

Fiscal Decentralization and Social Services in Nigeria

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Contents

List of tables

Abstract

1.	Introduction	1
2.	Decentralization and social services	3
3.	Theoretical and empirical literature	4
4.	Empirical evidence on decentralization	6
5.	Summary of the findings	18
6.	Policy recommendations	19
	Notes	20
	References	21

List of tables

1.	Description of variables	15
2.	Summary Statistics of Variables	15
3.	Random effects for models (8) and (9)	16

Abstract

This study examines the linkages between fiscal decentralization and social services in Nigeria. It is based on a panel of the 36 states and federal capital territory. Social services in health and education are measured by outcomes such as infant mortality rate and literacy rate. The index of fiscal decentralization is measured by the ratio of state government revenue to federal government revenue. Data employed in the research spans 2002 to 2010. Findings demonstrate that higher fiscal decentralization is consistently associated with lower mortality rate and higher literacy rate; benefits from fiscal decentralization are not particularly important for states with high population and low internally generated revenue; the internally generated revenue enhances literacy rates and reduces infant mortality. This underscores the need to improve state autonomy and reduce dependence on transfers from the centre. On the whole, the research findings are useful for the ongoing public sector reforms in Nigeria.

Key Words: *Decentralization, Health, Education, Panel data, Nigeria.*

1. Introduction

It is generally assumed that the transfer of powers and resources to lower tiers of government allows for a better matching of public policies to local needs and thus promotes allocation of resources. It is also argued that much of the recent movement towards devolution has been driven by the belief that fiscal decentralization has a positive effect on government efficiency and service delivery. All these are expected to lead to an improvement in regional and overall economic performance, particularly if subnational authorities shift resources from current to capital expenditures in search of a better response to local needs.

Opponents of the decentralization policy consider it a road to wrecks and ruins. It is seen as capable of making stabilization policies difficult to manage. Some authors argue that the benefits of decentralization are not as obvious as proponents of decentralization suggest, and there could be serious shortcomings that policymakers should be aware of in designing decentralization policies (Breton, 2002; Crook, 2003). Government accountability and allocative efficiency may not be achieved with decentralization when the scarcity of public sector administrative, financial and managerial capacity is more problematic at the lower levels of government (Crook, 2003; Collier, 2008). In addition, decentralization may impose constraints to the implementation of national policies and the creation of coordination channels across regions (Guldner, 1995). These disagreements arise primarily from the perspectives of the potential impact of such policies on the institutional environment of developing countries.

Whether the arguments will prevail requires empirical support. Several studies exist that investigate the interactions between decentralization and regional local-central relationships (Feltenstein and Iwata, 2005; Ahmed et al, 2005; Ahmad et al, 2008). These studies focus mostly on developed or developing countries of Asia and Latin America, and evidence appears inconclusive. These issues in the context of Sub-Saharan Africa are scarcely examined. Few empirical evidences (Elhiriaka, 2007; Akramov and Asante, 2009) provide differing arguments.¹

Nigeria has a highly decentralized system and much of the basic service delivery in health and education are decentralized to the subnational governments. It is believed that the subnational governments are better placed at perceiving the desires and demands of its constituents for public services than the distant central government. In recent years public revenue in Nigeria has increased significantly, with increased allocation to the subnational governments. However, social indicators particularly health and education are not improving substantially. It is, therefore, important to examine the interaction between fiscal decentralization and service delivery in Nigeria, with a view to determining the

effects of decentralization on expected outcomes of social services. This is particularly important owing to the ongoing public sector reforms and resurgence of interest in fiscal federalism in Nigeria.

Studies on fiscal federalism, in Nigeria, have focused on explaining the pattern of intergovernmental relations, or providing a historical and idealistic view within the context of political economy of possible consequences of such relationships (Mbanefoh, 1993; Ekpo, 1994; Ekpo and Ndebbio, 1996). Little has been done to empirically examine the implications of fiscal decentralization on social service delivery. This research fills the gap by estimating the relationship between fiscal decentralization and social service outcomes in Nigeria.

From the foregoing, the study examines the linkages between fiscal decentralization and social services in Nigeria. It is based on a panel of the 36 states and federal capital territory. Social services in health and education are measured by outcomes such as infant mortality rate and literacy rate. The index of fiscal decentralization is measured by the ratio of state government revenue to federal government revenue. Data employed in the research spans 2002 to 2010. The findings demonstrate that higher fiscal decentralization is consistently associated with lower mortality rate and higher literacy rate. Benefits from fiscal decentralization are not particularly important for states with high population and low internally generated revenue; the internally generated revenue enhances literacy rates and reduces infant mortality. This underscores the need to improve state autonomy and reduce dependence on transfers from the centre. On the whole, the research findings are useful for the ongoing public sector reforms in Nigeria.

The rest of the paper is organized as follows: Section 2 presents background issues related to fiscal federalism in Nigeria. In section 3, the theoretical and empirical literature is discussed. Section 4 contains the model specification, estimation and results. In section 5 the results are presented and discussed, while section 6 concludes the study by providing policy recommendations.

2. Decentralization and social services

Decentralization holds great promise for improving the delivery of public services, but the outcomes depend on its design and on the institutional arrangements governing its implementation. First, it has been argued that for decentralization to increase allocative and productive efficiency, local governments need to have the authority to respond to local demand, as well as adequate mechanisms for accountability. Second, functions need to be devolved to a low enough level of government for allocative efficiency to increase as a result of decentralization.

