GDP, reducing inflation, and unemployment but they never examined the reverse causality effect of disaggregated external debt on the key macroeconomic indicators GDP, inflation and unemployment in Nigeria and the disaggregated sources of external debt except Okoye (2022) that tried to look at the disaggregated sources of external debt accumulation on human capital development, these lead to contradictions and inconclusive outcomes and findings.

METHODOLOGY

The theoretical framework adopted in this work is the debt overhang hypothesis. A standard theoretical framework adopted in line with Howard (1972) and expatiated by Myer (1977) to examine the consequences of excessive borrowing on economic growth and development is the Debt Overhang Theory.

In deeply indebted and impoverished countries, excessively large levels of external debt have posed a serious barrier to economic growth, as well as to reducing unemployment and inflation. A high external debt service load may restrict resources available for social expenditures and hinder economic growth, ultimately leading to increased poverty, unemployment, and inflation.

Model Specification.

This study aims to examine the relationship between disaggregated external debt (DEXD) and key economic indicators: real gross domestic product (GDP), inflation rate (INF), and unemployment rate (UNEMP). External debt is treated as the main explanatory variable, while GDP, inflation rate, and unemployment rate serve as dependent variables. This structure enables the assessment of how changes in external debt may influence these major economic factors.

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

Model is specified as DEXT=f (GDP,INF and UNEMP**)**……1

Transforming equation 1 above we have

GDP=β0+β1EXD+β2INF+β3UNEMP+ε…….2

Where:

GDP: Real gross domestic product, representing the output of goods and services in Nigeria adjusted for inflation.

- EXD: External debt burden, denoting the total amount of debt owed by Nigeria to foreign
- INF: Inflation rate, measuring the rate of change in the general price level of goods and services in Nigeria over a period of time.
- UNEMP: Unemployment rate, representing the percentage of the labor force that is unemployed and actively seeking employment.

β0, β1, β2, β3: These coefficients quantify the specific impact of external debt, inflation, and unemployment rate on GDP. β0 represents the intercept, while β1, β2, and β3 reflect the effect of a one-unit change in EXD, INF, and UNEMP on GDP, respectively.

ε: Stochastic error term accounting for all other factors affecting GDP not included in the model. It represents the unexplained variation in GDP after including the independent variables.

METHOD OF DATA ANALYSIS

Table 1: Descriptive Statistics

	External Debt	GDP	Inflation Rate	Unemployment Levels
Mean	40.305	241.4836	19.3619	3.4873
Minimum	18.6	44.00	5.39	0.00
Median	33.500	4.2130	12.8766	3.8300
Maximum	98.3	574.18	72.84	5.63
Range	79.7	530.18	67.45	5.63
Sum	1571.9	9417.86	755.11	136.00
Std. Deviation	19.9262	173.22338	17.04812	1.59116
Variance	397.052	30006.341	290.638	2.532
Skewness	1.616	.329	1.833	-1.513
Kurtosis	1.807	-1.453	2.364	1.296

Table.1.The above presents the descriptive analysis of the variables. The mean of external debt is 40.305, with a minimum of 18.6 and a maximum of 98.3. The range of external debt values in the dataset is 79.7. The mean GDP is 241.4836, with a minimum of 44.00 and a maximum of 574.18. The range of GDP values in the dataset is 530.18. The mean inflation rate is 19.3619, with a minimum of 5.39 and a maximum of 72.84.

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

The range of inflation rate values in the dataset is 67.45. The mean unemployment level is 3.4873, with a minimum of 0.00 and a maximum of 5.63. The range of unemployment levels in the dataset is 5.63. The table also provides information on the standard deviation, variance, skewness, and kurtosis for each economic indicator, offering insights into the distribution and shape of the data for external debt, GDP, inflation rate, and unemployment levels.

Unit root test

The study utilizes the Augmented Dickey Fuller test in order to ensure the stationarity of the variables. Table 4.2 presents the results of the ADF unit root test at levels, first differences, and second differences. All the variables tested are stationary at levels, as well as in first and second differences, using the Augmented Dickey-Fuller (ADF) test. The results indicated that the variable GDP is stationary at levels, while the variables external debt, GDP, inflation rate, and unemployment levels are stationary at first difference.

