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ARTICLE

Econometric analysis of the deficit financing options-growth inclusiveness nexus in India and Nigeria

Maryjane Chigbo[1] · Oluwatosin Adeniyi[1] · Samuel Orekoya[1]

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Abstract

The crux of the study was to ascertain whether (and to what extent) the different deficit financing options impacted inclusive growth in India and Nigeria. The paper conducted an empirical analysis using data covering the period from 1989 to 2018 using the ARDL model. Some interesting results were obtained. First, foreign aid positively impacted inclusive growth in both short and long run for Nigeria. Contrarily, the results for India presented an inverse relationship between aid and inclusive growth with no statistical significance in the short and long run. Second, the impact of borrowing on inclusive growth was significant and negative for short run and long run in India. In the Nigerian case, the findings highlighted a positive and significant effect of borrowing on inclusive growth for both time horizons. Third, on the issue of human capital investments, the government expenditure on education effect on growth inclusiveness was found to be positive and negative in the short and long run, respectively, for India. On the other hand, government expenditure on health was negative in the short run and positive in the long run in Nigeria. Thus, there are a number of relatable policy recommendations viz: (i) Nigeria needs to utilize its borrowing options more effectively by undertaking relevant infrastructural and human capital investments; (ii) Instead of reliance on foreign aid for growth, Nigeria could join the liquidity race by attracting more diaspora remittances like its comparator India; (iii) The government of India should devote even more resources to capital expenditure to drive long-term investments and ensure that a greater number of citizens benefit from the process.

Keywords Deficit financing · Inclusive growth · Auto regressive distributed lag model · India · Nigeria

JEL Classification C32 · E60 · E63 · F43 · O11

✉ Oluwatosin Adeniyi
saino78@yahoo.com

[1] Department of Economics, Faculty of Economics and Management Sciences, University of Ibadan, Ibadan, Nigeria

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1 Introduction

Public finances are essential tools that play a very critical role in protecting lives and properties of the people alongside creating physical infrastructures to expand economic activities through employment generation and in providing social infrastructure to empower them to get productively employed (Rao 2017). Deficit financing arises when a government is operating a budget deficit in the economy.[1] This entails drawing financial resources internally and externally to finance economic activities with the major aim of achieving higher growth. Although budget deficit is crucial in making the unproductive sector to be productive, raising of capital formation and economic restoration, its unsustainability typically places the economy in a precarious state. Being quintessential to growth and development, deficit financing has been surrounded by tremendous controversies both empirically and theoretically.

Over the years, the focus on deficit financing has been more on its consequences rather than the benefits as posited by the Keynesian theorists. Since it is imperative for the government to provide basic resources for the people and this is mostly achieved through deficit, these Keynesians argue that a potentially useful shift in focus should be that all classes in the society benefit from the economic opportunities of rising growth through increased spending. The study carried out by Adam and Bevan (2005) identified five ways of financing deficit and their implications and they include taxes, grants, seigniorage (inflation tax), domestic borrowing, and external loans.[2] To them, the impact of taxes and grants are growth-enhancing if channeled to productive spending, while the effects of the other three forms are quite complex. For instance, they posit that deficit financed through limited seigniorage is growth-enhancing, whilst domestic debt distorts growth. In the context of external debt, its impact on growth levels is dependent on flow and stock analysis. Raju and Mukherjee (2010) provided a better understanding of the sustainability issue by weighing the relative benefits of the different channels of financing deficits.

Of utmost relevance in recent times, is promoting inclusive and sustainable economic growth which is one of the Sustainable Development Goals (SDGs). The Organization for Economic Cooperation and Development (OECD 2018) defined inclusive growth to surpass the attainment of output growth stating that "…it is an economic growth that is distributed fairly across society and provides opportunities for everyone". This implies that improvement in the economy must benefit every member of the society beginning from the poor to the middle class as well as the rich. The pursuit of inclusive growth can be attributable to high inequality and poverty problems facing many countries, and thus growth alone cannot guarantee that all persons will benefit equally from aggregate economic prosperity. Expectations about a continuous increase in growth rate are such that more employment opportunities and improved income averages of individuals are achieved. The poor are

[1] Budget deficit is calculated as Revenue minus Expenditure.

[2] See the literature section for studies carried on the effect of each of these financing options on economic growth. Seigniorage is the revenue derived from routine debt monetization including expansion of money supply during GDP growth and meeting yearly inflation target.

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generally constrained by circumstances or market failures that incapacitates them from participating in any available growth opportunities. As a result, the poor generally benefit less from growth than the non-poor. Thus, growth will generally not be pro-poor if left completely to the dictate of markets (Ali and Son 2007).

Furthermore, the new poverty estimates by the World Bank in 2018 shows that global extreme poverty still predominates in Sub-Saharan Africa and South Asian countries (Roser and Ortiz-Ospina 2019). The data estimates show that more than half of the extreme people live in the Sub-Saharan African region, thus, making poverty-related issues to be important considerations in relation to achieving growth that is more inclusive. In addition, Ali and Zhuang (2007) reported South Asian countries as part of those that did not meet the income poverty target in 2005, thus requiring more attention to achieve the global set target for the SDGs. Rising inequality despite spectacular growth is another major challenge facing developing countries. This implies that, although countries have recorded a very high growth pace, this does not benefit all citizens equally, thus, widening the gap between the rich and poor and oftentimes creating more poverty.

According to the Global Competitiveness Report (GCR) 2017–2018, the Inclusion Development Index (IDI) introduced by the World Economic Forum in 2017 helps to provide a better measure of economic development. Out of 103 economies, India and Nigeria were ranked 62nd and 63rd, respectively, in the 2018 rankings implying they scored significantly low. This is also indicative of their ability to make their growth processes more inclusive. Consequentially, Nigeria and India, although regarded as fast-growing economies in the Africa and Asia continents, are faced with challenging conditions that need to be addressed. However, India is one of the economies highlighted to have thrived well in terms of human capital investment but recorded a low score due to resource depletion (WEF 2018). Unemployment is still persistent, especially for Nigeria, with its recurring value reaching double-digit of 11.6 and 11.9% for 2016 and 2017, respectively. In contrast, Indian was estimated at approximately 3.3% for the same 2 years (World Development Indicators 2018).

The International Debt Statistics (IDS) 2019 report shows that Sub-Saharan and South Asian economies have the highest external debt burden of 16% and 11%, respectively. Accumulated debts played some role in contributing to the performance of both countries. In Nigeria, large external debt stocks is touted as one of the causes of the recession experienced in 2016. Prior to this, the naira value of Nigeria fiscal deficit stood at the average of 333.5 billion while that of India is 926 billion rupees from 1991 to 2014. The ratio of external debt to GNI is relatively below 50% from 1991 to 2017 for India while Nigeria experienced as high as 230% in 1993. With regards servicing debt, India's debt payment recorded as low as $7.5 million in 1991 and approximately increased over time to a peak of $92.8 million in 2014. Conversely, for Nigeria, debt servicing has fluctuated below the recorded value of approximately $4.6 million in 2014 except an all time of high of $8.8 million in 2005.