Decentralization has had mixed effects on public service delivery. Limited evidence suggests that effectiveness of decentralized service delivery depends on the design of decentralization and on the institutional arrangements governing its implementation. Specifically, the argument that decentralization promotes allocative and productive efficiency assumes that the devolution of functions occurs within an institutional environment that provides political, administrative, and financial authority to local governments, along with effective channels of local accountability and central oversight. These channels include: a voice mechanism for citizens to express their views to government bodies; exit mechanisms for citizens to switch to nonpublic service providers or to move to other localities; central government laws, rules, budget constraints, and oversight over local government operations, and channels for local governments to influence central governments decisions concerning them; public sector management arrangements that promote accountability, such as merit-based personnel policies and rules and arrangements promoting fiduciary accountability and constraining corruption (World Bank, 2001).

In Nigeria, the devolution of responsibilities for public service delivery has been a complex, ongoing process involving retention of some powers by the central government. The 1999 constitution has increased responsibilities of all subnational governments: 36 states, a federal capital territory and 774 local governments. Most health spending has been devolved to subnational governments, though the central government retains responsibility for public services like immunization and communicable diseases. In education, the central government is still responsible for budgeting and hiring, but local governments are responsible for operating and maintaining schools, and are often involved in hiring teachers.

Largely, a strict interpretation of the constitution of Nigeria with regard to the sharing of responsibilities between the three tiers of government implies that it is the state governments that have principal responsibility for basic services such as primary health and primary education. In addition, the extent of participation of Local Government Authorities (LGAs) in the execution of these responsibilities is determined at the discretion of individual state governments.

3. Theoretical and empirical literature

Fiscal federalism model

The fiscal federalism model places the functions of stabilization and redistribution on central governments, while subnational governments are assigned the role of resource allocation. Because tastes and preferences for public services vary among populations, fiscal federalism argues that if the benefits of particular services are largely confined to local jurisdictions, welfare gains can be achieved by permitting the level and mix of such services to vary accordingly. If local consumers are confronted with the cost of alternative levels of service, constituents will reveal their preferences, through voting for rival political candidates or moving to other jurisdictions (Ahmed et al., 2005). Invariably, local politics can approximate the efficiencies of a market in the allocation of these local public services.

It is argued that the lower levels of government can deliver services such as water, education, sanitation and health effectively. Also, at the lower levels of government, politicians and civil servants are more aware of the needs of their community that will be more responsive to providing such services. Preferences of local populations are better known at lower levels of government.

Decentralization and education

Based on theory, decentralization creates advanced sustainability and efficiency as well as equity in economic resource management in local societies. The theoretical advantages of decentralization have become extremely appealing. It is generally believed that the process of decentralization can substantially improve efficiency, transparency, accountability, and responsiveness of service provision compared with centralized systems. Decentralized education promises to be more efficient, better reflect local priorities, encourage participation, and, eventually, improve coverage and quality. In particular, governments with severe fiscal constraints are enticed by the potential of decentralization to increase efficiency. Beneficiary cost recovery schemes such as community financing have emerged as means for central governments to offload some of the fiscal burden of education service provision (World Bank, 2001).

There is an existing debate regarding the appropriate locus of decision making within the education sector. The debate remains unresolved because the process requires that policy makers rationalize and harmonize a complex set of complementary functions,

mainly: curriculum design, teaching methods, student evaluation, textbook production and distribution, teacher recruitment and pay, school construction and rehabilitation, education financing, and parent-teacher linkages. The decision of who does what is further complicated because each of these functions has to be evaluated for primary, secondary, and tertiary education, and often for preschool and adult literacy as well.

Principally, decentralization of education systems demands a complex set of functions, each for primary, secondary, tertiary, and non-formal education. These relate to how far to devolve decision making in each of these subsectors; and as to whom to devolve to is a continuing debate. There are a number of on-going experiments worldwide, ranging from devolution of limited functions to intermediate governments and local governments to community-based management and financing of schools. The current consensus is that tertiary education, and specific functions such as curriculum design and standards setting, are best retained by the centre; secondary and primary education should be devolved as far as possible; local participation in school management improves accountability, and responsiveness, and fosters resource mobilization. Yet, the devil is in the detail, and there are many details that need to be sorted out on a country by country basis.

Decentralization and health care

The theoretical argument for decentralizing health care is the potential for improved service quality and coverage; yet the issues of, one, exactly how these benefits can be realized, and two, the specific impact of different health system reforms, are not well understood. Health sector decentralization has become appealing to many because of its several theoretical advantages. These include the potential for: a more rational and unified health service that caters to local preferences; improved implementation of health programmes; decrease in duplication of services as the target populations are more specifically defined; reduction of inequalities between rural and urban areas; cost containment from moving to streamlined targeted programmes; greater community financing and involvement of local communities; greater integration of activities of different public and private agencies; improved inter-sectoral coordination, particularly in local government and rural and development activities (Faguet and Sanchez, 2009).

Little concrete evidence exists to date, however, to confirm that these potential benefits can be realized. Few developing countries have long-term experience with health sector decentralization, and little has been done on its impact on the management of the sector and on the services it delivers.

The debate whether decentralization does indeed improve equity, efficiency, accountability, and quality in the health sector continues with little data to inform it; although anecdotal and country-study evidence confirms that poorly designed and hastily implemented decentralization has serious consequences for health service delivery (Schwartz et al, 2002). A clear analytical framework to isolate or generalize the factors behind successful and unsuccessful decentralization hardly exists (Jimenez and Smith, 2005).

4. Empirical evidence on decentralization

Over the years, several independent studies have been conducted to examine the impact of fiscal decentralization on growth. In such researches, the crucial issue has been to measure the degree of decentralization. Bahl and Linn (1992) present a thorough discussion on the proper index of fiscal decentralization. They consider two possible measures: the ratio of local government revenues to total government revenues, and the ratio of local government expenditures to total government expenditures. The first measure indicates the extent to which local government are involved in mobilizing public resources through their system of taxes and user charges. Unfortunately, this measure might ignore a possible greater responsibility of local governments for the delivery of goods and services financed with external sources. This kind of public activities is better accounted for when we measure fiscal decentralization as the share of expenditures undertaken by subnational levels of government. However, Bahl and Linn (1992), list two major limitations to the comparability of the second measure among countries. First, as pointed out by Musgrave (1959), local governments acting just as spending agents of the central governments are not fiscally autonomous. Therefore, the measure does not reflect true decentralization of expenditures, just as centrally collected but shared taxes do not constitute true revenue decentralization. A second limitation of the index is that it does not take into account the number of local governments participating in expenditure separation. All other things being equal, more governments would imply more fiscal decentralization.

