The Local Political Resource Curse*

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Abstract

I study the local political resource curse in Nigeria. Local government councils are either elected by the people or illegally appointed as caretaker committees by the state governor. State governments in turn are likely to be captured by special-interest groups on account of rent-seeking opportunities. Tax revenues depend heavily on oil production and global oil prices, are collected centrally, and then allocated every month to the 36 states and 774 local government councils. I argue that by withholding local elections, state governors gain firm control over the oil revenue transfers that flow into local governments. I collect unique data on local government council elections through an extensive media content analysis of Nigerian newspapers articles. I combine it with monthly tax revenue disbursements by the Federal Accounts Allocation Committee for the post-autocratic period of 1999 to 2013. Exploiting the exogenous variation in the global oil price, I apply an instrumental variable approach to identify the effect of conducting local council elections or appointing caretaker committees instead on economic development proxied by nighttime light emissions, and public goods provision. The findings support the presence of a political resource curse and suggest that holding local elections increases accountability and facilitates development.

Keywords: Nigeria, Local Elections, State Capture, Resource Curse, Fiscal Federalism, Tax Revenue Allocations, Oil Price, Regional Economic Development

JEL classification: H41, H51, O43, O55.

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1 Introduction

Decentralisation is seen as a key element of development. A decentralised government is generally believed to be more responsive and accountable to the citizens (Bardhan, 2002; Faguet, 2014).[1] Local elections – under certain conditions – promise better outcomes for local development both in democratic regimes (e.g. Seabright, 1996; Khemani, 2001; Ahmad et al., 2005; Bardhan and Mookherjee, 2006a; De Janvry et al., 2012) and autocratic regimes (e.g. Martinez-Bravo et al., 2011). Yet, the potentially higher accountability of a decentralised government system may also be susceptible to capture by local elites (Bardhan and Mookherjee, 2000; Bardhan, 2002). Dominant special interest groups may deploy their influence to control democratic processes according to their preferences. In such cases, decentralisation may undermine democratic institutions, depress accountability and distort policies (Faguet, 2014), in particular in nascent and weak democracies.

Decentralisation is particularly critical in countries that experience windfalls of natural resources. Control over local governments becomes more attractive as large amounts of resource revenues are simply received without effort of collecting taxes. Even more if local voting population imperfectly informed about revenues, thus, incapable of holding politicians accountable (Brollo et al., 2013). A number of studies that investigate the nexus between transfers from natural resources, decentralised democratic governance, and government performance have emerged in recent time. Mainly they focus on South-American and Asian countries, e.g.Ferraz and Finan (2008), Ferraz and Finan (2011), Brollo et al. (2013), Litschig and Morrison (2013) on Brazil, Maldonado (2014) on Peru, Martínez (2016) on Columbia, and Olsson and Valsecchi (2014) on Indonesia.

Yet notably little is known concerning this matter with regard to African countries though local governance is proposed as key to development and natural resources abound in many African regions. Quantitative evidence on local elections and development which could yield valuable insights for improving decentralisation policies, is scarce.[2] There are two plausible reasons for this lack of evidence. First, collecting comprehensive data on local elections or local governance is a cumbersome endeavour, and sometimes hardly feasible. Second, only few countries are organised as federal states (Burgess, 2012), and many African states do not hold local elections at all.[3] In a time when decentralisation policies are being enacted in many resource rich developing countries, we should have a far better knowledge over it's implications on stability of local democratic institutions and

[1] The World Bank, an influential development policy institution, has a whole section on decentralisation topics. A summary of the arguments concerning accountability, transparency and corruption in decentralised governance compiled by the World Bank can be found here: http://www1.worldbank.org/publicsector/decentralization/admin.htm#4

[2] An exception is Reinikka and Svensson (2004) who look at the capture of school grants by local officials, but who neither do include any quantitative analysis of local elections. A study that looks at local governance and service delivery in Nigeria is Khemani (2006) using a survey of 30 local governments, 252 public primary health facilities and over 700 health care providers in the year 2002.

[3] Olowu (2003) states that partisan local elections are held in Nigerian, Kenyan, South African local governments, and Ivorian communes. Ghana has not allowed for the multi-party elections at the local level, Uganda holds local elections yet in a non-partisan way.

prosperity.

This paper studies the local political resource curse in Nigeria – a vast country of now over 170 million inhabitants[4]. It investigates how resource revenue disbursements potentially undermine local democratic institutions and impair development. Whether local elections are held or unconstitutional so-called "caretaker committees" appointed instead is contingent upon idiosyncratic decision power of state governments. I will argue that capture of states by governors with its consequential withholding of local elections depends on the amount of tax revenue transfers that flow into state and local governments. Larger transfer give incentives for political elites to control the local governments.

Figure 1 illustrates the main line of argument proposed in this study: Rising global oil prices lead to an increase in tax revenues, which are collected centrally, and then distributed to all state and local governments. This makes state capture and control over local governments more rewarding as larger rents are up for grabs. To exert firm control over local governments' funds, state governments appoint caretaker committees in lieu of holding local elections. The lower accountability and responsiveness of appointed caretaker committees deprives local government areas of their development prospects.

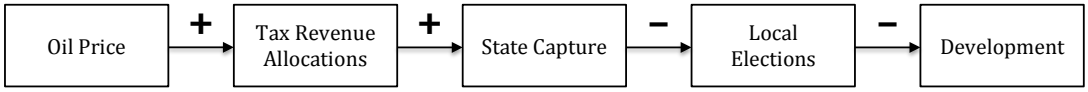


Figure 1: Line of Argument

Local government councils elections are supposed to be held regularly in the 774 local government areas of Nigeria stipulated by the 1999 constitution.[5] However, they are under the organisational lead of the state governments and have been conducted only irregularly since 1999 as depicted in Figure 2a.[6] In June 2003, the governors even called for the outright cancellation of all local elections and the abolishment of the local government councils.[7] Furthermore, local government council elections under the aegis of state independent electoral commissions often were fraudulent, delayed or cancelled.

State governments have substantial autonomy in their policy decisions. Even though the constitution stipulates a federalist structure of three tiers of government (Federal Republic of Nigeria, 1999), owing to the unspecific phrasing, local government councils

[4]In 2013, the Nigerian National Bureau of Statistics estimated the population of Nigeria to be 174 million (NBS 2013).

[5]The constitution was written in 1999 when Nigeria made the transition from a military autocratic to a civilian democratic regime. More information on institutional arrangements is provided in the description of the political economy of Nigeria in Section 2

[6]An overview over the conduct or absence of local government elections in the 36 states is displayed in figure A.2 in the appendix.

[7]The newspaper *This Day* reported on June 18, 2003, about a planned amendment of the constitution to abolish local elections: "The [state] governors are advocating that council chairmen and councillors should be appointed by them (governors) not elected by the electorate as presently provided by the constitution. [...] The governors would therefore want section 7 of the constitution to be amended. A source told *This Day* that the governors who are in support of the amendment are mostly those elected on the platform of the Peoples Democratic Party (PDP)." (20 out of 36 governors attended the meeting).

are not a completely independent third tier of government.[8] While many government functions are in the responsibility of decentralised state and local governments, overall, there exist notable gaps and ambiguities about the scope of duties at different levels of governments (World Bank, 2013, Federal Republic of Nigeria, 1999).

To perform the assigned government tasks, centrally collected taxes on oil and value-added are allocated to the state and local governments on a monthly basis. As displayed in Figure 2b, these allocations strongly correlate with the oil price. Capture and embezzlement of public finances at the state and local level seems likely in the Nigerian case. The fact that tax revenue funds are unconditionally disbursed to the state and local governments is a call to contest for these resources. There is also substantial anecdotal evidence that local Nigerian politicians have been enriching themselves.[9] The term *ga naka syndrome* in Hausa[10] language has become to be known as "gathering of local government principal officers every month-end to share whatever comes to the local government councils probably after the deduction of staff salary and thereafter disappear till the next month-end." (Oladeji, 2014).[11]

Brollo et al. (2013) present a political agency model with career concerns to explain how a windfall of government revenues can have an adverse effect on the functioning of political institutions. An incumbent politician competes for re-election while facing a trade of between pleasing the voters and grabbing rents for himself. Their model predicts that a larger budget size increases the room for grabbing rents without disappointing rationally but imperfectly informed voters. Oil revenue transfers thus worsen the moral hazard problem for incumbent politicians because the electoral punishment of corruption decreases with the budget size. Furthermore, the re-election probability for politicians with lower abilities increases with rising revenues via a selection effect based on an assumption that political rents are relatively more valuable for political candidates of lower ability.

In addition to these mechanisms, in the Nigerian case, the problem of governors' power to withhold local elections and appoint caretaker committees appears to make the political resource curse even worse: First, they can grab even more rents by controlling local

[8] Policy responsibilities and the unclear constitutional arrangement is discussed in further detail in section 2.

[9] On March 19, 2001, a journalist for *Newswatch* reported on the sudden wealth of public officials: "Poor men and women of yesterday are stupendously rich today because of their election or appointment into political offices. Even councillors at government councils are swimming in money, riding posh cars and building mansions." The newspaper *This Day* on June 18, 2003, gives an account of a deceased local government chairman, who was discovered to have become wealthy through public office: "[...] In the said case, a local government chairman who died was found to have N[aira] 150 million in his account. The same man, however, had no job before he was elected chairman."

[10] Hausa is one of the main languages in Nigeria. It is spoken by around 18.5 million people in the northern parts. Source: Ethnologue – Languages of the World, `http://www.ethnologue.com`

[11] A journalist for the newspaper *Daily Champion* articulates his clear-cut opinion on state governors: "While this writer does not intend to hold brief for the Council Chairmen, after all they are no saints, it remains obvious that the large-scale corruption going on in our local government areas is masterminded by the state governors who have seen in the local governments, veritable avenues for siphoning public funds. In fact, in some states, the local governments are extended ministries and parastatals that are at the mercy of wolves in the garb of governors. To say that the governors see in the local government councils, veritable goldmines, is not an overstatement."

budgets. Second, their reelection prospects are also improved as firm control over local administrations facilitates rigging their own reelections, but also the general elections.

Sala-i-Martin and Subramanian (2003, 2012) state that the large amounts of oil revenues led to considerable distortions in the Nigerian growth process. Although they study the period 1960 to 2000 and do not have detailed decentralised data at hand, they construe both a waste of resources by corrupt governments and the Dutch disease. Indeed, they conclude waste of resources by corrupt politicians as the more plausible explanation in the Nigerian case:

> "[...] the main problem affecting the Nigerian economy is the fact that the oil revenues that the government gets are regarded as manna from heaven which tends to corrupt institutions and lower the long-term growth prospects. [...], the logical conclusion is that the best way to deal with the problem is to transform Nigeria into a "non-oil" economy." (Sala-i-Martin and Subramanian 2012, p. 601).

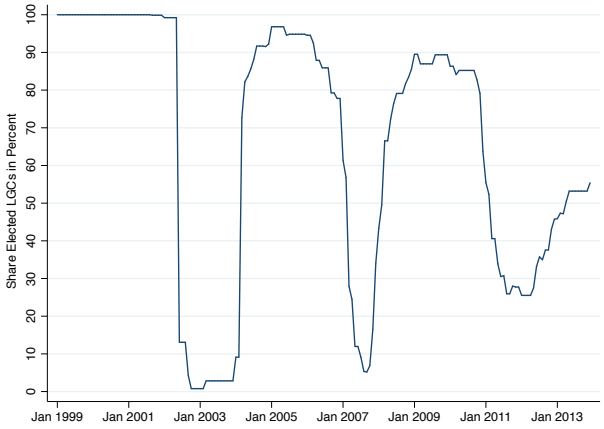
While turning Nigeria into a "non-oil" economy is practically impossible, it is essential to understand the political economic processes and institutions leading to either prosperous or malign development. This study points out possible mechanisms and provides novel empirical evidence of the local political resource curse.

To investigate the effects of local elections on economic development, and state capture as its possible cause, I make use of a data set that is unique in two ways. First, by conducting a media content analysis of Nigerian newspaper articles I gather information on the conduct and absence of local elections and the terms in office for each of the 768 local government councils on a monthly basis from June 1999 to December 2013.[12] Figure 2a displays a first clear drop in elected councils after the first term ended in May 2002. Over time there is a high volatility in elected officials partly on account of legal reasons but more so because of deliberate decisions of state governors to hold or abstain from local elections.

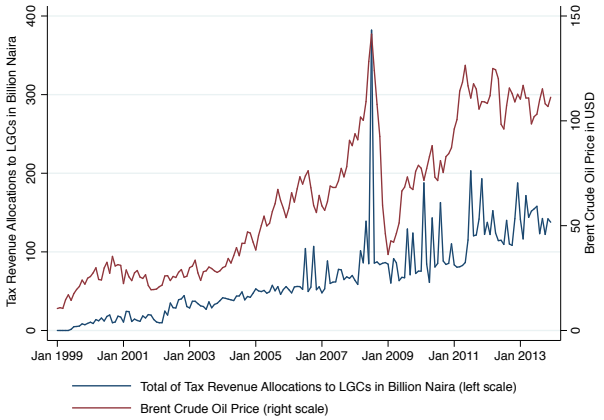
Second, I assemble data on monthly allocations from the Federation Account to the federal, the state, and the local governments that are distributed by the Allocation Committee (FAAC) of the Federal Ministry of Finance according to a specific formula that is adjusted only about every six years.[13] The revenues accruing to local government councils are almost exclusively stemming from the Federation Account sourced by value-added and oil tax revenues. Figure 2b presents the total of monthly allocations to local governments. The correlation with the global oil price is striking. A rough pattern that also emerges is, on the on hand, the steady increase in the oil price and the monthly allocations, and on

[12]The media content analysis is conducted since official information on local elections is not available. Section 2.2 gives a detailed account of how the media content analysis was conducted. I exclude the six local government councils of the Federal Capital Territory (Abuja) throughout the study due to their special status.

[13]Section 3.2 describes the Nigerian fiscal federalism in more detail.



(a) Election Status of Local Government Councils



(b) Tax Revenue Allocations and Oil Price

Figure 2: Local Elections, Monthly Allocations, and the Global Oil Price.

Notes: Part (a) depicts: the share of local government councils that are elected as percentage of all 768 local government areas (excluding the Federal Capital Territory, Abuja); the sum of monthly allocations to all local government displayed in current prices; the Brent Crude oil price depicted in USD on a monthly basis. The right axis is used both for allocations and the oil price, but in different units. Part (b) displays the logarithm of the sum of monthly allocations (deflated, 1999 prices) divided into a part that is allocated to elected local government councils and a part that is allocated to appointed caretaker committees. Allocations in both parts exclude 6 local government areas in the Federal Capital Territory, Abuja.

the other hand, the fall in the number of elected local government councils over the long run, though with noticeable fluctuations. While during the first term of the democratically elected president in 1999 to 2002 all the funds are flowing to elected councils, in the year 2013 a mere 50 percent of funds are allocated to legitimately elected councils.