Both countries can be viewed as developing mixed economies with populations of approximately 200 million and 1.3 billion in Nigeria and India, respectively (WDI 2018). Furthermore, the two economies are ranked 7th (India) and 30th (Nigeria) out of 194 economies (WEF 2018) in terms of the size of economic activities but this steady expansion in GDP is not fully reflected in employment generation. GDP

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per person employed for both of these countries is relatively low with Nigeria experiencing a negative growth (WDI 2018). Contrary to what has contributed mainly to the growth of the Indian economy, the service sector, Nigeria is heavily reliant on the oil sector that contributes relatively very little to its GDP. In addition, the choice of India is based on similarities in their past historical events, diverse population, economic and political architecture with Nigeria. For instance, in the area of historical events, the two countries have suffered from huge deficits in the past that are unsustainable and has prompted several fiscal rules framework to abate this situation. This public financial management framework is instituted in the form of year-plan that sets a benchmark and objectives for each of the countries in terms of preparation of revenue, expenditure and other macroeconomic projections.

Put together, therefore, it is instructive to point out that the focus on the effect of deficit financing on economic growth is necessary, but not sufficient. To this end, this study seeks to provide a broader assessment of the issue of deficit financing options and their interrelationships with inclusive growth.

From the discussed problems, the following questions are carefully examined: What is the effect of deficit financing on inclusive growth in Nigeria and India?; Which of the financing options impact inclusive growth more significantly?; and What are the short and long run effects of deficit financing on inclusive growth in Nigeria and India?

The main objective of this study is, thus, to empirically investigate the impact of deficit financing on growth inclusiveness in Nigeria and India. However, to clearly achieve this goal, the following specific objectives are pursued:

- To determine the impact of deficit financing options on inclusive growth
- To ascertain the options that have larger effects on inclusive growth
- To verify the short and long run effect of deficit financing on inclusive growth

Evidence from previous literature has shown mixed outcomes on the impact of deficit financing on economic growth. Some literatures, in their findings, reveal a positive relationship between deficit and economic growth (Ojong et al. 2013 and Hussain and Haque 2017) while the empirical evidence of some others show a negative relationship (Bazza et al. 2018; Napoleon 2017; Nkrumah 2016; Hassan et al. 2014; Goher et al. 2011). To cite an instance, Ojong et al. (2013) posits that the experience of unsustainable deficits in most developing countries, leaving heavy debt burden and poor economic performance as well as substantial deterioration in social welfare, suggests that financing of budget deficit needs to be re-examined. They further argued that whilst economic growth deals with only an increase in production levels from one period to another, inclusive growth is a concept that advocates for equitable opportunities for economic participants during economic growth with benefits incurred by every section of the society. This according to the authors' is a measure of socio-economic performance superior to growth.

Consequentially, with the rising global requirement to make economic growth inclusive and sustainable, there is a dearth of studies that provide empirical evidence on the relationship between deficit financing and inclusive growth. The ambiguity and inconclusiveness of literature on the exact relation between government size and economic

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growth and the importance of achieving a poverty reduction target preempted Whajab et al. (2019) to study the impact of government size, public debts on inclusive growth in developing countries with a major emphasis on Africa. However, public debt was the only financing option analyzed. Therefore, the present study extended the literature by assessing the various options for financing government deficits and how they relate to investment. Since the latter is paramount to achieving inclusive growth (Oyinlola and Adedeji 2019), the study also captured the effect of government spending on productive sectors (such as health, and education) on inclusive growth.

Subsequently, due to the incomparable ability in terms of resource abundance and some level of political stability that India possess compared to Nigeria, this study seeks to understand to what extent financing deficit affects inclusive growth given the levels of human capital development. Thereafter, the financing option that best works for each of the countries is determined.

To reiterate, although India and Nigeria can be classified under the broad umbrella of developing countries, a cursory comparison of some indicators of both economic and social progress will reveal a certain degree of disparity between the two countries with India, of course, ahead of Nigeria on most metrics. Thus, the comparative analytical approach we pursue here has intrinsic value in that it helps to uncover the possible heterogeneous character observable across countries even within the developing world. Furthermore, unlike extant studies with prime focus on the effects of deficit financing options on economic growth in the individual countries (see for instance, Ojong et al. 2013; Hussain and Haque 2017; Winnrose 2013; Bazza et al. 2018; Napoleon 2017; Nkrumah 2016; Hassan et al. 2014; Goher et al. 2011), here we investigate inclusive growth instead. Another noteworthy point is that the present paper also breaks from previous literature in its use of a cocktail of deficit financing options (in all we employed three here namely official development assistance/aid, seigniorage and borrowing) which allows for gaining useful insights into the relative impacts of the options on inclusive growth. It, thus, goes without saying that such outcome serves as germane input into the design and eventual implementation of policies geared towards making growth more inclusive. Ultimately, in this paper, we equally pursue a treatment of both short-run and long-run growth inclusiveness impacts of the choices in terms of options for financing deficits in both India and Nigeria. This helps with a deeper understanding of temporal variations both within each of the countries and across both national spaces. To sum up, this succinct description of the value addition to the literature, the country-specific analytical route we took in this study gives ample room for contemplating context-centered policy recommendations which are typically more useful than the one-size-fits-all prescriptions common with pooled analyses.

In line with all of the aforementioned, this study covered time series data obtained for India and Nigeria. Secondary data were obtained on the variables that are of significance

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to this work for the period of 1989 (1988–1989) to 2018 (2017–2018).[3] Data were obtained from the CBN Statistical Bulletin, Handbook of Statistics of the Indian Economy and World Development Indicators (WDI). The choice of duration of the study was guided by the need to have a reasonable data size that provided room for adequate and reliable econometric analysis. Beyond this, the consistency in the sample sizes offers sufficient room for making meaningful comparisons between India and Nigeria.

This study is compartmentalised into five sections. Following this introductory discussion, Sect. 2 focuses on the review of related empirical literature, while the methodology is stipulated in Sect. 3. Section 4 provides a detailed empirical analysis. Lastly, Sect. 5 offers a succinct summary and a few policy recommendations.

2 Literature review

Theoretically, inclusive growth is established on the ground that sustainable economic growth co-exists with declining income equality and poverty reduction. Consequently upon this, a theoretical model for inclusive economic growth was developed by Vellala et al. (2014) to explicitly demonstrate the channels through which economic growth can be transformed into inclusive growth. This model, as shown in Fig. 1, describes the two channels as public spending through socio-economic amenities and productive employment.

They further substantiated that the key drivers of inclusive growth were essentially long-term options. Productive employment allows for the ability to access more reliable and decent jobs and encourage investment activities. In addition to this, sustainable growth should foster the development of socio-economic infrastructure that allows for continuous access to electricity especially in rural areas, financial inclusion, and access to clean water, housing, transport, and sanitation services. In other words, inclusive growth embodies all other objectives needed to attain sustainable development goals.

