



Debt Profile and States Productivity: Evidence from Nigeria

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Abstract

This study examines the extent of the debt profile of the productivity of the states in Nigeria. Using data from the National Bureau of Statistics from 2013 to 2017, the study employed a linear regression with debt, sub-sector (agriculture, industry and service) on GDP as variables, while panel data analysis was equally employed to assess the net effect. Findings from the study show that debt taken so far positively enhances GDP, with it contributing more to the agricultural sector. The net effect of time shows 2017 to be the most impactful year with the high influx of investors. This study recommends that more emphasis should be given to the industrial sector as its multiplying effect can lead to more productivity.

Keywords: Debt Profile, Domestic Debt, Debt Management, Productivity, Nigeria

Introduction

Over the years, the persistent rise in the poverty level in developing countries like Nigeria has continued to put pressure on the government to increase its expenditures, to cater for the need of the people. This pressure has made many governments rely on borrowing, especially when the revenue receipts fall short of the required funds to finance expenditure (Kaur, Mukherjee & Ekka, 2018). Government borrowing occurred as a result of increasing government expenditure unmatched by its revenue (James, Magaji, Ayo & Musa, 2016). As a major requirement for the growth of any economy, without finance, the government would not be able to meet up with its obligations, because borrowing allows the government to spend even without static income (Cecchetti, Mohanty & Zampoli, 2011).

A debt profile is the outline or description of the total debt owed by individuals, companies or the government. Debt in Nigeria dates back to 1958 by the colonial administration which led to the creation of the marketable public securities to finance fiscal deficits (Mba, Yuni & Oburota, 2013). In Nigeria which is faced with fiscal imbalances, government debt is crucial for economic growth. Evidence shows that many developing countries in Africa including Nigeria, experienced a severe economic crisis in the late 1970s and early 1980s, which accounts for macroeconomic imbalances widening savings-investment gap, high rate of inflation, the balance of payments disequilibrium and huge budget deficit; the poor management of public debt has escalated the debt burden (Mba, Yuni & Oburota, 2013). This high level of debt has eroded its positive effect on the growth of the economy as a result of decreasing investment and consumption which results in less employment and lower output and productivity (Egbetunde, 2012).



Originally, public debt is aimed at making funds available for developmental projects that are meant to promote investment and greater productivity but the rise in debt profile has been a course for concern. Looking inward, the debt profile of many states in Nigeria has continued to increase especially within the democratic setting, to increase physical infrastructure. Most of these debt profiles which constitute the domestic and external debt are geared toward economic growth; but despite this, debt size is important for sustainability (Adesoji, 2019). The sustainability of the debt has continued to be an issue for policymakers. Evidence from Debt Management Office (DMO) shows that as of March 2020, the debt profile was ₦28.63 trillion with ₦1.23 trillion increases when compared to ₦27.40 trillion as of December 2019, with total domestic debt constituting ₦18.64 trillion and the external debt is ₦9.99 trillion (Economy, 2020). In essence, domestic debt seems to be the most accessible debt platform for most States, to resuscitate the decay in infrastructure and enhance their productivity. A closer look at these States, notably Akwa-Ibom, Bayelsa, Cross Rivers, Delta, Imo, Lagos, Ogun, Osun, Plateau and Rivers are the 10 top rankings indebted States to the tune of over ₦100 billion each. Other states are below ₦100 billion with states like Oyo, Enugu and Niger States cropping up faster (Sulaimon, 2021).

There has been a great surge in debt, which studies have blamed on widening fiscal deficits at both the national and State levels (Aladejana, Adeniyi, Okeowo, & Abosede 2021). This significant movement may pose a danger if appropriate measures are not taken, which might lead to a debt overhang. The debt overhang might be eminent especially when the components used in debt servicing fluctuate. Given the productivity rate of states, the most common means of servicing debt may fall under Federal Account Allocation which is always dynamic.