I use the annual change in nighttime light emissions as main outcome variable to measure economic development at the local level. It is a consistent and comprehensive measure of development available for local government areas. The data is provided by the National Oceanic and Atmospheric Administration (NOAA) and used by numerous other studies for sub-national administrative units, e.g. Michalopoulos and Papaioannou (2013) or Hodler and Raschky (2014).

The empirical strategy includes three parts. *First*, I analyse whether elected local government councils are better at promoting development than appointed caretaker commit-

tees. I further assess how this depends on the amount of tax revenue transfers disbursed. First and foremost, it is important to know whether holding elections at the local level – even if they are fraudulent and rigged in many cases – has an impact on the local development prospects. At this point, I assume that the conditions prevailing in the local government areas have no influence on the realisation of elections and, hence, local elections are exogenously determined by the state government. *Second*, I provide a discussion of the likelihood and possible reasons of state capture. In particular, I specify the link between the global oil price, socio-economic conditions in the state, and the consequential conduct or absence of elections. *Third*, I attempt to identify the effect of local elections on development taking into account possible endogeneity in local elections. I now assume that the conduct of local elections depends on the regional political economic conditions. State governors have immense influence on the timing and organisation of elections. A 2-stage least squares instrumental variable approach is applied in order to control for the endogeneity in local elections. The chosen instrumental variable is an interaction of pre-colonial political institutions and the global oil price. The pre-colonial political institutions represent the sophistication of tribal and clan structure prior to the government structures imposed by the British colonisation. Michalopoulos and Papaioannou (2013) show that pre-colonial political institutions are important for local governance. In addition, they are clearly exogenous to the current state of development. They are interacted with the Brent Crude oil price that is determined on global commodity markets and hence exogenous to local governance as well. Local development measured by the annual change in nighttime light is then regressed on the instrumented local elections interacted with tax revenue allocations from the federation account. Controlling for the transfers received by the local government is essential in order to account for the resources available to the council.

The findings show that elected local government councils indeed performed better than appointed caretaker committees. This is an important insight since it shows that local elections – even when they are fraudulent – lead to increased accountability and presumably to less rent-seeking of local government councils. Even more interesting, to have elected local government councils become more important as oil revenue transfers increase. The positive effect of local elections becomes even more pronounced if I control for the factors associated with state capture and the endogeneity in local elections.

This paper makes several contributions to the literature. First, it relates to a vast literature on decentralisation of governance, in particular accountability and responsiveness of local officials (e.g. Seabright, 1996; Shah, 1999; Bardhan, 2002; Besley and Coate, 2003a; Faguet, 2004; Bardhan and Mookherjee, 2005; Faguet, 2014). Specifically, quantitative studies on decentralisation in African countries are still relatively rare. My paper contributes to this literature by analysing the effect of local elections on economic development a one of the few African federal states. With a specific focus on capture at decentralised levels of government, it also relates to the literature on capture by special-interest groups (Bardhan and Mookherjee, 2000; Dal Bó and Di Tella, 2003; Bardhan and Mookherjee, 2006a,b; Alatas et al., 2013).

Second, it adds to a recent rapidly growing literature on subnational governance in resource rich economies also known as the political resource curse (Ferraz and Finan, 2008, 2011; Brollo et al., 2013; Litschig and Morrison, 2013; Maldonado, 2014; Martínez, 2016; Olsson and Valsecchi, 2014). The political resource curse is intensively debated in development economics and many developing countries struggle to find useful allocation mechanisms. I assemble novel data on oil tax revenue allocations and local elections to assess the association between disbursements, decentralised governance, and economic development. To the best of my knowledge, it is the first study to analyse the political resource curse for an African country at the local level.

Third, this study is related to the literature on political incentives of elected versus appointed officials. Incentives for the provision of public policies markedly differs between elected officials that face re-election constraint and appointed public servants that face See, for instance, Besley and Coate (2003b); Martinez-Bravo et al. (2011); Martinez-Bravo (2014). I provide additional empirical evidence on the relative performance of elected local government councils versus appointed caretaker committees in Nigerian local government areas.

Finally, it bridges the gap between studies on informal traditional political institutions and formal local democratic institutions. Recent studies emphasise the role of tribes and clans as "lowest level of government" in many sub-Saharan countries. Acemoglu et al. (2014) point out the importance of the clans for local governance in Sierra Leone. Other studies analyse the relevance of pre-colonial political institutions for current development (Michalopoulos and Papaioannou, 2013). Most related to my study, Phillips (2011) shows that Nigerian traditional and government elites engage in political exchange. I follow up on these findings by looking at formal local government institutions.

In order to understand the role of local councils and the mechanisms for local development outcomes, it is important to assemble new data sets that go beyond the national level, but measure governance at the local level, where it is closest to the citizens. Or as Besley and Burgess (2002) describe it:

> "Understanding what makes government responsive to citizens' needs is a key issue in political economy. It is particularly poignant in low-income countries where, in the absence of market opportunities, vulnerable populations rely in large measure on state action for their survival." (Besley and Burgess, 2002, p. 1415).

Capture of local and state governments might be a major obstacle to accountable governments in federal Nigeria. Bardhan and Mookherjee (2000) call for a better understanding:

> "[...] the extent of relative capture at the local level may well turn out to be context- and system specific. This creates the need for empirical research to identify the nature and relative capture in any given setting, in order to

appraise the potential pitfalls of decentralisation." (Bardhan and Mookherjee, 2000, p. 139).

The rest of the paper is organised as follows. Section 2 gives a brief overview over Nigerian political system, the fiscal federalism, and more detailed description of the local elections. Section 3 presents the data used, in particular an account of the media content analysis conducted. Section 4 lays out the empirical strategy. The main results are shown in section 5. Section 6 concludes.

2 A Brief Political Economy of Nigeria

Nigeria is one of few African countries organised as a system of federal states and with a system of fiscal federalism.[14] Since its independence from Great Britain, the federation underwent numerous institutional reforms and developed into a system of three levels of governments, the federal level, the state level, and the local government councils (LGC) (World Bank, 2013). The country currently comprises 36 states, the Federal Capital Territory (FCT, Abuja), and 774 local government areas.[15] Tax revenues stem mostly from oil revenues and value-added tax (VAT), are collected centrally in the federation account and distributed to the three tiers of government by the Federation Account Allocation Committee (FAAC) according to a specifically defined formula (World Bank, 2003). A brief overview of fiscal federalism in Nigeria is given in the following section.

Every four years there is a general elections for the presidency, and the bicameral National Assembly (legislature) consisting of the Senate and the House of Representatives. The senate consists of 109 members, three from each state and one from the Federal Capital Territory. Each state consists of 3 senatorial districts. The House of Representatives has 360 members that are elected based on states' population numbers in 360 single-member constituencies. Each of the 36 states elects a State Governor and a House of Assembly, the state legislature (Constitution of the Federal Republic of Nigeria, 1999). In general, electoral institutions still seem weak. General elections held in the years 1999, 2003, 2007, and 2011 were not judged as free and fair by international observation missions.[16] Only the recent election in 2015 was regarded as free and fair (European Commission Observation Mission, 2015).

With the transition from autocratic to democratic rule in 1999, a new constitution was written that drastically changed the rules of the game and stipulated new entitlements

[14]The other two federal states are Ethiopia and South Africa (Burgess, 2012)

[15]The last changes in the administrative structure were made in 1996, when the number of states was increased from 31 to 36 (World Bank, 2002). The administrative territory at the local level is usually referred to as local government area (LGA), while the local governing body is called local government council (LGC).

[16]Observation missions were conducted by numerous organisations, e.g by the Carter Center Center/National Democratic Institute (1999) or the European Commission Observation Mission (2003, 2007, 2011, 2015).

and responsibilities. The constitution tries to balance the power between the different levels of government, regions, ethnic groups, and religions. The decentralised structure of the Nigerian Federation gives the lower tiers of government substantial autonomy over policies. While a limited list of tasks is in the responsibility of the federal government, many social and economic policy domains are in the joint responsibility of the federal and state governments (Ekpo and Englama, 2008).[17]

Important for regional development, the local government councils have the duty to participate with the state in economic planning and development. The constitution also instructs local governments to establish an economic planning board. They appear to be a tier of government that are an executing body for the state governments, but that have also substantial autonomy over their own policies and how to implement assigned state policies (World Bank, 2002).[18] It is important to note that the average local government area has a population of over 250'000 inhabitants. These are large administrative units and implementation of policies can likely only be achieved through the local government administration. Furthermore, jointly with state government, the local government councils are responsible for (a) the provision and maintenance of primary, adult and vocational education; (b) the development of agriculture and natural resources, other than the exploitation of materials; and (c) the provision and maintenance of health services (Constitution of the Federal Republic of Nigeria, 1999).[19]

On the one side, state and local governments have substantial autonomy in implementing social and economic policies as described below. On the other side, the strong position of states within the federal structure may also have contributed to capture of state governments by local elites. The federal structure possibly increases the capture of governments especially in poor, unequal and badly educated areas with strong interest groups (Bard-

[17]The tasks of the federal government are written in the exclusive list and contains items such as defence, the currency, aviation, police, railways, among others. The concurrent list contains duties in the joint responsibility of the federal and state governments. Any task that is not assigned to the federal government is left to the state governments, called the residual list. For a full scheme of the assigned tasks, see Ekpo and Englama (2008) or the Nigerian Federal Constitution (1999).

[18]A World Bank report describes in an insightful way how local governments can outperform other local government areas if the local government council is active and willing to implement progressive policies (see World Bank, 2002, p. 46). Further anecdotal evidence of the influence of a local government on its growth trajectory is presented in the newspaper *This Day* where it is reported on March 27, 2006, that President Olusegun Obasanjo has named the Chairman of Kwami Local Government area of Gombe State Alhaji Abdullahi Tafida as the best performing local government chairman in the state: "The president was impressed that the chairman linked 26 villages with the National grid without any financial assistance from the state government. President Obasanjo, while commissioning an electrification project at Malam Sidi, the headquarters of Kwami local government, praised the council chairman for doing what the Federal Government wanted at the grassroots. (...) Tafida said he has executed 60 projects at a cost of about 320 million Naira including the electrification of the 26 villages at a cost of 113 million Naira that scattered all over the council." In an interview with the newspaper *Daily Champion* on August 21, 2006, the local government chairman of Obot Akara who in 2005 won the Best Performing Local Government Award instituted by Good Governance Award Committee of the Ethical and Attitudinal Re-Orientation Commission (EARCOM), gives an account of his projects that include the building of schools, health facilities, and the purchase of 250 motorcycles to help the farmers get market access. He explicitly states that the purchase of motorcycles is not to be judged as patronage goods, but a useful mean to integrate markets.

[19]A full list of tasks assigned to the local government councils is provided in Ekpo and Englama (2008).

han and Mookherjee, 2000). Furthermore, Nigeria has a complex structure of ethnic and religious groups that can be influential in the political decision process (Phillips, 2011). The northern parts of Nigeria are dominated by the Hausa-Fulani, the south-western parts by the Yoruba, and the south-eastern parts are mainly inhabited by the Igbo.

2.1 The System of Fiscal Federalism

The system of fiscal federalism is defined in the constitution. Most tax revenues are paid into a centrally managed Consolidated Revenue Fund of the Federation. This federation account is to a large extent alimented from tax revenue on oil and value-added tax (VAT). The funds are then allocated to all three tiers of government according to a specific allocation formula by the Federation Account Allocation Committee (FAAC) under the auspices of the Revenue Mobilisation Allocation and Fiscal Commission according to the Constitution of the Federal Republic of Nigeria (1999). The Revenue Mobilisation Allocation and Fiscal Commission is comprised of a chairman and one member from each state and the Federal Capital Territory, Abuja. The Federation Account Allocation Committee is comprised of Federal Minister of Finance, representatives of each state (usually the states' commissioners of Finance and their accountants-general), and representatives from fiscal and monetary related federal agencies such as the Central Bank, and the Customs and Federal Inland Revenue Services (Maystadt and Salihu, 2015).

After deduction 13% percent of revenues that directly flow back to the oil-producing states (called the derivation principle), the collected tax revenues are divided by a vertical and horizontal allocation formula. The vertical allocation formula states that 52.68 percent of revenue allocations is disbursed to the federal government, 26.72 percent is disbursed to the state governments and the FCT (Abuja), and 20.60 percent goes to the local governments. The horizontal allocation formula which applies to states and local government councils allocates the funds according to geographic and socio-economic indicators. The factors of the formula are (i) equality 40%; (ii) population 30%; (iii) internal revenue generation Effort 10%; (iv) landmass and terrain 10%; (v) education 4%; (vi) health 3% (primary school enrolment); (vii) water supply 3% (rainfall).[20] While the revenue formula remains in force for no less than 5 years, the horizontal allocation is adjusted annually "to ensure conformity with changing realities" by the Revenue Mobilisation Allocation and Fiscal Commission (Constitution of the Federal Republic of Nigeria, 1999).

While the state governments also generate their own revenue, the local government councils have little capacity to raise taxes and, thus, hinge on the transfers from the

[20]The landmass and terrain factor is further equally divided into one constant part for all local government areas according to terrain conditions in the state (50% of 10%), and a second part measuring the size of the landmass of each local government area (50% of 10%). The internal revenue generation effort is further divided into one part applying to each local government council in each state equally (75% of 10%), and one part depending on the individual revenue effort of each local government council (25% of 10%). The water supply factor is further equally divided into an equality part applying to all local government councils equally in each state (50% of 3%), and territorial spread of rainfall depending on each local government area's rainfall (50% of 3%).

central government. The fiscal situation in particular for local governments is at the mercy of global oil prices and the general business cycle in the country (World Bank, 2013). Almost 90 % of gross revenues comprised disbursements from the federation account in the period 2001–2005. Overall they raised less than 5 % of gross revenues through internally generated means (average 2001–2005) (Eboh et al., 2006).[21] The tax powers available to local governments are limited to minor subjects, such as property tax and market and trading licences.[22] For state governments, the internally generated revenue accounted on average for just 11.5 % of total revenues in the period 2001–2005, while the transfers from the federation account made up a over 70 % of revenues.

