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Is there an "invisible hand" in the formula-based intergovernmental transfers in Nigeria?

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Abstract

Intergovernmental transfers are susceptible to the tactical influence of the transfer-giving government notwithstanding the institution of a formula-based system under the control of an independent institutional body. This study explores the arrangement of intergovernmental transfers in Nigeria, where the formula-based system under the control of a constitutionally recognised body is in place, using the data from the year 2007 to the year 2016. The general conclusion from this study does not support equity considerations but rather tactical manipulation in intergovernmental transfers. Results suggest that states with poor fiscal capacity, especially the rural and less developed states, receive lower transfers per capita, contrary to equity considerations. There is evidence that transfers to states under the control of opposition parties and term-limited governors are lower. Additionally, transfers are strategically increased to all states during election periods possibly for the federal government's political base enlargement and strengthening.

1. Introduction

Intergovernmental relations engender a cooperative system in governance which entails responsibilities and resources sharing. Normative theories of intergovernmental transfers of the Arrow-Musgrave-Samuelson[1] (AMS) tradition dictate that transfers should be determined on the bases of equity and efficiency for even provision of public services and development across the subnational geopolitical space in a federation (Musgrave, 1999; Oates, 1972, 1999, 2005). However, there is a growing literature showing that intergovernmental transfers are laced with political considerations and susceptible to a political instrument in the hands of the central government. This happens especially where transfers are discretionary and/or form the bulk of revenues of the subnational governments. To stem this anomaly, two institutional mechanisms have been designed: the establishment of formulae for allocation of intergovernmental transfers, and the establishment and delegation of distribution of transfers to independent agencies (Khemani, 2007). Even so, the manipulation of transfer-receiving governments for political gains by the transfer-giving governments is evident in many countries (Boex & Martinez-Vazquez, 2005).

This study is the first to explore the Nigerian specific peculiarities under the formula-based revenue-sharing arrangement between the federal and subnational governments. Although the extant practice in Nigeria conforms to the formula-based approach, it may not be completely free of opportunism and targeting as the institutional body's executives are appointees of the president. Additionally, the existence and acceptance of a formula are based on a political equilibrium that exists at a particular time which may give way to another formula in the face of a new political development. In realisation of the above facts and the lack of a detailed country-specific study on Nigeria, this study explores the political economy of intergovernmental transfers in Nigeria.

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[1] See Oates (2005) for a detailed discussion of this view.

Our study is important for several reasons. First, although there is a growing literature on the politics of intergovernmental transfers, the number of studies focusing on developing countries, particularly from Africa, is very limited. As far as we know, only the cases of Ghana, Senegal and Tanzania have been analyzed (Allers & Ishemoi, 2011; Banful, 2011, Caldeira, 2012). Thus, Nigeria being the most populous and a leading economy in Africa with its constitutional federalism needs to be studied. Secondly, the Nigerian environment presents an interesting case given the moral hazard and tax exporting issues occasioned by attempts to balance development across the subnational political space through intergovernmental transfers. Besides, this study discusses the peculiarities of the Nigerian federalism that make distributive politics inherent in intergovernmental transfers. The political developments and ethnic rivalry lay emphasis on equality in revenue sharing at a horizontal level. This does not reflect the developmental needs of constituent units of the federation. In particular, equality determines the largest chunk of what goes to states from the distributable revenues despite differences in the rate of urbanisation and the need to fund developmental projects to cope with the urbanisation.

Our empirical results suggest intergovernmental transfers are not allocated based on equity and efficiency. There exists political targeting in the formula-based intergovernmental system in Nigeria. Intergovernmental transfers are strategically used to enlarge the political base and guarantee the reelection of the government at the center. The study shows that rural and agrarian states receive lower transfers. Besides, states including mineral-producing states under the control of the opposition governments and term-limited governors are penalized in allocation of transfers, but transfers are generally increased to states around election periods. While, mineral-producing states are specially treated, possibly for their credible threat of secession.

The study is organised as follows. The following section presents the literature review. Section three focuses on intergovernmental transfers in Nigeria and its institutional foundation.

Section four discusses the methodology. Section five presents empirical results. Finally, section six concludes the paper.

2. Literature Review

The normative theory of revenue allocation among tiers of governments in a multi-level governance structure emphasises equity and efficiency in determining how much is granted to the various levels of government vis-à-vis their responsibilities. In this view governments are social planners maximizing the welfare of the people at each jurisdiction. However, political motives may interfere in the allocation process. Thus, policies are crafted for votes as politicians are profit maximising agents, like entrepreneurs selling products for money (Downs, 1957). Two strands of models have been developed to explain how incumbent politicians use intergovernmental transfers to promote their probability of re-election at the pools: the political budget cycle models, and the tactical redistribution models.

Political budget cycle (PBC) models (Rogoff & Sibert, 1988; Rogoff, 1990) assume that the incumbent officeholder knows his level of competence better than the electorates. Rogoff and Sibert (1988) posit that competency is the ability to provide a given level of government services with less revenue. Given the temporary information asymmetry, when facing an election, the incumbent has an incentive to take advantage of voters by signalling competence through a reduction in taxes. Taxes are immediately visible by voters while any error by the government is observed with a lag through a distorting seigniorage tax or a deficit.[2] Rogoff

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[2] The political budget cycle models of Rogoff and Sibert (1988) and Rogoff (1990) focus on fiscal policy and assume voters' expectations are rational. These models were inspired by Nordhaus (1975) that pioneered the literature on political business cycles. Nordhaus (1975) was the first to admit that macroeconomic variables are influenced by opportunistic electoral motivations. Assuming that governments care only about their re-election prospects and that voters' expectation are adaptive, governments can exploit the

(1990) proposes a similar model in which the incumbent officeholder has an incentive to bias public expenditures in favour of current consumption expenditures and delays public investment. More recently, alternative models of political budget cycles (Shi & Svensson, 2006; Alt & Lassen, 2006) have been developed where all politicians, regardless of their competence, have an incentive to manipulate fiscal policy to signal competence and win elections. The literature on PBC has also shown that the electoral budget cycle is a positive function of the political rents of the incumbent (Shi & Svensson, 2006) and negatively related with the share of informed voters (Shi & Svensson, 2006) and transparency (Alt & Lassen, 2006). There is also evidence that they are stronger in young democracies (Brender & Drazen, 2005; Shi & Svensson, 2006) and less salient in the presence of term limits (Aidt & Shvets, 2012; Veiga & Veiga, 2019).

The literature on tactical redistribution is spearheaded by Cox and McCubbins (1986), and Lindbeck and Weibull (1987). Cox and McCubbins (1986) view electoral politics as a redistributive game in which electoral candidates plan welfare redistributive programs among groups in their constituency for political gains. They contend that risk-averse candidates invest relatively more in their core supporter groups while risk-loving candidates invest more in swing voters. On the other hand, Lindbeck and Weibull (1987) view voters and the political office-seekers as two self-interested and maximising agents who interact in the political system. Given the nonsymmetric reaction to transfers and taxes, and that transfers can be targeted at a specific group, Linbeck-Weibull hypothesises that electoral candidates will target large transfers at swing voters.

