

## External Borrowing, Government Expenditure and Road Construction in Nigeria



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**ABSTRACT:** External borrowing is a significant source of government revenue, and the increase in the levels of foreign borrowing is taken as evidence of progress toward meeting economic and infrastructure goals. Despite the massive incidence of foreign borrowings, developing nations continue to lag behind established economies in terms of quality, quantity, and accessibility to the benefits of infrastructural development. Therefore, this study analyses the effect of external borrowing on government expenditure on road construction in Nigeria. The study is anchored on the debt crowding theory. In analyzing the effect of external borrowing on macroeconomic performance in Nigeria, an Autoregressive Distributed Lag (ARDL) model framework was employed. The data for the study is a time series trend from the 1991-2022 periods. The ARDL result in the long run, external borrowing and interest rate exhibit significantly negative influence on government expenditure on road construction, as a percentage increase in both variables is seen to reduce expenditure on road construction by 0.26 and 12.3 percent respectively. Conversely, exchange rate and inflation have a significantly positive relationship with expenditure on road construction. A percentage increase in the exchange rate will increase expenditure on road construction by 1.66 percent. Similarly, a percentage increase in inflation will increase expenditure on road construction by 1.3 percent. The study indicates that the Federal Government of Nigeria must be methodical in its funding sources to provide infrastructure development facilities. While external borrowing is necessary, looking inward to create more revenue ways should be considered because it is less expensive. It was stated that foreign borrowing had a negative yet significant impact on Nigerian road construction.

**KEYWORDS:** External debt, Eurobond, Government expenditure, Multilateral debt, Road construction

### INTRODUCTION

External borrowings are the proportion of a country's debt that is owed to commercial banks, governments, or international financial institutions (multilateral, bilateral, promissory notes, Eurobonds, and other sources) (Adepoju, Salau & Obayelu, 2019). It is a significant source of government revenue, and rising levels of foreign borrowing are taken as evidence of progress toward meeting economic and infrastructure goals (Okoli, 2019). Nonetheless, nations often borrow for one of two macroeconomic purposes: to fund increased investment or consumption, or to get around strict budget constraints (Soludo, 2018). This means that borrowing is used to improve infrastructure deficits, reduce poverty, strengthen national security, and lower the costs of utilities like electricity, gas, and phone service (Todaro, 2018).

Despite the massive incidence of foreign borrowings, developing nations continue to lag behind established economies in terms of quality, quantity, and accessibility to the benefits of infrastructural development (Acosta-Ormaechea & Morozumi, 2017). Most developing nations have shown an eagerness to invest in infrastructure by borrowing vast sums of money from international financial institutions, international development partners, and developed nations (Aladejana, Okeowo, Oluwalana & Alabi, 2021). However, this is in stark contrast to the actual infrastructures in place, revealing a massive infrastructural deficit (the lack of necessary infrastructures in relation to the population) (Acosta-Ormaechea & Morozumi, 2017).

The Global Infrastructure Development Index from 2016–2021, for instance, revealed that annual global averages for infrastructure development were 33% in 2016, 37% in 2017, 32% in 2018, 37% in 2019, 43% in 2020, and 39% in 2021 (GIIA, 2022). The G8 (France, Germany, Italy, Japan, the United States, the United Kingdom, Canada, and Russia) had 35%, 37%, 33%, 35%, 36%, 37%, and 38% in 2016, 2017, 2018, 2019, and 2020, while Europe had 31%, 34%, 26%, 29%, 38%, and 38%, respectively (GIIA,

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2022). The differences between the global average, the G8, and Europe were rather small. However, this is not the case for emerging nations in Africa.

Seychelles placed highest with 96.73% in 2020 and Botswana ranked lowest with 37.50%; other African countries were Nigeria, Egypt, Libya, South Africa, Mauritius, Tunisia, Morocco, Algeria, Cabo Verde, and Botswana. Contrarily, the Central African Republic, Sierra Leone, Madagascar, Ethiopia, Eritrea, Congo, Chad, Niger, South Sudan, and Somalia were ranked last in Africa in terms of infrastructure development, with Somalia receiving the lowest score of 4.5 out of 100 (Africa Infrastructure Knowledge Program, 2020). In 2021, the developed world had an infrastructure development index of 38.3%, while developing countries had an index of 28.44%, according to statistics (Africa Infrastructure Knowledge Program, 2020).

A significant gap exists in Nigeria's infrastructure. With an Infrastructural Development Index of 8.61% in 2003 and 23.27% in 2020, Nigeria fell from the 12th to the 24th position in Africa (Africa Infrastructure Knowledge Program, 2020). For many years, problems such as high unemployment and inflation, widespread poverty, insufficient access to clean drinking water, erratic energy, and widespread fear plagued the country (Acosta-Ormaechea & Morozumi, 2017). The country has decided to seek external borrowings from international development partners, foreign financial institutions, and developed countries in order to address the problem of the infrastructural deficit caused by inadequate credit (Okoli, 2019). The study seeks to investigate the effect of Nigeria's external borrowing (multilateral debt, eurobond, bilateral loan, and promissory note) on infrastructure development on road infrastructure and exchange rate as control variables. **Statement of the Problem**

Access to standard and efficient infrastructure facilities take for example roads, healthcare, security, education, and power is a hallmark of a prosperous nation. However, this has become a cause of concern for Nigeria citizens. The roads are death traps across major highways and in city centers, access to basic primary healthcare service is a challenge just as insecurity and an unrelenting industrial strike action embarked upon by healthcare practitioners, university dons, and power generation employees happen too frequently. Agricultural productivity has consistently remained poor and worsened by the activities of bandits. If the underlying concerns are not addressed, Nigeria is at risk of remaining a country with high levels of poverty.