A recurring contentious issue is the regulation on the joint account of states and local governments. The disbursements of tax revenue from the Federation Account to the local governments is not directly paid into the local government's account, but through the so-called 'State Joint Local Government Account'. It is then in the responsibility of state governments to transfer the amount determined by the FAAC to the respective local governments. The local governments in turn complain that funds at times are withheld by state governments or that they find all sorts of reasons to make deductions. This undermines the financial independence of local councils from the state government and possibly aggravates the problem of capture as more power is ascribed to the state administration (Ekpo and Englama, 2008).[23]

2.2 Nigerian Local Government Council Elections

The Nigerian Constitution of 1999 stipulates that local government councils are elected by the people. Even though the federal structure of governance includes three tiers of government, the constitution gives the state governments considerable influence over the organisation and regulation of local government councils and their elections. The constitution reads:

> The system of local government by democratically elected local government councils is under this Constitution guaranteed; and accordingly, the Government of every State shall, [...], ensure their existence under a Law which provides for the establishment, structure, composition, finance and functions of such councils. (Federal Republic of Nigeria, 1999)

This passage defining the constitution of local government councils has been proven most controversial all the years since Nigeria did the regime switch from military to civil rule. The main problem is that the constitution guarantees the election of local government

[21] I could not find any comprehensive data on internally generated revenue of local government councils.

[22] A full list of tax powers is provided in Ekpo and Englama (2008).

[23] The equivocal issue of the the joint accounts was described by a journalist of the *Daily Champion* on August 29, 2003: "The so-called state and governments' joint account system serves as the final deathblow on the financial independence of the government system."

councils. Yet, it gives the state governments all the power to enact laws regarding local governments instead of treating them rigorously as an independent tier of government. The fact that the third tier of government is not clearly independent from state governments seems to give strong parties and interest groups a lot of power, which makes capture of local governments by elites all the more likely.

While general elections – which include the elections of state governors and state house of assemblies – are under the surveillance of the national Independent Electoral Commission (INEC), local elections are under the jurisdiction of state executive. State governments constitute State Independent Electoral Commissions, a body to organise, undertake, and supervise local government elections. It consists of a chairman and no less than five but not more than seven other members (Constitution of the Federal Republic of Nigeria, 1999). Furthermore, the state governor have also to provide the financing for the conduct of local council elections so that local officials hinge on her intentions and decisions.

As a preparation for the first democratic presidential elections after the military regime in February 1999, local government council elections were first held on December 5-6, 1998. These local elections were successfully conducted in essentially all local government areas of the federation. The first term of councils lasted until the end of May 2002 when transition (caretaker) committees were appointed to temporarily govern the local governments.[24] At that time, new local government elections could not be held because the national voter register had not been properly updated since the general elections 1999. The legally critical situation subsequently led to a long delay of local elections in all states.[25] The whole controversy over the voter register marked a prejudice to appoint caretaker committees and the constitution was de facto weakened.

In a countrywide collective efforts to reinstate elected local councils, most states held local elections in March and April 2004, a remarkable two years after the term for the former elected councils had ended. Yet, a number of states found all sorts of reasons not to hold local elections and henceforth appointed caretaker committees to run the local

[24]The newspaper *This Day* reported on May 9, 2002, on the decisive ruling of the supreme court, which led to a first wave of transition committees to be appointed: "In what is widely acclaimed as a landmark judgment delivered on March 28 this year, the Supreme Court ruled in favour of the 36 states of the Federation by stating that the National Assembly had no power to extend the tenure of local councillors beyond 3 years. In the aftermath of that judgment, very few of us (if at all any) realised that we were merely concluding the beginning of an endless saga between the State Governments and our Federal legislators in their now all too familiar and desperate quest to control their local councils." This statement on the endless saga over the control of local councils turned out to have been essentially true till this day.

[25]On August 8, 2002, *Agence France-Presse (AFP)* describes the cancellation of the local elections: "Local elections were due to be held on Saturday this week, but were cancelled at the last minute after the national electoral commission failed to draw up a voter's register and legal wrangling raged over alleged attempts to exclude parties from the poll." Due to procedural problems, the voter register was finally updated only in September 2002 instead of February 2002 as planned (European Union, 2003). The delay in the update of the voter register at the national level also delayed the conduct of local government council elections and led to the legally precarious appointment of caretaker committees, that began already in June 2002 in almost all states. In some states, there was a strong will not to deploy unelected officials and subsequently the term of elected councils was extended until August 2002 (Akwa Ibom, Borno, Kaduna, Taraba).

government area administrations. Depending on the political power structures at the state level, local elections were held more or less regularly and with varying degrees of "freedom and fairness". Opposition parties often accused elections of being rigged by the incumbent administration. State Independent Electoral Commission members were charged of being members of the state governor's leading party, which was the Peoples Democratic Party in the majority of cases. Only in July 2014, a supreme court ruling forced state governments to hold local government council elections, but compliance has been insufficient since.[26]

The high volatility in elected local government councils between 1999 and 2014 is clearly resembled in Figure 2a. Moreover, Figure A.2 in the appendix provides more detail by displaying a timeline of elected local councils and appointed caretaker committees for each state. This is basically the variation that I am exploiting in the empirical analysis.

While elections into the local government councils were frequently not free and fair, but heavily controlled and manipulated by the party of the state governor, there still seem to emerge certain democratic credentials around the time of local elections:[27] (i) local elections seem to intensify the formation of political parties; (ii) local elections increase the voter awareness about local elections; (iii) even at the local level, major parties hold primary elections. Despite of the fact that the incumbent governor's party usually swipes the elections, there is some form of political competition within the parties; (iv) most of the times election tribunals are erected where election complaints can be deposited and where a court has to rule over election results; and (v) losing parties usually improve their strategies to contest the next elections. The mechanisms listed provide some provisional answers to the question whether holding fraudulent elections is still superior than holding no elections at all. Although this evidence is anecdotal and I do not claim any sufficiency, it provides some insights on what the democratic competition in the local government areas can trigger. Opposition parties are generally eager to engage in election campaigns, though often they are lacking the means to actually stand a chance of winning against a well organised incumbent party that enjoys the support of the governor. While, the electoral institutions at the local level are still precarious, strategies to compete the elections seem to have improved over time. Yet, since the governors have essentially control over conducting, delaying or even cancelling elections, the local elections usually have become a tedious undertaking for opposition forces.

[26] In June 2006, Abia state governor Chief Orji Uzor Kalu had sacked 148 duly elected local officials. Subsequently, the chairmen and councillors went to court, which led to a legal battle lasting 8 years and ended at the Supreme court that judged the dissolution of the local government councils illegal. The newspaper *Daily Independent* on July 28, 2014, commented on the major decision: "Nigeria's democracy got a legal boost and was further deepened on Friday, July 11, 2014, following a landmark judgment delivered by the Supreme Court in respect of a titanic legal battle between elected council officials in Abia and the state government. [...]. When the judgment was delivered on that fateful Friday, it reverberated across the 774 local government areas in the country. Lawyers, the umbrella body of elected council officials (ALGON) and lovers of democracy and democratic norms hailed the judgment, describing it as one of the best things that has happened in the attempt to deepen our nascent democracy".

[27] These preliminary rough findings on mechanisms characterising local government council elections are based on the media content analysis conducted and presented in section 2.2. Further details on the media content analysis are available on request.

The incentives for state governors to hold or not to hold local government elections are manifold. First, since personal gain is a potential purpose of holding office, appointing loyal caretaker committees is one way to secure that a maximal amount of funds is controlled by the state government. Caretaker committees are appointed and can, therefore, also be replaced any moment with a new set of caretakers without considerable reasons. This maximises control over the third tier of government. Second, governors have career concerns. On the one side, appointing caretaker committees can increase the probability of re-election for the governor since rigging local elections is easier if the administrative personnel in the local governments are monitored and under the control of the governor. On the other side, not holding elections could also be judged as a negative signal to the voters if voters prefer elected local councils instead of appointed caretaker committees. Conducting elections legitimises their office when they act accordingly to the constitution signaling decency to the voters. Nonetheless, if rigging elections is feasible that option may yield the higher benefits. Even governors with no re-election prospects have incentives not to hold elections since they can secure the election prospects for their successor of the same party, or improve chances of securing a seat in the House of Representatives or the Senate.

Third, increasing revenues to the state and local governments further augmented the incentives to grab political rents. As the increasing oil price lead to higher oil tax revenues, the amounts disbursed to the state and local governments increased considerably over time (as shown by Figure 2a for LGCs). Following the arguments of Brollo et al. (2013), a politician faces the trade off between grabbing rents and pleasing the voters. A larger budget size increases the room to grab political rents without disappointing the rational but imperfectly informed voters. The electoral punishment of corrupt behaviour decreases with the budget size. In the case of Nigeria, this arguments appear plausible, even more so, as the elections were usually biased towards the incumbent party through illegal means. The potential control over the transfers disbursed intensified incentives for strong political factions to capture sub-national governments in order to embezzle funds or to determine more palpably its beneficiaries. The windfalls in oil revenues seem to be a factor undermining democratic institutions.

3 Data

This study uses four major data sources briefly described in this section. There are two remarks on the data used. First, this is the first study to assemble data on local elections that determines for each month for the period 1999 to 2014 when local elections were conducted and how long local government councils were in office using a media content analysis. Second, I assembled monthly data on tax revenue allocations to the 36 states and 774 local government councils for the period 1999 to 2014. To the best of my knowledge, this is the first study using detailed monthly allocation data to all the local governments

for analyze the Nigerian fiscal federalism.

3.1 Information on Local Elections through a Media Content Analysis

I gather data on local elections by conducting a media content analysis using the FACTIVA media data base.[28] From local Nigerian newspaper articles, I extract information on local government council elections.[29] Using a series of keywords, I determine for each of the 774 local government areas the date when local elections were held, the tenure of elected councils, and the periods when caretaker committees were appointed.[30],[31] The media content analysis was conducted for each of the 36 states, excluding the Federal Capital Territory, which is exempt from in the analysis. Besides information on dates of local elections and tenure of councils, I also extracted information on the party affiliation of elected councils. Most of the time, all elected councils belonged to the same party, usually the party of the governor. This supports the notion that local elections were at times rigged and not "free and fair". It is however impossible to determine the degree of fraudulent behaviour for each election. Detailed information on the names of elected councils or the exact vote count is almost never reported by the State Independent Electoral Commissions.[32]

3.2 Monthly Allocations by the Federation Account Allocation Committee

Monthly information on tax revenue allocations from the central government to the 36 state governments and 774 local government councils comes from the Federation Account Allocation Committee of the Federal Ministry of Finance.[33] I assemble data on monthly disbursements for each month from June 1999 to July 2014. The disbursement data is timed such as the decision taken by Federation Account Allocation Committee is taken in one month, and the disbursements shared in the following month. The data is adjusted for that month of delay in the disbursement. The information on the monthly allocations is communicated by the Accountant-General of the Federation in Abuja. Since I am interested in the transfer flowing to the local government council, I use the final amount

[28]The FACTIVA media data base is a product by Dow Jones and contains news articles and information from over 9'000 international, national and regional news publications out of 152 countries, including several Nigerian newspapers.

[29]Most information is extracted from Nigerian newspapers *This Day/All Africa Global Media*, *Daily Champion/All Africa Global Media*, *Vanguard/All Africa Global Media*, *Daily Trust/All Africa Global Media*, and *Daily Independent/All Africa Global Media*.

[30]There is no official information on local government elections provided by the Nigerian government nor by the National Bureau of Statistics.

[31]I used a whole series of key terms to conduct scanning of newspaper articles. The search algorithm was adjusted for each state in order to detect the right information. The search terms included e.g. council polls, local government (LG) election, election into local government, local government election, LG poll, local government poll, LG election, LG vote, LG council, local government council election, transition committee, transition implementation committee, or caretaker committee.

[32]Further information on the details of the media content analysis is available on request.

[33]The data was available on www.faac.gov.ng in April 2015. The website is currently not online (May 2016).

Total Net Allocation that is set by the Federation Account Allocation Committee.

For each year and local government council, I sum up the allocation to elected government councils and appointed caretaker committees on a monthly basis. The log of the sum of allocations to elected and appointed councils is displayed in figure 2b. There is a high volatility in funds that flow to legitimate local government councils and "illegitimate" caretaker committees. I use this exogenous variation in disbursements in the empirical analysis to determine the government efficiency of local governments.

Table 1: Revenue Allocation Formula

Variable	**Mean**	**Std. Dev.**
Equality	0.138	0
Population	0.104	0.058
Internal Revenue Generation effort	0.009	0.004
Landmass	0.017	0.021
Terrain	0.017	0
Health - Hospital Beds	0.01	0.005
Education - Primary enrollment	0.014	0.008
Rain - Water supply spread	0.005	0.006
Rain - Rainfall share	0.005	0
Total index	0.345	0.068
N	774	

Notes: Mean and Standard deviation of the different ingredients that feed into the overall index used to allocate revenues to local government area's.

3.3 Nighttime Light Data

Nighttime light emissions are used to measure economic activity at the local level and serve as the main outcome variable of the analysis. The light data is provided by the Earth Observation Group (Earth Observation Group, 2013) and originates from the Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS) to detect cloud cover. The satellites that record the light emissions circle the earth 14 times a day and measured the light emissions every night at some instant between 8:30 and 10:00 pm local time. Light intensity is measured approximately on every square kilometer (every 30 arc-second) on a scale from 0 to 63, where higher values imply more intense nighttime light. The resulting images record stable lights that are intended to capture man-made activity.

According to Henderson et al. (2012) and Chen and Nordhaus (2011) nighttime light emissions seem a good proxy for economic activity. It has also been used at a the local level in several recent studies (see e.g. Michalopoulos and Papaioannou, 2013, Michalopoulos and Papaioannou, 2014, Hodler and Raschky, 2014).

For each local government area and year in the period 1999 to 2013 (the last available

year) I calculate the logarithm of the mean light intensity. As some LGA take the value of zero, I follow Michalopoulos and Papaioannou, 2013 to add 0.01 and calculate log(light density + 0.01). As gas flaring might be a serious problem in the Niger Delta where a lot of oil extraction is occurring, I exclude all Delta states in the main analysis.[34] Furthermore, all specifications include time fixed effects to account for different groups of satellites for which light sensor settings are reported to vary (Henderson et al., 2012).

3.4 Measuring Public Service Provision using Demographic Health Surveys (DHS)

In order to measure public goods provision at the local level, I use micro-level data from the Demographic Health Surveys (DHS), a survey implemented by ICF International.[35] In Nigeria, surveys were undertaken in the years 1999, 2003, 2008, and 2013.[36] The DHS surveys make use of geographic clusters. A cluster is a series of individual interviews conducted at one particular geo-referenced location. I add up the information available in each cluster to the level of local government areas to achieve a comprehensive coverage.

As an indicator for health services, I calculate a measure of infant mortality. Each woman in the DHS survey is asked in which years she gave birth to a child and whether the child is still alive. If a child didn't survive, the age at death in month is inquired. Using this information it is possible to calculate a measure of infant mortality that is defined as the mortality rate of children within their first year of life. This yields a complete yearly time series of infant mortality. The measurement of infant mortality includes survey responses of the DHS surveys of the years 2008 and 2013.[37]

I further assemble information on school attendance at the individual level using the DHS data for the years 2003, 2008, and 2013. For each individual child of school age, I use an indicator variable whether the child attended school at some point during the respective year or not. With this micro data, I assemble a pseudo-panel data set that allows me to answer the question whether elected local governments are better at providing schooling, controlling for unobserved local government fixed effects.