Building on the previous models, Dixit and Londregan (1996) show that, under a majority voting with two competing parties, if the parties are efficient in targeting transfers at any group,

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short-run Phillips curve to boost their re-election prospects. Unemployment and inflation are therefore subject to cyclical fluctuations according to the electoral cycles. See Dubois (2016) and Veiga et al. (2019) for surveys.

the model explains the swing voter theory; but, if parties are only effective in delivering targeted transfers to their core support group, the model explains the core constituency theory. Dixit and Londregan (1998) offer an additional explanation. They argue that parties adjust their ideological positions to take care of both ideological and pork-barrel components of their public policies to attract the swing voter groups whose cut-points change in response to redistribution promises targeted at them.

The number of empirical studies analyzing the political economy of intergovernmental transfers is extensive, but most papers focus on the U.S. or Western European countries. Most studies find evidence supporting political budget cycles models; that is, that the central government increases transfers at election periods to boost its re-election chances. However, evidence on whether the allocation of transfers is skewed in favour of jurisdictions which give the incumbent the strongest support at the election or to those with more swing voters is mixed.[3]

Even though political influences on fiscal policy are more salient in young democracies where institutions are weaker, incumbent politicians can extract larger rents while in office and voters are less informed, only a few studies focus on developing countries. For Latin American countries, which initialized their democratization and decentralization processes mostly during the 1980s and 1990s, only the cases of Argentina (Porto & Sanguinetti, 2001), Mexico (Costa-i-Fonta *et al*., 2003) and Brazil (Brollo & Nannicini, 2012) have been analyzed. In Asia, only India,

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[3] Results depend on the specific features of each country, namely the electoral system and the institutional rules for the allocation of intergovernmental transfers. For studies on developed countries, see among others, Dalhberg and Johansson (2002), Johansson (2003), Akhmedov and Zhuravskaya (2004), Ansolabehere and Snyder, Jr (2006), Veiga and Pinho's (2007), Sollé-Ollé (2013), Veiga and Veiga (2013), Simón-Casano et al. (2014), and Kauder *et al.* (2016).

which has a long-established democracy (Arulampalam *et al*., 2009) and Indonesia (Gerrit *et al*., 2018) have been researched. There is also a gap in the literature regarding African countries.

Several African developing countries recently embraced decentralisation reforms after years of colonial rule and long civil wars. An increase in the number of multiparty systems, and the pressure from regional and ethnic groups for more autonomy have increased the demand for decentralization. To eliminate political targeting and ward off its institutional weakening effects in intergovernmental transfers, many countries have evolved a formula-based system of intergovernmental transfers under an institutional manager.[4] Despite the appealing characteristics of African countries for research, only three studies have been conducted to examine the impact of these institutional mechanisms in limiting political manipulation in intergovernmental transfers. For Ghana (Banful, 2011), Tanzania (Allers & Ishemoi, 2011) and Senegal (Caldeira, 2012) there is evidence that the formula-based intergovernmental transfer mechanisms did not eliminate politically motivated targeting in intergovernmental transfers. In this paper, we focus on the Nigerian case.

3. Intergovernmental transfers in Nigeria

This section presents some background information on the political and institutional features of the Nigerian fiscal federalism.

3.1 Institutional foundation of the Nigerian intergovernmental transfers

The Nigerian state is constitutionally a multiparty presidential federal democracy.[5] The federal system of government entails multiple governmental jurisdictions under the same sovereign

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[4] See Khemani (2007).

[5] At independence, Nigeria ran a parliamentary system of government until the army took over in 1966. The presidential system of the American type was introduced at the beginning of the second republic in

authority where powers and authorities are shared among various jurisdictions that make up the state.[6] The federal system of government which emerged from the amalgamation of different geopolitical entities has been in place before the Nigeria's independence in 1960, albeit with various modifications. At independence, the Nigerian federal system of government comprised the central (federal) government and three regions at the subnational level. However, the Nigerian geopolitical structures have undergone many changes until 1996 when the last major changes to the second administrative level (state) of the federal structure were made. The Nigerian federal system of government currently embraces a three-level system of federalism: the central government, state governments,[7] and local governments. The 1999 federal Constitution, which was adopted after the last modification to the federal structures, recognises the central government, 36 autonomous states, a semi-autonomous Federal Capital Territory (FCT), Abuja and 774 local governments.[8]

The Nigerian Constitution specifies the functions as well as the revenue-generating powers and sources of revenues for each level of governments in Nigeria. These functions, powers, and revenue sources have also undergone many changes. They change according to political developments, particularly when there is a change in the Constitution of the country. These functions which require the assignment of expenditures responsibilities are enshrined in the Nigerian 1999 Constitution. Statutorily, all revenues realised by the federal government,

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1979. Its operation continues in the fourth republic, which began in 1999 under the 1999 Federal Constitution.

[6] See Gómez-Reino and Martinez-Vazquez (2013) on fiscal decentralisation across the globe.

[7] The regional system was in place pre-and post-independence in Nigeria until 1967 when the regions were replaced by states.

[8] See Table A1 in the Appendix for a summary of the number of governments in each layer of government, since 1960.

after deduction of costs, are paid into the federation account[9] as stipulated in Section 162(1) of the 1999 Constitution. The federal government receives the largest chunk of revenues according to the extant vertical sharing formula of 52.68%, 26.72% and 20.60% for the federal, state and local governments respectively. This formula has been in existence since the year 2004 against the constitutional provisions which underscores the influence of politics over institutions in intergovernmental revenue allocation (Khemani, 2007). Other statutory allocations must be made before the balance in the federation account is shared. These include the 13 percent derivation funds which are deducted from revenues realised from the production of mineral resources that are economically profitable to be shared by states from which those resources are sourced.[10]

Revenue sharing is a highly contentious issue in Nigeria's federalism.[11] This has necessitated the use of a formula-based system of revenue allocation, and the constitution of an institutional body to oversee this arrangement. Before and under the present institutional

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[9] The federation account is a metamorphosis of what was recommended as "Distributable Pool Account" in the pre-independent Raisman Commission's Report of 1958. Certain revenues of the federal government are exempted from this provision such as the personal income tax (PIT) of the personnel of the armed forces, the police, the ministry of foreign affairs, and the residents of the FCT, Abuja. The revenue in the federation account is shared by the Federal Account Allocation Committee (FAAC) whenever fund is to be shared among tiers of government.

[10] The term mineral producing state is used here because the derivation principle in no longer limited to oil resources, it now includes other minerals that are economically profitable.

[11] Various commissions' reports and constitutions before and after independence document issues on the Nigerian fiscal federalism. The literature on fiscal federalism in Nigeria, such as Adamolekun (2005) and Phillips (1971, 1999), is replete with contentious issues of the Nigerian federalism. The focus here is to find out if there is an element of political targeting in federal finance in Nigeria, despite the formula-based revenue allocation system.

body, Revenue Mobilization Allocation and Fiscal Commission (RMAFC), many vertical sharing formulae have been evolved to placate ethnic groups on revenue allocation.[12] The existence of vertical allocation requires a sharing formula for the horizontal revenue allocation particularly in a multi-ethnic society like Nigeria where there are mistrust and moral hazard on revenue issues. This arises out of the ways and manners the federal government has handled revenue allocation. This is reflected in the variables that make up the horizontal revenue allocation formula which has not changed since the return to civil rule in the year 1999.[13] Equality determines a large chunk (40%) of what is transferred to states in revenues from the federal government any time revenue is shared.[14] This leads to less than optimal allocations with concomitant ills under the federal arrangement such as tax exporting, moral hazard, and debts.