Finance experts have opined that with appropriate funding, such infrastructural deficit can be developed and made to improve economic activities which have a positive ripple effect on the living standard of the citizen (Aladejana, Okeowo, Oluwalana & Alabi, 2021; GIIA, 2022; Okoli, 2019; Soludo, 2018; Todaro, 2018). While this sounds logical, it is imperative to undertake empirical investigations to determine to what extent can funding drive infrastructural development in Nigeria. Although funding can be obtained internally and externally to address developmental challenges, researchers seem to have mixed thoughts on funding domestic investment through external borrowing (Okoli, 2019; Adepoju, Salau & Obayelu, 2019; Malik, Hayat, 2015; Ogunmuyiwa, 2017; Oloyede, 2018; Soludo, 2018; World Bank, 2022). Some scholars claim it is insufficient, while others affirm its adequacy. Those in support claim that external borrowing will only aid infrastructure development if it is used wisely in productive activities (Malik, Hayat, 2015; Soludo, 2018). Those who advocate internal borrowing argue that it offers result to the economy and create a less international burden on the need to pay back in foreign currency. This debate suggests that there is no consistency in finance literature regarding the relevance of debt for infrastructural development. Hence, the need to address this concern.

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### Objective of the Study

This study sought to:

- i. investigate the influence of external borrowing on government expenditure on road construction in Nigeria.

### Infrastructural Development

Infrastructure is the physical installations that include things like highways and roads, airports, telecommunication facilities, water supply systems, electrical infrastructure, and waste treatment facilities, among other things (Odongo & Kalu, 2018). Infrastructure not only provides services that are included in the consumption bundles of residents, but it also supplements both capital and labour as input in the production process (Ayogu, 2007). Increases in investment, productivity, and long-term economic growth are all results of increased access to infrastructure provision, which is beneficial to both human development and quality of life (Ajakaiye & Ncube, 2010).

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Expenditures made by Government on infrastructure are intended to raise the total amount invested in the country, which may lead to economic expansion (Ajakaiye & Ncube, 2010). In his research, Adam Smith proposed that Government should limit its spending to the military, the maintenance of peace and order, and public development projects; anything beyond these is seen to be both unjust and wasteful. If Government fails to assist with the provision of infrastructure, the economy would negatively be impacted. Communications, roadways, transportation, highways, and ports are all included in the definition of "infrastructure" (Rehman, Ilyas, Alam & Akram, 2011).

In another hypothesis, the existence of infrastructure lowers the costs of transportation and any applicable tariffs, increases access to new markets, and lowers operational expenses in a particular nation (Rehman, Ilyas, Alam & Akram, 2011). Both economic and social aspects of infrastructure are considered to be part of the larger whole (Wekesa, Wawire & Kosimbei, 2017). The former category often includes facilities for transportation and communication, road building and construction, electricity generation, water supply, and sanitation, whereas the latter category comprises establishments for education and medical care (Lokesha & Mahesha, 2016). The term "infrastructural development" refers to improvements in a country's physical and non-physical infrastructure, both of which are essential to the nation's overall economic development (Lokesha & Mahesha, 2016). The improvement of infrastructure is a significant engine for economic advancement and a critical facilitator of productivity (Lokesha & Mahesha, 2017).

### **Government Expenditure on Road**

The purpose of the various structures that make up the road infrastructure, which serves to transport both people and goods, is to connect the various types of roads that exist in a given area (Lokesha & Mahesha, 2017). The term "road infrastructure" refers to all of the different types of roads, as well as the facilities, structures, signage and markings, electrical systems, and other elements that are required to ensure that traffic is safe, problem-free, and effective (Olaverri-Monreal & Jizba, 2016). A rise in the amount of money spent by the government on the infrastructure of roads will result in the construction of good roads suitable for motorized traffic, which will make it simpler to transport raw materials and finished goods to and from places of business.

Access to a good road network is one of the most important aspects that domestic investors take into consideration when deciding where to locate industries. If a country has a good road network, foreign investors are more likely to invest there because this reduces the risk of accidents that could damage raw materials and finished goods. Such accidents are more likely to occur in countries with poor road networks (Sadgrove, 2016).

Additionally, it is expected that domestic investment will increase in regions that have a good road network, as this will facilitate the easy flow of resources. Poor road conditions almost always result in collisions involving trucks and other vehicles that are transporting raw materials from their source of supply and finished goods to places of consumption (Olaverri-Monreal & Jizba, 2016). Because roads are the most important subset of the transport subsector, which affects a greater proportion of the population in terms of the transportation of economic goods and services, there is a cap on the amount of money that can be spent on roads (Sadgrove, 2016).