On the empirical side**,** several studies have been carried out on the interaction of deficits with economic growth and their implications. Some studies have identified negative relationship (Adam and Bevan 2005; Napoleon 2017; Nkrumah et al. 2016; Hassan et al. 2014; Taylor et al. 2011) while some found a positive relationship (Hussain and Haque 2017; Winnrose 2013; Ojong et al. 2013). In his own study, Egwakhide (1999) investigated the impact of budget deficit on trade balance in Nigeria through a simulation exercise. This empirical study sought to unravel the interaction between fiscal deficits and current account balances in Nigeria running

[3] Data sample periods are 1990–91 to 2016–2017 for India; and 1991 to 2017 for Nigeria. We equally wish to note at this juncture, that the use of higher frequency data (for instance, quarterly observations) would have yielded a larger sample size with the implication that the estimates arising from such econometric analysis would likely be more precise than the coefficients reported in our empirical section. Nonetheless, we did not use quarterly data because our key response variable is inclusive growth (proxied by GDP per person employed) which is obtained at annual frequency from the same source for both India and Nigeria. Also, many of the explanatory variables are not measured at quarterly frequency especially in the case of Nigeria. Since, one intrinsic purpose for the study is to undertake a comparative analysis, it was deemed best to ensure consistency in the frequency of data used for both countries. While we thank an anonymous reviewer for pointing attention to the potential insights that a higher frequency analysis might undoubtedly yield, we are constrained on the aforementioned fronts.

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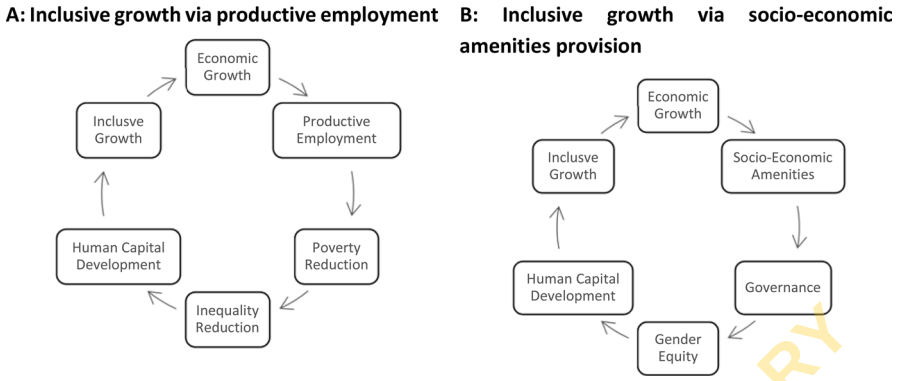

Fig. 1 Diagrammatic framework for inclusive growth. Source: Authors' Reconstruction of Vellala et al. (2014) Schema

from 1981 to 1993. The result indicated that causality runs from fiscal deficits enhanced from increased government spending to current account deficits. We now turn to brief reviews on the linkage(s) between each of our preferred options for deficit financing and growth.

2.1 Aid/official development assistance and growth

Nyoni (1998) examined the relationship between foreign aid inflows and economic performance in Tanzania. Basically, the study's major objective was to confirm the relationship that foreign aid inflow causes real exchange rate appreciation which reduces manufacturing production and export performance in the country to create Dutch disease. The model results revealed that aid is relevant in stimulating the economy through exports. This stems from the depreciation of the real exchange rate in reaction to the aid inflows. However, the effectiveness of foreign aid inflow on economic performance was not examined critically.

Another assessment of aid and economic performance was carried out by Guillaumont and Chauvet (2001). They posit that aid effectiveness is conditional on policy and environmental factors. The authors' found that bad environment poses a potential threat to a positive aid–growth relationship. Hence, the effectiveness of aid is dependent on the vulnerability of the country's economy. However, the study shows no impactful linkage between aid and growth via policy factors despite its relevance status. Further to other studies on foreign aid, Odusanya et al. (2011) investigated the impact of net disbursement of foreign aid on economic growth via government spending. This study revealed evidence that foreign aid is significantly and positively related to economic growth. This relationship was also applicable to government expenditure and growth.

With regard to assessing the long-run contribution of foreign aid to growth and development, Arndt et al. (2014) critically examined the effectiveness of aggregate aid. They pointed out that aid contribution to growth alone is not sufficient to analyze its impact on the economy as a whole. Rather, it should be broadly assessed on its contribution to human capital development and other investment activities.

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Improvement of the poorer households was considered as the major target of aid provision. Their findings showed that a positive aid–growth result had no significant effect on income distribution but reduced poverty. Also, foreign aid had a positive effect on average years of schooling, secondary schooling, and health outcomes although its impact is insignificant for the latter.

2.2 Printing of money and growth

There is diverse literature that has evidently proven the linkage between money growth and economic growth. One of the earlier studies is that of Mankiw (1987) that provided empirical validation of the theory of optimal collection of seigniorage in the United States. The study analyzed the inherent relationship of the tax rate on both inflation and nominal interest rate. Empirical results revealed that tax rate exhibits positive and strong effect on both inflation and interest rate. However, this study is country-specific and based on the assumption of the constant real interest rate. Hence, it was recommended that further research needed to capture cross-country dimensions and the constant interest rate assumption be relaxed. Another study was carried out in the country a year later to test the prediction level of the theory. This study by Serletis (1988) provided no empirical evidence to support the prediction of optimal seigniorage.

To validate the optimal seigniorage hypothesis, Armano (1998) investigated its consistency in the Canadian economy when compared to the US. With the assumption that fiscal and monetary policies are only coordinated at the federal level, the optimal seigniorage hypothesis holds. Nevertheless, the relationship between the inflation rate and the provincial tax rate still provided a positive relationship. Therefore, he concluded that the observed relationship suggests that factors other than optimal tax considerations may be the driving force. Due to the empirical failure in testing the traditional optimal taxation, Click (2000) developed another general model that incorporated cost associated with adjusted revenues, diverse shock sources and borrowing costs. The paper examined how shocks are financed by the government to arrive at the correlation between seigniorage and conventional taxation. The author's major finding was that the model that incorporates only government expenditure shock performs badly than those with multiple shocks, thus, providing a negative correlation of seigniorage and conventional tax.

More strands of recent studies have captured empirical evidence of the relationship between seignorage and growth. For example, Ehrhart et al. (2014) analyzed the relationship between taxes and economic growth in developing countries in the account of debt and seigniorage using Growth Laffer Curve (GLC). The authors' results indicated that seigniorage affects economic growth depending on the value of the tax. When there is an increase in tax rate, a high tax rate is accompanied by a decrease in growth but a low tax rate had no significant impact on growth. Equally, a higher debt ratio increases the GLC maximizing tax rate but lowered growth when debt is reduced at a given interest rate. Sebate et al. (2018) explored the relationship between budget deficits and money creation before Bretton Woods. This study reveals how the relationship between budget balance and monetary variation was strong for the group of pre-WWI "sometimes-floaters" during 1870–1938, but was statistically

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non-significant for the "never-floaters" when WWI and its aftermath are disregarded. Furthermore, evidence shows that the pre-WWI sometime-floaters ran fiscal policies that are biased towards seignorage and inconsistent with long-lasting convertibility due to the less efficient tax system and political instability. In line with the belief that monetary inflation spurs wealth inequality, Bagchi et al. (2019) studied the relationship between monetary growth and wealth inequality. They reported a positive and significant relationship between base money growth and wealth inequality.

2.3 Borrowing and growth

Many countries finance their deficits either through external borrowing or domestic borrowing. To illustrate the effect of past external borrowing on growth, Jayaraman and Lau (2009) used a dataset spanning the period from 1988 to 2014 in six major PICs, including Papua New Guinea (PNG) along with three other Melanesian countries (Fiji, Solomon Islands and Vanuatu) and two Polynesian countries (Samoa and Tonga). A positive and significant relationship was found for debt and economic growth with the no directional causality running from debt to growth. The same result was maintained using data on Greece for the period of 1970–2010 and in uniformity with economic theory (See details in Spilioti and Vamvoukas 2015). Nevertheless, the relationship remains positive until a certain level of debt-GDP ratio. This implies that as debt rises above a certain level, its effects on growth become negative. Other strands of literature have, however, identified a negative relationship between borrowing and growth (Gomez-Puig and Sosvilla-Rivero 2015; Karadam 2018; Siddque et al. 2016; Ramzan and Ahmad 2014; Johansson 2010; Chen et al. 2016; Bal and Rath 2015).