[34] The Delta include all states around the Niger Delta, where a lot of oil production is located. The Niger Delta states are Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers.

[35] More than 300 Demographic Health Surveys have been conducted in over 90 countries to provide extensive data on health related topics comparable across countries, but also to trace individual information on education and household characteristics. The surveys are conducted by ICF International and funded by the U.S. Agency for International Development (USAID). They are available on https://dhsprogram.com.

[36] Another survey with a limited number of respondents was undertaken in the year 2010, which I do not include in the analysis.

[37] The sample of local government areas is restricted to years, when enough information on births and death of children are available. I decided to use a cutoff point of 15 infants per year. This cutoff is somewhat arbitrary, but the data gets more imprecisely measure if it chosen at a lower level, and the sample gets very small if the cutoff is chosen at a higher level.

4 Empirical Strategy

I exploit panel data over 14 years on the conduct or absence of local elections, monthly tax revenue allocations from the Federation Account, and development indicators, to estimate a series of econometric models. The empirical strategy consists of three parts. Since the primary goal of the empirical analysis is to find out whether elected councils perform better in terms of economic development than appointed caretaker committees, in the first part, I start by investigating the effect of elected councils on annual light growth assuming that the timing of local elections is exogenously determined by the decision of the governor. The exogeneity assumption is plausible if we consider that each local government has no decisive influence on the timing of local elections, as there are on average 10 local governments per state. The specification is discussed in section 4.1. In the second part, I present a discussion of the presumable capture of state governments. I check for various factors that make capture more likely based on the theoretical arguments provided by Bardhan and Mookherjee (2000) and Brollo et al. (2013). While not claiming causality in this part of the analysis, it gives the reader a distinct picture of the socio-economic conditions that lead to the cancellation of local elections. In the third part, I drop the exogeneity assumption on local elections. I attempt to solve a possible endogeneity in the conduct or absence of local elections. The endogeneity arises because the local economic development may have an influence on the timing of elections; the decision of the governor to hold local elections depends on economic progress and on the local political economic conditions. The 2-stage least squares instrumental variable approach applied is discussed in section 4.3.

4.1 Local Council Elections and Economic Development

In the first part of the empirical analysis, I present basic patterns in the data on local elections and allocations to the local government councils in a stylised way. Since the data has never been used in any other study in this form, it is interesting to see whether local elections and allocation to the local government area are associated with higher growth proxied by nighttime light data. It is important to note here that the specifications in this section make no compelling claim of causality. Yet, assuming that the timing of elections is fully determined by the discrete choices of the governor, the estimates based on the following specification can present a rather accurate picture of the effect of elections on economic development. The exogeneity assumption is later dropped.

In the first specification, I regress annual light growth on a variable that measures whether a local government council is elected by the people or appointed by the state government in the following way:

$$\Delta Log\ Light_{l,s,t+1} = \alpha_l + \delta Elected\ Council_{l,s,t-1} + \psi_g + \lambda_t + \varepsilon_{l,s,t} \quad (1)$$

where the dependent variable is annual light growth defined as $log(light\ density_{l,s,t+1}) - log(light\ density_{l,s,t})$, l indicating the local government area (or its council), s indicating the state, and t indicating year t. The main explanatory variable $Elected\ Council_{l,s,t}$ is defined as the number of months in a year a local government had an elected council. The variable ranges from 0 to 12, being zero when an appointed caretaker committee governed the local government area, and 12 when an elected council governed the local government area the whole year. A number in between 0 and 12 indicates the exact number of months that a local government area had an elected council. The dependent variable is defined as the change in log light density this year to the log light density in the next year $log(light\ density_{l,s,t+1}) - log(light\ density_{l,s,t})$ in order to account for a time that implemented policies or public investments by the local council may need some time to be reflected in light emissions. In the estimations I will also vary the time lag to get more precise picture of the association between election status and local development. Time fixed effects λ_t are included to account for changes in the measurement of light emissions, and to absorb general shocks that affect all local government areas. ψ_g is a governor fixed effects. Since governor may have an impact on economic and development policies, but also on the conduct of local elections. $\varepsilon_{l,s,t}$ is an error term.

The second specification establishes the link between monthly tax revenue allocations to the local government council and annual growth in light density:

$$\Delta Log\ Light_{l,s,t} = \alpha_l + \rho \Delta Log\ Revenue\ Allocation_{l,s,t} + \psi_g + \lambda_t + \varepsilon_{l,s,t} \quad (2)$$

where the main explanatory variable is the annual change in revenue allocation included as natural logarithm. The allocation variable is measured contemporaneously with light growth. The argument behind is that additional funds that flow into the local government council are likely to be quickly spent by the council. I include different lags of the allocation variable to investigate the possible time lag in spending.

The first part concludes with the following specification, including the interaction of the election status variable and the allocation variable from above:

$$\begin{aligned} \Delta Log\ Light_{l,s,t+1} = {} & \alpha_l + \gamma Elected\ Council_{l,s,t} \times \Delta Log\ Revenue\ Allocation_{l,s,t+1} \\ & + \delta Elected\ Council_{l,s,t} + \rho \Delta Log\ Revenue\ Allocation_{l,s,t+1} \\ & + \psi_g + \lambda_t + \varepsilon_{l,s,t} \end{aligned} \quad (3)$$

where the $Elected\ Council_{l,s,t} \times \Delta Log\ Revenue\ Allocation_{l,s,t+1}$ interacts the two variables of interest in order to investigate the following argument: if local elections have a disciplining effect on local governments, this effect should become even stronger when allocations to the local government increase in the current year to the next year.

4.2 Factors of Capture

The aim of the second part of the empirical strategy is to screen the factors that are likely to make the issue of capture of state governments worse. I base my arguments on the theoretical models by Bardhan and Mookherjee (2000) and Brollo et al. (2013) to assess whether capture could indeed be the reason for the absence of local government council elections. I simply regress the indicator variable for capture, the conduct or absence of local elections, on a number of socio-economic variables the are associated with capture of governments. This exploratory empirical exercise makes no claim of causality while it should provide insights on the political economic conditions at the subnational level. Variables that are potential confounding factors possibly affecting both the conduct of local elections and the development prospects are subsequently used in the next step to identify the effect of local elections on development, discussed in the following section.

4.3 Identifying the Effect of Local Elections on Development: Instrumental-Variable Approach

The objective of the instrumental variable approach is to identify the causal effect of local council elections on economic development while controlling for the transfers that flow into a local government. While tax revenue disbursements to the local government councils are plausibly exogenous since they depend largely on variation in global crude oil prices, the conduct of local government elections is more likely to be endogenous: Whether local elections are held depends on regional political economic conditions that influence the decisions of the state governor. Hence, there possibly is a reverse of effect of the state of development on the conduct of elections. Furthermore, confounding variables that both affect the timing of elections and economic development might bias the estimate.

To address these concerns, I apply an instrumental variable approach in a 2-stage least squares estimation framework. On the first stage, I predict the conduct or absence of local government council elections using two sources of plausibly exogenous variation as instruments. In the second stage, I regress local development on the predicted values of local council elections interacted with tax revenue allocations received by the local government council, similar to the specification in equation 3.

I estimate the following **first stage specification** to determine the factors influencing the conduct or absence of local government council elections:

$$\begin{aligned} \textit{Elected council}_{l,s,t} \;=\; & \alpha_l + \theta_I \textit{Pre-colonial Institutions}_{l,t} \times \Delta \textit{Log Oil Price}_t \\ & + \kappa_I \textit{Pre-colonial Institutions}_{l,t} \\ & + X'_{l,t}\beta_l + X'_{s,t}\beta_s + \psi_g + \lambda_t + \varepsilon_{l,s,t} \end{aligned} \tag{4}$$

where *Elected council*$_{l,s,t}$, as above, measures the months in a year that a local government area l had a an elected local government council in local government in state s, and year t. The instrumental variable is *pre-colonial institutions*$_{l,t} \times$ *oil price*$_t$. The oil price that might influence the business cycle or any other variables that have a potential affect on elections is absorbed by the time fixed effect λ_t. The time fixed effects λ_t also control for common shocks affecting all local government areas. $X_{l,t}$ and $X_{s,t}$ are a time-varying sets of control variables at the level of local council and state government.

The exogenous variation used for the instrumental variables comes from two sources. First, I use the variation in the global crude oil price that is exogenous to local political economic conditions and cannot be influenced by state governments.[38] Second, I use pre-colonial political institutions as an important indicator for the depth and organisational character of the civil society. Michalopoulos and Papaioannou (2013) find pre-colonial political institutions to be a relevant determinant of development in African countries.

In fact there are two endogenous variables that need to be instrumented, that is *Elected Council*$_{l,s,t}$ and the interaction term *Elected Council*$_{l,s,t} \times \Delta$*Log Revenue Allocation*$_{l,s,t}$. Therefore, two instruments are so that the estimation is just identified. While *Elected Council*$_{l,s,t}$ is instrumented by *Pre-colonial Institutions*$_{l,t} \times \Delta$*Log Oil Price*$_t$, it obviously follows that *Elected Council*$_{l,s,t} \times \Delta$*Log Revenue Allocation*$_{l,s,t}$ can be instrumented by *Pre-colonial Institutions*$_{l,t} \times \Delta$*Log Oil Price*$_t \times \Delta$*Log Revenue Allocation*$_{l,s,t}$.

In order for the instruments to be valid, the exclusion restrictions needs to hold. The instruments should affect local development only through the policies enacted by the local government councils and not through other means. Yet, both the oil price and the pre-colonial political institutions are very likely to influence development through other channels than the local government. However, the likely effect of the oil price on the business cycle is absorbed by including time fixed effects. Furthermore, pre-colonial institutions are also relevant for local development, for which reason I include them separately in each regression. Again, the central identifying assumption is that both instrumental variables interacted can have an effect only through the local governments, and not through other channels. Once I control for the business cycle effect of the oil price, interacted with the locally measured pre-colonial political institutions, it will have an effect on development only through the local government elections. The argument is that the oil price strongly affect the tax revenue disbursements to the local governments. Increasing oil revenue disbursements intensify the political contest for resources at the local level.[39] The intensity of the resource contest again influences the decision of the state governor to hold elections. Eventually, the decision of the governor to hold or abort elections influences the policies enacted by each local government council, and therefore its development prospects.

In the **second stage specification**, I employ the fitted values of local council elections

[38] Throughout, I exclude states of the oil-rich Niger delta that potentially have an influence on oil production or disturbance thereof.

[39] It is important to note here, again, that I am only including non-oil-producing states in my empirical analysis.

from the first stage to estimate its causal effect on development, according to:

$$\begin{aligned} \Delta Log\ Light_{l,s,t} &= \alpha_l + \gamma \widehat{Elected\ Council_{l,s,t} \times \Delta Log\ Revenue\ Allocation}_{l,s,t} \\ &+ \delta \widehat{Elected\ Council}_{l,s,t} + \rho \Delta Log\ Revenue\ Allocation_{l,s,t} \\ &+ X'_{l,t}\beta_l + X'_{s,t}\beta_s + \psi_g + \lambda_t + \varepsilon_{l,s,t} \end{aligned} \quad (5)$$

where the outcome variable is $\Delta Log\ Light_{l,s,t}$ as before. The coefficient of interest are γ and δ that capture the efficiency of the local government council in promoting growth, in fact comparing the available funds to the council and the subsequent economic growth proxied by light. ψ_g is a governor fixed effects accounting for specific characteristics of each individual governor. λ_t is a year fixed effect. $\varepsilon_{l,s,t}$ is the error term.

Estimates could be biased if there are any confounding factors that both affect the election status of local governments and development, for which I do not account. As on the first stage, a series of controls at the local level, $X_{l,t}$, as well as the state level, $X_{s,t}$, is included in order to account for any variables affecting both the election variable and the outcome.

5 Results

The results section is structured according to the empirical strategy derived above. Results on the effect of local elections on public goods provision is discussed in the separate Section 6.

5.1 Elected Local Government Councils and Local Economic Growth

In this first result section I presents simple OLS regressions. Table 2 present the baseline result for the association between elected local government councils and annual light growth. It is important to understand the timing of events here. Growth in light proxying development is measure as $log(light_{t+1}) - log(light_t)$.[40] It is a comparison of the amount of light emitted this year to the amount emitted in the next year. Assuming that the performance of the local government council can have an effect on development only after a certain time lag, I include the variable indicating election status $Elected\ Council_{l,s,t}$ this year and the dependent variable with a one year lag. Since a policy change this year can only have an effect on development in the following year, this timing in the regressions makes completely sense. Since I have monthly information on the status of local councils, I can also include lags in election status of several months instead of years to model a more accurate timing.

[40] As measurement of light emissions may vary from year to year because of changing sensing technology of satellites, it is important to include year fixed effects in the regression.

Panel A in Table 2 shows a simple OLS regression of the variable measuring the election status of councils this year on light growth in this to the next year. The estimated coefficients in column (1) to (3) indicate that there is indeed a clearly positive association between elected local government councils and change in light emitted. An additional month that a local government area has an elected council increases light growth by 0.5 percentage points in the current year, and by 1.3 percentage points after a 6 months lag. The coefficient with a 6 months time lag is highly significant at the 0.1% level.[41]

Columns (5)–(7) presents the results using a simple dummy variable to measure election status of local government councils at a yearly level. The dummy is equal to 1 if an elected council was governing the local government area more than half of the year, thus at least 7 months. It is zero if a council was appointed by the state government 6 or more months. The results resemble the pattern of the monthly analysis. The coefficient that is significant in column (6) has a lag of one year. Having an elected council during a year increased light growth by 8 percentage points compared to local governments that had an appointed council, which is substantial. Light growth in the current year and after a two year lag is not significant, which is plausible as investments and policy changes need some time to be reflected in light growth. The coefficient including a governor fixed effect is even larger at almost 10 percentage points increased light growth and highly significant at the 1% level. Overall, the results using the monthly measure of elected councils seem to capture the effect with more precision.

While the governor has a lot of power over policies within the state, the local governments are the administrative unit that finally execute the policies at the local level. Deriving from these basic results, local governments seem to be important with regard to regional development.