A reliable road network is very important because of its capacity to support the growth and development of other areas of the economy, such as agriculture, commerce, and industry (Azolibe, Okonkwo & Adigwe, 2020). This is one of the reasons why having a reliable road network is very important. They went on to say that the purpose of having good roads is to make life more meaningful for the people who live on them by lowering the costs of production and shortening the amount of time it takes to move goods and people from one location to another. This is due to the fact that having excellent roads will cause a considerable reduction in the cost of production and save time spent moving goods and people from one location to another (Sadgrove, 2016; Azolibe, Okonkwo & Adigwe, 2020; Bustan, 2015)

### **Government Expenditure on Transport**

The funding for transportation infrastructure could come from the budget of the central government, the budget of local governments, state enterprises, or private investment, all of which contribute to the role of the government as the preeminent provider of transportation infrastructure (Bustan, 2015). This is because it is a form of public transportation; consequently, the Government ought to take a more active role in the provision of public facilities (Abioye, Shubber & Koenigsberger, 2016). Since Government through States allocated funding for transportation infrastructure. Transportation infrastructure includes roads, rail, airports, and seaports are the conduits that allow for the free flow of people, goods, and information; these are three things that are necessary for any economy that is based on manufacturing and exporting (Bustan, 2015). The makeup of the Nigerian transportation system: road, air, rail, maritime, and pipelines. Even though, most goods and people are transported through her extensive road network (Abioye, Shubber & Koenigsberger, 2016).

Meanwhile, the total length of the road network in Nigeria is approximately 195,500 kilometers, of which 32,000 kilometers are classified as Federal roads, 31,000 kilometers as State roads, and the remaining kilometers as Local Government roads. Only about

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60,000 kilometers out of a total of 195,500 kilometers of roadways (or 30.7%) are tiled (Nwokoye & Chukwunonso, 2017). Even though there have been several changes made in the transportation industry, the majority of these tiled roads are in dilapidated condition due to poor maintenance and inadequate investment (Siyan, Eremionkhale & Makwe, 2015). Overall, transportation's contributions to the gross domestic product of the country are low (Eva, Mihai & Munteanu, 2019). Transportation is an activity that typically involves moving people as well as goods from one location to another. Because transportation is so important to economic expansion, there is a direct correlation between the economic prosperity of a nation and the number of kilometers of tiled roads (Cochran, 2020).

Scholars believed strong infrastructures cause a decline in transportation costs and create a motive for regional and multinational companies' entry, and that they are accompanied by the attraction of foreign investment. The costs incurred by businesses as a result of deteriorating infrastructure contribute to a reduction in investment (Azolibe, Okonkwo & Adigwe, 2020; Barzelaghi, Dizaji & Laleh, 2012; Litman, 2009; Perovic, 2013). An enhancement in the amount and caliber of transportation infrastructure can result in a reduction in the necessary private inputs for producing a specific output level (Perovic, 2013).

When government-provided infrastructure leads to more efficient use of existing resources, there is a corresponding reduction in supply costs. This is true both at the level of the individual firm and at the aggregate level, where total output per unit of input rises. In light of the information presented above, one line of reasoning suggests that improvements to the nation's and world's transportation systems could boost the efficiency of both domestic and foreign direct investment (Eva, Mihai & Munteanu, 2019). Furthermore, the domestic private sector and multinational corporations (MNEs) would function less effectively without publicly funded infrastructure, and any attempts by these entities to provide their networks would result in duplication and a waste of resources (Perovic, 2013). These types of infrastructure were not publicly provided; the domestic private sector and MNEs would operate with less efficiency (Perovic, 2013).

According to the findings of a study on the effect of transportation infrastructure on the attraction of FDI in Iran, transportation infrastructure did not affect FDI attraction in the short run; however, in the long run, it had a positive and significant effect on FDI attraction (Eva, Mihai & Munteanu, 2019). Despite this, data from the African Development Bank's 2018 Report on the AIDI indicates that the transport infrastructure index of Nigeria is low when compared to other African nations (Aluko & Arowolo, 2010). It was ranked 31st out of 54 African countries in 2016, with an index of 4.89 percent. In 2017 and 2018, it was ranked 29th out of the 54 African countries, with an index of 5.10 and 5.09 percent, respectively (Aluko & Arowolo, 2010; Cohen, 2008). The total number of paved roads and the total road network are the two components that make up the transport infrastructure index, as stated in the report (Cohen, 2008).

### **External Debt**

Government debt has been considered a critical fiscal policy tool for funding a nation's growth. It is put to use in the process of settling expenditures that, in the long run, will finally boost productivity and contribute to the expansion of the economy (Muhammad, Ruhaini, Nathan & Arshad, 2017). As a result of various factors such as the decrease in oil prices, fluctuation in currency exchange rates, and rising interest rates, the global economy of developing nations has been negatively impacted, with a particularly strong effect seen in Nigeria. The problem of debt faced by numerous developing countries has received worldwide attention (Muhammad, Ruhaini, Nathan & Arshad, 2017).