Table 2: Augmented Dickey Fuller Test (ADF) Unit Root Test Unit root test

Variables	Augmented Dickey- fuller T-test	P-value	Order of Integration
External Debt	-4.520757	0.0042	I(1)
GDP	-6.4460339	0.0000	I(0)
Inflation Rate	-8.772365	0.0000	
Unemployment Levels	1.804143	0.9977	I(1)

Table 3: Correlations between variables

	External Debt	GDP	Inflation Rate	Unemployment level
External Debt	1			
GDP	0.557	1		
Inflation Rate	-.049	-0.349	1	
Unemployment Levels	.488	0.550	-0.060	1

Table 3 above shows the correlation coefficients between different economic indicators. There is a moderate positive correlation of 0.557 between external debt and GDP, indicating that as external debt increases, GDP tends to increase as well. There is a weak negative correlation of -0.049 between external debt and the inflation rate, suggesting a slight tendency for inflation to decrease as external debt increases.

There is a strong positive correlation of 0.488 between external debt and unemployment levels, implying that as external debt rises, unemployment levels also tend to increase These correlation coefficients provide insights into the relationships between external debt and other economic indicators, highlighting how changes in external debt may be associated with changes in GDP, inflation rate, and unemployment levels.

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

Vector Error Correction Model

Table 4: Vector Error Correction Model

Beta	Coefficient	Std.err	T-statistic
GDP	0.384157	0.22515	1.70625
Inflation Rate	0.704255	0.12104	5.81850
Unemployment Levels	-0.020421	0.00226	-9.03657
	Constant3.624920	Constant3.624920	Constant3.624920

Table 4 presents the outcomes of applying Johansen normalization constraints to a Vector. Error Correction Model (VECM). GDP has a coefficient of 0.384157, a T-statistic of 1.70625, and a standard error of 0.22515. With a T-statistic of 5.81850 and a standard error of 0.12104, the inflation rate coefficient is 0.704255. The T-statistic for unemployment is -9.03657, the coefficient is -0.020421, and the standard error is 0.00226. 3.624920 is the model's constant term. These findings demonstrate the impact of each variable on the model. In the case of GDP and inflation rate, for example, positive coefficients indicate a positive link with the dependent variables; whereas negative coefficients are associated with unemployment rates. The significance of each coefficient is evaluated using the T-statistic, where larger absolute values indicate greater relevance

Table 5: Ordinary Least Test

Variables	Unstandardized Coefficients		Standardized Coefficients		Sig
	B	Std. Error	Beta	t	
(External Debt)	22.829	5.610		4.070	-000
GDP	-.016	.018	.136	-.885	.382
Inflation Rate	.113	.113	.097	.847	.403
Unemployment levels	.486	1.731	.039	.281	.780

Table 5 presents the results of the Ordinary Least Squares (OLS) regression analysis. The coefficient for External Debt is 22.829 with a standard error of 5.610, a beta of 4.070, a t-statistic of 4.070, and a significance level of .000. The coefficient for GDP is -0.016 with a standard error of 0.018, a beta of -0.136, a t-statistic of -0.885, and a significance level of .382. The coefficient for Inflation Rate is 0.113 with a standard error of 0.133, a beta of 0.097, a t-statistic of 0.847, and a significance level of .403. The coefficient for Unemployment levels is 0.486 with a standard error of 1.731, a beta of 0.039, a t-statistic of 0.281, and a significance level of .780.

Table 6

R	R Square	Adjusted R Square	Std. Error of the Estimate	Sum of sqs	DF Mean Square	F	Sig
0.851[a]	0.724	0.682	11.2392	10919.	4252183.884	17.289	.000[b]

The adjusted R^2 is 0.682, which considers the number of predictors in the model. The standard error of the estimate is 11.2392, representing the average difference between the observed values and the predicted values. These values are related to the model's overall fit and statistical significance. These results provide insights into the relationships

Xi'an Shiyou Daxue Xuebao (Ziran Kexue Ban)/
Journal of Xi'an Shiyou University, Natural Sciences Edition
ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

between the independent variables (GDP, Inflation Rate and Unemployment levels) and the dependent variable (External Debt). The coefficients, t-statistics, and significance levels help assess the impact and significance of each independent variable on the dependent variable in the regression model.