2.4 Empirical review on inclusive growth

Raheem et al. (2018) empirically examined the possible effects of achieving inclusive growth via spending on health and education as well as its interconnectedness with natural resources. This study was carried out on a sample of 18 Sub-Saharan African countries. From their findings, human capital development is observed to be a major determinant of inclusive growth. Also, government expenditure is proven to be significantly and positively associated with inclusive growth. However, the study showed that this connection is only pronounced when related to natural resource rents. This implies that a marginal change (increase) in expenditure on health does not correlate with the possession of relatively higher GDP per capita in some countries, such as South Africa and Cote d'Ivoire. One of the major limitations of their study is the inability to provide substantial backing to this observed effect. Also, the exclusion of government spending on education in the simulation exercise due to its insignificant relation with total natural resource rents makes their conclusion somewhat misleading.

A subsequent study to reiterate the relationship between human capital and inclusive growth was conducted by Oyinlola and Adedeji (2019) with the

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exclusion of natural resource rents and inclusion of financial development. The choice of the latter of course premised on their notion that "… a well-performing and healthy financial system comes in handy in the acceleration of human capital development". They studied the financial development and human capital-growth nexus in 19 sub-Saharan African countries. The results revealed that irrespective of how human capital and financial development are measured, the indicators had a positive impact on inclusive growth. In addition, their combined effects are not independent of the choice of measures of the indicators in terms of efficiency and volume. Inclusive growth is enhanced if and only if human capital is measured in terms of efficiency, while financial development is measured in terms of its volume.

More similar in spirit and orientation to our study is the observed relationship amongst government size, public debt, and inclusive growth identified by Whajah et al. (2019). Their study was carried out on a panel data set of 54 African countries and sample period ranging from 2000 to 2016. Variables like labour productivity (measured as GDP per person employed), Gross Fixed Capital Formation (GFCF) and the Inequality-adjusted Human Development Index (IHDI) were further explored. Findings revealed that government size, labour productivity, GFCF, and IHDI all had a positive effect on inclusive growth. Also, it was observed that, based on the trend values, public debt took a downward trend from the period of 2000–2011 and picked up from 2011 to 2016. However, government size kept increasing despite public debt decline. For this reason, productive use of accumulated funds may be a possible explanation for these findings which implies that other options of financing deficit or funding investments with higher marginal returns may have contributed to the expansion of government size.

Having reviewed the related literature on the subject of interest in this paper, evidently, several studies have examined the impact of the deficit on growth exploring the divergent financing options. Notwithstanding, the findings have remained ambiguous and sometimes inconsistent with theoretical foundations. The paradigm shift from achieving pro-poor growth to inclusive growth has diverted recent studies to frontally tackling activities that endanger the attainment of inclusive growth. There is still a dearth of literature linking deficit financing options to inclusive growth although Whajab et al. (2019) made an attempt to identify the relationship between public debt and inclusive growth. They highlighted in the study that other sources of financing government activities may account for the increased government spending when debt declined since these were not incorporated into their models. Also, the importance of productive use of accumulated funds by investing in health and education is further explored in line with the arguments in Raheem et al. (2018). To this end, this study, therefore, investigated the effect of aid, borrowing and money creation on inclusive growth in Nigeria and India.

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3 Methodology and data description

3.1 Preliminary tests

This study utilises the unit root test to check for the stationarity properties of all the variables. It is common knowledge that regressions on time series data that have the presence of unit root is usually spurious and not reliable. The time series characteristics of each series were examined using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) testing procedures. The Augmented Dickey–Fuller (ADF) test constructs a parametric correction for higher-order correlation by assuming that the y series follows an AR (P) process and adding P lagged difference terms of the dependent variable y to the right-hand side of the test equation. The Phillips and Perron test uses non-parametric statistical methods to take care of the serial correlation in the error terms without adding lagged difference terms. Conclusively, the PP test is a generalisation of the ADF test procedure that allows for fairly mild assumptions concerning the distribution of errors. The generalised test equation for ADF is expressed as follows:

$$\Delta Y_t = \alpha_1 + \alpha_2^{'} t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta Y_{t-i} + \varepsilon_t. \tag{1}$$

The generalised test equation for PP is expressed as follows:

$$\Delta Y_{t-1} = \alpha_1 + \alpha_2 Y_{t-1} + t. \tag{2}$$

3.2 Model estimation technique and specification

Descriptive statistics is used to describe the intrinsic characteristics of the underlining data. Some of these features include among others the mean, median, standard deviation and range of data which make up some of the measures of central tendency and dispersion. Also, this study employs theAutoregression Distributed Lag (ARDL) which is consistent with the conclusion from stationarity testing. This approach is preferable when dealing with series that are integrated of mixed orders, namely I(0) and I(1).[4] In addition, the F-statistics help to determine the long-run relationship in the underlying series.

The mathematical expression of the model for this study is implicitly stated as:

$$\mathrm{IG} = f(\mathrm{PUB}, \mathrm{ODA}, \mathrm{BMG}, K), \tag{3}$$

where IG is the inclusive growth, PUB is the public debt, ODA is the net official aid and development assistance, BMG is the base money growth and K is the vector of control variables, such as Gross Fixed Capital Formation (GFCF) and Unemployment rate (UR). However, IG is proxied, in line with the practice in the literature, by GDP Per Person Employed (GDPPE).

[4] The I(0) and I(1) orders of integration is particularly common to time series data.

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This Eq. (3) depicts that inclusive growth is a function of deficit financing options. Since the enhancement of human capabilities is essentially important to ensure that the labour force is enabled to seize the employment opportunities created by the growth process, the model specification is further expanded to incorporate expenditure of government on health and education. This implies that when the government, for instance, uses its finances to improve the health and education sectors, there will be effective participation in the labour market. The new equation includes the government expenditure variables on health and education with their respective impacts to be determined.

$$\mathrm{IG} = f(\mathrm{PUB}, \mathrm{ODA}, \mathrm{BMG}, \mathrm{GEE}, \mathrm{GEH}, K), \tag{4}$$

where[5] GEE is the Government Expenditure on Education and GEH is the Government Expenditure on Health.