The amount of a nation's total debt that is owed to entities located beyond the borders of that nation, including but not limited to multinational enterprises, international financial institutions, and overseas governments, is known as the nation's external debt (Matthew & Mordecai, 2016; Nwannebuike, Ike & Onuka, 2016; Ayadi & Ayadi, 2008). If the government is unable to fulfil its responsibility of providing public goods to the populace effectively and efficiently in order to domestically improve the nation's standard of living and economic development, then the best alternative is to finance economic development by sourcing it from outside the nation through debt (Nwannebuike, Ike & Onuka, 2016). This sort of debt is paid off with funds derived from other countries' currencies, and interest is charged on it.

External debt refers to the amount of debt owed by a country to creditors outside of its borders. This can come from a variety of sources such as foreign companies, governments, or financial institutions (Arnone, Bandiera & Presbitero, 2005). It's not just the government that can be responsible for this type of debt, but also companies and even individuals. The external debt constitutes a part of a nation's total debt and represents the obligations to foreign lenders (Abula, Ben & Ozovehe, 2016). The external debt of a country is the portion of its total debt that is owed to creditors residing in other countries. These creditors could be foreign commercial banks, government entities, or international financial institutions. The term "foreign debt" or "external debt" is used to describe the amount owed to these out-of-country creditors.

According to yet another interpretation of the term, external debt refers to the sum of money that the government and other organisations inside a country have borrowed from the governments and organisations of other nations (Saifuddin, 2016). The

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amount of money that a nation owes to other nations is known as its foreign debt. This debt might be directly owed to other nations in the form of government-to-government loans, or it can be owed indirectly as a result of a negative balance of trade (Business Dictionary, 2019).

Despite this, many countries depend on one another to support their economic development and achieve sustainable growth. This is because there is a shortage of resources and certain countries have relative advantages (Afolabi, Laoye, Kolade & Enaholo, 2017). The amount of money that a country or sub-nation owes to an international creditor after receiving financial assistance in the form of loans from that creditor is referred to as the country's or sub-external nation's debt<sup>10</sup>. This external debt can evolve into an external debt burden, which arises when the amount due gets increasingly substantial and difficult to pay back or when there are difficulties in annual debt service. Both of these scenarios are examples of situations in which an external debt burden can exist (Ali & Mshelia, 2007).

The term external debt can refer to either the national debt that is due by the government or the aggregate of borrowings by all levels of government, including the federal, state, and local levels of government (Idenyi, Igberi, Anoke, 2016). It is possible to see it as the total amount of borrowings that government bodies of a country have accumulated; this sum includes money that is owed to private companies, public entities, foreign governments, and other such entities. Therefore, it could refer to either local or foreign debt.

When discussing the national debt, it is important to take into account upcoming pension payments, existing government obligations, as well as goods and services obtained by the government using credit (Idenyi, Igberi, Anoke, 2016). Borrowing can be a desirable option when it is utilized to finance investments that are predicted to bring in a satisfactory rate of return or to even out consumption during periods of irregular aggregate supply. This is particularly the case when borrowing is used to fund investments that are expected to generate an adequate rate of return. By doing so, borrowing can bring about an increased level of economic well-being that would not have been possible otherwise.

However, investments that are funded by debt must be productive and efficiently managed in order to generate a rate of return that is greater than the interest or principal that is paid on the debt. (Ndekwe, 2008; Clements & Nguyen, 2008). Borrowing money from outside sources can be beneficial in that it can stimulate growth, albeit the level of this benefit is contingent on how the acquired resources are put to use. In reality, Nigeria faces limited opportunities for capital formation due to low-income levels and a high prevalence of poverty, hindering the country's ability to secure sufficient funds for development from within its borders. The widespread nature of poverty exacerbates the situation.

When developing countries are confronted with a shortage of capital, it is typically anticipated that they will acquire external debt in order to complement their domestic saving (Ndekwe, 2008; Clements & Nguyen, 2008). Borrowing money from international financial institutions, such as the International Monetary Fund (IMF), often offers interest rates that are about half as high as those offered on the home market. This makes borrowing money from abroad a more attractive option than taking on domestic debt. However, this relies on whether the borrowed money is spent in the productive sectors of the economy or if it is used for consumption, as this determines whether or not the borrowing nation would benefit from taking on external debt (Cohen, 2008). The early authors are of the opinion that a developing country's economic progress will most likely benefit from it taking on moderate amounts of debt in order to finance its borrowing needs. If these debts are managed correctly, they can be of enormous assistance to a rising nation. Not only do they contribute to the nation's expansion, but they also increase the overall resources that are accessible to an economy over a specified period (Ndekwe, 2008). When a loan of USD28 Million was received from the World Bank in 1958 to construct a railway and other developmental projects in Nigeria, this marked the beginning of the country's accumulation of external debt (Mbah, Agu & Umunna, 2016). The problem of servicing debt began in 1985 when the total external debt of Nigeria rose to USD19 billion. However, the government was able to pay back more than USD35 billion to the international creditors (Paris Club), while the amount of money that had been borrowed was then less than USD15 billion (Ali & Mshelia, 2007). This caused the problem of servicing debt to arise.