5.2 Tax Revenue Allocations and Local Economic Growth

Local government areas depend heavily on the tax revenues from the federation account as described in section 2.1. Since tax revenues heavily depend on oil production and global oil prices, the local governments are more than any other tier of government at mercy of global oil demand and supply. In this section I provide evidence, that this inflows of tax revenues funds indeed has an effect on the local government areas' prosperity. While the benefits of large oil revenues are considered and shown to have brought little sustainable growth prospects (Sala-i Martin and Subramanian, 2012), the results in table 3 suggest that the local business cycle in fact very much depends on these funds flowing in. While this evidence cannot be assessed as causal due to possible omitted variable bias, the results

[41] One concern is that the standard errors are correlated at the state level since the conduct or absence of local government elections is determined at the state level. Table B.1 in the appendix presents the same set of results with standard errors clustered at the state level. While standard errors indeed get larger, the main results with a time lag of 6 months is still significant at the 1% level, while the other lags or marginally not significant. Clustering with only 27 cluster groups is problematic however (**?**). Therefore, I present the main results without clustering at the state level.

Table 2: Elected Local Government Councils and Light Growth

Dep. Var.: Annual Light Growth	Monthly Measure				Yearly Measure		
Δ Log Light$_{t+1}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: OLS Pooled Cross Section							
Council Elected	0.005^{+}						
	(0.002)						
Council Elected, 6 months lag		0.013***					
		(0.003)					
Council Elected, 12 months lag			0.009**				
			(0.003)				
Council Elected, 24 months lag				−0.002			
				(0.003)			
Council Elected Dummy					0.039		
					(0.024)		
Council Elected Dummy, 1 year lag						0.080**	
						(0.030)	
Council Elected Dummy, 2 years lag							−0.014
							(0.030)
R^2	0.22	0.24	0.24	0.25	0.22	0.23	0.25
Observations	7995	7418	7414	6837	8162	7579	6996
Panel B: OLS Governor Fixed Effects Estimation							
Council Elected	0.004						
	(0.003)						
Council Elected, 6 months lag		0.020***					
		(0.004)					
Council Elected, 12 months lag			0.013***				
			(0.004)				
Council Elected, 24 months lag				−0.003			
				(0.005)			
Council Elected Dummy					0.031		
					(0.029)		
Council Elected Dummy, 1 year lag						0.096**	
						(0.035)	
Council Elected Dummy, 2 years lag							−0.012
							(0.041)
R^2	0.23	0.25	0.25	0.27	0.23	0.24	0.27
Observations	7995	7418	7414	6837	8162	7579	6996

Notes: Dependent variable is annual growth in light $log(light_{t+1}) - log(light_t)$. The explanatory variable measures whether a local government council was elected or appointed, in two variations: (1) number of months in year with elected councils (columns 1–4), (2) dummy variable equal to 1 if the council was elected at least 7 months in year, and 0 otherwise (columns 5–7). All regressions include year fixed effects. Panel B also includes state governor fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

strongly indicate the heavy dependence of local governments on the oil windfalls or its absence.

The first column in Table 3 presents a strong association between annual growth in monthly allocations and annual growth in light emissions. An increase in allocations by 1 percent increases light growth by 0.24 percentage points. This elasticity is substantial and highly significant at the 1% level. Looking at the growth rate with a 3 months lag, the correlation is slightly lower and less significant. After a lag of half a year the association between growth in allocations and light growth disappears. The results support the notion that the local government areas heavily depend on the transfers from the federation account.

Table 3: Annual Growth in Monthly Allocations and Light Growth

Dep. Var.: Δ Log Light$_t$	OLS			OLS Governor FE		
	(1)	(2)	(3)	(4)	(5)	(6)
Δ Log Revenue Allocation$_t$	0.242**			0.189*		
	(0.075)			(0.081)		
Δ Log Revenue Allocation$_t$, 3 Months Lag		0.145+			0.163+	
		(0.086)			(0.086)	
Δ Log Revenue Allocation$_t$, 6 Months Lag			−0.051			−0.069
			(0.100)			(0.100)
R^2	0.22	0.23	0.23	0.23	0.24	0.24
Observations	8162	7579	7579	8162	7579	7579
Governor FE	No	No	No	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Dependent variable is the growth in light $log(light_t) - log(light_{t-1})$. The explanatory variable is annual growth in monthly allocations to the local government council. The allocations are measured in constant 1999 prices. All regressions include year fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

5.3 Local Government Efficiency for Elected Councils and Appointed Caretaker Committees

As shown in the last two sections, the local economic growth seems to depend on the election status of local government councils, but it also on the transfers received from the federation account. In order to really compare the performance of elected councils and appointed caretaker committees, the next step is obviously to combine the two important determinants of local development.

Panel A in Table 4 presents a combination of the two explanatory variables. I include the same set of lags for the elected council variable that were shown to be relevant for local light growth. Column (1) clearly indicates that even when both variables are included, they keep being significant. The coefficient measuring the number of months that an elected council was in office provides evidence that there is a significant influence on local development already in the same year. The effect in the annual growth in monthly transfers stays exactly the same compared to table 3. Again, the influence of the elected council variable grows over time. Increasing the time in office of elected councils by one month in a year, increases light growth by about 1 percentage point with a time lag of 6 to 12 months. The effect is highly significant at least at the 1% level.

Columns (4) to (6) presents the same set of regressions, yet include governor fixed effects, as the governor might have a lot of influence over policy. The pattern stays roughly the same. While the effect of elected local government councils becomes even more pronounced after 6 to 12 months, the annual growth in allocations is now significant also after a one year lag.

Panel B in Table 4 further includes interaction terms of the allocation and the election variable. The same set of time lags are presented. Interestingly, the interaction really seems to matter. The results are remarkable. Controlling for the the transfers that flow into the local government council, the effect of elected councils becomes even stronger. An

Table 4: Elected Local Government Councils, Growth in Allocations and Light Growth

Dep. Var.: Δ Log Light$_{t+1}$	OLS			OLS Governor FE		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: without Interactions						
Council Elected	0.005^{+}			0.004		
	(0.002)			(0.003)		
Council Elected, 6 Months Lag		0.013***			0.020***	
		(0.003)			(0.004)	
Council Elected, 12 Months Lag			0.009**			0.013***
			(0.003)			(0.004)
Δ Log Revenue Allocation$_{t+1}$	0.241**	0.119	0.115	0.190*	0.158^{+}	0.150^{+}
	(0.075)	(0.083)	(0.083)	(0.081)	(0.084)	(0.084)
R^2	0.22	0.24	0.24	0.23	0.25	0.25
Observations	7995	7418	7414	7995	7418	7414
Panel B: Interactions of Election Status and Allocations						
Δ Allocation$_{t+1}$ x Elected	0.032**			0.044***		
	(0.012)			(0.013)		
Council Elected	0.005*			0.005		
	(0.002)			(0.003)		
Δ Allocation$_{t+1}$ x Elected 6 Months Lag		0.039**			0.058***	
		(0.014)			(0.016)	
Council Elected, 6 Months Lag		0.011***			0.018***	
		(0.003)			(0.004)	
Δ Allocation$_{t+1}$ x Elected 12 Months Lag			0.040*			0.060***
			(0.017)			(0.018)
Council Elected, 12 Months Lag			0.007^{+}			0.010*
			(0.003)			(0.004)
Δ Log Revenue Allocation$_{t+1}$	−0.127	−0.326^{+}	−0.345	−0.303^{+}	−0.500*	−0.544*
	(0.152)	(0.180)	(0.212)	(0.163)	(0.196)	(0.223)
R^2	0.22	0.24	0.24	0.23	0.25	0.25
Observations	7995	7418	7414	7995	7418	7414

Notes: Dependent variable is the growth in light $log(light_{t+1}) - log(light_t)$. The variable *Council Elected* is defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The explanatory variables in Panel B include an interaction term including election status of local government councils (in months) and annual growth in allocations to the council. All regressions include year fixed effects. Panel B also includes state governor fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

additional month of elected council turns into additional light growth of 3.7 percentage points. Interestingly, the coefficient of the allocation variable turns negative and insignificant indicating that the allocations become more important for local development with elected local government councils.

The effect of the interaction term gets even more pronounced after some time lag. An additional month with an elected local government council increases light growth by 5 percentage points after 6 months, and by 4.7 percentage points after one year, if we control for the annual growth in monthly allocations.

Columns (4) to (6) in panel B once more present the same set of regressions including governor fixed effects. The effects become, again, even more pronounced. Interestingly, the coefficient on annual growth in monthly allocations turns negative and becomes significant. Hence, an annual growth in allocations has a negative growth effect for the reference group, the local governments with full year around appointed caretaker committees. An

additional percent in yearly allocations yields 0.3 percentage points lower growth in light for local government areas that are controlled by an appointed caretaker committee all year around. The effect becomes stronger after one year, reaching –0.54 percentage points after one year. With a lag of one year, an additional month of an elected council yields 7 percentage points increased light growth for the mean amount of allocations.

To illustrate the result, I exemplify the mechanism, again using the last column (6). Having an appointed council for the whole year yields a lower light growth rate of –0.54 percentage points when allocations increase by one percent. Having an elected council for just one month still yields a negative growth rate of –0.47 percentage points. A slightly positive growth rate is only reached when the council is elected at least 8 months. Having an elected council for the whole year yields an increased growth rate of around 0.3 percentage points when annual allocations from the federation account increase by one percent.

Table B.3 in the appendix presents the same results with standard errors clustered at the state level. While standard errors generally become larger, the main results stay robust.

5.4 Capture of State Governments

Capture of state governments possibly has substantial influence on local development through the conduct or absence of local government council elections. Besides, withholding elections and appointing caretaker committees instead appears to facilitate the embezzlement of public funds for state governors. Political corruption seems to be especially problematic since transfers to the state and local governments are unconditionally made. While measurement of the political economic conditions is exceptionally difficult due to a lack of comprehensive data, the conceptual arguments shall turn the evidence more intuitive. Table 5 presents the main results on state capture.

The principal argument I establish is that higher transfers flowing into the local governments make capture of the state and hence control over large sums of disbursed amounts more lucrative. Columns 1 and 2 in Table 5 present supportive evidence for this argument. In column 1, a simple regression of the *Elected Council* variable on the oil price is presented. An increase of the global oil price of 50 US dollars is associated with elected local councils serving 20 days less in office per year. The coefficient is highly significant at the 0.1% level. Column 2 indicates that a 1 percentage point increase in the annual change in revenue allocations to the local government decreases the time in office for elected councils by almost 1.5 months per year, when not controlling for other factors.[42] These result supports the patterns already observed in Figure 2: a trend of increasing allocations coincides with less time in office for elected local government councils.

[42]The estimations in Table 5 exclude the years 1999 to 2002 when local government councils were elected throughout all local government areas. During this period state governors had no idiosyncratic decision power to dispose elected councils.

Brollo et al. (2013) argue that with a larger budget size, the incumbent politician has more room to grab political rents without disappointing the imperfectly informed voters. The electoral punishment of corruption decreases with budget size which induces the politician to misbehave more frequently. In the case of Nigerian state governors, the larger transfers make it attractive to appoint caretaker committees instead of holding elections. Appointing loyal caretaker committees improves the control over the funds distributed to the local governments. Importantly, even if voters prefer elected councils to appointed caretaker committees, the governor may still please the voters since larger funds are available to be spent. In such a case, a dollar stolen hence has a smaller impact on voters perception of the unobserved ability of the governor, and thus punishment in the next gubernatorial elections becomes relatively less likely. In related studies, Grossman and Helpman (1996) and Bardhan and Mookherjee (2000) emphasise that campaign financing plays a crucial role, because uninformed voters are swayed by campaign spending to vote in favour of the respective party. Higher tax revenue transfers flowing into a captured state thus enlarge the political "war chest" of incumbent governors.

Bardhan and Mookherjee (2000) further describe that a lack of effective political competition may increase capture of governments both at the national and the local level. In general, political competition seems still precarious in Nigeria. The general elections held every four years include the gubernatorial and House of Assembly (state parliament) elections. As reported by several elections observations missions, these elections were usually not free and fair through the years 1999, 2003, 2007, and 2011.[43] While conducting a detailed analysis of these elections is beyond the scope of this study, there is plenty of evidence indicating a lack of effective political competition. In column 3 and 4 of Table 5, I include two measures of capture for each state, representing the intensity of political competition at the state level. The first measure *Senate Capture* is a binary indicator that equals one if all three senators in a state belong to the same party. I presume that political competition is low, when one party dominates the senate. The second measure is *Senate-Governor Capture* which equals one if the governor and all the senators belong to the same political party. I suppose that political competition is even further reduced if all these political functions are controlled by the same party.

The coefficients estimated in column 3 and 4 of Table 5 reveal two insights. First, lower political competition indeed seems to aggravate the problem of state capture. The time in office for elected councils is significantly reduced in cases where the governor and all three senators belong to the same party. The variable senate capture, in contrast, is positive. Although this might be counterintuitive at first sight, it indicates that if all three senators belong to a different party than the governor, state capture seems to be reduced.

[43] A non-exhaustive list of organisations that observed the Nigerian General Elections include the National Democratic Institute and The Carter Center in 1999 (1999), the National Democratic Institute in 2007, and 2011 (NDI, 2008, 2012), the European Union Elections observation Mission in 1999, 2003, 2007, 2011 and 2015 (EU, 2003, 2007, 2011, 2015). Other election observing organisations include the International Crisis Group, the International Republican Institute, and EISA – Promoting Credible and Democratic Governance in Africa.

Table 5: State Capture: Determinants of Local Government Council Elections

Dep. Var.: Elected Council				
	(1)	(2)	(3)	(4)
Oil Price	−0.014***			
	(0.003)			
Δ Log Monthly Allocations		−1.434***	−0.651***	−0.727**
		(0.329)	(0.140)	(0.251)
Senate Capture			0.763***	2.273***
			(0.098)	(0.276)
Senate-Governor Capture			−0.935***	−2.607***
			(0.110)	(0.285)
Governor First Term			0.078	−0.107
			(0.058)	(0.103)
Governor's Party is PDP			0.321***	2.826***
			(0.084)	(0.193)
Pre-colonial Pol. Institutions				−0.204**
				(0.066)
Ethnic Fractionalisation				−0.296
				(0.191)
Share Households with TV			3.061***	6.217***
			(0.485)	(0.727)
Share Households with Radio			9.498***	4.802***
			(0.467)	(0.986)
Share of People with Primary Education			−0.423	−4.148***
			(0.368)	(0.685)
Share of People with Secondary Education			−6.693***	−5.145***
			(0.759)	(1.067)
Months elapsed since last Elections			−0.200***	−0.177***
			(0.002)	(0.003)
Months elapsed since last Term End			0.138***	0.133***
			(0.003)	(0.004)
Distance State Capital to Abuja			−0.129*	0.195+
			(0.065)	(0.101)
Distance LGC Capital to State Capital			−0.021	0.112+
			(0.034)	(0.060)
Distance to Coast			−0.167**	−0.205+
			(0.056)	(0.106)
R^2	0.01	0.00	0.82	0.82
Observations	6322	6322	6173	2552

Notes: Dependent variable is *Elected Council* defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses are clustered at the LGC level. + p < 0.10, * p < 0.05, ** p < 0.01 *** p < 0.001.