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Summary

The research examined the relationship between external debt and key macroeconomic indicators through data analysis and empirical tests. It found a moderate positive correlation between external debt and GDP, and assessed the impact of each variable in the model. Positive coefficients for GDP and inflation indicated a positive relationship with external debt, while negative coefficients for unemployment indicated an inverse relationship. Regression analysis highlighted relationships between GDP, inflation, unemployment, and external debt. The literature review yielded mixed results on public debt, emphasizing the importance of proper debt management and striking an optimal balance between domestic and external debt for stability and growth. The study's findings, which focus on GDP, inflation, and unemployment, broadly align with prior empirical work on the effects and management of external debt.

Conclusion

The research provides valuable insights into the complex relationship between key macroeconomic indicators and external debt. The analysis reveals a strong positive correlation between external debt and GDP, unemployment, and inflation, indicating that external debt has a significant impact on economic outcomes. The study's findings are largely consistent with existing literature, underscoring the importance of careful management and strategic utilization of external debt to promote economic stability and growth. While the study highlights the importance of proper debt management, it also underscores the potential risks associated with mismanaging external debt. This research contributes to a deeper understanding of the impact of external debt on macroeconomic indicators and offers valuable insights for policymakers and other key stakeholders in development and economic policy formulation.

Recommendations

To enhance the management of external debt and its impact on macroeconomic indicators, the study's findings and conclusions suggest the following measures for policymakers and other relevant stakeholders.

Policymakers should strive for a balanced mix of domestic and external debt to maximize the benefits of each type of debt while mitigating associated risks. Implementing strong debt management strategies, including regular monitoring and assessment of debt levels, can help avoid excessive debt burdens and maintain economic stability. Borrowing should be done cautiously and only for projects with high potential returns. Policymakers should prioritize investments in infrastructure, education, and other productive areas to enhance

ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

economic growth. Transparency in debt management, including clear reporting and open communication with the public, can help build trust and ensure accountability. Policymakers should aim to use borrowed funds to support sustainable economic growth, including investing in sectors that drive productivity.

References

1) Abdullah, H., Yien, L. C., & Khan, M. A. (2019).The impact of fiscal policy on economic growth in ASEAN-5 countries. *Int. J Sup. Chain. Mgt 8*(1), 754.

2) African Development Bank. (2019). African Economic outlook 2018. Côte d'Ivoire

3) Agyapong, D. and Bedjabeng, K.. (2020), External debt stock, foreign direct investment and financial development: Evidence from African economies, *Journal of Asian Business and Economic Studies*, 27 (1), 81-98.

4) Aimola, A. U., & Odhiambo, N. M. (2021).Public debt and inflation nexus in Nigeria: An ARDL bounds test approach. *Cogent Economics & Finance*, *9*(1), 1921905.

5) Aimola, A. and Odhiambo, N. (2022) "Is the effect of public debt on inflation symmetric or asymmetric? Evidence from the Gambia" *Croatian Review of Economic, Business and Social Statistics*, (8), 1, 41-57

6) Akingbade A and Odhiambo,N (2023) Public Debt and Inflation: A Review of International Literature Folia OeconomicaStetinensia 20(1):9-24

7) Alnaa,S and, Juabin, M(2023) Dynamic Relationship Between External Debt and Unemployment in Sub-Saharan Africa . *Theoretical and Applied Economics 30 (1), 137-152*.

8) Alnaa S and Matey J (2023) Dynamic relationship between external debt and unemployment in Sub-Saharan Africa. *Theoretical and Applied Economics* 60(1) 137-152.

9) Arnone, M., Bandiera, L., & Presbitero, A. F. (2005). External debt sustainability: Theory and empirical evidence. *Catholic University of Piacenza Economics Working Paper*, *33*, 1-47.

10) Arshed, N., Nasir, S. & Saeed, M.I. (2022). Impact of the External Debt on Standard of Living: A Case of Asian Countries. *Soc Indic Res 163*, 321–340 https://doi.org/10.1007/s11205-022-02906-9

11) Attamah, N. (2019) Effects of Public Debt Dynamics and Inflation Shock on Gross Domestic Product Per Capita: Evidence from Nigeria. *Inosr Arts And Management* 5(1): 114-130.

12) Beetsma, R.M.W. and Bovenberg, A.L. (2003) Strategic debt accumulation in a heterogeneous monetary union. *European Journal of Political Economy,19(1)1-15*.

13) Cahyadin, M., &Ratwianingsih, L. (2020). External debt, exchange rate, and unemployment in selected ASEAN countries. *Jurnal Ekonomi & Studi Pembangunan*, *21*(1), 16-36.