Davoodi and Zou (1998) investigate the relationship between fiscal decentralization, measured as the subnational share of total government spending, and economic growth. They use a panel data set of 46 countries over the period 1979-1989. In order to deal with year-to-year fluctuations in growth, the growth regression is estimated on data averaged over five- and 10-year periods. Besides the decentralization index, the set of independent variables includes the tax rate, country-fixed effects and time-fixed effects. They found a negative relationship between fiscal decentralization and growth for developing countries and the world as a whole, but none for developed countries. In conclusion, they admit that subnational government share of total government expenditure may not reflect the subnational government autonomy in expenditure decision making.

The authors do not try to analyse differences in fiscal arrangements among countries or to group comparable countries. Even when they consider only developed countries, the level of local expenditure has completely different meaning, say, for Switzerland and Italy. In Switzerland, revenues as well as expenditures are distributed independently among the tiers of government (Spahn, 1997). On the contrary, in Italy, the fiscal relations

between the central and subnational governments is characterized by a high degree of vertical fiscal imbalances, ambiguity over responsibilities for financing expenditures, and lack of transparency and stability of policies (Emiliani et al, 1997).

In a related paper, Zhang and Zou (1997) are more careful about the choice of the proper decentralization index. They explore how the allocation of fiscal resources between the central and local governments has been associated with economic growth in China since the reforms of the late 1970s. First, Zhang and Zou (1997) present data to show that fiscal decentralization on the spending varied across provinces and over time. Further, they use annual data from 1980 to 1992 for 28 provinces to estimate the impact of expenditure decentralization on the provincial growth rate. They argue that local revenues do not constitute the proper measure of decentralization because a significant portion of local revenues is transferred to the upper level. The problem of comparability of the decentralization index is less relevant in this case because intergovernmental relations with each province in China are arranged according to the same principle.

Besides the decentralization measures, the explanatory variables include production inputs, composed of budgetary spending, tax rate, foreign trade and inflation. Running Least Squares Dummy Variables (LSDV) regression yields a negative and significantly different from zero coefficient for fiscal decentralization. The random effect-estimation with Generalized Least Squares (GLS) regression produces negative and significant coefficients for fiscal decentralization in two indicators for budgetary and extra budgetary spending, respectively. However, a negative and insignificant sign is found for the consolidated provincial spending. The authors did not explore why different provinces assume different expenditure responsibilities. If the same determinants also affect the rate of growth, then we have a problem of endogeneity, which might cause a bias in the estimate of the impact of decentralization. This problem is even more aggravated by the fact that annual data were used. The gain in efficiency due to decentralization is likely to affect growth only after a while. In contrast, economic shocks are likely to affect intergovernmental fiscal flows immediately. Thus annual data is likely to indicate the reverse effect: from the state of the economy to fiscal flows.

Zhang and Zou (1997) further examine the expenditure pattern of central and provincial governments and its impact on growth in the context of fiscal decentralization. In this respect, the results for central and local government spending yield different pictures. Central spending on administration and development has a positive and significant impact on growth. For local expenditures, the growth impact of spending on administration and development is significantly negative. Both central and local governments spending on human capital are positively, but significantly, associated with growth. Central governments' spending for defence yields an estimated coefficient that is significantly negative. Local government spending on urban maintenance and development yields an estimated coefficient that is insignificant but positive. Another empirical paper by Woller and Phillips (1998) contains a more sophisticated analysis on the topic. The work presents an examination of the relationship between the level of fiscal decentralization and economic growth rates across a sample of 23 Less Developed Countries (LDCs) from 1974 to 1991. The data can be used to test whether and to what extent a decentralized fiscal structure contributes to economic growth rates at the national level. In addition to running panel regressions on the annual data, they also ran regressions

on data sets consisting of three- and five-year averages of the annual data to control for business cycle fluctuations. They use four different measures of fiscal decentralization:

- (1) the ratio of local government revenues to total government revenues;
- (2) the ratio of local government revenues less grants-in-aid to total government revenues
- (3) the ratio of local government expenditures to total government expenditures; and
- (4) the ratio of local government expenditures to total government expenditures less defence and social security expenditures.

For each measure of decentralization, the regression included four baseline regressors: the initial level of Gross Domestic Product (GDP), the ratio of investment to GDP, human capital accumulation and population growth. To control for the existence of fixed effects in the data, the authors included a set of 23 dummy variables — one for each country — in the list of regressors. With the exception of the first measure, when using five-year averages, none of the decentralization measures were significant. The negative coefficient on the first measure is significant at the 10% level of confidence. Next, they tested the robustness of the decentralization variables by including the control variables like imports and exports, foreign bank assets and liabilities, the inflation rate and others. They performed the robustness tests proposed by Leamer (1985) and Sala-i-Martin (1997) for each of the four decentralization measures using annual data and three- and five-year averages. In every case, all four decentralization measures were not robust according to Leamer's extreme bounds criterion. When using the less stringent Sala-i-Martin test, only the first measure with the five-year averaged data was found to be robust and then "only at a fairly weak 10% level of confidence."