Senators from different parties may put pressure on the governor to hold local elections.

Two additional measures are included to evaluate the characteristics of state governors. First, a variable indicating whether the governors serves the first term. Career concerns of the governor could affect whether withholding elections is a viable option in light of re-election prospects. Second, I also include a variable indicating whether the governor belongs to the People's Democratic Party, the incumbent party at that national level.[44] Belonging to the PDP could yields additional privileges through party ranks.

A further determinant of capture proposed by Bardhan and Mookherjee (2000) is elec-

[44] All presidents of Nigeria throughout my study period 1999–2013 were members of the PDP.

toral uncertainty, i.e. the number of swing voters, interest group cohesiveness, political awareness and the disparity in political awareness levels across classes or groups. They propose that especially the last two factors increase with illiteracy, poverty, and inequality, which are all pervasive in Nigeria. The complex political structure comprising of traditional rulers, numerous political party platforms and the multi-ethnic and multi-religious society makes it difficult to provide any clear predictions concerning capture. However, it is possible to include indicators of socio-economic conditions that proxy for electoral uncertainty and make capture more or less likely.

Phillips (2011) states that historically strong ethnic groups' characteristics continue to be of political value in Nigeria. Groups with a long pre-colonial political history are better able to engage in political exchange, in the sense that traditional leaders exchange political support of their group for public goods and services. Hence, they have a better basis to organise political support. Traditional elites remain active political entrepreneurs. Column 4 in Table 5 includes a measure of pre-colonial political institutions.[45] I find that pre-colonial political institutions in fact are associated with less time in office for elected councils. It may well be that the traditional groups are part of the elite capturing the local and state governments. Hence, they might engage in political exchange in the sense that traditionally strong groups support the incumbent governor party in exchange for financial payments made to the state and local governments. Furthermore, if traditional rulers see the local councils as contestants of their local power structure, they would have additional interests to undermine the local government elections.

Foster and Rosenzweig (2004) provide evidence that democratically elected local governments reduce inequality and poverty compared to traditional local governance in villages in India, as democratic governments produce an outcome that maximises the weighted average of landed and landless households. This supports my argument that local democratic institutions decrease the power of strong interest groups represented by traditional pre-colonial groups which capture state and local governments. In addition, the presence of strong traditional rulers also support the argument that the cohesiveness of strong interest groups increase the capture of governments.

To additionally control for group cohesiveness, which might affect capture of government, I also include a measure of ethnic fractionalisation in the regression. Ethnic fractionalisation might increase cohesiveness of political interest groups. However, I do not find any significant association of ethnic fractionalisation and elected councils.

As mentioned above, the theoretical model by Bardhan and Mookherjee (2000) predicts that political awareness and disparity in political awareness increases with illiteracy, poverty, and inequality. Column 3 and 4 in Table 5 include four variables that reflect these socio-economic characteristics. The first two proxy for the number of informed voters: the

[45]Data on pre-colonial political institutions measuring the *Jurisdictional Hierarchy Beyond Local Community* is unfortunately available only for a limited number of local government areas as show in Figure A.2 in the appendix. Since the variables pre-colonial political institutions and ethnic fractionalisation substantially reduce the sample size, they are excluded in column 3.

share of people that have either a radio or a TV. Besley and Burgess (2002) highlight the importance of the mass media to convey information about government policies in order to improve responsiveness of governments. They state that mass media can play an important role by enabling vulnerable citizens to better supervise the actions of incumbent governments.[46] The results in Table 5 support these arguments as states with higher shares in radio and TV possession are associated with a higher number of months of elected local government councils in office.

Two further variables are included that proxy for the education level in each state: the share of adults aged 18 to 49 with completed primary or secondary education. Besides Bardhan and Mookherjee (2000) providing theoretical support for literacy to mediate the problem of capture, Glaeser et al. (2004) show that higher levels of human capital should improve government institutions. Ahrend (2002) also shows that the capacity of civil society to oversee government officials depends on education levels, and also provide empirical evidence for this prediction. The simple pooled OLS results in Table 5, in contrast to expectations, show that higher levels of both primary and secondary education is negatively associated with elected councils. This counterintuitive fact is probably owing to the steadily increasing education levels across states over time. Since the trend in the number of elected councils steadily decreases over time, this negative correlation follows.

The Nigeria Economic Report (2014) by the World Bank emphasises the enduring high levels of poverty and inequality among Nigerians. While no direct evidence of poverty and inequality is included in the estimation in Table 5 by reason of missing convincing measurement, it seems likely that they contribute to lower political awareness. A lack of voter awareness and the disparity of voter awareness among different groups might substantially contribute to the problem of capture of state governments and the consequential absence of local government council elections. There might even be a vicious cycle of capture and inequality as strong interest groups that capture the state governments enrich themselves through the tax revenue allocations, while poorer groups do not have access to public funds and public goods.

Finally, I also include a number variables that control for the timing of elections and geographic location of each local government area, not discussed in detail. Overall, this empirical exercise to analyse the factors that make capture of state governments likely presented interesting insights into the political economic conditions at the state level. The conclusion is that capture indeed is a potential issue and probable to cause the withholding of local council elections.

[46] Other important studies that emphasise the importance of mass media for decreasing corruption levels are Brunetti and Weder (2003) and Ahrend (2002).

5.5 2SLS: Identifying the Effect of Local Government Elections on Development

In this section, I attempt to identify the causal effect of tax revenue disbursements obtained by elected or appointed local government councils on indicators of local economic growth. I employ a 2-stage least squares instrumental variable approach. As described in section 4.3, I use two instrumental variables to account for the endogeneity in local elections and its interaction with monthly revenue allocations. The endogeneity arises because the state of local development may have an influence on the timing of elections; the decision of the governor to hold local elections depends on economic progress and on the local political economic conditions. The exogenous variables to serve as instruments are the oil price and the indicator of pre-colonial political institutions. As a side effect, the sample in following regressions is restricted to the local government councils for which the exogenous instrumental variable pre-colonial political institutions is available.[47] Furthermore, the time period is now restricted to the years when governors had idiosyncratic power over the conduct of elections, thus the years after 2002.

Panel A in Table 6 presents the results with no time lag. The growth in light from this year to the next year is regressed on the variable measuring the number of months in a year that a local government was elected.[48] The coefficient in column (1) on the instrumented variable *Elected Council* is substantial and highly significant at the 1% level. An additional months that a council was elected increases light growth from this to the next year by almost 12 percentage points. The effect gets even slightly larger more significant with a 6 months lag, reaching over 14 percentage points in panel B. The first stage F-statistic for the instruments is 32.97 and affirms that the instrument is valid. Compared to the results in Table 4, the effect of elected council on annual light growth is now considerably larger. The results suggest a negative selection of local government elections. It is likely that local government councils that were in fact willing to conduct elections could not proceed due to a state government unwilling to hold elections.

The second column adds the control variables that take into account the socio-economic and political characteristics in each state. These control variables absorb any confounding factors that might affect both the election status of local government councils and local development proxied by light growth. Section 5.4 presented the factors that influence to conduct or absence of local government council elections mainly following the arguments by Bardhan and Mookherjee (2000). Including the controls, the effect of the election status variable becomes even larger while the change in monthly allocations keeps being insignificant.

Columns (3) and (4) add governor fixed effects. Since governors are most influential

[47] Figure A.2 in the appendix presents a map indicating the sophistication of regional political institutions using the variable *Jurisdictional Hierarchy Beyond Local Community* based on Murdock (1967) and Gray (1998).

[48] The timing of events is precisely explained in section 4.3.

Table 6: 2SLS: Elected Local Government Councils, Growth in Allocations and Light Growth (2003 – 2013)

Dep. Var.: Δ Light$_{t+1}$	Elected Council				Elected x Allocations			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: No Time Lag								
Elected Council	0.119**	0.171**	0.111**	0.095*	0.180**	0.216**	0.121**	0.107*
	(0.038)	(0.061)	(0.039)	(0.038)	(0.062)	(0.080)	(0.044)	(0.044)
Δ Allocations x Elected					0.386**	0.139	0.048	0.050
					(0.141)	(0.105)	(0.072)	(0.072)
Δ Log Revenue Allocations	0.165	0.581	0.238	0.240	−0.923+	0.357	0.117	0.124
	(0.356)	(0.496)	(0.398)	(0.381)	(0.478)	(0.536)	(0.438)	(0.424)
FS 1: F-statistic	32.97	32.36	68.30	70.14	21.31	16.54	35.72	37.25
FS 2: F-statistic					28.10	23.65	30.11	30.86
Observations	3005	2921	3005	2921	3005	2921	3005	2921
Panel B: Time Lag 6 Months								
Elected Council, Lag 6 Months	0.142***	0.165**	0.152***	0.125***	0.159***	0.157***	0.140***	0.116***
	(0.037)	(0.051)	(0.045)	(0.037)	(0.044)	(0.047)	(0.040)	(0.033)
Δ Allocations x Elected, Lag 6 M.					0.267**	−0.057	−0.093	−0.080
					(0.103)	(0.077)	(0.071)	(0.066)
Δ Log Revenue Allocations	0.233	0.456	0.492	0.326	−1.102+	0.719	0.929	0.724
	(0.380)	(0.423)	(0.431)	(0.372)	(0.642)	(0.617)	(0.622)	(0.562)
FS 1: F-statistic	39.36	26.53	45.09	60.33	26.75	15.23	28.98	38.13
FS 2: F-statistic					36.85	39.35	52.31	53.21
Observations	3004	2925	3004	2925	3004	2925	3004	2925
Governor FE	No	No	Yes	Yes	No	No	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Dependent variable is the growth in light $log(light_{t+1}) - log(light_t)$. The variable *Council Elected* is defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The two endogenous variables *Elected Council* and *Elected Council* x Δ*Log Revenue Allocations* are instrumented by *Pre-colonial Political Institutions* x Δ*Log Oil Price* and *Pre-colonial Political Institutions* x Δ*Log Oil Price* x Δ*Log Revenue Allocations*. The control variables include *Pre-colonial Political Institutions*, *Months Elapsed since Last Election*, *Months Elapsed since Last Term End*, *Governor First Term*, *Governor Party PDP*, *Senate Capture*, *Senate-Governor Capture*, *TV Possession*, *Radio Possession*, *Secondary Education*, *Distance to State Capital*, and *Distance to Coast*, and *Distance to Abuja*. All regressions include year fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers) and the Federal Capital Territory. The sample is reduced to the local government areas that have information on pre-colonial political institutions. The time period is restricted to the years 2003–2013. Huber-White standard errors in parentheses are clustered at the LGA level. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

on policies, this could have a relevant influence on economic growth. The governor fixed effect does, however, not change the results, no matter whether controls are included or not. The effects become slightly smaller though. Again, the estimated coefficients are slightly larger with a 6 months time lag.

Columns (5) to (8) additionally include the interaction of allocations and election status. Interestingly, the effect of the conduct of election becomes even stronger when monthly disbursements increase as already observed in table 4. Controlling for the endogeneity in the conduct of local elections reveals that the interaction of allocations and election status loses significance. The coefficient on the elected council is, however, stable around 13 percentage points, except for column (6), when the coefficient is even larger.

Overall, the preferred specification is displayed in column (8), where both governor fixed effects and the controls are included. An additional months with an elected council increases light growth by 10.7 percentage points in the following year, and by 11.6 per-

centage points with a lag of 6 months. The effect of local elections on light growth is hence considerable and highly significant.

Although the preferred estimation takes the endogeneity in the timing of local elections into account and controls for possible confounding factors, there are still potential unresolved issues in the estimations presented. First, the clustering of standard errors could be done at the state level instead of the local government level. Since some variables are measured at the state level, clustering at the state level may be a necessary option. Therefore, Table B.5 presents the same set of results with standard errors clustered at the state level. The main results are still significant at the 5% level, although the size in standard errors is generally increased. Second, the estimations do not in any sense control for population size or movements. Although I use annual light growth, which is a relative measure, migration of people still might affect the results. As people migrate to more attractive local governments, the growth in light could arise due to the additional people living in the area and not due to better living conditions experienced by the native people. Finally, the exact allocation mechanism of tax revenue allocations is not entirely transparent. While the vertical allocation formula presented in section 2.1 is adjusted every five years, the horizontal formula is adjusted annually "to ensure conformity with changing realities". Since I have no detailed information on the changes in indicators that constitute the horizontal allocation formula, I might not be able to control for all factors that affect allocations and development prospects in a local government area.

6 Elected Local Governments and Public Goods Provision

In order to assess the efficiency of local governments in terms of public goods provision, I present preliminary evidence on how elected local councils affect infant mortality and education attendance. As citizens are at mercy of their local government council when it comes to health care and education, it is insightful to analyse how local elections determine the service delivery in these sectors.

6.1 Provision of Health Care Services

I use infant mortality as a proxy for the provision of health care services. Infant mortality is defined as the percentage of infants that do not survive their first year. Since health care policies might take some more time to be effective I use the change in monthly allocations this year to explain infant mortality in the following year. I employ a simple OLS framework using the following specification:

$$
\begin{aligned}
Infant\ Mortality_{l,s,t} \;=\; & \alpha_l + \gamma Elected\ Council_{l,s,t} \times Log\ Revenue\ Allocation_{l,s,t} \quad (6)\\
& + \delta Elected\ Council_{l,s,t} + \rho \Delta Log\ Revenue\ Allocation_{l,s,t}\\
& + X'_{l,t}\beta_l + X'_{s,t}\beta_s + \psi_g + \lambda_t + \varepsilon_{l,s,t}
\end{aligned}
$$

where I just exchange the dependent variable, while the rest of the specification remains unchanged.

Table 7 presents the results on the effects of elected local councils on infant mortality. The estimated effects are quite weak and much less evident than the results on light growth. In panel B, when controlling for the allocation of revenues, I find a weak negative effect with a time lag of 6 and 12 months. The negative sign of the coefficient makes sense as elected local council should improve health care services compared to appointed caretaker committees and thus reduce infant mortality. This suggestive evidence is however only preliminary. A more in-depth analysis that is beyond the scope of this paper, is necessary to assess whether the conduct of local government council elections indeed also has an effect on people access to health care services.

6.2 Provision of Education

To further elaborate on the effects of local political institutions and public goods provision in the broader sense, I analyse whether children in areas with an elected local government are more likely to attend school than when the local government is appointed by the governor. If expected elected governments to more accountable to the citizens, we should observe higher school attendance rates in these LGAs. As mentioned, I assemble a pseudo-panel data set at the micro-level using DHS data of all children in school age across Nigeria using the survey years 2003, 2008, and 2013. To measure school attendance at the individual level, I use a simple dummy variable indicating whether child in was in school at some point within the past year. Unfortunately, the survey does not provide more specific information on school attendance.