The essence of this debt by states is to accelerate the pace of economic development by addressing the most critical areas and as well enhancing the investment portfolio. The big question is, what has been the pace of economic development given the referred sectors within the confine of debt taken so far? The main goal for every society is to stimulate and address the critical infrastructure with the sole aim of providing employment opportunities for the teeming population. In addressing this key fundamental issue, previous studies have examined the relationship between debt and economic growth in Nigeria (Adofu & Abula, 2010; Egbetunde, 2012; Matthew & Mordecai, 2016). Other studies looked at public debt on sub-macroeconomic variables like investment, prices and interest rate among others (Akomolafe, Bosede, Emmanuel & Mark, 2015; Essien, Agboegbulem, Mba & Onumonu, 2016; Ogunjimi, 2019). Though, these earlier studies were directed toward country-level data, without due consideration for state-level debt profile and their productivity status; secondly, earlier studies emphasise more on foreign debt than domestic debt. In essence, the manifestation of the domestic debt crisis is more responsible for the increment in unemployment, high cost of governance and low productivity due to the lack of strict restrictions. Therefore, the persistent rise in debt profile may fail to attain economic development, if the necessary measures are not taken into consideration; especially when the share percentage of debt approaches 100 percent of the state growth rate.

Literature Review

The federal, as well as state governments, have come to rely heavily on debt as an instrument to solve financial deficits. However, this has given rise to a series of studies because of the heavy



burden borrowing has caused as it has been identified as the cause of the inability of the government to fulfil its financial obligations. Debt profiles have a severe link to the growth and productivity of the economy. Most studies focused on the overall effect of public debt on the national economy (Oke & Suleiman, 2012; Boris, 2014; Erhieyovwe & Onovwoakpoma, 2013; Ebi, Abu, & Clement, 2013). Kamundia, Gitahi, and Mwilaria (2015) use data from 1980 to 2013 in Kenya and examined the effect of public debt on economic growth, and the result shows that debt has a positive effect on economic growth. The Same findings were obtained in the study of Al-Dughme (2019) in Jordan, as the study try to test the effect of public debt on economic growth from 1990 to 2017. But, Alzoubi, Khasawneh and Alzoubi (2020) found a negative relationship between the ratio of Net Public Debt to economic growth in Jordan. Although this public debt is more specific as it comprises both external and domestic debt. The superiority of external debt to domestic debt in terms of economic growth leads to a crowd-out of domestic investment in Nigeria (Ebi, Abu, and Clement, 2013). This might lead to an increase in the cost of debt servicing because it can crowd out investment expenditure (Karagol, 2002). The study of Didia and Ayokunle (2020) in Nigeria incorporates both the domestic and external debt; finding show that external debt negatively affects economic growth while domestic debt positively affects economic growth. Domestic debt is more advantageous as seen in the study of Mba, Yuni and Oburota (2013), their study used the error correction model and finds domestic debt to have a significant and direct relationship with GDP, with debt should be invested in the real sector. Titus, Chidi, Tochukwu and Babatunde (2016) use domestic debt and economic growth in Nigeria, and the study revealed that domestic debts enhanced the growth of the economy. But the negative result was obtained by James, Magaji, Ayo & Musa (2016) between domestic debt and economic growth in Nigeria.

Methodology

In examining the effect of state's debt profiles on productivity, the study used a dataset from 2013 to 2017 for seven states notably, Rivers, Ogun, Kano, Kaduna, Niger, Ondo and Kogi obtained from the National Bureau of Statistics (2019). Only 22 states have a complete report on states GDP out of which seven states having complete information on sub-sector were purposively selected. The study used domestic debt stock to represent the debt profile, because virtually all states have been accessing domestic debt when compared to external debt, due to its flexibility and favourable conditions. For productivity, the state GDP at the current basic price is used for the productivity of the state, while productivity from the agricultural, industrial and service sectors was equally used. The argument expects that the debt profile should increase the productivity of the agriculture, industry and service sectors.

This study used linear regression analysis to estimate the debt profiles and productivity components. This study used the sectorial productivity on the debt profile. To achieve a more normalized dataset, a log transformation was carried out by transforming high skewed variables. Also, the aim is to have homogeneity in the data format. The estimation model for the study is stated as:

$$lgdp = \beta_0 + \beta_1ldbt + \varepsilon \dots\dots\dots 1$$

$$lgdp = \beta_0 + \beta_1lagr + \beta_2lind + \beta_3lsev + \varepsilon \dots\dots\dots 2$$

On the panel setup, the Harris-Tzavalis unit root test was employed because the number of panels is larger than the number of periods. The Hausman test were used to identify the preferred model



and the null hypothesis is more of random effects than the fixed effects (Green, 2008). Using simple panel analysis, the fixed effect associated with this study is stated below:

$$lgdp = \beta_1 ldbt_{it} + \alpha_i + \mu_{it} \dots\dots\dots 3$$

Where α is the unknown intercept for each state, $lgdp$ is the log of GDP given the states i at time t ; $ldbt$ represents the log of debt profile; β is the coefficient and μ is the error term. The fixed effect usually removed the time-invariant associated with observations thereby assessing the net effects.