14) Cham, Y (2023*): Inflation and Public Debt Reversals in the West African Monetary Zone (WAMZ) Economies. Online at https://mpra.ub.uni-muenchen.de/117027/MPRA Paper No. 117027, posted 12 Apr 2023 07:56 UTC*

15) Clements, B., R. Bhattarcharya and T. Q. Nguyen (2003) External Debt, Public Investment, and Economic Growth in Low Income Countries', International Monetary Fund (IMF) Working Paper No. 03/249, Washington, DC.

16) Debt Management Office (2021). Nigeria External Debt Stock

ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

17) Dey, S. R., &Tareque, M. (2020). External debt and growth: role of stable macroeconomic policies. *Journal of Economics, Finance and Administrative Science*, *25*(50), 185-204.

18) Di G &Zongxin Q (2022) Inflation targeting and financial crisis, *Applied Economics*, 54:41, 4782-4795,

19) DMO (2023) Nigeria External Debt reached 42.5 USD bn in Dec 2023, compared with 41.6 USD bn in the previous quarter

20) Easterly, W. (2002) How Did Heavily Indebted Poor Countries Become Heavily Indebted? Reviewing Two Decades of Debt Relief. *World Development*, 30, (10),1677–96.

21) Eke, C. K., &Akujuobi, N. E. (2021). Public debt and economic growth in Nigeria: An empirical investigation. *International Journal of Development and Management Review*, *16*(1), 178-192.

22) Ekeruche, M. A., Folarin, O., Ihezie, E., Okon, A., &Olasode, T. (2023, September 28). Fiscal policy options for growing out of debt: Evidence from Nigeria. Africa in Focus. https://www.brookings.edu/articles/fiscal-policy-options-for-growing-out-of-debtevidence-from-nigeria/

23) Ekong C. Okon J, and Effiong U (2019) Fiscal Policy And Unemployment: The Nigerian Conundrum*. international* Journal *of Management Studies, Business & Entrepreneurship Research 4,(3), 44-64*

24) Enongene, B. E., &Etape, F. M. (2023). Does External Debt Stocks Have an Asymmetric Effect on Inflation Dynamics in Cameroon? An Application of Nonlinear ARDL. *American Journal of Economics and Business Innovation*, *2*(2), 17–23.

25) Essien, S N., Agboegbulem N, Mba M.I, and OnumonuO.G.(2016) An empirical analysis of the macroeconomic impact of public debt in Nigeria. *CBN Journal of applied statistics* 7(1) 125-145

26) Farooq A, Yasmin B (2017) Fiscal policy uncertainty and economic growth in Pakistan: role of financial development indicators

27) Festus, G. E., & Saibu, M. O. (2019). Effect of external debt on Nigerian Economy: Further evidences.1-20

28) Folawewo, A. O., &Adeboje, O. M. (2017). Macroeconomic determinants of unemployment: Empirical evidence from economic community of West African states. *African Development Review*, *29*(2), 197-210

29) Fosu, A. K. (1996), 'The Impact of External Debt on Economic Growth in Sub-Saharan Africa*Journal Economic Development.*21,(1), 93–118

30) Ghaly, S. B. (2023). External debt in time of inflation in Egypt: a vector error correction model, *Scientific Journal for Financial and Commercial Studies and Research*. 4(1)1, 661-701.

31) Gunter, B. G. (2002), 'What's Wrong with the HIPC Initiative and What's Next?' Development Policy Review,20 (1), 5–24.

32) Helmy, H. E. (2022). The external debt-inflation nexus in Egypt. *Journal of Public Affairs*, *22*, e2802.

33) Hlongwane, N. W., & Daw, O. D. (2022). Determinants of public debt in South Africa: A Regime-Switching Approach. *International Journal of Economics and Finance Studies 14, (1) 1-25.*

34) Howard (1972) Theory of debt overhang hypothesis

35) Hung, Ly,D.,(2021). External Debts And Economic Growth When Debts Rating Matters.*Vietnam Institute Of Economics*, (1),1–26.