I then estimate the following specification:

$$
\begin{aligned}
In\ School_{ilst} \;=\; & \alpha_l + \gamma Elected\ Council_{lst} \times Log\ Revenue\ Allocation_{lst} \quad (7)\\
& + \delta Elected\ Council_{lst} + \rho \Delta Log\ Revenue\ Allocation_{lst}\\
& + X'_{ilst}\beta + \psi_g + \lambda_t + \varepsilon_{l,s,t}
\end{aligned}
$$

where α_l is a local government fixed effect, and X˙ilst is a set of control variables at the individual level. Both for the allocations and the elected variable, I create a measure that captures the political economic conditions in the past 6 or 12 months. Thus for allocations,

Table 7: Elected Local Government Councils, Growth in Allocations and Infant Mortality

Dep. Var.: Infant Mortality$_{t+1}$	OLS				OLS Governor FE			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: without Interactions								
Council Elected	−0.001				0.000			
	(0.001)				(0.001)			
Council Elected, 6 M L		0.000				0.001		
		(0.001)				(0.001)		
Council Elected, 12 M L			0.000				0.002^{+}	
			(0.001)				(0.001)	
Council Elected, 24 M L				0.000				0.000
				(0.001)				(0.001)
Δ Allocations$_t$	−0.054^{+}	−0.054^{+}	−0.054^{+}	−0.043	−0.039	−0.036	−0.035	−0.025
	(0.030)	(0.030)	(0.030)	(0.031)	(0.030)	(0.030)	(0.030)	(0.032)
R^2	0.09	0.09	0.09	0.08	0.24	0.24	0.24	0.23
Observations	1113	1119	1119	1067	1085	1091	1091	1039
Panel B: Interactions of Election Status and Allocations								
Δ Allocations$_t$ x Elected	0.000				−0.002			
	(0.003)				(0.004)			
Council Elected	−0.001				0.000			
	(0.001)				(0.001)			
Δ Allocations$_t$ x Elected 6 M L		−0.006*				−0.003		
		(0.003)				(0.003)		
Council Elected, 6 Months Lag		0.000				0.001		
		(0.001)				(0.001)		
Δ Allocations$_t$ x Elected 12 M L			−0.007**				−0.003	
			(0.003)				(0.003)	
Council Elected, 12 Months Lag			0.000				0.002	
			(0.001)				(0.001)	
Δ Allocations$_t$ x Elected 24 M L				0.002				0.000
				(0.002)				(0.003)
Council Elected, 24 Months Lag				−0.001				0.000
				(0.001)				(0.001)
Δ Allocations$_t$	−0.053	0.014	0.019	−0.061^{+}	−0.021	−0.003	−0.002	−0.030
	(0.045)	(0.040)	(0.041)	(0.035)	(0.046)	(0.041)	(0.045)	(0.042)
R^2	0.09	0.10	0.10	0.08	0.24	0.24	0.24	0.23
Observations	1113	1119	1119	1067	1085	1091	1091	1039

Notes: Dependent variable is *infant mortality* in the following year $t + 1$. *Infant mortality* is defined as the percentage of infants that do not survive the first year. The variable *Council Elected* is defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The explanatory variables in Panel B include an interaction term including election status of local government councils (in months) and annual change in allocations to the council in year t. All regressions include year fixed effects. Panel B also includes state governor fixed effects. The sample only includes local government areas with sufficient reliable data on infant mortality and excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

I sum up all the monthly allocations within the last year, so capture how much money has flown into the local government. This type of measurement shall incorporate the time lag that government revenues may have on educational outcomes. Similarly, I also create a variable that measures the share of months that a local government was elected within the year before the survey. This takes the status of the local government in the time up to the survey into account.

Table 8 presents the preliminary results of the effects of having an elected local government (vis-a-vis an appointed one) on school attendance at the micro level. I restrict the sample to children of age 7 to 12, in order to just capture the age of primary education.

The only significant effect found is a relatively short term effect of revenue allocations on the probability that a child is in school. Interestingly, higher revenues allocated to the local government council results in fact in about 4 percentage point lower likelyhood that a child is in school in a given year. Whether a LGA has an elected local government or an appointed one does not seem to make a difference, however. The coefficient is not significant for any of the regressions, neither is the interaction term of allocations and having an elected local government council prior to the DHS survey.

Table 8: Allocations, Elected LG, and School Attendance

Dep. Var.: Child in School	6 Months		12 Months		24 Months	
	(1)	(2)	(3)	(4)	(5)	(6)
Allocations 6M	−0.049***	−0.035**				
	(0.003)	(0.005)				
Elected 6M	0.039	0.023				
	(0.090)	(0.074)				
Alloc. x Elec. 6M	−0.009	−0.007				
	(0.016)	(0.012)				
Allocations 12M			−0.016	−0.012		
			(0.013)	(0.006)		
Elected 12M			0.001	0.000		
			(0.096)	(0.077)		
Alloc. x Elec. 12M			−0.002	−0.002		
			(0.011)	(0.008)		
Allocations 24M					−0.002	−0.003
					(0.007)	(0.004)
Elected 24M					−0.026	−0.046
					(0.085)	(0.069)
Alloc. x Elec. 24M					−0.002	0.000
					(0.006)	(0.004)
LGC FE	Yes	Yes	Yes	Yes	Yes	Yes
Governor FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
R^2	0.41	0.46	0.41	0.46	0.41	0.46
Observations	62281	62272	62281	62272	62281	62272
Number of LGCs	688	688	688	688	688	688
Mean of DV	0.71	0.71	0.71	0.71	0.71	0.71

Notes: Dependent variable is a dummy variable indicating whether a kid is in school or not. The main explanatory variable are: (1) a measure of revenue allocations to the local government within the 6, 12, or 24 months prior to the survey; (2) Elected measures the share of months (6, 12, or 24) with elected local government council prior to the survey. Alloc. x Elec. is the interaction of both variables. The sample includes all children between of age of 7 and 12 in the DHS 2003, 2008, and 2013. Standard errors are two-way clustered at the state and the DHS survey level. * p<0.10, ** p<0.05, *** p<0.01.

7 Conclusion

Local government elections could be an essential element of a successful Nigerian federal state. Yet, capture of state governments by strong political groups indeed seems to be a big obstacle to development as state governments increase their grip on political power by withholding the constitutionally guaranteed local elections and undermining the third tier of government. The large and increasing inflows of tax revenue allocations makes it more attractive for state governments to appoint obedient caretaker committees in order to have tighter control over the public funds.

In this paper, I provide evidence for the political resource curse at the local level and the crucial role of local government council elections for regional economic development in Nigeria. First, I demonstrate that elected local governments indeed have a positive impact on development measured by the annual growth in nighttime light emissions. In the second part, I discuss possible factors that render capture of state governments by strong interest groups more likely. Most importantly, vast amounts of tax revenues disbursed to state and local governments make the tight control over these governments more lucrative as more public funds are up for grabs. In addition, the high poverty, inequality, and illiteracy rates, combined with still weak democratic institutions further increase the probability of capture at state and local governments. The absence of local elections based on idiosyncratic decisions of state governments is an obvious consequence thereof. Third, by applying a 2-stage least squares instrumental variable approach, I identify the effect of local council elections on annual light growth while controlling for possible confounding factors. The robust evidence supports the notion that local elections indeed improve the development prospects of local government areas and that withholding elections is detrimental.

The political resource curse at the local level seems to be a major obstacle to economic prospects in Nigeria. Enforcing the conduct of local government council elections and ensuring the independence of the third tier of government has the potential to increase accountability at the local level and unleash a more prosperous development path.

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A Data Appendix

A.1 Variable Description and Descriptive Statistics

Table A.1: Variable Description & Data Sources

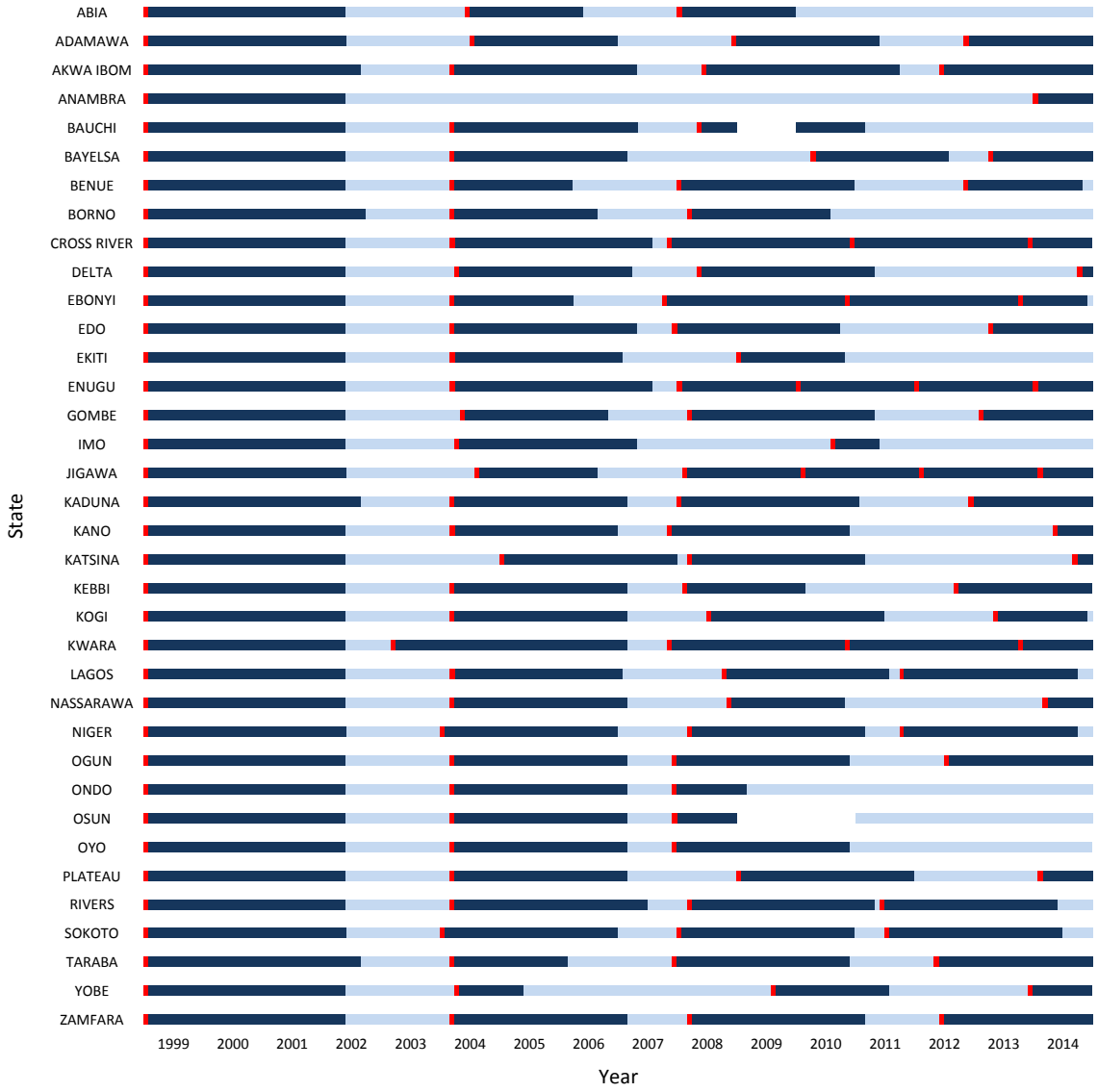
Variable	Description	Source
Dependent Variables		
Annual Light Growth	$log(light_t) - log(light_{t-1})$ Annual growth in the logarithm of light density in a local government area.	Earth Observation Group (2013), National Oceanic and Atmospheric Administration of the National Geophysical Data Center of the United States.
Infant Mortality	$Infant\ Mortality_{l,s,t}$ Infant mortality defined as percent of infant deaths within the first year of life in a local government area.	Demographic Health Surveys, 2003, 2008, 2013.
Main Explanatory Variables		
Elected Local Government Council	Binary indicator that equals one if the local government council was elected by popular vote. The indicator is zero if the local government council was appointed by the state governor (caretaker committee).	Media Content Analysis using FACTIVA, a newswire database by Dow Jones.
Annual Change in Revenue Allocations	$log(Revenue\ \ Allocation_{l,s,t}) - log(Revenue\ Alloction_{l,s,t-1})$ The revenue allocations are measured on a monthly basis and added up to each year. Revenue Allocations are deflated using the consumer price index.	Federation Account Allocation Committee (FAAC) of the Federal Ministry of Finance, online source: www.faac.gov.ng on April 2015.
Control Variables		
Pre-colonial Political Institutions	The classification of *Jurisdictional Hierarchy Beyond Local Community* is as follows: (i) No levels (no political authority beyond community); (ii) One level (e.g., petty chiefdoms); (iii) Two levels (e.g., larger chiefdoms); (iv) Three levels (e.g., states), population weighted	Murdock (1967), Gray (1998), http://worldmap.harvard.edu/ (Murdock HRAF 1959 v2)
Oil price	Brent Crude Oil price in USD, yearly average	Thomson Reuters Datastream.
Months elapsed since last elections	Counts the months since the last local government council election took place.	Own calculations based on media content analysis.
Months elapsed since last term end	Counts the months since the last elected local government councils left office.	Own calculations based on media content analysis.
Governor First Term	Indicates whether the incumbent governor serves his/her first term in office (re-election is possible).	Independent National Electoral Commission (INEC) and various online sources.
Governor's Party is PDP	The incumbent governor's party is the People's Democratic Party (PDP)	Independent National Electoral Commission (INEC) and various online sources.
Senate Capture	Binary indicator of capture of the senate at the state level. The indicator equals one if all three senators are members of the same political party.	Independent National Electoral Commission (INEC), Adam Carr's Election Archive (http://psephos.adam-carr.net), and various online sources.
Senate-Governor Capture	Binary indicator of capture of the senate and state government. The indicator equals one if the three senators and the governor of a state are members of the same political party.	Independent National Electoral Commission (INEC), Adam Carr's Election Archive (http://psephos.adam-carr.net), and various online sources.
Share Households with TV	Share of households that possess at least one TV at home, measured at the state level.	Own calculations based on Demographic Health Surveys 2003, 2008, 2013.
Share Households with Radio	Share of households that possess at least one radio at home, measured at the state level.	Own calculations based on Demographic Health Surveys 2003, 2008, 2013.
Share of People with Primary Education	Share of the adult population that completed at least a primary education, measured at the state level.	Own calculations based on Demographic Health Surveys 2003, 2008, 2013.
Share of People with Secondary Education	Share of the adult population that completed at least a secondary education, measured at the state level.	Own calculations based on Demographic Health Surveys 2003, 2008, 2013.
Ethnic Fractionalisation	Measures the probability that two randomly people from a national population are from different linguistic groups based.	Demographic Health Surveys 2003, 2008, 2010.
Distance State Capital to Abuja	Logarithm of distance from state capital to Nigeria's capital Abuja in kilometres.	Own calculations using GIS, coordinates of state capitals from Google Maps.
Distance LGA to State Capital	Logarithm of distance from local government area geographic centroid to the state's capital in kilometres.	Own calculations using GIS, coordinates of capitals from Google Maps.
Distance to Coast	Logarithm of distance from local government area geographic centroid to nearest coastal point in kilometres.	Own calculations using GIS, coordinates of LGC capitals from Google Maps.