To show the effect of financing options and human capital expenditures independently on inclusive growth, the econometric expression of the model is given as:

$$\mathrm{GDPPE} = \alpha_0 + \alpha_1 \mathrm{PUB} + \alpha_2 \mathrm{ODA} + \alpha_3 \mathrm{BMG} + \alpha_4 \mathrm{GEE} + \alpha_5 \mathrm{GEH} + \alpha_6 K + \varepsilon_t. \tag{5}$$

3.3 Co-integration test: bounds test

This study employs the bounds co-integration test to examine whether or not a long-run relationship exists between deficit financing options and inclusive growth. The

[5] GEE and GEH are measures of the share of education and health in total government expenditure, respectively. Government expenditure is made up of both recurrent and capital components. This involves government spending in elementary, secondary and tertiary education; health and family welfare as well as on socio-community services. In the absence of disaggregated data for socio-community services under the capital expenditure data provided by the CBN Statistical Bulletin, a rough computation was made to ascertain the proportion of education and health in capital expenditure. Specifically, the average proportion of recurrent spending on health and education in the current period was benchmarked accordingly to obtain their corresponding shares in terms of capital expenditure. This synthetically derived capital expenditure data may however potentially produce imprecise estimates from regression models in which these two proxies human capital (GEE and GEH) are included. On the part of India, firstly, the 1996 data for both health and education expenditures were extrapolated and the value used for 2018 is the budgeted value and not the actual. Secondly, the unavailability of data for India on capital expenditure separately for health and education led to the following five- step computational approach:

Step 1: The share of health and education spending in the total recurrent spending from1989 to 2018 was obtained.

Step 2: An average share for each of the sectoral expenditures was computed.

Step 3: Using the average share for health and education, the fraction of each on total capital expenditure from 1989 to 2018 was derived.

Step 4: We then summed up the recurrent and capital expenditure values for health and education, respectively.

Step 5: Finally, the values were represented as a percentage of GDP.

It is thus hardly arguable that this usage of moving averages and average benchmarking to make up for unavailable data for both countries is a key challenge with this research. Nonetheless, it is comforting to note that the estimates obtained, to a large extent, remain mostly in tune with the underlining theoretical prescriptions.

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F-test helps to evaluate the possible existence of the long-run equilibrium in the equation. The decision criteria are conditional on the value of the *F*-statistics. If it is above the upper bound, then there is a long-run relationship. If the *F*-statistics is below the lower bound, then no long-run relationship exists. The test is however inconclusive if the value falls in the range between the lower and upper bounds.

The ARDL model specification is as follows:

$$\Delta GPPE_t = \alpha_0 + \sum_{a=1}^{a} \beta_a \Delta GDPPE_{t-a} + \sum_{b=0}^{b} \gamma_b \Delta PUB_{t-b} + \sum_{c=0}^{c} \delta_c \Delta ODA_{t-c} + \sum_{d=0}^{d} \eta_d \Delta BMG_{t-d} + \sum_{f=0}^{f} \lambda_f \Delta UR_{t-f} + \sum_{g=0}^{g} \mu_g \Delta GFCF_{t-g} + \sum_{h=0}^{h} \rho_h \Delta GEE_{t-h} + \sum_{i=0}^{i} \pi_i \Delta GEH_{t-i} + \varepsilon_t \quad (6)$$

$$\Delta GPPE_t = \alpha_0 + \sum_{a=1}^{a} \beta_a \Delta GDPPE_{t-a} + \sum_{b=0}^{b} \gamma_b \Delta PUB_{t-b} + \sum_{c=0}^{c} \delta_c \Delta ODA_{t-c} + \sum_{d=0}^{d} \eta_d \Delta BMG_{t-d} + + \sum_{f=0}^{f} \lambda_f \Delta UR_{t-f} + \sum_{g=0}^{g} \mu_g \Delta GFCF_{t-g} + \sum_{h=0}^{h} \rho_h \Delta GEE_{t-h} + \sum_{i=0}^{i} \pi_i \Delta GEH_{t-i} + \varphi ECT_{t-1} + \varepsilon_t \quad (7)$$

Summarily, Eq. (6) is utilized when there is no co-integration whilst Eq. (7) is used when there is co-integration. The post-estimation tests, such as normality test, heteroscedasticity test, and stability test, are utilized to validate the results of the empirical estimation.

4 Empirical results and discussion

4.1 Descriptive analysis

Descriptive analysis gives the summary statistics of the variables employed in the study. The description includes the mean, minimum, maximum and standard deviation values.

Table 1 above shows the descriptive statistics of the various variables used. The highest value of GDP per person employed ever attained in Nigeria was about US$19,439. In the same vein, the minimum value of GDP per person employed was slightly below US$10,000. The mean of the GDP per person employed in Nigeria stood at US$13,384.6 with an average growth rate of approximately 2.3% over the period of our analysis. Similarly, Nigeria's public debt recorded an all-time low of N358.2 billion in 1990 and an all-time high of about N36,690 billion in 2018. But a worrisome trend was observed as the trajectory of public debt to the nation's total output rose from an historical low of 7.2% in 2008 to about three-quarters (75%) of the country's GDP in 1991. However, average public debt within the period was N7,391 billion. Nigeria's receipt of net Official Development Assistance (ODA) averaged US$2.2 billion and a US$0.69 billion deviation from the mean over the years covered. The country recorded an all-time high net ODA inflow of US$3.5 billion representing 5 percent of the gross national income (GNI).

The level of priority given to human development in Nigeria is best illustrated by the amount of government expenditure on the two key social sectors: health and

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Table 1 Result of the descriptive analysis (Nigeria)

	Mean value	Minimum value	Maximum value	Standard deviation	Probability
GDP per person employed	13,384.62	9254.784	19,438.73	3884.88	0.1455
GDP per person employed (% annual growth)	2.2624	−3.3793	30.9536	6.0411	0.0000
Public debt	7390.992	358.1770	36,689.20	9289.555	0.0000
Public debt (% of GDP)	34.8024	7.2760	74.9620	22.4336	0.2119
Net ODA	2,171,065,333	724,120,000	3,499,690,000	685,510,769.5	0.0000
Net ODA (% of GNI)	0.7834	0.2400	4.9390	1.0203	0.0000
Base Money Growth	3342.565	26.2688	11,752.56	3847.495	0.0994
Base Money Growth (% annual growth)	24.2921	−5.2954	62.2392	18.1101	0.5305
Government expenditure on education	184.3546	3.5369	602.5972	182.0562	0.1600
Government expenditure on education (% of GDP)	0.3645	0.0180	0.8632	0.2530	0.4507
Government expenditure on health	103.5619	1.1586	361.7070	109.4090	0.1304
Government expenditure on health (% of GDP)	0.1974	0.0067	0.5181	0.1548	0.3538
Unemployment rate (% of total labour force)	4.1145	3.4240	6.2370	0.7533	0.0000
Gross fixed capital formation	366,784,796,030.37	847,263,392,253.54	95,805,282,790.81	248,983,719,668.19	0.4040
Gross fixed capital formation (% of GDP)	28.9003	14.1687	53.1222	12.6581	0.3112

Source: Authors' computation

education. The maximum value of government's expenditure on education in Nigeria (N602.6 billion) was more than 1.5 times that of health (N361.7 billion). Essentially, the combined expenditure in the two sectors has been below N1 trillion. A cursory look at the data reveals that total expenditure on health and education as a percentage of GDP stood at less than 1 percent, while the share of government education expenses in GDP was 0.9%, and that of health was 0.5%. Added to this, its yearly growth rate has been lackluster.

Table 2 depicts the descriptive statistics for variables used for India. As the table reveals, the highest gross domestic product per person employed in India over the years covered was US$18,564.7 which almost quadrupled its minimum value of US$4,877. In the same vein, the mean value of the gross domestic product per person in the country (US$9,409) was almost twice the minimum value. More so, the mean public debt in India over the scope of our study stood at about 39,511 billion rupees, more than two-thirds of the nation's average gross domestic product for the period. However, net official development assistance (ODA) averaged US$1.6 billion signifying 0.32% of the nation's GNI and about US$0.6 billion less than Nigeria's average ODA inflows.