Due to the apparent debt overhang in Nigeria, the administration that was led by Obasanjo during the years 2003-2007 vigorously sought debt revocation, which ultimately resulted in a reduction of the country's external debt to an amount equal to USD3.4 billion in 2007 (Adedoyin, Otekinri & Adeoti, 2016). In 1964, the nation requested and received a loan from the Paris Club of Creditor Nations for \$13.1 million US dollars to fund the construction of the Niger Dam. The structure of Nigeria's debt was altered as a result of the country's participation in the International Capital Market (ICM) in 1978 for the much-talked-about "jumbo loan" of \$1 billion. Prior to this, Nigeria's debt was primarily comprised of concessional loans; after this, it was comprised of loans with more stringent repayment terms (Cohen, 2008). In 2002, Nigeria's debt reached approximately \$39.9 billion. This increase was mostly caused by the accumulation of interests, fees, and penalties in addition to the precipitous drop in oil prices. As a direct consequence of the debt crisis, Nigeria's economy grew more slowly than expected, and the country also faced increased levels of poverty and unemployment, as well as higher interest rates and security issues (Adedoyin, Otekinri & Adeoti, 2016).

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### Eurobond

Eurobonds were first proposed as a more developed type of cooperative debt management that offered the possibility of efficiency gains (Claessens, Mody & Vallée, 2012). The enhanced liquidity of Eurobonds would lower the average cost of borrowing money throughout the Eurozone. This would be accomplished by merging the fragmented national public debt markets. In an ideal world, Eurobonds would compete with US Treasury Bonds for their status as a "haven," and they would also help to promote the role of the euro as a reserve currency (Claessens, Mody & Vallée, 2012; Matthijs & McNamara, 2015).

Eurobonds, or "stability bonds" are public bonds that are frequently issued and guaranteed by nations that are part of the eurozone (Matthijs & McNamara, 2015). Therefore, the pooling of the respective credit risks and guarantee responsibilities of the Member States are included in the debt that is issued jointly. Weak member states, in the sense that they are currently confronted with severe market pressure and high-interest rates, would gain from the creditworthiness and assurances of "strong" member state as a result of this. Eurobonds would most likely be issued by a single European agency, but this isn't a given and isn't a need either (Herderschee, Kaiser & Samba, 2011)

Eurobonds need a sharing of risks rather than a sharing of a "common" debt among investors. Each nation is still responsible for the repayment of its proportion of the debt that was issued in the form of Eurobonds. Creditors are only able to call in other countries' debts if one nation defaults on its financial commitments (also known as failing to meet its payment obligations). Eurobonds are somewhat comparable to other forms of jointly guaranteed debt issuances that are already in existence and are used to finance European lending programmes (Cummings, Seferiadis & De Haan, 2020; Claessens, Mody & Vallée, 2012). Already, the European Commission takes out loans on the financial markets through the issuance of debt that is guaranteed by the EU budget (hence ultimately by all Member States). In addition, the lending activities of the EFSF and the ESM have their borrowing operations guaranteed by members of the eurozone (Matthijs & McNamara, 2015).

A bond that is denominated in a currency that is different from that of the nation in which it was issued is referred to as a eurobond (Sy, 2015). The phrase does not refer solely to bonds that have their origins in Europe. A bond is considered to be a Eurobond whenever its face value is expressed in a currency other than that of the country from which it originated; for instance, a Japanese bond that is denominated in dollars rather than yen is considered to be a Eurobond. Eurobonds, on the other hand, are not to be confused with 'project bonds,' which are fundamentally different financial products (Matthijs & McNamara, 2015). Project bonds enjoy the benefits of European guarantees, but they are issued by private enterprises. In addition to this, their primary focus is on easing the financial burden placed on particular infrastructure projects as opposed to general governmental expenditures (Kwak, Chih & Ibbs, 2009).

### Multilateral Debt

A nation's multilateral debt is the portion of its total foreign debt load that is owed to international financial institutions (IFIs) like the World Bank and the International Monetary Fund (IMF) (Mbah, Agu & Umunna, 2016). Multilateral debt is also known as multilateral obligations. As a result of the International Financial Institutions (IFIs) status as "preferred creditors" and as providers of core development and balance-of-payment loans, multilateral debt looms larger than other obligations for the majority of the world's poorest countries (Adedoyin, Babalola, Otekinri & Adeoti, 2016). Due to the special status of these creditors, any payments made to them must take precedence over both private and bilateral (government-to-government) debt. In addition, these organizations argue that the bylaws of their organizations prevent them from providing debt relief or writing off debts, as is common practice among commercial creditors and the government (Birdsall, Williamson & Deese, 2002).

Since IFIs determine a country's creditworthiness, governments have a special incentive to keep current on their multilateral debts: until the International Monetary Fund gives its stamp of approval, which typically requires adherence to the economic policies it recommends, poor countries generally cannot get credit or capital from other sources (Birdsall, Williamson & Deese, 2002). Also, in order to qualify for bilateral debt reduction from the countries that make up the "Paris Club" of creditors, a country must first sign onto a programme offered by the IMF. Loans and credits from the World Bank, regional development banks, and other multilateral and intergovernmental organisations are included in the category of publicly available and publicly guaranteed multilateral loans (such as the Caribbean Development Fund, Council of Europe, European Development Fund, Islamic Development Bank, Nordic Development Fund, and similar entities) (Galindo & Panizza, 2018).