Aigbokhan (1999) examines fiscal federalism and economic growth in Nigeria. He employs an endogenous growth model to investigate the pattern of fiscal decentralization in Nigeria and its impact on growth. A single equation model is adopted with three different measures of decentralization:

- (1) Subnational own-source (internally generated revenue) as a ratio of total central (federal) revenue;
- (2) Subnational expenditure as a ratio of total federal expenditure;
- (3) Subnational own-source as a ratio of total federal expenditure.

The Ordinary Least Squares (OLS) technique was used to estimate the model. His findings indicate an inconsistent pattern. On the whole, a negative impact of decentralization on growth was observed for Nigeria in the study. The problem observed with the work is that the time series properties of the variables were not conducted which makes the results obtained likely to be spurious. More so, the OLS technique has been criticized as not too robust when testing interrelationships between variables.

Rodriguez-Pose et al (2007) on fiscal decentralization, efficiency and growth test empirically the assumption that the transfer of powers and resources to lower tiers of government allows for a better matching of public policies to local needs, thus a better allocation of resources. The study analyses the evolution of subnational expenditure categories and regional growth in Germany, India, Mexico, Spain, and the USA. They

use a dynamic regression analysis of regional GDP per capita on the size and variation in the type of expenditure by subnational governments in the sample countries and control for the effect of differences in regional GDP per capita on growth. Their method of estimation differs from other works. They adopt the heteroskedasticity-consistent pooled OLS regression to allow for a presentation of a dynamic picture of the impact of different forms of regional expenditure on growth. The findings indicate that lower levels of economic growth were observed for countries where devolution was driven from above. That greater economic growth could be derived where bottom-up process of devolution was employed.

In a related study by Onwioduokit and Obiora (2007) on Nigeria, the authors found no evidence that fiscal decentralization leads to any meaningful rise in per capita income. The results indicated a positive, but insignificant, relationship between fiscal decentralization and growth. Other studies on developing country cases include Sepulveda and Martinez-Vazquez (2011) and Zakaria (2013). The authors found no clear linkage between decentralization, poverty and inequality.

On the whole, key issues identified with the recent empirical studies can be summarized as:

- (1) measurements of fiscal decentralization;
- (2) the relative relationship between expenditure and revenue decentralization; and
- (3) levels of government.

Finally, most works reviewed in the empirical literature are cross-sectional studies, and cross-country studies have the disadvantage of pooling countries with substantial differences in history, politics, institutions, and culture, which if not taken into account in the analysis are likely to blur the true relationship between fiscal decentralization and growth.

Largely, the empirical studies show either no impact of decentralization on growth or a negative impact for some measures of decentralization in developing countries. With no theoretical model in hand, researchers have had to employ ad hoc approaches toward the choice of specification. Right hand side variables chosen for the regressions were simply those that were found significant in other papers dealing with this subject. Due to the little theoretical guidance available, the set of explanatory variables varies a lot among studies. By controlling for the usual growth factors, these analyses essentially focused on the residual effects of fiscal decentralization. In addition, most of the empirical studies use the traditional OLS analysis and paid little attention to the time series properties of the data.

Empirical studies on decentralization and provision of social services are scant. Robalino et al (2002), Ramani (2002), Oriakhi (2006) and Elhiriaka (2007) are some the works on decentralization and social services. Robalino et al (2002) investigated the linkages between fiscal decentralization and health outcomes. The study was based on a panel of low and high income countries using socioeconomic indicators such as infant mortality rate, GDP per capita, and the share of public expenditures managed by local governments which is used as a proxy for the level of fiscal decentralization. The indicator of fiscal decentralization was defined as the ratio between expenditures managed by local governments and expenditures managed by the central government. From their findings, it was evident that higher fiscal decentralization led to improved

health outcomes (lower mortality rates), particularly in environments with strong political rights and high levels of ethno-linguistic fractionalization.

Ramani (2002) examined the linkage between fiscal decentralization, rural development and poverty reduction, the Sri Lankan perspective. His analysis approached the issue of decentralization in terms of minimizing the costs of infrastructure provision, adopting a regional perspective to analyse the issue of ensuring the functionality of systems that cross jurisdiction boundaries. The author used descriptive analysis of some basic social services, human poverty index and output growth of regions in Sri Lanka provinces. He argued that intergovernmental transfer system could certainly help target resources to disadvantaged jurisdictions and improve pro-poor projects within jurisdictions. In addition, different factor endowments of different jurisdictions may make it more cost-effective for one to provide services to another.

In a similar study, Oriakhi (2006) examined fiscal decentralization and efficient service delivery in Nigeria. His work was purely descriptive based on data on education indicators, health indicators and other infrastructural facilities. He posited that service delivery by subnational governments had been poor and attributed it to some constraints such as the mismatch between expenditure assignments and sources of revenue, lopsided vertical allocation formula which favoured the federal government, rent seeking and ineffective monitoring of public expenditures among others.

The following remedial measures were suggested as means of improving service delivery at the subnational levels of government:

- i) The need to reform and modernize institutions and processes for budgetary and financial management,
- ii) Devolution of a greater share of both revenue/tax sources and funds allocated from the federation account to subnational levels of government and
- iii) The need to tie budget items to community-based projects and empower the communities to track such expenditures.

More recently, Elhiriaka (2007) investigated fiscal decentralization and public service delivery in South Africa using cross-sectional data for nine provinces. He estimated education and health equations using random effects and fixed effects procedures. Own-source revenue and intergovernmental transfers were explored to determine the ability of the provincial governments to meet their expenditure responsibilities. Findings demonstrated that own-source revenue variable had a negative and significant impact on demand for health relative to demand for other public services. Demand for health services was found to be independent of changes in the share of intergovernmental transfers in the total province revenue. While the work could not adequately assess the intergovernmental transfer system due to data limitations, Elhiriaka (2007) argued for increased fiscal decentralization and greater revenue autonomy, in particular to improve service delivery in South Africa.