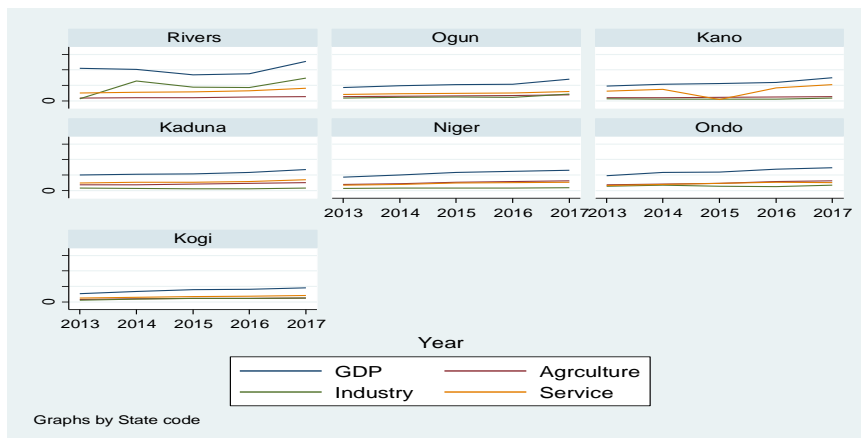
Results

From the data obtained, the descriptive result shows that the average mean for domestic debts for the seven states is ₦58.2 billion with Rivers State having the highest debt of ₦142 billion in 2017, while Kogi State has the least debt in 2013 given the periods under observation. For agriculture, Niger state took the lead from 2013 to 2015 with a maximum production of ₦1061314.8 billion, while Ondo state had top agricultural production from 2016 and 2017 with ₦1251162.3 billion. However, in terms of industry, Ondo State only led in 2013 having over 100 medium and largest scale companies. But from 2014 to 2017, Rivers have the highest contribution in the industrial sector with over 5000 medium and large-scale companies. Looking at the service sector, Kano State lead all through except in the year 2015 when Rivers state had a high record of ₦1164774.02 billion in the service sector. In terms of GDP, Rivers State has the highest growth rate given the years under consideration.

Table 1: Descriptive Statistics

Variables	Mean	Standard Deviation
Domestic Debt	58.2	38.1
Agriculture	683668	273689
Industry	598291.2	642717.5
Service	1021159	357181
Gross Domestic Product	2416229	829918.5

Source: Authors' Computation





For the sectorial result, industrial and service sectors are positive and significant at 1% and 10% respectively, while agricultural productivity is positive but not significant. However, emphasizing on state, the agricultural productivity is positive and significant in all the states with Ogun state having a higher contribution of agricultural productivity to its GDP. In the case of industry, Ogun, Niger and Kogi show a positive and significant contribution to GDP. Surprisingly, states like Rivers, Kano, Kaduna and Ondo are positive but not significant, this might be due to the proliferation of industries in those states. Also, most of those industries are largely cottage in nature with no registration with any government agency. For the service sector, Ogun, Kaduna, Niger, Ondo and Kogi have positive and significant results, whereas not significant in the case of Rivers and Kano.

Table 2: Sector's influence on GDP

	All States	State1	State2	State3	State4	State5	State6	State7
Variables								
Agriculture	0.11 (0.15)	0.28* (0.66)	1.35*** (0.19)	1.21*** (0.17)	0.72** (0.14)	0.88*** (0.01)	0.69*** (0.07)	1.18*** (0.05)
Industry	0.28*** (0.05)	0.01 (0.08)	0.55*** (0.04)	0.44 (0.32)	0.03 (0.32)	1.99*** (0.28)	0.28 (0.66)	0.63*** (0.05)
Service	0.36* (0.20)	0.45 (0.42)	1.29*** (0.08)	0.04 (0.06)	0.88*** (0.94)	0.95*** (0.03)	0.79*** (0.11)	1.15*** (0.15)

Notes: Robust standard errors are in parentheses, P values: significance *10%; **5%; ***1%. State codes have State1= Rivers, State2 = Ogun, State3 = Kano, State4 = Kaduna, State5 = Niger, State6 = Ondo, and State7 = Kogi.