Loans from funds that are administered on behalf of a single donor government by an international organization are not eligible for this programme (Adams, 2021). These are what are known as loans from the respective governments. The primary function of multilateral financing agencies (MFAs) is to provide member nations that need financial assistance with access to funds for specific projects and programmes. This, in turn, will encourage better rates of economic expansion (Galindo & Panizza, 2018). MFAs increasingly require that the institutions (and their governments) who borrow the money execute economic reforms as part of the conditions for such lending (Paulais, 2012). These requirements are becoming progressively stricter.

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Therefore, multilateral lending organizations are concerned not only with ensuring that the loans will be repaid but also with how a particular loan affects the economy of the country and how the government will implement economic policy. Macroeconomic reform, which includes fiscal, monetary, and exchange-rate policy, as well as a recent emphasis on market liberalisation and privatisation, is the most important issue that multilateral lending institutions take into consideration (Paulais, 2012).

### Theoretical Framework

This study is anchored on the debt crowding theory which was propounded by Krugman in 1988. According to the theory, an increase in a country's budget deficit can cause a reduction in public savings if there is not also an increase in private savings to make up the difference (Joy & Panda, 2020). This can happen if the country makes higher payments on its debt. As a result, this could either cause an increase in interest rates or a reduction in the amount of credit that is available for private investment, thereby stifling economic expansion. When the government borrows more money in order to finance higher spending or lower taxes, it discourages investment in the private sector by raising interest rates, which in turn makes borrowing more expensive. If additional borrowing leads to an increase in demand for money and loanable funds, and subsequently higher prices, the interest rate-sensitive private sector is likely to reduce investment due to a decrease in return rates. This is due to the increased demand for money and loanable funds, causing higher prices. A decline in fixed investment by businesses will negatively impact long-term economic growth potential, also referred to as potential production growth (Joy & Panda, 2020).

### Empirical Review

Amaefule and Umeaka (2016) evaluate the effects of the government's borrowings on infrastructural development in Nigeria. The Central Bank of Nigeria statistic bulletin served as the sole source of quantitative information for the study's three variables, which exclusively utilized secondary data. The association between the variables was examined using the Ordinary Least Square (OLS) Regression technique. The analysis results demonstrate a short-term relationship between the variables. The analysis also shows that capital spending by the federal government is positively correlated with domestic debt, but that there is no correlation between capital expenditure and foreign debt. The results indicate that while federal government international debt has not, to date, led to any improvement in capital spending, rises in domestic debt of the federal government lead to an increase in capital expenditure (infrastructure development) (in the short run) (infrastructure development). The study concludes that Nigeria's massive external debt profile, even before the debt forgiveness of 2005 to date, is unjustifiable and uncalled for and that the external/foreign debt has not materially contributed to the development of Nigeria's infrastructure. It was suggested that only certain clearly defined productive or infrastructure projects should be eligible for external borrowing.

Sulaiman and Azeez (2012) studied the effect of external debt on the economic growth of Nigeria. The model created for the study uses a proxy for the exchange rate, inflation, and the ratio of external debt to export as exogenous variables, and the gross domestic product as an endogenous variable measuring economic growth as a function of these factors. From 1970 to 2010, annual time series data were collected from the Debt Management Office and the Statistical Bulletin of the Central Bank of Nigeria. The empirical analysis uses the econometric methods of Ordinary Least Square (OLS), Augmented Dickey-Fuller (ADF), Unit Root test, Johansen Co-integration test, and Error Correction Method (ECM). The co-integration test demonstrates that the variables have long-run equilibrium relationships. The results of the error correction procedure demonstrate that Nigeria's economy has benefited from external debt. The study recommends that government should maintain political and economic stability and should acquire external debt primarily for business-related considerations rather than social or political ones.

Amaefule (2018) examined the effect of public debt on the performance of Nigeria's economy. Gross domestic product (GDP), public capital investment (PCI), and the human development index (HDI) were used to measure economic performance, and external debt, domestic debt, and total debt servicing were used to measure public debt. For the years 1991 to 2016, information on the variables was gathered from the Central Bank of Nigeria bulletin, reports from the Debt Management Office, and World Bank publications. Utilizing an Augmented Dickey-Fuller unit root test, the stationarity of the gathered data was determined and confirmed. In order to analyze the data, an ordinary least squares regression model was used. Results showed that, without any indication of a major impact on HDI, the external debt had a considerable negative impact on GDP and PCI. Additionally, the results showed that domestic debt had a statistically significant positive impact on all of the economic development indices, whereas total debt servicing had no statistically significant impact on any of the economic development proxies. The conclusion bears the connotation that the government has not wisely used the earnings from these loans and that the enormous foreign debt records and accompanying debt servicing costs are not justified.