For Ghana, Akramov and Asante (2009) developed a simple framework that explains disparities in local public services between decentralized districts. The result of their finding suggests that geography and ethnic diversity are important determinants of local public service delivery.

Overall, the empirical literature on the impact of decentralization on the provision of

social services in Nigeria is scant. The available ones are mainly qualitative which have helped to understand the pros and cons of decentralization. The magnitude of its impact on health and education outcomes remains largely non-quantified. This quantitative measurement is vital as it gives more precise information to assist in policy formulation which is what the current research seeks to provide.

Framework and model specification

A simple model predicated on a fiscally decentralized system is explored. The evidence offered focuses on the effects that greater local control of the finance and administration of primary services has on service uptake by local citizens. It is predicated on the fact that education and health services are jointly provided by central and state governments. But before the empirics of the question, it is important to provide the underlying interactions between the centre and the periphery. To better appreciate how the interactions affect provision of a common local public good, a simple model is explored. In this model, as previously discussed, the major channel through which fiscal decentralization is likely to affect health and education outcomes is an increase in levels of allocative and technical efficiency. A decentralized system is expected to better allocate scarce resources. To make the idea more formal, a benevolent policy maker is considered. The policy maker attempts to maximize the national average health and education outcomes.² The framework employed in this section draws from Robalino et al (2002) but with some modifications.³ It is assumed that within each state g in a country, the outcome indicator M is a function of structural characteristics of the state (e.g., population and resource base), represented as φ and the allocation of revenue x_{gi} among a set of services i . This is expressed as:

$$M_g = f_g(\varphi, x_{g1}, \dots, x_{gi}), \quad (1)$$

It is further assumed that $f(\cdot)$ is a continuous function which validates I

$\frac{\partial f_g}{\partial x_g} > 0$ and $\frac{\partial^2 f_g}{\partial x_{gi}^2} < 0$, such that an increase in revenue to the state increases health and education outcomes indicators. Then the problem is solved by the policy maker. Put

differently, the function specified expresses the optimization of a social welfare and is expressed as;

$$Max_x : M = n_g f_g(\varphi, x_{g1}, \dots, x_{gi}) - \lambda(x_{gi} - Y), \quad (2)$$

Where n_g is the contribution of region g to the national average and Y is the total budget to be allocated. The assumption underlying Equation 2 is that a balanced budget is maintained in the analysis. The budget is taken as given. Further interpretation suggests that revenues need to be allocated in a way that the marginal impact of an additional naira to a service i in state g (adjusted by its weight n_g), differs across all states but is optimal.⁴

A second scenario assumes that policy makers are not benevolent and have objective functions that respond to political incentives rather than social welfare. In these cases, the functions used to allocate revenue will be different from $f_g(\cdot)$ and therefore observed revenue (x_{gi}^{obs}) will be sub-optimal. By extension, the revenue allocation to each state g defined by $y_g^{obs} = x_{gi}^{obs}$ will be sub-optimal as well.

It is straightforward to show that for a given region g , $x_{gi}^* = x_{gi}(\phi, Y)$ are also solutions to the problem:

$$Max_{x_{gi}} : M = f_g(\phi, x_{g1}, \dots, x_{g1}) - \lambda (x_{gi} - Y_g^*), \quad (3)$$

where Y_g^* is the optimal revenue of region g .

Equation 3 gives the problem that would be solved by a sub-national policy maker in control of budget Y_g^* . It is observed that the allocation of resources by state governments will generate national optimum only if the budget allocated to each state was optimal in the first place. However, even if the revenue $Y_g = x_{gi}^{obs}$ is suboptimal, their management by the state governments can improve the health and education outcome as long as local authorities have a better knowledge of $f_g(\cdot)$. If the revenue allocated to the state is suboptimal, the resulting level of expenditure in each state will be different from the optimal level; nevertheless, the relative level of expenditure will be optimal. It would thus become;

$$\frac{x_{gi}}{y_g^{obs}} = \frac{x_{gi}^*}{x_{gi}^*}.$$

When the revenue is managed centrally, the level of inefficiency in the allocation to health and education can be measured by $\frac{x_{gi}^*}{y_g^*} = \frac{x_{gi}^{obs}}{y_{gi}^{obs}}$. It is important to note that it becomes $u_{gi} = 0$. Hence, $u = u_{gi}^2$. can be seen as a general indicator of inefficiency.

Clearly, u will be a function of the share S of the total revenue Y that is managed by the state governments. The partial derivative of u with respect to S will depend on the relative levels of efficiency of the state and central governments of public expenditures.⁵ Hence, it can be proposed that:

$$\frac{\partial U}{\partial S} = C(c - I) \quad (4)$$

where c and I are indicators of the level of efficiency in managing public resources of the central and state government respectively. Given this, if $c > I$ (meaning the institutional capacity at the local level is low relative to the centre), an increase in the share of public revenue controlled by the state governments will increase inefficiency and reduce health outcomes and vice versa.

Based on the outlined assumptions, the health and education indicator can be expressed as:

$$M = f(\varphi, x(\varphi, Y)) - h(U(S)) = g(\varphi, Y) - h(U(S)), \quad (5)$$

Where h is a continuous and monotonic function which gives the loss in the outcome indicator resulting from inefficiencies in the allocation of public resources.

A first order expansion of (5) gives:

$$\begin{aligned} M &= g(0) + (\varphi - \varphi_0) \frac{\partial g}{\partial \varphi_0} - h(U(S_0)) \frac{\partial h}{\partial U_0} \frac{\partial U}{\partial S_0} \\ &= \left[g(0) - \varphi_0 \frac{\partial g}{\partial \varphi_0} - h(U(S_0)) + S_0 \frac{\partial h}{\partial U_0} \frac{\partial U}{\partial S_0} \right] + \frac{\partial g}{\partial \varphi_0} \varphi - \frac{\partial h}{\partial U_0} \frac{\partial C}{\partial (c - I)} S, \\ &= \alpha_0 + \alpha_1 \varphi + \alpha_2 S \end{aligned} \quad (6)$$

Hence, the sign of α_2 provides information on the relative levels of efficiency of central and state planners in allocating resources. It is reasonable to expect that α_2 is itself a function of the state level of development and other structural factors such as the population figure. A simple formulation of the hypothesis would be:

$$\alpha_2 = a_0 + Xb' \quad (7)$$

where X a row vector of structural factors, and b is a row vector of parameters to be estimated.