Notwithstanding the revenue allocation through the formula-based system, there are sections of the Constitution that spelt out support to the subnational governments. Specifically, Section 164 of the 1999 Constitution stipulates support to subnational governments in the form of transfers in aids with no definite formula for the transfers. By and large, the allocation of transfers of this nature based on the whims and caprices of the government at the centre makes it amenable to political targeting. Besides, under Chapter II of the 1999 Constitution which is codenamed *Fundamental Objectives and Directives Principles of State Policy*, the federal government has a few justifications to target a particular section of the country through porks

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[12] See Table A2 in the Appendix for a description of the vertical revenue allocation formulae in Nigeria, since 1981.

[13] Since the return to the civil rule in 1999 after the 1999 general election, general elections have been held in 2003, 2007, 2011, 2015. However, some states like Anambra, Bayelsa, Edo, Ekiti, Kogi, Ondo, and Osun have their gubernatorial elections outside the general election dates because of the Supreme Court's rulings on gubernatorial electoral disputes in those states.

[14] See Table 3A in the Appendix.

for political purposes. Section 16 (2) (b) under *Chapter II* states "that the material resources of the nation are harnessed and distributed as best as possible to serve the common good." This section makes it possible for discretionary allocations for a government at the centre to provide pork barrels in support of its political base or a pivotal jurisdiction which may be hard to be labelled as such by the opposition.

3.2 The revenue mobilisation, allocation and fiscal commission (RMAFC)

Until 1988, various commissions and committees advised the Nigerian government on revenue allocation.[15] In 1988, the RMAFC was established as a permanent body to advise the federal government based on the prevailing situation on revenue allocation. The formalisation of the establishment of the commission through an act was made in December 1989. This body is also recognised by the Nigerian 1999 Constitution. According to the Constitution, this body comprises a chairman, and other members representing each state of the federation and the semi-autonomous FCT, Abuja who are all appointees of the president, subject to the approval of the Senate. Inter alia, the commission is to track the accruals into and outlays of revenues from the federation account. The commission is also charged with the review of the existing revenue allocation formula and principles in line with economic developments subject to a provision that the extant revenue allocation formula has remained in operation for at least five years. The body also has to advise governments at all levels in the federation on fiscal efficiency and how to improve their revenues. All these functions are to be performed without political interference as an independent body.

However, in practice, the work of the RMAFC may be affected by interest groups in government and its recommendations may be rejected due to political motives rather than sound economic judgement. The recommended vertical allocation formulae for 1989 and 1991

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[15] Recall footnote 11.

by the RMAFC were not adopted.[16] This underscores the subsidiarity of the power of the commission to political forces. Given the judgement of April 5, 2002, by the Supreme Court of Nigeria which nullified the extant vertical revenue allocation formula at the time, an allocation formula recommended by RMAFC should have been forwarded to the national assembly for adoption in line with the 1999 Constitution. The Supreme Court's judgement altered the vertical revenue allocation formula in operation in conformity with the Nigerian 1999 Constitution as against the practice by the executive since the beginning of the fourth republic[17] in the year 1999.[18] The nullification resulted in the issuance of an executive order based on the discretion of the executive in power instead of the constitutional provisions. This led to the emergence of three different vertical allocation formulae within two years; two in the year 2002, and the last one in the year 2004 (Table 2A).

The politics behinds these orders have led to the violation of the Constitution on the review of the revenue allocation formula. The bickering between the federal and the state governments on the one hand, and among the state governments on the other hand over the vertical and horizontal allocation formulae respectively has almost rendered the RMAFC impotent. What has always resulted in a crisis between the central government and subnational governments is the way the federal government manages the common pool. In particular, the special funds[19] in the vertical allocation formula have always been managed by the federal government until 2002. The subnational governments always suspect the central government

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[16] See columns 4 and 6 of Table A2.

[17] The fourth republic commenced on May 29, 1999.

[18] The judgement given by the Supreme Court frowned at certain practices of the Federal Government in respect of funds in the federation account, and the non-implementation of the 13 per cent derivation principle as stated in the 1999 Constitution on revenues from natural resources.

[19] See Table A2 for various allocations to special funds under various vertical formulae.

in its ways and manners of managing these funds. The formulae that have been evolved over the years have been based on political rather than economic reasons. The result is that some states regardless of their economic potentials continue to depend on allocation from the centre, which makes them amenable to the federal government's control.

4. Methodology and data

This section starts by discussing the empirical models and the estimation strategy adopted in the empirical work. It then presents the sources of the data and the descriptive statistics.

4.1 Empirical models and estimation strategy

In testing the political economy of intergovernmental transfer in Nigeria, our model relates the annual per capita intergovernmental transfer to a state as a dependent variable to vectors of normative, political and institutional, and control variables. The baseline model is presented in equation 1.

$$Transfers_{it} = \beta Normative_{it-1} + \varphi PolInst_{it} + \eta_i + \gamma_t + \xi_{it} \tag{1}$$

$$i = 1, \dots, 36, \qquad t = 2007, \dots, 2016$$

where i indexes a state and t represents a year.

The dependent variable, *Transfers*, is defined in real per capita local currency (*naira*) to control for the differences in the size of the states both in geographical and economic terms and to avoid heteroskedasticity problems. *Normative* is a vector of variables proxying the economic, demographic and educational situation of the states. All variables included in this vector are lagged one period because intergovernmental transfers are decided one year before they are transferred to sub-national governments. *PolInst* is a vector of dummy variables representing political and institutional factors. η_i is the individual effect and γ_t is time effects. β and φ are

vectors of parameters to be estimated, η and γ are parameters to be estimated, and ξ_{it} is the error term.

In public finance theory, according to the AMS perspective, normative factors determine intergovernmental transfers to any level of government for the objective of welfare maximisation. The vector of normative variables includes economic, demographic and education variables, namely the real per capita own revenues generated by each state (*Own revenues*), a proxy for GDP per capita based on night-lights (*Luminosity*), the amount granted in loan per capita to farmers in each state under the Agricultural Credit Guarantee Scheme Fund of the Central Bank of Nigeria (*Agricultural loans*), the number of persons per square kilometer (*Population density*) and dummies to identify mineral-producing states (*MPS*) and educationally developed states (*EDS*).[20] The vector of political and institutional variables includes dummy variables to identify election years (*Election year*) and states run by governors that do not belong to parties in the federal government (*Opposition*) or that are prevented by law from running for office again (*Term limit*).