Meanwhile, the mean value of India's monetary base was 952,566 rupees crores between 1989 and 2018 at an average growth rate of 14.4 percent. The recorded minimum and maximum value of the base money relative to the mean stood at 66,786 rupees crores and 3,267,331 rupees crores, respectively.

Lastly, the insight gleaned from the expenditures on health and education reveals the extent of readiness of the Indian government to enhance the human capital development and innovativeness of its people. Over the last three decades, the total expenditure on education and health by the Indian government averaged 23,735.5 rupees crores and 10,957.9 rupees crores representing 0.27% and 0.12% of GDP, respectively. More recently, the World Economic Forum in 2018 revealed that resource depletion is one of the reasons why India appears to be lagging behind despite its efforts to improve human capacity.

4.2 Unit root tests

This section provides explanation on the stationarity properties of the variables used in the study.[6] The Augmented-Dickey Fuller (ADF) and the Phillip–Perron (PP) pre-estimation techniques were adopted to check for the order of integration at the 1%, 5% and 10% significance levels.

The numbers reported in Tables 3 and 4 show that variables are significant both at levels, I(0) and first difference, I(1). From the results, it is imperative to

[6] Aside from the ADF and PP unit root testing results presented here, a couple of more recent unit root tests precisely the ADF-GLS and Ng-Perron were also used. This is expedient since the latter two tests are widely acknowledged in the time series literature to have relatively higher power to reject the null than the former two tests. In our sample, the ADF-GLS and Ng-Perron tests returned similar results as the reported ADF and PP on the stationarity properties of the variables for both India and Nigeria (See the Appendix Tables A and B for the results for both countries).

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Table 2 Result of the descriptive analysis (India)

	Mean value	Minimum value	Maximum value	Standard deviation	Probability
GDP per person employed (	9409.012	4877.297	18,564.69	4277.848	0.1696
GDP per person employed (% annual growth)	4.5001	−4.4553	9.7447	2.8930	0.0646
Public debt	39,511.19	5076.448	133,108.0	37,339.23	0.0526
Public debt (% of GDP)	73.3313	65.9770	84.2430	5.1589	0.3017
Net ODA	1,611,437,500	193,880,000	11,278,060,000	2,269,998,642	0.8306
Net ODA (% of GNI)	0.3241	0.0931	1.0428	0.2434	0.0050
Base Money Growth	952,566.6	66,786.00	3,267,331.0	924,411.4	0.0991
Base Money Growth (% annual growth)	14.3729	3.0516	27.5100	6.0301	0.4358
Government expenditure on education	23,735.51	800.0000	85,468.71	26,879.10	0.0715
Government expenditure on education (% of GDP)	0.270725	0.0331	0.6750	0.2225	0.1824
Government expenditure on health	10,957.85	228.000	51,550.85	13,533.36	0.0066
Government expenditure on health (% of GDP)	0.1194	0.0095	0.3662	0.1112	0.1850
Unemployment rate (% of total labour force)	2.6656	2.2680	3.1820	0.2288	0.3887
Gross fixed capital formation	56,055,779,496	42,860,852,464	70,767,545,662	7,825,119,497	0.1970
Gross fixed capital formation (% of GDP)	28.5847	23.2096	35.5703	3.9302	0.2309

Source: Authors' computation

Table 3 The result of the unit root test (Nigeria)

Test Variables	ADF				PP				Concluding remark
	Level		1st difference		Level		1st difference		
	t-stat	Prob	t-stat	Prob	t-stat	prob	t-stat	prob	
GDPPE	−4.213	0.003	−8.312*	0.000	−4.220*	0.003	−15.477*	0.000	I(0)
PUB	−1.837	0.356	−4.487*	0.001	−1.914	0.322	−4.484*	0.001	I(1)
BMG	−3.545**	0.015	−4.432*	0.002	−3.575**	0.013	−20.701*	0.000	I(0)
ODA	−3.895*	0.006	−5.878*	0.000	−2.850***	0.064	−9.529	0.000	I(0)
GEE	−0.303	0.913	−5.479*	0.000	1.044	0.996	−9.240*	0.000	I(1)
GEH	0.320	0.975	−3.976*	0.006	0.746	0.991	−10.667	0.000	I(1)
GFCF	−1.726	0.408	−5.085	0.000	−2.227	0.2013	−5.084*	0.000	I(1)
UR	−1.218	0.652	−3.004**	0.047	0.022	0.953	−2.781***	0.074	I(1)

Source: Authors' computation from Eviews 9

Note: *, **, and *** denotes 1%, 5% and 10% statistical level of significance

The probability value for both ADF and PP are presented in the parenthesis

I(0) implies integrated of order zero and I(1) implies integrated of order one

Table 4 The Result of the Unit Root Test (India)

Test Variables	ADF				PP				Concluding remark
	Level		1st difference		Level		1st difference		
	t-stat	Prob	t-stat	Prob	t-stat	prob	t-stat	Prob	
GDPPE	−3.238**	0.028	−6.221*	0.000	−3.159**	0.033	−13.204*	0.000	I(0)
PUB	−2.314	0.175	−3.048**	0.043	−1.818`	0.365	−3.058**	−3.058	I(1)
BMG	−2.553	0.114	−10.795*	0.000	−5.135*	0.000	−16.028*	0.000	I(1)
ODA	−4.549*	0.001	−9.808*	0.000	−1.625	0.458	−8.276*	0.000	I(1)
GEE	−1.084	0.708	−7.228*	0.000	−0.644	0.846	−10.450*	0.000	I(1)
GEH	−0.347	0.9057	−7.235*	0.000	0.380	0.979	−7.693*	0.000	I(1)
GFCF	−1.271	0.629	−4.693*	0.000	−1.421	0.559	−4.780*	0.000	I(1)
UR	−2.715**	0.084	−3.402*	0.000	−1.983	0.292	−3.445	0.018	I(1)

Source: Authors' computation from Eviews 9

Note: *, **, and *** denotes 1%, 5% and 10% statistical level of significance

The probability value for both ADF and PP are presented in the parenthesis

I(0) implies integrated of order zero and I(1) implies integrated of order one

adopt a technique that recognises the use of variables with mixed order of integration for regression analysis. Hence, the need to utilise the Auto regressive distributed lagged (ARDL) bounds test technique to check for co-integration.