## METHODOLOGY

In this study, the *ex-post facto* research design was utilised as a quantitative approach to explore the relationship between external debt, tax revenue, and infrastructure development. The federal government of Nigeria is this study's unit of analysis given the

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issues under investigation are macroeconomic variables and the government is solely responsible for external debt/borrowing, tax revenue, and infrastructural development. The nature of the data for the study is a time series trend from 1991-2022 periods. collated data found in reports of government institutions and organizations such as CBN and the National Bureau of Statistics were used.

### Model

The first model analyses the effect of external borrowing on government expenditure on road construction in Nigeria. The model is therefore specified as:

$$EXROAD = f(extborrowing, exc, inf, int) \dots \dots \dots (1)$$

The econometric representation of the first model becomes

$$LNEXROAD_t = \alpha_0 + \alpha_1 LNextborrowing_t + \alpha_2 LNexc_t + \alpha_3 inf_t + \alpha_4 int_t + \mu_t \dots \dots \dots (2)$$

where:

$LNEXROAD_t$  = natural logarithm of government expenditure on road and construction

$LNextborrowing$  = natural logarithm of external borrowing

$LNexc$  = the natural logarithm of exchange rate

$inf$  = inflation rate

$int$  = interest rate

$\alpha_0$  = Constant of the regression model.

$\alpha_1$  = Coefficient of labour force

$\alpha_2$  = Coefficient of log of human capital

$\alpha_3$  = Coefficient of log of gross fixed capital formation

$\alpha_4$  = Coefficient of log of oil price

$\mu$  = Error term

### Auto-Regressive Distributed Lag Method (ARDL)

In analyzing the effect of external borrowing on macroeconomic performance in Nigeria, an Autoregressive Distributed Lag (ARDL) model framework was employed. The ARDL approach yields consistent estimates of the long-run coefficients that are asymptotically normal, irrespective of whether the underlying regressors are  $I(1)$  or  $I(0)$ , and also works well with small samples. Similarly, the test is based on a single ARDL equation, rather than on a VAR, thus reducing the number of parameters to be estimated. Finally, it estimates simultaneously the long-run and short-run parameters. Five ARDL models are estimated in analyzing the effect of external borrowing on infrastructural development in Nigeria. If there is evidence in support of a long-run relationship or cointegration among the variables, the long-run models will be estimated as:

$$LNEXROAD_t = \alpha_0 + \alpha_1 LNextborrowing_{t-1} + \alpha_2 LNexc_{t-1} + \alpha_3 inf_{t-1} + \alpha_4 int_{t-1} + \mu_{t-1} \dots \dots \dots (4)$$

While the short-run error correction ARDL model will be specified as:

$$\Delta LNEXROAD_t = \alpha_0 + \alpha_1 \Delta LNextborrowing_{t-1} + \alpha_2 \Delta LNexc_{t-1} + \alpha_3 \Delta inf_{t-1} + \alpha_4 \Delta int_{t-1} + \alpha_4 ECM_{t-1} + \mu_{t-1} \dots \dots \dots (3.4).$$

## RESULTS AND DISCUSSION OF FINDINGS

**Research Question:** What is the influence of external borrowing on government expenditure on road construction in Nigeria?

**Table 1: ARDL Result for Model**

Dependent Variable: LNROAD				
Selected Model: 2,4,4,0,3				
Variable	Coefficient	Standard Error	T-Statistics	Probability
<b>LONG RUN ESTIMATES</b>				
<b>LNEXTBORR</b>	-0.258	0.138	-1.861	0.078*
<b>LNEXC</b>	1.661	0.130	12.813	0.000***
<b>INF</b>	0.013	0.004	3.145	0.005***
<b>INT</b>	-0.123	0.020	-6.046	0.000***
<b>C</b>	-0.009	0.338	-0.028	0.978
<b>SHORT RUN ESTIMATES</b>				
<b>D(LNROAD (-1))</b>	0.276	0,109	2.518	0.021**



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DLNEXTBORR	0.277	0.157	1.760	0.094*
DLNEXTBORR(-1)	0.170	0.177	0.963	0.347
DLNEXTBORR(-2)	-0.147	0.181	-0.815	0.425
DLNEXTBORR(-3)	0.439	0.234	2.086	0.051*
DLNEXC	0.489	0.234	2.086	0.061*
DLNEXC(-1)	-1.612	0.309	-5.221	0.000***
DLNEXC(-2)	-0.911	0.302	-3.012	0.007***
DLNEXC(-3)	-1.557	0.239	-6.496	0.000***
DINT	0.079	0.018	4.312	0.000***
DINT(--1)	0.135	0.026	5.203	0.000***
DINT(-2)	0.135	0.022	5.985	0.000***
CointEq(-1)*	-1.120	0.128	-8.758	0.000***
R <sup>2</sup> = 0.862				
Adjusted R <sup>2</sup> = 0.793				
D.W. Statistics = 2.253				

Note: \*\*\*, \*\* and \* indicate probability value at 1%, 5% and 10% respectively.

Source: Author's Computation (2023)

The ARDL result shown above depicts the short and long-run relationship existing among the variables. In the long run, external borrowing and interest rates exhibit a significantly negative influence on government expenditure on road construction, as a percentage increase in both variables is seen to reduce expenditure on road construction by 0.26 and 12.3 percent respectively. Conversely, exchange rate and inflation have a significantly positive relationship with expenditure on road construction. A percentage increase in the exchange rate will increase expenditure on road construction by 1.66 percent. Similarly, a percentage increase in inflation will increase expenditure on road construction by 1.3 percent.