On the basis of models (6) and (7), equations 8 and 9 are estimated

$$\log IMR_{it} = a_0 + a_1 \log S_{it} + a_2 \log POPN_{it} + a_3 \log OS + v_i + e_{it} \text{-----} 8 \quad (8)$$

$$\log LR_{it} = b_0 + b_1 \log S_{it} + b_2 \log POPN_{it} + b_3 \log OS + v_i + e_{it} \text{-----} 9 \quad (9)$$

where IMR is the infant mortality rate, LR is literacy rate, S is the percentage of total revenue managed by the state governments (used as a proxy for decentralization), X is a vector of structural indicators (population growth and own source of revenue), v_i are state specific shocks, and e is white noise. Following the specification of a double log model, the slope coefficients represent elasticities. In the ensuing section, the data and estimation strategy are discussed.

Scope and sources of data

The focus of the research is on Nigeria. The choice is made out of the fact that Nigeria is undergoing some economic reforms, and there is a drive towards achieving the Millennium Development Goals. More importantly, the role of local authorities in achieving increased service delivery is increasingly appreciated in Nigeria. Annual series for fiscal decentralization, health and education outcomes are employed. This choice is based on the availability of data on the relevant variables covering the period 2002-2009 for 36 states and the federal capital territory. The specific data employed are:

- (i) an index of decentralization measured as the ratio of central revenue to state revenue;
- (ii) a measure of health outcomes (infant mortality rate); and
- (iii) a measure of education outcome (adult literacy rate).

Other structural factors that influence fiscal decentralization, including, population growth and states' own revenue, are included in the model. The hub of the research is to investigate the effect of fiscal decentralization on social service delivery (health and education outcomes). Data are drawn from World Development Indicators (WDI) CD-ROM 2009 and annual publications of the National Bureau of Statistics (Nigeria) 2009.

Contained in Table 5 is a description of the measures of decentralization and other variables employed in the research. It provides an explanation of how the measures were constructed.⁶ Fiscal decentralization connotes the shift of government activities from the central to the local levels. It is important to note that decentralization indicators employed in the work include only the federal and state data. Local tax and expenditures are excluded owing to lack of data.

Table 1: Description of variables

Indicators	Measurement
1. Revenue decentralization	The total revenue of state governments divided by the total revenue of central and state governments.
2. Expenditure decentralization	The total expenditure of state governments divided by the total expenditure of central and state governments
Health indicator	Infant mortality rate
Education indicator	Literacy rate
Structural indicator	Population growth of each state

Empirical strategy

A panel of the 36 states and the federal capital territory covering the period 2002-2009 is employed. The number of observations available is 296. For each state, an observation is made of infant mortality rate, an indicator of fiscal decentralization, and a structural indicator (population of each state). The indicator of fiscal decentralization is defined as the ratio between revenue managed by the central government and revenue managed by the state. The outcomes of health and education are used as proxy for the measurement of service delivery. Specifically, infant mortality rate captures health outcome while literacy rate represents education. A panel analysis of the outcomes of these services and fiscal decentralization is undertaken. State-specific effects and differences in wealth and revenue resources of different states are considered. This enhances focus on the specific effect of fiscal decentralization on the delivery of the social services.

Estimation results

The estimation begins with a preliminary analysis of the data. Contained in Table 6 is the summary statistics of the model variables. From the analysis, the variance is not equal to zero; hence Equation 8 cannot be estimated using OLS method. Fixed effects models and random effects models are standard alternatives. The estimation of the education and health equations were done using random and fixed effects procedures. In all cases, the Hausmann Chi-Square test suggests that the random effects model is superior to the fixed effects one.⁷

Table 2: Summary statistics of variables

Variables	Observations	Mean	SD
Infant Mortality Rate	298	13.6	9.72
Literacy Rate	298	32.5	32.1
Population Rate	298	4.8	3.8
Own Revenue	298	23.32	20.29
Fiscal Decentralization Index	298	13.3	12.19

Source: Author's estimation

Reported in Table 7 is a summary of results for the fixed effect and random effects estimations for models (8) and (9). The estimated equations have good fit in terms of the standard error. The overall R2 is relatively fair. Probably the inclusion of some relevant variables could improve the R2. Given the high degree of correlation between own-source revenue and transfers, which almost add up to 100% in some states, the two variables were entered separately.

Table 3: Random effects for models (8) and(9)

Dep. Variable = IMR	Coefficient	T-Statistic	Dep. Variable = LR	Coefficient	T-Statistic
Constant	46.825	16.6**	Constant	13.61	6.4**
LogS	-1.25	3.5**	LogS	1.32	2.7**
Log Popn	0.50	0.055	Log Popn	-0.62	0.521
LogOS	-1.43	4.03**	LogOS	1.05	4.2**
Chi2#	38.9		Chi2 #	4.1	
S.E	1.82		S.E	1.21	
		Observations 296			Observations 296
		Groups (37)			Groups (37)
		R2 Between 0.56			R2 Between 0.57
		R2 Total 0.47			R2 Total 0.48

Notes: Method of estimation: Random Effects, * and ** indicate significance at 5% and 10% levels, respectively; # Hausmann chi-square test statistic for the Random-effects versus Fixed-effects model.