Source: Authors' Computation

To determine the sector that always benefits from debt in most states in the light of major sectors like agriculture, industry and service sector. The result shows that debt influences the GDP of all states except that of Rivers where they are at the largess of high IGR. Rivers state is ranked the second most industrialized state in Nigeria aside from Lagos state. The state has a huge investment in oil and gas, with a production of almost 60% of crude oil in the country. An in-depth analysis of Rivers state shows that the debt those not have any significance on the GDP and the servicing sectors identified in this study. The result from Ogun and Kogi states shows an increase in debt usually accelerates the growth rate of their GDPs and other servicing sectors, with the industrial sector having the contribution given the coefficient of 1.72 and 0.28 respectively. Differences were found in the case of other states, with Kaduna and Ondo states debt contributing more to the agricultural and service sectors. For Niger State, an increase in debts tends to accelerate the agricultural and industrial sectors in the state with agriculture receiving the highest share given the value of 0.64. In Kano, debt tends to drive the agricultural sector more.



Table: Debt influence on Sectors

Variables	GDP	Agric	Industry	Service
Debt*	0.27*** (0.05)	-0.08 (0.08)	0.42*** (0.13)	0.18** (0.09)
Debt1	-0.02 (0.41)	0.33 (0.33)	-0.75 (2.26)	0.49 (0.39)
Debt2	1.11** (0.49)	0.89*** (0.30)	1.72* (0.98)	0.92*** (0.34)
Debt3	0.25*** (0.08)	0.23*** (0.04)	0.06 (0.18)	0.01 (0.87)
Debt4	0.09** (0.04)	0.16*** (0.03)	-0.14 (0.07)	0.11*** (0.04)
Debt5	0.55* (0.33)	0.64* (0.37)	0.29** (0.13)	0.55 (0.36)
Debt6	0.24** (0.12)	0.41*** (0.15)	-0.06 (0.13)	0.27* (0.16)
Debt7	0.18*** (0.03)	0.14*** (0.04)	0.28*** (0.05)	0.16*** (0.02)

Notes: Robust standard errors are in parentheses, P values: significance *10%; **5%; ***1%. Debt codes have Debt1 = Rivers, Debt2 = Ogun, Debt3 = Kano, Debt4 = Kaduna, Debt5 = Niger, Debt6 = Ondo, and Debt7 = Kogi.

Source: Authors' Computation

From the further analysis, the data for the study consist of panel nature with observations cut across seven states from 2013 to 2017. This study analyzes the impact of debt on GDP using the panel model by adding the time dummy into the equation. The result of the estimated coefficient shows that domestic debt has an impact on GDP in both the pooled OLS and Random Effect Models. Looking at the two-panel models, the domestic debt is negative but not significant in the fixed-effect model, while is positive and significant in the random-effect model. For the time dummy, the results are similar across the two models, with 2017 having the highest impact on the models. The obvious reason for the high impact in 2017 shows the actualization of MOU signed by many states which led to an influx of investors. Most of these states organized an investment summit to reaffirm the economic renaissance of the states, notably like KadInvest by Kaduna State Investment Promotion Agency (KADIPA), and Niger State investment summit organized in 2017 to tackle the development of critical infrastructure in the state. States like Kano and Ogun have continued to have a yearly summit on investment in the industrial sector.



Table: Debt on GDP

Variable	Pooled OLS	FE	RE
Domestic Debt	0.28*** (0.08)	-0.04 (0.04)	0.07* (0.04)
2014	0.11 (0.13)	0.11** (0.04)	0.11** (0.05)
2015	-0.01 (0.14)	0.12** (0.05)	0.11* (0.06)
2016	-0.04 (0.16)	0.17** (0.06)	0.15** (0.07)
2017	0.14 (0.15)	0.35*** (0.06)	0.33*** (0.07)

Notes: Robust standard errors are in parentheses, P values: significance *10%; **5%; ***1%.

Source: Authors' Computation

Conclusion and Recommendation

This study used state-level debt profile data from 2013 to 2017 for seven states to see how debt influences their productivity. This study concludes that state agriculture contributes more to states' GDPs when compared to the industrial and service sectors. Likewise, debts tend to contribute more to the agricultural sector than other sectors in Kaduna, Ondo, Niger and Kano. On the timing, the highest impact is seen in 2017 due to the signing of MOU by many states which warrant an influx of investors.

However, given the GDP level of states, the various state governments should channel the debt toward agricultural and industrial sectors, as its multiplying effect can enhance productivity for states through the creation of agricultural processing centres and industries. Debt repayment should be a priority for most states given the extent of their profile, to avoid debt overhang.

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