Given that one of the normative objectives of intergovernmental transfers is to reduce horizontal inequalities among jurisdictions, the estimated coefficients associated with the variables *Own revenues* and *Luminosity* are expected to be negative. The amount of loans per capita granted to farmers is used as a proxy for rural and less developed states and, therefore, a positive sign is expected for the estimated coefficient associated with the variable *Agricultural loans*. From an economic perspective, we expect the estimated coefficient associated with the

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[20] According to the Joint Admission and Matriculation Board (JAMB), states in Nigeria are categorised according to their level of educational development for the purpose of admission to schools, especially at tertiary level. Of the 36 states in Nigeria, 23 are categorised as Educationally Less Developed States (ELDS): Adamawa, Bauchi, Bayelsa, Benue, Borno, Cross Rivers, Ebonyi, Gombe, Jigawa, Kaduna, Kano, Kastina, Kebbi, Kogi, Kwara, Nassarawa, Niger, Plateau, Rivers, Sokoto, Taraba, Yobe, and Zamfara.

dummy for mineral producing states (*MPS*) to be negative since these states are richer than the others, particularly due to oil revenues. As explained in section 3.1, states from which minreal resources are sourced enjoy a 13 percent derivation allocation which is deducted from revenues realised from the production of mineral resources that are economically profitable. However, the South-South region of Nigeria where oil is produced has threatened secession over oil revenues many times. Thus, it is also possible that control over the mineral resources of the country provides these states additional political bargaining power to demand more transfers. In this case, a positive sign would be expected for the estimated coefficient. Regarding population density, a positive or a negative sign can be expected. A higher level of population density may allow for economies of scale in the provision of local public goods which is a rationale for a negative relationship between per capita transfers and population density. However, after a certain level, an increase in population density may generate diseconomies of scale, particularly in states with large urban areas, justifying a positive sign for the estimated coefficient associated with *Population density*.

To test if political and institutional considerations matter for intergovernmental allocation to state governments in Nigeria, several variables were included in the model. Following the political business cycle theory (Rogoff & Sibert, 1988; Shi & Svensson, 2006), a dummy variable was included to signal general election years and gubernatorial elections that fall outside the general election years (*Election year*).[21] To analyze if the federal government targets its core supporters or swing voters (Cox & McCubbins, 1986; Lindbeck & Weibull, 1987),

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[21] Recall that political parties compete keenly for gubernatorial elections outside the general election periods. This was visible in the contest for the control of Ekiti State in the 2014 gubernatorial election between the party in power at the centre and the incumbent regional party in the state. The party in power at the centre muscled its influence around its candidate to gain an inroad into the regional block of South-West.

a dummy variable coded one for states being ruled by parties different from the party ruling at the federal level (*Opposition*) is considered.[22] To test if term-limited governors are penalized in the allocation of transfers, a dummy variable identifying states whose governors are constitutionally not allowed to seek re-election again was also included (*Term limit*).[23] Finally, to control for the passage of time, dummies for each mandate are included. There are three general elections in the periods under study, a dummy is created for each mandate.

We start by estimating the model (equation 1) by ordinary least squares (OLS) and Random Effects (RE). Because transfers to a state may be affected by unobservable features that are not susceptible to change over time, we also estimate the model by Fixed Effects (FE). A Hausman test is implemented to select between the models. To correct for possible autocorrelation problems and obtain efficient and consistent estimates, we use robust standard errors clustered by states. Although the use of robust standard errors clustered by states corrects for possible autocorrelation problems, we also implement a slightly different model (equation 2) that includes the first lag of *Transfers* as an explanatory variable. This robustness test also allows us to analyze the degree of persistency in transfers over time.

$$Transfers_{it} = \rho Transfers_{it-1} + \beta Normative_{it} + \varphi PolInst_{it} + \eta_i + \gamma_t + \xi_{it} \qquad (2)$$

$$i = 1, \ldots, N, \qquad t = 1, \ldots, T$$

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[22] Under President Olusegun Obasanjo, Lagos State, under the control of an opposition party was denied allocations for many months for various political reasons.

[23] Governors facing term limits are sometimes denied some funds. Towards the end of 2016, part of the Paris Club refund to Ondo State was not released because the outgoing opposition party governor was expected to be succeeded by a member of the party ruling at the centre.

Equation 2 is also estimated by OLS, RE and FE. The latter assumes individual-specific effects which capture both observable and unobservable time-invariant differences across states. However, because the model is dynamic, by construction the lagged dependent variable is correlated with the individual effect (η_i), which leads to spurious estimates. According to Arellano and Bond (1991), this problem can be overcome by taking first-differences of equation (2) to eliminate the individual effects and using as instruments for the first lag of the dependent variables lagged levels of the dependent variable from two or more periods before. Since transfers are expected to be highly persistent the System GMM (SGMM) estimation is implemented, as suggested by Arellano and Bover (1995) and Blundell and Bond (1998). The validity of the instruments used is checked using the Hansen test for over-identifying restriction. Arellano-Bond tests for first- and second-order serial correlation in disturbances are employed. The first-order serial correlation is expected (due to the lagged dependent term) and should not be a problem. The study follows the suggestions of Roodman (2009a & 2009b) in handling the estimation strategy to address the problem of too many instruments.

4.2 Sources of data and descriptive statistics

The study explores panel data that covers the year 2007 to the year 2016. The data on *Transfers* is available for both net and gross allocation to states. The net transfer allocation is what states get after their indebtedness that the federal government guaranteed (including amount due in a joint project with the federal government) has been deducted from the gross allocation.[24] For both net and gross allocations, the 13 percent derivation allocation from

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[24] Given that subnational governments have limited capacity to commit to international borrowings due to possible default that may affect national credit rating, the federal government acts to protect the nation and creditors by always guaranteeing repayments of loans taken from foreign institutions. The repayment of debts may also be in respect of other financial commitments and obligations either locally

revenues from mineral resources is deducted from the transfers to states that are entitled to it. This is done to eliminate biasedness as this can confound the relationship between *Own revenue* and *Transfers*. All monetary variables are in the local currency; and, they are adjusted for change in the time value of money using the composite consumer price index (CCPI).

For Nigeria, like for most developing countries, data on subnational jurisdictions' economic activities is scarce. Even when data is available, it is frequently poorly measured, namely due to high levels of informality that prevail in developing countries. Following Chen and Nordhaus (2011) and Henderson *et al.* (2011, 2012) the brightness of visible night-lights from the space is adopted to proxy the Nigerian states' GDP. The original data is collected from NASA and the average of stable nighttime lights[25] (multiplied by 1,000,000) is divided by the number of inhabitants. The resulting variable, termed *Luminosity*, is used as a proxy of GDP per capita. Data for luminosity is only available from 2007 to 2013 and was interpolated for the last three years of the sample.[26] Two dummy variables, *MPS* and *EDS* respectively identify oil-producing states and educationally developed states.

The full summary statistics of the data and sources are displayed in Table 1. The data is sourced from the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN), the Independent National Electoral Commission (INEC) and the Joint Admission and Matriculation Board (JAMB). JTB stands for the Joint Tax Board and OAGF refers to the Office of the Accountant General of the Federation. The number of observations is 357, the number of states is 36, and the number of years is 10. Transfers, Own revenues and Agricultural loans are in real per capita terms. Population density is the number of persons per square kilometer.

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or internationally. The federal government deducts at the source the value of due repayment obligations from the amount states are entitled to in intergovernmental transfers.

[25] Original data is presented in digital numbers from 0 to 63, as annual figures.

[26] This is done using *ipolate* command in STATA 15 (StataCorp, 2017).

Table 1: Descriptive statistics for the years 2007-2016

Variable	Mean	Std. Dev.	Min	Max	Source
Net transfers	9,661.95	5,525.95	647.67	57,234.86	NBS, OAGF
Gross transfers	10,480.79	5,842.72	2,171.15	57,307.94	NBS, OAGF
Own revenues	2,000.58	2,803.20	120.27	19,492.75	NBS, JTB
Luminosity	0.64	1.07	0.01	8.18	NASA
Agricultural loans	46.74	43.78	0.00	276.41	CBN
Population density	355.30	489.56	40.77	3,311.18	NBS
EDS	0.36		0	1	JAMB
MPS	0.25		0	1	NBS
Opposition	0.34		0	1	INEC
Election year	0.34		0	1	INEC
Term limit	0.14		0	1	INEC

Notes: EDS refers to Educationally developed states. MPS represents Mineral-producing states.