Source: Author's estimation

Interpretation of results

The findings show that higher share of decentralized revenue tend to lower mortality rates and increase literacy rates. This does not imply that higher decentralization automatically results in improved health and education outcomes. However, evidence supports the view that if state governments are strengthened with more resources from the centre then fiscal decentralization is likely to improve health and education outcomes. In particular, a unit increase in fiscal decentralization index results in a 1.25 decrease and 1.32 increase in infant mortality rate, and literacy rate respectively. Given that Nigerian subnational governments are mainly responsible for financing basic public services such as primary health and education, decentralization creates the potential for further improvements in the financing of these priority sectors. In Nigeria, federal grants to the states are seen as a common instrument to improve efficiency of intergovernmental cooperation. They are used by federal governments to influence states' resource allocation and encourage them to improve financing of key services in line with national priorities.

To evaluate the role of the size of the state on decentralization and infant mortality rate, the population of each state was introduced into the model. The coefficient of the population rate indicator is insignificant in both models. This implies that population growth rate is not significant in determining the effect of decentralization on health and education outcomes. One possible interpretation of this result is that high population growth rate at the subnational level weighs down on the resource allocation effort at the centre. This complicates progress in improving service delivery at the subnational levels.

A striking feature of the results is that, the coefficient of own-source of revenue is significant in both models. This suggests that the positive effect of fiscal decentralization on infant mortality rate and literacy rate is higher in states with lower own-source of revenue. Evidently, a unit increase in own source revenue results in 1.43 units decline in infant mortality rate and 1.05 units increase in literacy rate. This does not come as a surprise. A plausible explanation for this finding is that when own-source of revenue is high, state governments can better fund health and education services with internally generated revenue, thus depending less on transfers from the federal government. It further points to the fact that fiscal decentralization tends to be less effective in improving health and education outcomes when own source of revenue is high. As explained in the background section of the work, revenue sharing is skewed in favour of the central government. This means the federal government retains much of the centrally collected revenue. A smaller percentage is allocated to the lower tiers of government. Hence, the states with high levels of own-revenues spend it locally and have relatively little use of revenue distributed from the federal government. A typical example is the case of Lagos State where internally generated revenue has increased significantly over the last five years and has reduced the state's dependence on revenue from the centre. A consequence of this is improved services recorded in Lagos State of Nigeria.⁸

5. Summary of the findings

The study explores the linkages between fiscal decentralization, infant mortality rate and literacy rate. The research is based on a panel of 36 states and the federal capital territory in Nigeria. Socioeconomic indicators, such as infant mortality rate and literacy rate, are employed to measure service outcomes. The ratio of state government revenue to federal government revenue is used as a proxy for the index of fiscal decentralization.

The following major findings were evident:

- i) Higher fiscal decentralization is consistently associated with lower mortality rate and higher literacy rate
- ii) Benefits from fiscal decentralization are not particularly important for states with high population and low internally-generated revenue
- iii) The internally generated revenue enhances literacy rates and reduces infant mortality. This demonstrates the need to improve state autonomy and reduce dependence on transfers from the centre.

Largely, the results of the estimated models should be interpreted with caution: first, given measurement problems associated with aggregated state data; second, the indicator of fiscal decentralization used in the analysis is a crude proxy for the fiscal decentralization process and may not be a true representation of the index. Nevertheless, some policy recommendations are to be drawn.

6. Policy recommendations

Certain policy implications arise from the discourse. Prominent among them are highlighted in this section.

- i) Fiscal decentralization should be encouraged as it is shown to contribute positively towards improved health and education outcomes. However, it is important to stress that the results presented in this research do not imply that fiscal decentralization is a magic recipe to improve health and education outcomes. The central government should be able to influence local policy and implementation without compromising the autonomy of local decision making from which many of the benefits of a devolved system is expected to flow.
- ii) Subnational governments, particularly state governments, must promote internally generated revenue and rely less on subventions from the central government.

On the whole, the research findings provide useful information for the ongoing economic reforms in Nigeria. The key policy making arm of the three tiers of government should also benefit from the findings. Further research in the subject is, however, necessary.

Notes

1. The arguments presented in these studies are discussed in the sections under literature review.
2. This assumption does not necessarily reflect reality, but it allows a definition of a best case scenario to serve as reference in the empirical analysis.
3. The measure of decentralization and structural indicators used in this model differ from Robalino et al (2002).
4. In reality, various factors deviate revenue from their optimal use. First, policy makers at the centre may have scant information about the function $fg(.)$
5. An assumption here is that revenue equals expenditure. This assumption is rather restrictive and does not depict reality. However, it will assist in the empirical analysis. More so, data availability is also a fundamental reason.
6. The literature identifies three basic measurements of decentralization; administrative, economic and fiscal decentralization (Yusuf, 1994). However, for the purpose of this study and owing to availability of data, fiscal decentralization is explored.
7. The Eviews 7 was employed in the estimations.
8. Details are available in the Lagos State website (www.lagosstate.gov.ng).