36) Igberi C, Odo S, Anoke and Nwachukwu U. (2016) The Implications of Rising Public Debt on Unemployment in Nigeria: An Auto Regressive Distributed Lag Approach. *Asian Research Journal of Arts & Social Sciences 1(1) 1-15.*

ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

37) Igudia P. O. (2021). Impact of external debt servicing on human capital development in Nigeria: *International Journal of Business & Law Research, 9(3):38-55*

38) Imoagwu C, Ezenekwe U, and Nwogwugwu, U (2023) Rising external debt and exchange rate: Empirical evidencefrom Nigeria. *International Journal of Advanced Economics 5, (4),90-106*

39) Iwuoha J. C.Rising(2020) Unemployment in Nigeria: Public Debt to the Rescue?. *Current Research Journal of Social Sciences and Humanities 3(2)280-290*

40) Iyoha, M. A. (1999), 'External Debt and Economic Growth in Sub-Saharan Africa Countries: An Econometric Study', African Economic Research Consortium (AERC) Research Paper No. 90/1999, Nairobi, Kenya

41) Jibir, A., Abdullahi, S., Abdu, M., Buba, A., & Ibrahim, B. (2018). External debt-growth nexus in Nigeria revisited. *Asian Economic and Financial Review*, *8*(1), 117-130.

42) Karakaplan, M. U. (2009). The Conditional Effects Of External Debt On Inflation. Sosyal Ekonomik Araştırmalar Dergisi , 9 (17) , 203-217 .

43) Olaoye, O. (2023). Sub-Saharan Africa's rising public debt stock: before another debt relief. *African Journal of Economic and Management Studies, 14(1), 86-105.*

44) Oloke, E., Olabisi, F., Johnson, A. A., Awofala, H. T., & Aderemi, T. A. (2022). Nexus between Foreign Capital Inflows and Human Capital Development in Nigeria. *EuroEconomica*, *41*(2).67-77

45) Onisanwa, I. D., & Adaji, M. (2018). Does external debt liability affect economic growth in Nigeria. *Journal of Multidisciplinary Social Research (JMSR)*, *2*(1), 31-38.

46) Saadoun H and Samah A. (2021). Inflation in light of the external debt constraint in Latin American countries/Brazil as a model. *Tikrit Journal of Administration and Economics Sciences 17, (55) 292-306*

47) Sharaf, M.F. (2022), "The asymmetric and threshold impact of external debt on economic growth: new evidence from Egypt, *Journal of Business and Socio-economic Development*,. 2 (1) 1-18.

48) Shuaibu M, Muhammad H, Abdullahi S &Gwazawa,U(2021). Impact of Public Debt on Inflation and Unemployment in Nigeria: An ARDL Vector Error Correction Model," *Noble International Journal of Economics and Financial Research,6(5) 91-98*

49) Shihab RA (2014) The causal relationship between fiscal policy and economic growth in Jordan. *Int J Econ Finance 10(10):145*.

50) Siddiqa, A. (2021). Journal of Economic Impact. *Journal of Economic Impact*, *3*(1), 19-26.

51) Singh, S., Sharma, G. D., Radulescu, M., Balsalobre-Lorente, D., & Bansal, P. (2024). Do natural resources impact economic growth: An investigation of P5+ 1 countries under sustainable management. *Geoscience Frontiers*, *15*(3), 101595.

52) Soukaina K. & Hammami, S. (2021). The Dynamic Links between Public Debt, Unemployment, and Budget Deficit in the MENA Countries and Eurozone during 1990 to 2016: Fresh Evidence from Simultaneous Equation Models. *Business and Economics Journal* 1(1)79-84

53) Lin, S., & Sosin, K. (2001). Foreign debt and economic growth. *Economics of Transition*, *9*(3), 635-655.

54) Mahmud, U. E., &Ogwuzebe, Y. A. (2021). Contemporary Issues in Nigeria's External Debt and Implications for National Sovereignty. Bullion, 45(3), 44-59

55) Manasseh C O, Abada FC, Okiche EL, Okanya O, Nwakoby IC, Offu P, et al. (2022) External debt and economic growth in Sub-Saharan Africa: Does governance matter? *PLoS ONE 17(3): e0264082*

ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

56) Mohsin M, Nurunnabi M, Zhang J et al (2020) The evaluation of efficiency and value addition of IFRS endorsement towards earnings timeliness disclosure. *Int J Financ Econ*. https://doi.org/10.1002/ijfe.1878

57) Mohsin M, Rasheed AK, Sun H et al (2019) Developing low carbon economies: an aggregated composite index based on carbon emissions. Sustain Energy Technol Assess. https://doi.org/10.1016/j.seta.2019.08.003

58) Mohsin, M., Ullah, H., Iqbal, N., Iqbal, W., & Taghizadeh-Hesary, F. (2021). How external debt led to economic growth in South Asia: A policy perspective analysis from quantile regression. *Economic Analysis and Policy*, 72, 423-437.