5. Empirical results

This section presents the estimation results of the static and dynamic panel data models, described by equations (1) and (2). The dependent variable is net transfers from the federal government to states, from 2007 to 2016. This section also describes the robustness tests implemented to determine the consistency of the previous results.

5.1. The static model

We start by analyzing the allocation of net transfers to states. The empirical model of equation 1 is estimated without the time-invariant dummies for educationally developed states (*EDS*) and mineral-producing states (*MPS*). Results of econometric estimations by Ordinary Least Squares (OLS), Random Effects (RE) and Fixed Effects (FE) are presented in Table 2. The Breusch-Pagan

Lagrangian Multiplier test affirms the consistency and efficiency of RE over OLS indicating that there is a panel effect with a chi-square statistic of 64.38 at one percent level of significance. The Hausman test indicates that the individual component of the error term is not correlated with the regressors with a Chi-squared statistic of 9.91 and a p-value of 0.35. With this, RE is efficient and consistent with a between R-squared of 54 percent explaining variation in *Transfers* and a Rho of 0.28 indicating that 28 percent of the variation is due to differences across panels. The Wald statistic of RE estimator indicates a good model with a Chi-squared statistic of 1337.5 for the rejection of the null at one percent level of significance. Therefore, when interpreting the results, we focus on the RE estimations presented in column 2.

Table 2: The political economy of intergovernmental net transfers

Variable	OLS (1)	RE (2)	FE (3)	RE (4)
Own revenue(t-1)	0.3376*	0.1172	-0.3671	0.1175
	(0.1724)	(0.2514)	(0.5563)	(0.2568)
Luminosity(t-1)	2.1304***	2.1139***	1.5505	2.1134***
	(0.2324)	(0.3145)	(0.9693)	(0.3206)
Agricultural loans(t-1)	-0.0112*	-0.0119**	-0.0109**	-0.0120**
	(0.0063)	(0.0053)	(0.0050)	(0.0053)
Population density(t-1)	-0.0038***	-0.0027**	-0.0066	-0.0027**
	(0.0010)	(0.0013)	(0.0071)	(0.0013)
Opposition	-1.2592*	-1.7073***	-1.9205***	-1.7403***
	(0.6449)	(0.5365)	(0.6150)	(0.5336)
Election year	2.0232***	2.0399***	2.0841***	1.9147**
	(0.5873)	(0.6130)	(0.7097)	(0.8221)
Term limit	-0.9771*	-0.7825*	-0.6381	-0.9045
	(0.5591)	(0.4669)	(0.4843)	(0.6380)
Term limit*Election Year				0.3751
				(0.7727)
R-squared	0.55	0.54	0.55	0.54
Rho		0.28	0.62	0.29
BP LM test stat		64.38***		70.44***
Hausman test			9.91	

Notes: Significance levels: * 10%, ** 5%, *** 1%. Clustered standard errors at the state level are in parentheses. The dependent variable is the net transfer per capita. Results are estimates of equation (1). BP LM test refers to the Breusch-Pagan Lagrangian Multiplier statistic. The number of observations is 322

for all regressions. To control for the passage of time, dummies for each mandate are included in all regressions.

As can be seen from column 2, among the normative variables considered, only *Own revenue* is not statistically significant. The proxy for states' GDP per capita (*Luminosity*) is highly statistically significant but, contrary to our expectation, is positively correlated with transfers. This reveals that richer states receive more transfers per capita from the federal government than poor states, suggesting that intergovernmental transfers are not being used to promote equity among states. This is easily discernible in the case of Nigeria as equality accounts for the highest proportion of transfers to states. The amount of loans per capita granted to farmers (*Agricultural loans*) is negatively signed and statistically significant. Again, the sign of the estimated coefficient does not conform to our expectations since it indicates that rural states are penalized in the distribution of transfers. Finally, *Population density* is highly statistically significant and negatively correlated with transfers. Admitting that a higher level of population density generates economies of scale in the provision of local public goods, the negative relationship between per capita transfers and population density is in line with public finance theory.

All the three political and institutional variables considered, turned out to be statistically significant and signed according to our expectations. States ruled by governors that do not belong to parties in the federal government are penalized in the distribution of funds. Intergovernmental transfers seem to be tactically distributed in favour of core supporter constituencies among states in Nigeria. The *Election year* dummy variable is also consistently positive and strongly statistically significant under all the three estimators. At the *Election year*, there appear to be more strategic transfers to states. This may be an attempt at buying support from the subnational level as the probability of re-election of any incumbent president at the federal level rests on the level of support from the subnational units. Finally, *Term limit* is

negatively signed and marginally statistically significant. The sign is in line with our expectations, implying that states whose governors face a term limit are penalized by receiving fewer transfers. This may be a strategic decision for the party that is ruling at the center. It may also signal lower effort to attract transfers by governors prevented from running for re-election again. To test if states with term-limited governors are treated differently at election years, we introduced in the regression a variable resulting from the interaction of the *Term limit* and the *Election year* dummies. As can be seen from column 4 of Table 2, the interaction variable did not turn out as statistically significant.

In Table 3, two time-invariants dummy variables that identify educationally developed states and mineral-producing states are introduced into the model but did not turn out as statistically significant (column 1). To check the robustness of the results and because the dummy variable *MPS* is correlated with *Luminosity* (61%), we excluded *Luminosity* from the regression. As can be seen from column 2, the dummy for mineral-producing states is now strongly statistically significant and positively signed, indicating that these states receive more transfers. Higher transfers being enjoyed by the mineral-producing states are in line with the submission of the credible threat of secession in a federation by Treisman (1996). The South-South region of Nigeria where oil is produced has threatened succession over oil revenues many times. For this, they are not only enjoying the 13 percent derivation allocation, but they seem to be specially treated in the allocation of transfers. Given this result, we then interacted the dummy variable *MPS* with the three political and institutional variables analyzed. There is evidence that oil-producing states ruled by governors that are not politically aligned with the federal government receive fewer transfers than those that are aligned (column 3). A similar result was obtained for states whose governors are term-limited (column 4). Finally, at election years, no discrimination is made by the federal government in favor of oil-producing states; that is, all states benefit from an increase in transfers (column 5).