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Table 5 Bounds test result

Countries	F-statistics	Bounds		Concluding remarks
		Upper bound	Lower bound	
Nigeria	5.938012	***(4.26) **(3.5) *(3.13)	***(2.96) **(2.32) *(2.03)	Co-integration
India	12.00026	***(4.26) **(3.5) *(3.13)	***(2.96) **(2.32) *(2.03)	Co-integration

Source: Authors' computation from Eviews 9

Note: *, **, and *** denotes 1%, 5% and 10% statistical level of significance

4.3 Co-integration analysis

The check for co-integration is imperative in probing for the existence of long-run relationship among variables. The bound test is based on the assumption of restrictive and no trend model specification as provided in case 2 of E-views Statistical Package. The optimal lag length is two based on Akaike and Schwarz information criteria. The summary of the co-integration test is presented in Table 5:

4.4 Model estimation results and interpretation

The short- and long-run estimates of our study are presented in Tables 6 and 7, respectively. On Table 6, the result shows that in the short run, a percentage increase in the previous period value of gross domestic product per person employed ($GDPPE_{-1}$) will increase current GDPPE in Nigeria by 0.47%. This positive association reflects the persistence in the path of inclusive growth as more inclusiveness is expected to breed better outcomes in the future. Similar conclusion on the path dependence of inclusive growth was reached by Raheem et al. (2018) and Oyinlola and Adedeji (2019). All the variables at their current periods had a negative relationship with GDPPE except public debt (PUB) and official development assistance (ODA) which maintained positive relationships with GDPPE. Unlike our findings, Whajab et.al. (2019) reported positive effects of a set of explanatory variables [namely government size, gross fixed capital formation (investment), and Inequality adjusted HDI] on inclusive growth. The authors also specifically obtained results to the effect that public debt reduction had opposite effect on inclusive growth despite increases in government size. Whajab et al. (2019) averred that "….. productive use of accumulated funds may be a possible explanation for the findings…..and other deficit financing options may have contributed to the observed expansion of government size". Turning to foreign aid (ODA), its contemporaneous effect on inclusive growth is positive but not statistically significant. Arndt et al. (2014) found similar results in their aid-growth paper, although their key dependent variable was economic growth (not its inclusiveness) and the analysis was essential in the long run.

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Table 6 Short-run results

Variable	Nigeria			India		
	Coefficient	Standard error	Probability	Coefficient	Standard error	Probability
D(GDPPE(-1))	0.473033	0.469081	0.3703	0.288736	0.197292	0.1740
D(ODA)	4.201761	3.056945	0.2413	− 3.549504	4.136446	0.4109
D(ODA(−1))	− 4.100410	1.272551	0.0322	n/a	n/a	n/a
D(PUB)	0.314388	0.103983	0.0390	− 0.687276	0.167651	0.0021
D(PUB(−1))	0.369945	0.125794	0.0424	n/a	n/a	n/a
D(BMG)	− 0.243040	0.101249	0.0743	0.111114	0.079417	0.1920
D(BMG(−1))	0.213657	0.046425	0.0100	n/a	n/a	n/a
D(GEE)	− 54.808635	18.227438	0.0397	5.946425	8.399442	0.4951
D(GEE(−1))	− 39.631426	23.151232	0.1621	n/a	n/a	n/a
D(GEH)	− 26.395780	19.352254	0.2443	− 15.032042	18.337170	0.4315
D(GEH(−1))	50.688651	31.475124	0.1826	14.661188	13.175395	0.2918
D(GFCF)	− 1.260641	0.505364	0.0672	− 0.008753	0.368589	0.9815
D(GFCF(−1))	1.708361	0.477135	0.0232	− 0.959869	0.451671	0.0595
D(UR)	− 9.447809	4.336580	0.0949	17.073883	6.568829	0.0265
D(UR(−1))	− 19.435644	4.160510	0.0095	− 14.317329	5.842465	0.0342
CointEq(−1)	− 2.249613	0.724396	0.0360	− 1.296567	0.295704	0.0014

Source: Authors' computation

Note: n/a indicates not available

Table 7 Long-run results

Variable	Nigeria			India		
	Coefficient	Standard error	Probability	Coefficient	Standard error	Probability
ODA	2.979974	1.021747	0.0434	− 2.737618	2.995447	0.3823
PUB	0.199757	0.071191	0.0485	− 0.214586	0.088035	0.0350
BMG	− 0.202287	0.076267	0.0568	0.085698	0.068726	0.2408
GEE	− 39.54423	17.03676	0.0810	− 13.26711	8.047185	0.1302
GEH	− 35.77933	16.76985	0.0998	21.40883	17.64554	0.2529
GFCF	− 1.457942	0.392478	0.0206	0.323514	0.183588	0.1085
UR	− 0.322958	0.854070	0.7245	9.297258	5.034506	0.0946
C	65.28725	15.49052	0.0135	− 13.08543	13.92341	0.3695

Source: Authors' computation

Also on Table 6, and in the short run, base money growth (the proxy for seignorage in our models) has a marginally significant but negative influence (at the 10% level) on inclusive growth. This implies that unbridled money growth plausibly leads to ineffectiveness in the apportionment of the benefits of economic growth. Put in other words, the inflationary pressures precipitated by excessive money creation may as well dampen the value of the proceeds of growth via substantial reductions

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in purchasing power. Though not precisely focused on our line of enquiry, it is still somewhat instructive to note that, for instance, Ehrhart et al. (2014), Sebate et al. (2018) and Bagchi et al. (2019) studied money creation and growth, seignorage and budget deficits as well as money growth and wealth inequality in that order and found ambiguous growth impacts (conditional on the level of tax), non-significant budget deficit effects and positive and significant wealth inequality effects, respectively.

Also, in the short run, a percentage increase in base monetary growth (BMG) and government expenditure on education (GEE) in India increased GDPPE by 0.11% and 5.95%, respectively, while the same magnitude of change decreased government expenditure on health (GEH) by 15.03% (see Table 6). Clearly, the sheer size of the latter is much smaller than the decrease earlier reported for Nigeria in part due to the relatively more advanced health system in India. It is common knowledge that India remains one of the main destinations for medical tourism by Nigerians. However, only GEE was statistically significant at the 5% level. The circumstance surrounding the significant inverse relationship between GEE and GDPPE in Nigeria in the short run (which is a negation of a priori expectations) could well be explained by the fact that it may take longer years for a country to reap the benefits of its expenses on the education sector.[7]

In the long run, a percentage increase in ODA and PUB in Nigeria will lead to approximately 3% and 0.2% increase in GDPPE but in India, GDPPE will decrease by 2.7% and 0.2% for a percentage increase in ODA and PUB, respectively. While in the case of Nigeria, ODA and PUB were statistically significant in explaining GDPPE given that their respective probability values were less than 5% significant level, only PUB was statistically significant in India. The non-significance of the impact of ODA on Inclusive growth in India could be connected with the shifting foci of foreign aid in India. There is abundant evidence of the effectiveness of aid in driving development outcomes in India in the earlier years. For instance, Lipton and Toye (2010) [cited in Sethi et al. (2019)] argued that "the aid flows which supported the Green Revolution of 1960s in India have been quite effective….. The aid came in for research in agriculture, imports of fertilizer, and purposes to improve the production mechanism and the inputs used." Focusing on historical data in similar fashion, Gang and Khan (1990) found evidence that aid is highly effective in India and because it directly ploughed into developmental projects with almost no leakage to the non-investment sector. These dynamics appear to have changed in contemporary times as India itself has become a bigger aid donor in line with its acquired status in terms of economic prosperity.

But in Nigeria, base monetary growth, government expenditure on education and health were all inversely related to GDPPE in the long run. The result showed that a 1% increase in BMG, GEE and GEH will lead to 0.2%, 39.5% and 35.6% decrease

[7] Another plausible rationale for this seemingly counterintuitive result may be that it essentially is a relic of the *ad-hoc* approaches elected for the computation of the two measures of human capital. Footnote 5 under the methodology and data description section provides an elaboration of the mechanics of the construction of these variables.

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in GDPPE but they were all statistically insignificant at the 5% level of significance. In India, GDPPE will increase by a meagre 0.1% and about 21% should base monetary growth and government expenditure on health increase by a percentage. On the flip side, a percentage increase in government expenses on education will lead to about 13% drop in GDPPE. Like Nigeria, none of these three variables were statistically significant at the 5% level to explain inclusive growth as measured by GDPPE.