Short-run estimates reveal that one year lagged value of expenditure on road construction significantly influences current expenditure on road construction. A percentage increase in the one-year lagged value of road construction will increase current expenditure on road construction by 0.27 percent. External borrowing in the current and three lagged periods has a significantly positive influence on road construction, with a percentage increase in external borrowing in these periods leading to an increase in expenditure on road construction by 0.27 and 0.44 percent.

The exchange rate in the current period has a positive influence on expenditure on road construction, as a percentage increase in the current value of the exchange rate increases expenditure on roads by 0.49 percent. Conversely, the one, two and three lagged values of exchange rate exert a negative influence on expenditure on road construction, as a percentage increase in the exchange rate in these periods reduce expenditure on road by 1.61, 0.91 and 1.56 percent respectively.

The interest rate in the current, one and two lagged periods have a significantly positive relationship with expenditure on road construction. A percentage increase in interest rate in these periods will increase government expenditure on road construction by 7.9, 13.5 and 13.5 percent respectively. The error correction term is statistically significant, and negative, but greater than one. This indicates an oscillatory convergence.

### Post Estimation Diagnostic Test on Model

Some diagnostic tests are carried out after estimating the ARDL result to validate findings.

**Table 2: Breusch-Godfrey Serial Correlation Test**

F-Statistic	0.711	Prob. F (2,8)	0.505
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Source: Author's Computation (2023)

Since the probability value (0.505) is greater than 0.05, we conclude that there is no evidence of serial correlation in the model.

**Table 3: Breusch-Pagan Godfrey Heteroskedasticity Test**

F-Statistic	0.387	Prob. F(21,10)	0.973
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Source: Author's Computation (2023)

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Since the probability value (0.973) is greater than 0.05, we conclude that there is no evidence of heteroskedasticity in the model.

**Hypothesis 1:** External borrowing does not have a significant influence on government expenditure on road construction in Nigeria.

**Table 4: Bound Test Result for Model**

F-Statistic	10.122		
Critical Values	1%	5%	10%
Lower Bound	3.29	2.56	2.2
Upper Bound	4.37	3.49	3.09

**Source:** Author's Computation (2023)

Note:\*\*\* indicates significance and rejection of the null hypothesis of no co-integration at a 1% significance level.

Table 4 reported above shows the Bound-Test for linear co-integration for the first analyzed model. This approach is used for testing whether or not there is a long-run relationship (co-integration) between the variables employed. The criterion for rejecting the null hypothesis of no co-integration is that the F-Statistic should be greater than the lower and upper bound at 5%. Since the calculated F-Statistic (10.122) is greater than the upper bound at 5%, we, therefore, establish a long-run relationship between the variables.

### DISCUSSION OF FINDINGS

This study examined the effect of external borrowing on infrastructural development in Nigeria while disaggregating infrastructural development into government expenditure on road construction. Within the ARDL framework, the long-run estimates indicated that external borrowing and interest rates exhibit a significantly negative influence on government expenditure on road construction. This does not conform to *a-priori* expectation as it is expected that an increase in external borrowing should increase government spending on capital projects like road construction (Ndekwe, 2008). However, the negative relationship may be connected with the need for monitoring, evaluation, accountability and transparency in loan disbursement and utilization as this aligns with the findings of previous studies (Amaefule & Umeaka, 2016; Idenyi, Igberi, Anoke, 2016), but deviates from findings by another author (Osadume & Imide, 2022).

Conversely, a study conducted previously aligns with the finding that exchange rate and inflation have a significantly positive relationship with expenditure on road construction (Onwuka, 2020). Short-run estimates reveal that one year lagged value of expenditure on road construction significantly influences current expenditure on road construction. This means that the expenditure on road construction in the previous year, to a large extent influences current expenditure on road construction. External borrowing in the current and three lagged periods has a significantly positive influence on road construction. This again conforms to *a-priori* expectation as it is expected that external borrowing increases productive investment in the infrastructure of a state with both short- and long-term effects.

### CONCLUSION AND RECOMMENDATIONS

The research concluded that the Federal government of Nigeria needs to be systematic in their sourcing for funding to provide infrastructure development facilities. While external borrowing is critical, looking inwardly to create additional tax means needs to be looked into because it is cheaper and the burden imposed by exchange rate fluctuations and interest rates paid on external borrowing is very high and is not sustainable in the light of Nigeria's economic growth and development.

Based on the findings of this study, the following recommendations are made;

- i. The study posits that external borrowing exerts a negative but significant effect on road construction in Nigeria respectively
- ii. The study calls for a stringent measures in monitoring, evaluation, accountability and transparency in the loan disbursement and utilization.
- iii. Developed economies should help the country to own significant infrastructure development facilities that can enhance growth and economic prosperity for the citizens and the country at large.

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- iv. The study provides the Federal government of Nigeria with the strategic information it needs to make evidence-based choices concerning external borrowing.

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