Table 3: The political economy of intergovernmental net transfers

Variable	RE (1)	RE (2)	RE (3)	RE (4)	RE (5)
Own revenue(t-1)	0.0561	0.0828	0.0359	0.1837	0.0791
	(0.2718)	(0.2866)	(0.2701)	(0.2860)	(0.2936)
Luminosity(t-1)	1.7736***				
	(0.4311)				
Agricultural loans(t-1)	-0.0119**	-0.0121**	-0.0123**	-0.0110**	-0.0121**
	(0.0053)	(0.0055)	(0.0053)	(0.0051)	(0.0056)
Population density(t-1)	-0.0019	-0.0006	-0.0007	-0.0013	-0.0006
	(0.0016)	(0.0018)	(0.0017)	(0.0018)	(0.0018)
Opposition	-1.7356***	-2.0136***	0.0058	-2.0054***	-2.0152***
	(0.6274)	(0.7072)	(0.3691)	(0.7027)	(0.7134)
Election year	2.1041***	2.3477***	2.2891***	2.1613***	2.3624***
	(0.6374)	(0.7384)	(0.6902)	(0.7616)	(0.4563)
Term limit	-0.8378*	-0.9983**	-0.7798*	-0.1067	-0.9932**
	(0.4779)	(0.4769)	(0.4238)	(0.3320)	(0.4819)
EDS	-0.9963	-1.4165	-1.4052	-1.0841	-1.4161
	(0.9776)	(1.3299)	(1.2253)	(1.3350)	(1.3294)
MPS	1.8832	4.7198***	7.4804***	5.6447***	4.7412***
	(1.2084)	(1.6102)	(2.2937)	(1.6444)	(1.3671)
MPS* Opposition			-6.2499***		
			(2.0554)		
MPS* Term limit				-3.3807**	
				(1.3328)	
MPS* Election year					-0.0600
					(1.5249)
R-squared	0.56	0.39	0.51	0.39	0.39

Notes: Significance levels: * 10%, ** 5%, *** 1%. Clustered standard errors at the state level are in parentheses. The dependent variable is the net transfer per capita. Results are estimates of equation (1) using RE estimator. EDS refers to Educationally developed states. MPS represents Mineral-producing states. The number of observations is 322 for all regressions. To control for the passage of time, dummies for each mandate are included in all regressions.

5.2 The dynamic model

As explained in section 4.1, although we use robust standard errors clustered by states to correct for possible auto-correlation problems, we also implement an econometric model that includes the first lag of the dependent variable in the set of regressors (equation 2). This procedure allows us to analyze the degree of persistency in transfers over time. We start by

estimating the model by OLS, FE and RE with the same set of explanatory variables to facilitate comparisons. As can be seen from Table 4, the first lag of the dependent variable is always statistically significant and positively signed, confirming that there is persistency over time in intergovernmental allocations. The Hausman test indicates that a fixed-effects model is preferable to a random-effects model. Since our model is dynamic and the dependent variable is persistent over time, the SGMM estimation procedure is implemented and, therefore we focus our attention on the estimation results resulting from this econometric procedure (column 4). For the level equation, the lagged first difference of the dependent variable is used as instrument for the lagged dependent variable. For the differenced equation, the first-difference of the dependent variable is instrumented by its levels lagged 2 and 3 years. *Own revenues*, *Luminosity*, *Agricultural loans*, *Population density* and *Opposition* are assumed to be endogenous and are instrumented similarly to lagged transfers. The remaining explanatory variables, *Election year* and *Term limit* are assumed as exogenous. Lags 2 and 3 of these independent variables are used as their own instruments, while the year and state dummies are used as IV-style instruments. The number of instruments used in the estimation is reported at the bottom of the table, as well as the p-values for AR1 and AR2 tests for serial correlation, and the p-value for the Hansen test for over-identifying restrictions. For the SGMM, the two-step estimation with the finite-sample correction for standard errors suggested by Windmeijer (2005) is used.

Table 4: The political economy of intergovernmental net transfers: equation 2

Variable	OLS (1)	RE (2)	FE (3)	SGMM (4)
Transfer (t-1)	0.5794***	0.5794***	0.3621***	0.3710***
	(0.0808)	(0.0808)	(0.0378)	(0.0722)
Own revenue	0.1310	0.1310*	-0.3447	-0.0296
	(0.0783)	(0.0783)	(0.5353)	(0.2726)
Luminosity	0.6761***	0.6761***	0.6867	1.9824***
	(0.2124)	(0.2124)	(0.8880)	(0.4972)
Agricultural loans	-0.0078**	-0.0078**	-0.0102**	-0.0242*
	(0.0037)	(0.0037)	(0.0046)	(0.0136)
Population density	-0.0013***	-0.0013***	-0.0061	-0.0017
	(0.0004)	(0.0004)	(0.0055)	(0.0015)
Opposition	-0.7901**	-0.7901**	-1.4482***	-2.6715**
	(0.3249)	(0.3249)	(0.4687)	(1.1039)
Election year	1.7625**	1.7625***	1.9277**	1.8029***
	(0.6809)	(0.6809)	(0.7394)	(0.4858)
Term limit	-0.7216**	-0.7216***	-0.6293*	-0.5847
	(0.2738)	(0.2738)	(0.3614)	(0.4483)
R-squared	0.70	0.95	0.60	
Hausman test			39.72***	
AR1 (p-value)				0.14
AR2 (p-value)				0.05
Hansen stat (p-value)				0.12
No of instruments				36.00

Notes: Significance levels: * 10%, ** 5%, *** 1%. Clustered standard errors at the state level are in parentheses. The dependent variable is the net transfer per capita. Results are estimates of equation (2) using various estimators. The number of observations is 322 for all regressions. To control for the passage of time, dummies for each mandate are included in all regressions.

Results when using the SGMM procedure (column 4), confirm the result found in Table 2 that states with a higher GDP per capita (*Luminosity*) receive more transfers, reinforcing our conclusion that intergovernmental transfers are not promoting equity among states. The results also show that states receiving larger amounts of agricultural loans receive fewer transfers, which also goes against our expectations. Regarding the political variables, there is evidence that opposition states are negatively discriminated against in the distribution of transfers; and that at electoral periods, more funds are allocated to states. When estimating the dynamic model by the SGMM, being a term-limited governor does not seem to influence the amount of transfers

received by the state. However, for all the three other econometric methods considered (OLS, RE and FE) the *Term limit* dummy is negatively signed and statistically significant, as in the estimates for the static model.

5.3 Robustness tests

What is due to a state is the gross allocation while the balance remaining after the deduction of due repayment obligation is the net allocation.[27] The net allocations are used as the dependent variable in the main regressions. Given that the debt obligations (the gap between gross allocations and net allocations) may mask the politics inherent in intergovernmental transfers on the variables of interest, it thus becomes important to use the gross transfers as the dependent variable in checking the robustness of the main regressions' results. The static and dynamic models of equations (1) and (2) are estimated using the same econometric techniques.[28] The behaviour of the explanatory variables in the models using gross allocations data remains stable as under the main regressions.[29] The coefficients of variables in our model show little or no change in magnitude and direction as results indicate in Tables 2-4. Therefore, the results are not driven by the data used in the econometric estimations. They confirm that Nigeria behaves like some other developing federal states where strategic considerations override normative reasons in revenue sharing.

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[27] The difference in the gross allocation and net allocation has been explained earlier in section 4.2. The correlation between gross and net transfers per capita is 0.974.

[28] Virtually all the states had repayment obligations that were repayable during the periods covered in this study. So, using the gross allocations is a good approach to check the robustness of the results given that our panel data covers a short period (2007-2016).

[29] Results are available from the authors upon request.

6. Conclusion

This study examines the existence of political targeting in intergovernmental transfers in Nigeria. Nigeria is a multiparty federal democracy. Though the normative theories of fiscal federalism recommend equity and efficiency for intergovernmental transfers, in practice, it has been established that politics influences the allocation of intergovernmental transfers. This has led to the establishment of mechanisms to remove the influence of politics in intergovernmental transfers through formulaic revenue sharing arrangement and establishment of an independent body to oversee the sharing of revenues. The extant practice in Nigeria conforms to the formulaic revenue sharing arrangement under the supervision of a constitutionally recognised independent body, RMAFC. The extant institutional arrangement evolves largely from an overused system of ad-hoc committees in response to constitutional and political developments for revenue sharing arrangement in Nigeria.