5 Summary and policy recommendations

The crux of the study was to ascertain whether the different deficit financing options impact growth inclusiveness in Nigeria and India. These options cut across borrowing, printing of money and aid/assistance. Notably, expectations about a continuous increase in growth rate are such that more employment opportunities and improved income averages of individuals are achieved. With the rising global requirement to make economic growth more inclusive and sustainable, there is a dearth of studies that provide empirical evidence on the relationship between deficit financing and inclusive growth. This study conducts an empirical analysis to examine between deficit financing option and inclusive growth for the period of 1989–2018 using the ARDL model. The results highlight the effects in both short- and long-term basis.

For aid, results for Nigeria support the evidence of Ardnt et al. (2014) and Odusanya (2011) that aid positively impact growth and development for both short and long run but not necessarily its silver-bullet. Unsurprisingly, aid option has the highest effect on inclusive growth due to high reliance of African countries on development assistance. Contrary, the results for India present an inverse relationship between aid and inclusive growth with no significance in the short and long run. Therefore, aid is not a good measure of inclusive growth in India. The economy has experienced growth with a declining share of ODA from 1991 to 2018 (WDI 2018). Subsequently, the impact of borrowing on inclusive growth is significant and negative for short run and long run in India. This result is consistent with that of Bal and Narayan (2015) that shows the relationship between public debt and economic growth. This option is next line to aid when quantifying the impact regardless of the direction. Borrowing effect on inclusive growth is identifiable and significant, thus, poses more threats to the benefits of the society. For the Nigerian case, the result findings highlight a positive and significant effect of borrowing on inclusive growth. This implies that for the Nigeria economy, borrowing can significantly affect the growth of GDP per person.

Furthermore, the effect of base money growth and GDP is negative and significant for Nigeria whilst positive and insignificant for India in the short and long run. Financing deficit through money creation is the least favorable option especially for countries without strong value for its currency. On the issue of human capital investments, the results are a bit controversial to theoretical explanations. Arguably, government expenditure on education is positive and negative in the short and long run, respectively, for India. On the other hand, government expenditure on health is negative in the short run and positive in the long run. However, these outcomes are all not significant which implies that investing in human capital has no significant

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impact on inclusive growth in Nigeria, negative effect is displayed in the short run and long run for both health and education expenditure.

In terms of suggestions for policy, the research findings show how beneficial Nigeria can tread the part of borrowing to finance its excess expenditure. Thus, this policy recommends that Nigeria utilizes its borrowing option effectively by undertaken relevant infrastructural and human capital investments. Second, rather than relying on ODA for growth as well, Nigeria could join the liquidity race by attracting more diaspora remittances like its Indian counterpart. This is because with remittances, governments are the drivers of what happen with the funds which break them free for donor's hidden motives. Distinctively, and in sum, there is no clear-cut answer as to which option to capitalize on for India. However, the government should be encouraged to devote more resources to capital expenditure to drive long-term investments and ensure that the majority of people benefit from the process.

Appendix

See Tables 8 and 9.

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Table 8 Unit root test results: Nigeria

Test	ADF-GLS				Ng-PP				Con-cluding remark
Variables	Level		1st difference		Level		1st difference		
	t-stat	Critical values	t-stat	Critical values	t-stat (MSB)	Critical values	t-stat (MSB)	Critical values	
GDPPE	−4.198	−2.647* −1.953** −1.610***	−8.469	−2.650* −1.953** −1.610***	0.191	0.174 0.233** 0.275***	0.212	0.174 0.233** 0.275***	I(0)
PUB	−1.337	−2.647 −1.953 −1.610	−4.572	−2.650* −1.953** −1.610***	0.436	0.174 0.233 0.275	0.190	0.174 0.233** 0.275***	I(1)
BMG	−3.530	−2.647* −1.953** −1.610***	−5.560	−2.650* −1.953** −1.610***	0.197	0.174 0.233** 0.275***	0.192	0.174 0.233** 0.275***	I(0)
ODA	−3.972	−2.650* −1.953** −1.610***	−5.842	−2.653* −1.953** −1.610***	0.137	0.174* 0.233** 0.275***	0.110	0.174* 0.233** 0.275***	I(0)
GEE	0.069	−2.647 −1.953 −1.610	−5.583	−2.650* −1.953** −1.610***	0.502	0.174 0.233 0.275	0.186	0.174 0.233** 0.275***	I(1)
GEH	−0.135	−2.647 −1.953 −1.610	−6.260	−2.653* −1.953** −1.610***	0.426	0.174 0.233 0.275	0.115	0.174* 0.233** 0.275***	I(1)
GFCF	−0.282	−2.647 −1.953 −1.610	−4.575	−2.650* −1.953** −1.610***	0.941	0.174 0.233 0.275	0.190	0.174 0.233** 0.275***	I(1)
UR	−1.410	−2.650 −1.953 −1.610	−3.061	−2.650* −1.953** −1.610***	0.167	0.174* 0.233** 0.275***	−0.216	0.174 0.233** 0.275***	I(1)

Note: *. ** and *** implies significance at 1%, 5% and 10%, respectively. The maximum lag length employed is two (2)

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Table 9 Unit root test results: India

Test	ADF-GLS				Ng-PP				Concluding remark
Variables	Level		1st difference		Level		1st difference		
	t-stat	Critical values	t-stat	Critical values	t-stat (MSB)	Critical values	t-stat (MSB)	Critical values	
GDPPE	−2.860	−2.647* −1.953** −1.610***	−7.892	−2.650* −1.953** −1.610***	0.224	0.174 0.233** 0.275***	0.206	0.174 0.233** 0.275***	I(0)
PUB	−2.309	−2.650 −1.953** −1.610***	−3.102	−2.650* −1.953** −1.610***	0.199	0.174 0.233** 0.275***	0.215	0.174 0.233** 0.275***	I(0)
BMG	−5.136	−2.647* −1.953** −1.610***	−7.796	−2.650* −1.953** −1.610***	0.185	0.174 0.233** 0.275***	0.201	0.174 0.233** 0.275***	I(0)
ODA	−1.508	−2.653 −1.953 −1.610	−3.204	−2.657* −1.954** −1.610***	0.826	0.174 0.233 0.275	0.438	0.174 0.233 0.275	Partial I(1)
GEE	−0.902	−2.647 −1.953 −1.610	−7.357	−2.650* −1.953** −1.610***	0.377	0.174 0.233 0.275	0.200	0.174 0.233** 0.275***	I(1)
GEH	−0.252	−2.647 −1.953 −1.610	−7.369	−2.650* −1.953** −1.610***	0.372	0.174 0.233 0.275	0.196	0.174 0.233** 0.275***	I(1)
GFCF	−1.067	−2.647 −1.953 −1.610	−4.54	−2.650* −1.953** −1.610***	0.524	0.174 0.233 0.275	0.192	0.174 0.233** 0.275***	I(1)
UR	−2.537	−2.650 −1.953** −1.610***	−3.459	−2.650* −1.953** −1.610***	0.195	0.174 0.233** 0.275***	−0.205	0.174 0.233** 0.275***	I(0)

Note: *. ** and *** implies significance at 1%, 5% and 10%, respectively. The maximum lag length employed is two (2)

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