59) Muhammad N, Olaolu D, Abu S and Umar H (2021) Effects of public debt on inflation rate in Nigeria.Lafia journal of economics and management sciences 6(1)171-186

60) Munir, S., Rao, Z. U. R., & Sana, S. (2019). Financial development, fiscal policy and economic growth: the role of institutional quality in Pakistan. *Journal of Finance and Accounting Research*, *1*(2), 27-47.

61) Musgrave, R. A., (1959).The Theory of Public Finance, McGraw-Hill, New York, pp. 161 and 385.

62) Myers, S. (1977) Determinants of Corporate Borrowing. *Journal of Financial Economics*. **5** (2): 147–175

63) National Bureau of Statistics, Nigeria (NBS) (2022). Data on unemployment in Nigeria

64) Nursini N (2017) Effect of fiscal policy and trade openness on economic growth in Indonesia: 1990–2015*. Int J Econ Finance Issues 7(1):358–364*

65) Nwokoye,E, Ilechukwu N, Uzodigwe A and Okonkwo A (2016) Impact of External Borrowing on Unemployment in Nigeria. *Economic and financial review 54 (3) 19-38*

66) Nya, I., &Onyimadu, C. O. (2019). Fiscal policy and public debt sustainability in Nigeria. *Journal of Economics Sustainable Development*, *10*(19), 6-20.

67) Odili O (2022) Debt Status and Economic Performance in Nigeria: Implications for Macro- economic Policy. *Amity Journal of Management Research 5(1)259-277*

68) Obisesan, O.G., Akosile, M. O.&Ogunsanwo, O. F. (2019).Effect of external debt on economic growth in Nigeria. *African Journal of Economics and Sustainable Development, 2(1), 39-50.*

69) Okoye, B. O., & Obi, K. O. (2022). Nexus between Public Debts, Poverty and Unemployment Rates in Nigeria: A Vector Auto Regression (VAR) Approach. *International Journal of Management Studies and Social Science Research 4 (6) 116-127*

70) Osakwe C . Anachedo, C & Okonkwo, J (2022)Effects of Rising External Debt; Empirical Evidence from Nigeria. *International Journal of Trend in Scientific Research and Development 6 (2)1091-1098*

71) Pattillo, C., Poirson, H., & Ricci, L. (2003). External debt and growth: Implications for HIPCs. In *Debt relief for poor countries* (pp. 123-133). Palgrave Macmillan, London

72) Pattillo, M.C.A., Poirson, M.H. and Ricci, M.L.A. (2004),What Are the Channels through Which External Debt Affects Growth? (Issues 4-15), International Monetary Fund

73) Poirson, M.H., Ricci, M.L.A. and Pattillo, M.C.A. (2002), External Debt and Growth (Issues 2-69), International Monetary Fund

74) Robinson, B. (2022). *African special economic zones*. SPRINGER VERLAG, SINGAPORE

ISSN: 1673-064X
E-Publication: Online Open Access
Vol: 69 Issue 04 | 2026
DOI: 10.5281/zenodo.19465584

75) Sachs, J. D. (1988), The Debt Overhang of Developing Countries', in G. Calvo, R. Findlay, P. Kouri and J. Braga de Macedo(eds.), Debt Stabilization and Development: Essays in Memory of Carlos Diaz Alejandro, Basil Blackwell, Oxford

76) Serhan Ç and Amin S (2018) External Debt- Economic Growth Nexus in Selected CEE Countries *Journal for Economic Forecasting, 4 (3) 85-100*

77) Soludo, C.C. (2003) Implications of' Alternative Macroeconomic Policy-Responses to External Shocks in Africa. Development Research Paper Series DRPS No.8, United Nations Economic Commission for Africa, Addis-Ababa.

78) World development indicator statistical bulletin (2021)

79) World bank (1998). Public Expenditure Management Handbook. Washington: The World Bank.

80) Yeboah E (2022) The Effect of External Debt, Unemployment Rate, And Inflation on Economic Growth In Ghana. *Journal of Empirical Studies*, 9(2): 24-34

81) Zuhroh, I., &Pristiva, D. (2022). External Debt and Economic Growth: Evident from South Asian Countries. *JEJAK*, *15*(1), 92-101.)