Notwithstanding the extant practice, there is evidence of political targeting in intergovernmental transfers in Nigeria, as observed by Khemani (2007). Intergovernmental transfer does not conform to equity and efficiency considerations. The poorer states and states with greater fiscal needs are not favored in revenue sharing. There seems to be a grand political targeting under the formulaic revenue sharing arrangement being supervised by an independent body in Nigeria. Results point to the existence of distributive politics in intergovernmental transfers to support core supporter constituencies and the use of transfers to expand the political base. The existing system of intergovernmental transfers lends itself to political manipulations and makes the use of intergovernmental transfers for opportunism possible, especially when the president can override the constitutional body.

Distributive allocation is done through large transfers to subnational governments around the election year (Rogoff & Sibert, 1988). Additionally, states under the control of the opposition party members get lower transfers than states in the hands of the core supporter constituencies of the party of the government at the centre (Cox & McCubbins, 1986; Dixit &

Londregan, 1996). More so, a state whose governor faces a term limit gets lower transfers. This may be in anticipation that a member of the party at the centre will emerge the new governor in the state. It may also signal less effort to attract funds by the incumbent governor since re-election is not feasible.

Higher transfers being enjoyed by the mineral-producing states are in line with the submission of the credible threat of secession in a federation by Treisman (1996). The South-South region of Nigeria where oil is produced has threatened succession over oil revenues several times. The current large transfers to the region are a product of series of agitations and threats to secede from the Nigerian state. For this, they are not only enjoying the 13 percent derivation allocation, but they are also being specially treated as this study reveals.

References

Adamolekun, L. (2005). The Nigerian federation at the crossroads: The way forward. *Publius*, *35*(3), 383–405.

Aidt, T.S., & Shvets, J. (2012). Distributive politics and electoral incentives: Evidence from seven us state legislatures. *American Economic Journal: Economic Policy*, 4(3), 1-29.

Akhmedov, A., & Zhuravskaya, E. (2004). Opportunistic political cycles: Test in a young democracy setting. *Quarterly Journal of Economics*, 119(4), 1301–1338.

Akindele, S. T., Olaopa, O. R., & Obiyan, A. S. (2002). Fiscal federalism and local government in Nigeria: An examination of revenue rights and fiscal jurisdiction. *International Review of Administrative Sciences, 68*(4), 557-577.

Allers, M. A., & Ishemoi, L. J. (2011). Do formulas reduce political influence on intergovernmental grants? Evidence from Tanzania. *Journal of Development Studies*, *47*(12), 1781–1797.

Alt, J. E., & Lassen, D. D. (2006). Fiscal transparency, political parties, and debt in OECD countries. *European Economic Review*, *50*(6), 1403–1439.

Ansolabehere, S., & Snyder, J. M. (2006). Party control of state government and the distribution

of public expenditures. *Scandinavian Journal of Economics*, *108*(4), 547–569.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies, 58*(2), 277-297.

Arellano, M. & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, 68, 29–52.

Arulampalam, W., Dasgupta, S., Dhillon, A., & Dutta, B. (2009). Electoral goals and center-state transfers: A theoretical model and empirical evidence from India. *Journal of Development Economics*, *88*(1), 103-119.

Banful, A. B. (2011). Do formula-based intergovernmental transfer mechanisms eliminate politically motivated targeting? Evidence from Ghana. *Journal of Development Economics*, *96*(2), 380–390.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143.

Boex, J., & Martinez-Vazquez, J. (2005). The determinants of the incidence of intergovernmental grants: A survey of the international experience. *SSRN Electronic Journal*.

Brender, A., & Drazen, A. (2005). Political budget cycles in new versus established democracies. *Journal of Monetary Economics*, 52(7), 1271-1295.

Brollo, F., & Nannicini, T. (2012). Tying your enemy's hands in close races: the politics of federal transfers in Brazil. *American Political Science Review*, *106*(4), 742-761.

Caldeira, E. (2012). Does the system of allocation of intergovernmental transfers in Senegal eliminate politically motivated targeting? *Journal of African Economies*, *21*(2), 167–191.

Chen, X., & Nordhaus, W. D. (2011) Using luminosity as a proxy for economic statistics. *Proceedings of the National Academy of Sciences*, 108(21), 8589-8594.

Costa-I-Font, J., Rodriguez-Oreggia, E., & Lunapla, D. (2003). Political competition and pork-barrel politics in the allocation of public investment in Mexico. *Public Choice*, *116*(1-2),

185–204.

Cox, G. W., & McCubbins, M. D. (1986). Electoral politics as a redistributive game. *The Journal of Politics*, *48*(2), 370–389.

Dahlberg, M., & Johansson, E. (2002). On the vote-purchasing behavior of incumbent governments. *American Political Science Review*, *96*(1), 27–40.

Dixit, A., & Londregan, J. (1996). The determinants of success of special interests in redistributive politics. *The Journal of Politics*, *58*(4), 1132–1155.

Dixit, A., & Londregan, J. (1998). Ideology, tactics, and efficiency in redistributive politics. *The Quarterly Journal of Economics*, *113*(2), 497–529.

Downs, A. (1957). An economic theory of political action in a democracy. *Journal of Political Economy*, *65*(2), 135–150.

Dubois, E. (2016). Political business cycles 40 years after Nordhaus. *Public Choice*, 166 (1-2), 235-259.

Gerrit, J. G., Schulze, G. G., & Sjahrir, B. S. (2018). To the ones in need or the ones you need? The political economy of central discretionary grants– empirical evidence from Indonesia. *European Journal of Political Economy*, *54*, 240-260.

Gómez-Reino, J., & Martinez-Vazquez, J. (2013). An international perspective on the determinants of local government fragmentation. In S. Lago-Peñas & J. Martinez-Vazquez (Eds.), *The Challenge of Local Government Size: Theoretical Perspectives, International Experience and Policy Reform* (pp. 8–54). Cheltenham, UK: Edward Elgar.

Henderson, J. V., Storeygard, A., & Weil, D. N. (2012). Measuring economic growth from outer space. American Economic Review, 102(2), 994–1028.

Henderson, V., Storeygard, A., & Weil, D. N. (2011). A bright idea for measuring economic growth. American Economic Review, 101(3), 194–199.

Inyang, E. O. (2013). The role and expectation of the members of revenue mobilization, allocation and fiscal commission on review of revenue allocation formula. *Paper Presented*

at the Technical Session on the Review of Revenue Allocation Formula Held at the National Centre for Women Development, Abuja, Nigeria.

Johansson, E. (2003). Intergovernmental grants as a tactical instrument: Empirical evidence from Swedish municipalities. *Journal of Public Economics*, *87*(5–6), 883–915.

Kauder, B., Potrafke, N., & Reischmann, M. (2016). Do politicians reward core supporters? evidence from a discretionary grant program. *European Journal of Political Economy*, *45*, 39–56.

Khemani, S. (2007). The political economy of equalization transfers. In J. Martinez-Vazquez & B. Searle (Eds.), *Fiscal Equalization: Challenges in the Design of Intergovernmental Transfers* (pp. 463–484). New York: Springer.

Lindbeck, A., & Weibull, J. W. (1987). Balanced-budget redistribution as the outcome of political competition. *Public Choice*, *52*(3), 273–297.