References

- Ahmad, E., G. Brosio and V. Tanzi. 2008. "Local service provision in selected OECD countries: Do decentralized operations work better?" *Working Paper No. 08/67* International Monetary Fund. Washington, D.C.
- Ahmed, J., S. Devarajan, S. Khemani and S. Shah. 2005. "Decentralization and Services Delivery." World Bank Policy Research Paper No. 3603. The World Bank, Washington, D.C.
- Aigbokhan, B.E. 1999. "Government size and economic growth." *Fiscal Federalism And Nigeria's Economic Development*. Nigerian Economic Society Annual Conference Proceedings, Ibadan, Nigeria.
- Akromov, T.K. and F. Asante . 2009. "Decentralization and Local Public Services in Ghana: Do Geography and Ethnic Diversity Matter?" *IFPRI Discussion Paper No. 00872* IFPRI.
- Bahl, R.W and J. Linn. 1992. *Urban Public Finance in Developing Countries*. New York Oxford University Press.
- Breton, A. 2002. "An introduction to decentralization failures." In E. Ahmad and V. Tanzi eds, *Managing Fiscal Decentralization*, 31-45. London: Routledge.
- Collier, P. 2008. "Oil, growth and governance in Nigeria. In P. Collier, C. Pattilo, and C. Soludo (eds). *Economics Policies for a Prosperous Nigeria*, pp. 45-60. New York: Palgrave.
- Crook, R.C. 2003. "Decentralization and poverty reduction in Africa: The politics of local-centre relations". *Public Administration and Development*, 23:77-88.
- Davoodi, H. and H. Zou 1998. "Fiscal decentralization and economic growth: A Cross-country study". *Journal of Urban Economics*, 43(2): 244-57.
- Ekpo, A. H. 1994. "Fiscal federalism: Nigeria post-independence experience, 1960-90". *World Development*, 22(8):1129-46.
- Ekpo, A.E. and J.E. Ndebbio. 1996. *Fiscal Operations in a Depressed Economy: Nigeria, 1960-90*. AERC Research Paper No. 44. African Economic Research Consortium, Nairobi.
- Elhiriaka, A.B. 2007. "Fiscal decentralization and public service delivery in South Africa". *WIP* No. 58. African Trade Policy Centre.
- Emiliani, N., S. Lugaesi and E. Ruggiero. 1997. "Italy" in Ter-Minassian T. (ed.) (1997).
- Faguet, J-P. and F.S. Fabio. 2009. "Decentralization and access to social services in Columbia". *CEDE*, Facultad de Economia, Universidad de Los Andes.
- Feltenstein, A. and S. Iwata. 2005. "Decentralization and macroeconomic performance in China: Regional autonomy has its costs." *Journal of Economic Development*, 76:481-501.
- Guldner, M. 1995. "Health care in transition in Vietnam: Equity and sustainability". *Health Policy and Planning*, 10 (Supplement): 49-62.
- Jimenez, D. and P. Smith. 2005. "Decentralization of health outcomes and its impact on health outcomes." *Discussion Papers in Economics*, 2014 (16). The University of York.
- Leamer, E.E. 1985. "Sensitivity analyses would help". *American Economic Review*, 57(3), 308-313.
- Mbanefoh, G.F. 1993. "Unsettled Issues in Nigerian Fiscal Federalism and the National Questions." *The National Question and Economic Development in Nigeria*. Selected Paper of the 1993 Annual Conference of The Nigerian Economic Society.

- Musgrave, A. R. 1959. *The Theory of Public Finance*. New York, Toronto, London: McGraw-Hill Book Company, Inc.
- National Bureau of Statistics. 2009. Nigeria Database.
- Onwioduokit, E.A. and K.I. Obiora 2007. "Fiscal Decentralization, Inflation and Economic Growth: Further evidence from Nigeria". *West African Journal of Monetary and Economic Integration*, 7(1): 11-19.
- Oriakhi, D.E. 2006. "Fiscal decentralization, public expenditure and efficient service delivery: An assessment of the performance of subnational levels of government in Nigeria". Paper presented at a Workshop on Public expenditure and Service Delivery in Africa. Lusaka, Zambia, 9-11 October 2006. Lusaka, Zambia.
- Ramani, J. 2002. "Fiscal decentralization and poverty reduction in Sri Lanka" Paper prepared for the International Seminar on Monetary and Fiscal Policy and Poverty and Public Policy, Institute for Social and Economic Change, Nagarabhavi, Bangalore, India, 17-18 January 2000.
- Robalino, D.O., F. Picazo and A. Voetberg. 2002. "Does fiscal decentralization improve health outcomes? Evidence from cross-country Analysis". Policy Research Working Paper No. 2565. World Bank, Washington DC.
- Rodriguez-Pose, A., S. Tijmstra and A. Bwire. 2007. "Fiscal decentralization, efficiency and growth." Department of Geography and Environment. London School of Economics.
- Sala -I-Martin, X. 1997. "I just ran two million regressions". *American Economic Review*, 87: 178-183.
- Sepulveda, C. F. and J.Martinez-Vazquez. 2011. "The consequences of fiscal decentralization on poverty and income equality." *Environment and Planning: Government and Policy*, 29(2):321 – 343.
- Spahn, D. 1997. "Decentralized government and macroeconomic control." Infrastructure Notes. FM-12 The World Bank, Washington, D.C
- Schwartz B. J, D.K. Guilkey and R. Racelis. 2002. "Decentralization, allocative efficiency and health service outcomes in the Philippines". Working Paper Series, USAID.
- Tanzi, V. 1995. "Fiscal Federalism and decentralization: A review of some efficiency and macroeconomic aspects." In M. Bruno and B. Pleskovic (eds). *Annual World Bank Conference on Development Economics*, Washington D.C.: World Bank, 295-316.
- Woller, G.M. and K. Phillips. 1998. "Fiscal decentralization and LDC economic growth: An empirical investigation". *Journal of Development Studies*, 34 (4): 139-148.
- World Bank. 2001. "Decentralization and governance: Does decentralization improve public service delivery?" Open Knowledge Series. The World Bank, Washington D.C.
- World Development Indicators CD ROM 2009.
- Yusuf, S. 1994. "China's Macroeconomic Performance and Management During Transition." *Journal of Economic Perspectives*, 8(2): 71-92.
- Zakaria, S. 2013. "The impact of fiscal decentralization toward regional inequalities in Eastern Region of Indonesia." *Journal of Economics and Sustainable Development*, 4(10): 74-84.
- Zhang, T. and H. Zou. 1997. "Fiscal decentralization public spending and economic growth in China". *Journal of Public Economics*, 67: 221-240.

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