Musgrave, R. A. (1999). Fiscal federalism. In J. M. and Buchanan & R. A. Musgrave (Eds.), *Public Finance and Public Choice* (pp. 155–202). Cambridge, Mass.: The MIT Press.

Nordhaus, W. D. (1975). The political business cycle. *The Review of Economic Studies*, *42*(2), 169–190.

Oates, W. E. (1972). Fiscal federalism. *New York: Harcourt Brace Jovanovich*.

Oates, W. E. (1999). An essay on fiscal federalism. *Journal of Economic Literature*, *37*(3), 1120–1149.

Oates, W. E. (2005). Toward a second-generation theory of fiscal federalism. *International Tax and Public Finance*, *12*(4), 349–373.

Phillips, A. (1971). Nigeria's federal financial experience. *The Journal of Modern African Studies*, *9*(3), 389–408.

Phillips, A. O. (1991). Managing fiscal federalism: Revenue allocation issues. *Publius*, *21*(4), 103–111.

Porto, A., & Sanguinetti, P. (2001). Political determinants of intergovernmental grants: Evidence

from Argentina. *Economics and Politics*, *13*(3), 237–257.

Rogoff, K. (1990). Equilibrium political budget cycles. *American Economic Review*, *80*(1), 21–36.

Rogoff, K., & Sibert, A. (1988). Elections and macroeconomic policy cycles. *The Review of Economic Studies, 55*(1), 1-16.

Roodman, D. (2009a). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics*, *71*(1), 135–158.

Roodman, D. (2009b). How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, *9*(1), 86–136.

Shi, M., & Svensson, J. (2006). Political budget cycles: Do they differ across countries and why? *Journal of Public Economics*, *90*(8–9), 1367–1389.

Simon-Cosano, P., Lago-Peñas, S., & Vaquero, A. (2014). On the political determinants of intergovernmental grants in decentralized countries: The Case of Spain. *Publius: The Journal of Federalism*, *44*(1), 135–156.

Sollé-Ollé, A. (2013). Inter-regional redistribution through infrastructure investment: tactical or programmatic? *Public Choice*, 156 (1–2), 229-252.

StataCorp. (2017). Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC

The Federal Republic of Nigeria. (2011). *The 1999 Constitution of the Federal Republic of Nigeria as amended 2010*.

Treisman, D. (1996). The politics of intergovernmental transfers in post-Soviet Russia. *British Journal of Political Science*, *26*(3), 299–335.

Veiga, L. G., Efthyvoulou, G., & Morozumi, A. (2019). Political budget cycles: Conditioning factors and new evidence. In Goetz, K. (ed.), The Oxford Handbook of Time and Politics: Oxford University Press.

Veiga, L. G., & Pinho, M. M. (2007). The political economy of intergovernmental grants: Evidence from a maturing democracy. *Public Choice*, *133*(3–4), 457–477.

Veiga, L. G. & Veiga, F. J. (2013). Intergovernmental fiscal transfers as pork barrel. *Public Choice*,

155, 335–353.

Veiga, L.G. & Veiga, F. J. (2019). The effects of electoral incentives on fiscal policy. *Journal of Law, Economics, and Organization,* 35(2), 394-421.

Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics*, *126*(1), 25–51.

Appendix A

Table A1: The structural evolution of the Nigerian federalism, 1960-2016

Year	1960*	1963*	1967	1970	1976	1979	1981	1984	1987	1991	1996
Autonomous states	3 (regions)	4 (regions)	12	12	19	19	19	19	21	30	36
Semi-autonomous state	-	-	-	-	-	-	-	-	-	1	1
Local government areas	-	-	-	299	299	301	781	301	449	593	774

Notes: *Under the regional system, there was no uniform system of local government administration in Nigeria as each region had its system of local administration. Hence, the number of local government areas could not be ascertained. Until 1991, Lagos served as the seat of the Federal Government. Though FCT, Abuja was created in 1976, its semi-autonomous status came into force in 1991 when the Federal Capital was relocated from Lagos State to FCT, Abuja. Of the listed 774 local governments areas in Nigeria, six are municipal council areas in the semi-autonomous region of FCT, Abuja.

Source: Akindele *et al.* (2002) and authors' addition.

Table A2: The vertical revenue allocation formulae in Nigeria, 1981-2004 (in percentage, %)

Recipient	1981	1984	1989[r]	1990	1991[r]	1992[b]	1992[c]	1999	2002[d]	2002[e]	2004
Federal government	**55**	**55**	**47**	**50**	**47.5**	**50**	**48.5**	**48.5**	**56**	**54.68**	**52.68**
Special Funds	**4.5**	**2.5**	**8**	**5**	**10**	**5**	**7.5**	**7.5**	**7.5**	**6.185**	**4.18**
1. Federal Capital Territory	-	-	1	1	1	1	1	1	1	1	1
2. Stabilisation	-	-	0.5	0.5	0.5	0.5	0.5	0.5	1.5	0.725	0.5
3. Derivation	2	-	2	1	1	1	1	1	-	-	-
4. Dev. of mineral producing areas	1.5	1.5	2	1.5	1.5	1.5	3	3	-	-	-
5. General Ecology	1	1	0.5	1	1	1	2	2	2	1.46[f]	1
6. Primary education fund	-	-	-	-	5	-	-	-	-	-	-
7. Dev. of non-mineral producing areas	-	-	0.5	-	-	-	-	-	-	-	-
8. Savings	-	-	2	-	-	-	-	-	-	-	-
9. Dev. of natural resources	-	-	-	-	-	-	-	-	3	3	1.68
State Governments	**30.5**	**32.5[a]**	**30**	**30**	**28.5**	**24**	**24**	**24**	**24**	**24.72**	**26.72**
Local Governments	**10**	**10**	**15**	**15**	**14**	**20**	**20**	**20**	**20**	**20.60**	**20.60**
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100[g]**	**100**

Notes: [r] Vertical allocation formulae recommended by the RMAFC but these were not implemented.

[a] 2% of the mineral component of the entire 32.5% due to states from the federation account is to be shared based on the derivation principle.

[b], [c], [d], [e] Allocation formulae implemented by the federal government in January 1992, June 1992, May 2002, and July 2002.

[f] From July 2002, the special allocation becomes the federal government share of derivation and ecology.

[g] The total due to the federal government was approximated to 54.68%. Also, since May 2002, all the special allocations are part of the federal government's share, and the formulae are based on executive orders.

Source: Inyang (2013, p. 8), and authors compilation from official government documents.

Table A3: The current horizontal revenue sharing formula among states (%)

The basis of sharing			Percentage of the total fund
Equality:			**40**
Population:			**30**
Landmass and Terrain:			**10**
Landmass		5	
Terrain		5	
Social Development Factors:			**10**
Education		4	
Primary school enrolment	2.4		
Secondary/Commercial school enrolment	0.8		
Inverse secondary/commercial school enrolment	0.8		
Health		3	
Hospital beds	1.5		
Hospital beds inverse proportion	1.5		
Water		3	
Water supply spread	1.5		
Rainfall inverse proportion	1.5		
Internal Revenue Effort:			**10**
Total			**100**

Note: The variables in the table determine transfers allocation at a horizontal level in Nigeria. What each state of the federation gets is determined by the parameters defined in the table.

Source: Authors' compilation.

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