Table A.2: Descriptive Statistics

Dependent Variables	Observations	Mean	Std. Dev.	Min.	Max.
Δ Log Light	8162	0.063	0.808	−5.238	5.474
Infant Mortality	1272	0.097	0.073	0	0.41
Main Explanatory Variables	Observations	Mean	Std. Dev.	Min.	Max.
Elected Local Government Council	8079	7.569	5.098	0	12
Δ Log Monthly Allocations	8246	0.153	0.386	−0.593	1.953
Control Variables	Observations	Mean	Std. Dev.	Min.	Max.
Oil Price (Brent Crude)	8246	64.885	32.137	24.503	111.813
Pre-colonial Pol. Institutions	4018	1.821	0.942	0	3
Months elapsed since last Elections	8142	31.513	22.101	4.5	173.5
Months elapsed since last Term End	6971	28.451	20.978	1.5	133.5
Governor First Term	8162	0.628		0	1
Share Households with TV	8246	0.376	0.230	0	0.921
Share Households with Radio	8246	0.772	0.103	0.468	0.981
Share of People with Secondary Education	8246	0.274	0.166	−0.082	0.741
Governor's Party is PDP	8162	0.638		0	1
Senate Capture	8162	0.639		0	1
Senate-Governor Capture	8098	0.526		0	1
Log Distance State Capital to Abuja	8162	5.814	0.460	4.774	6.539
Log Distance LGA to State Capital	8162	3.932	0.972	0.108	5.620
Log Distance to Coast	8162	5.909	0.994	1.066	7.016

A.2 Appendix Local Government Council Elections

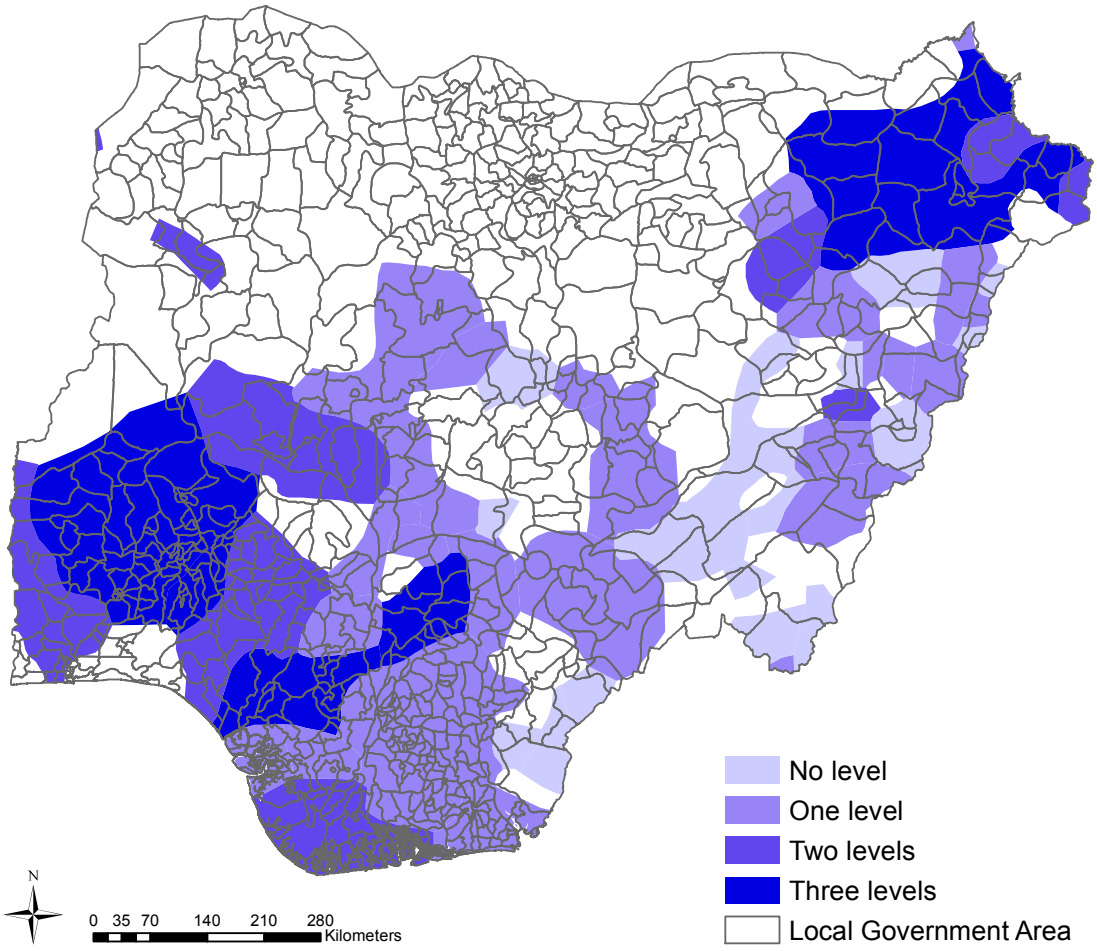
Figure A.1: Timeline of Elected Local Government Councils (dark blue) and Appointed Caretaker Committees (light blue) in Each State of Nigeria, including the Month of Elections (red)



Notes: The figure shows a timeline of elected local government councils and appointed caretaker committees for each state and month in Nigeria between 1999 and 2014. The month of elections is colored red. Years are coded as *Elected Council* if there were more than 50 percent of local government areas with elected local government councils. The first local government elections were held on December 5-6 1998, but are displayed as January 1999. When the date of the inauguration of local government councils is known, then this date serves as date of election. In most cases local government councils are sworn-in shortly after the election. The timeline is left blank if no reliable information on the constitution of local government councils was found in a month.

A.3 Pre-Colonial Political Institutions

Figure A.2: Levels of Pre-Colonial Political Institutions in Nigeria



Notes: The map shows Nigerian territories and their pre-colonial political institutions according to Murdock (1959, 1967). The classification of *Jurisdictional Hierarchy Beyond Local Community* is as follows: (i) No levels (no political authority beyond community); (ii) One level (e.g., petty chiefdoms); (iii) Two levels (e.g., larger chiefdoms); (iv) Three levels (e.g., states); for white areas there is no data available. *Sources*: Murdock (1967), Gray (1998), http://worldmap.harvard.edu/ (Murdock HRAF 1959 v2), and *Global Administrative Areas (GADM)*.

B Empirical Appendix

Table B.1: Elected Local Government Councils and Light Growth

Dep. Var.: Δ Log Light$_{t+1}$	Monthly Measure				Yearly Measure		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: OLS Pooled Cross Section							
Council Elected	0.005						
	(0.004)						
Council Elected, 6 months lag		0.013**					
		(0.004)					
Council Elected, 12 months lag			0.009				
			(0.006)				
Council Elected, 24 months lag				−0.002			
				(0.008)			
Council Elected Dummy					0.039		
					(0.041)		
Council Elected Dummy, 1 year lag						0.080	
						(0.053)	
Council Elected Dummy, 2 years lag							−0.014
							(0.072)
R^2	0.22	0.24	0.24	0.25	0.22	0.23	0.25
Observations	7995	7418	7414	6837	8162	7579	6996
Panel B: OLS Governor Fixed Effects Estimation							
Council Elected	0.004						
	(0.006)						
Council Elected, 6 months lag		0.020**					
		(0.007)					
Council Elected, 12 months lag			0.013				
			(0.009)				
Council Elected, 24 months lag				−0.003			
				(0.013)			
Council Elected Dummy					0.031		
					(0.055)		
Council Elected Dummy, 1 year lag						0.096	
						(0.070)	
Council Elected Dummy, 2 years lag							−0.012
							(0.106)
R^2	0.23	0.25	0.25	0.27	0.23	0.24	0.27
Observations	7995	7418	7414	6837	8162	7579	6996

Notes: Dependent variable is the growth in light $log(light_t - log(light_{t-1})$. The explanatory variable measures whether a local government council was elected or appointed, in two variations: (1) number of months in year with elected councils (columns 1–4), (2) dummy variable equal to 1 if the council was elected at least 7 months in year, and 0 otherwise (columns 5–7). All regressions include year fixed effects. Panel B also includes state governor fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

Table B.2: Annual Growth in Monthly Allocations and Light Growth; clustering at state level

Dep. Var.: Δ Log Light$_t$	OLS			OLS Governor FE		
	(1)	(2)	(3)	(4)	(5)	(6)
Annual Growth Allocations	0.242^{+}			0.189		
	(0.118)			(0.131)		
Annual Growth Allocations, 3 Months Lag		0.145			0.163	
		(0.106)			(0.109)	
Annual Growth Allocations, 6 Months Lag			−0.051			−0.069
			(0.148)			(0.148)
R^2	0.22	0.23	0.23	0.23	0.24	0.24
Observations	8162	7579	7579	8162	7579	7579
Governor FE	No	No	No	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Dependent variable is the growth in light $log(light_t) - log(light_{t-1})$. The explanatory variable is annual growth in monthly allocations to the local government council. The allocations are measured in constant 1999 prices. All regressions include year fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

Table B.3: Elected Local Government Councils, Growth in Allocations and Light Growth

Dep. Var.: Δ Log Light$_{t+1}$	OLS			OLS Governor FE		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: without Interactions						
Council Elected	0.005			0.004		
	(0.004)			(0.006)		
Council Elected, 6 Months Lag		0.013**			0.020**	
		(0.004)			(0.007)	
Council Elected, 12 Months Lag			0.009			0.013
			(0.006)			(0.009)
Δ Revenue Allocation$_{t+1}$	0.241^{+}	0.119	0.115	0.190	0.158	0.150
	(0.120)	(0.120)	(0.119)	(0.135)	(0.124)	(0.122)
R^2	0.22	0.24	0.24	0.23	0.25	0.25
Observations	7995	7418	7414	7995	7418	7414
Panel B: Interactions of Election Status and Allocations						
Δ Allocation$_{t+1}$ x Elected	0.032			0.044		
	(0.028)			(0.032)		
Council Elected	0.005			0.005		
	(0.004)			(0.007)		
Δ Allocation$_{t+1}$ x Elected 6m Lag		0.039*			0.058*	
		(0.017)			(0.021)	
Council Elected, 6 Months Lag		0.011*			0.018*	
		(0.004)			(0.007)	
Δ Allocation$_{t+1}$ x Elected 12m Lag			0.040			0.060
			(0.036)			(0.040)
Council Elected, 12 Months Lag			0.007			0.010
			(0.007)			(0.009)
Δ Revenue Allocation$_{t+1}$	−0.127	−0.326	−0.345	−0.303	−0.500^{+}	−0.544
	(0.320)	(0.230)	(0.463)	(0.362)	(0.286)	(0.513)
R^2	0.22	0.24	0.24	0.23	0.25	0.25
Observations	7995	7418	7414	7995	7418	7414

Notes: Dependent variable is the growth in light $log(light_{t+1}) - log(light_t)$. The variable *Council Elected* is defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The explanatory variables in Panel B include an interaction term including election status of local government councils (in months) and annual growth in allocations to the council. All regressions include year fixed effects. Panel B also includes state governor fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses are clustered at the state level. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

Table B.4: Elected Local Government Councils, Growth in Allocations and Light Growth; including Controls

Dep. Var.: Annual Light Growth	OLS			OLS Governor FE		
$log(light_{t+1}) - log(light_t)$	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: without Interactions						
Council Elected	0.008^{+}			0.003		
	(0.004)			(0.005)		
Council Elected, 6 Months Lag		0.019***			0.021***	
		(0.005)			(0.005)	
Council Elected, 12 Months Lag			0.010*			0.008
			(0.005)			(0.005)
Annual Growth Allocations	−0.116	−0.110	−0.123	−0.445*	−0.424*	−0.443*
	(0.142)	(0.142)	(0.142)	(0.186)	(0.187)	(0.187)
R^2	0.21	0.21	0.21	0.24	0.24	0.24
Observations	3199	3203	3200	3199	3203	3200
Panel B: Interactions of Election Status and Allocations						
Growth Allocations x Elected	0.040**			0.042*		
	(0.015)			(0.017)		
Council Elected	0.010*			0.006		
	(0.004)			(0.005)		
Growth Allocations x Elected 6 M. Lag		0.051**			0.064**	
		(0.018)			(0.020)	
Council Elected, 6 Months Lag		0.016***			0.017**	
		(0.005)			(0.005)	
Growth Allocations x Elect. 12 M. Lag			0.061**			0.088***
			(0.021)			(0.023)
Council Elected, 12 M. Lag			0.004			−0.002
			(0.005)			(0.006)
Annual Growth Allocations	−0.549*	−0.682**	−0.826**	−0.891***	−1.130***	−1.449***
	(0.214)	(0.241)	(0.271)	(0.244)	(0.278)	(0.312)
R^2	0.21	0.22	0.21	0.24	0.24	0.24
Observations	3199	3203	3200	3199	3203	3200

Notes: Dependent variable is the growth in light $log(light_{t+1}) - log(light_t)$. The variable *Council Elected* is defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The explanatory variables in Panel B include an interaction term including election status of local government councils (in months) and annual growth in allocations to the council. All regressions include year fixed effects. Panel B also includes state governor fixed effects. The control variables include *Pre-colonial Political Institutions*, *Months Elapsed since Last Election*, *Months Elapsed since Last Term End*, *Governor First Term*, *Governor Party PDP*, *Senate Capture*, *State Capture*, *Television Possession*, *Radio Possession*, *Secondary Education*, *Distance to State Capital*, *Distance to Coast*, and *Distance to Abuja*. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers). Huber-White standard errors in parentheses are clustered at the LGC level. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.

Table B.5: 2SLS: Elected Local Government Councils, Growth in Allocations and Light Growth (2003 – 2013); SE clustered at State Level

Dep. Var.: Δ Light$_{t+1}$	Elected Council				Elected x Allocations			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: No Time Lag								
Elected Council	0.119	0.141	0.111	0.104	0.180	0.192	0.121*	0.116^{+}
	(0.114)	(0.122)	(0.069)	(0.071)	(0.185)	(0.160)	(0.057)	(0.059)
Δ Allocations x Elected					0.386	0.139	0.048	0.047
					(0.332)	(0.222)	(0.117)	(0.137)
Δ Log Revenue Allocations	0.165	0.426	0.238	0.292	−0.923	0.230	0.117	0.182
	(0.595)	(0.933)	(0.614)	(0.606)	(0.695)	(1.080)	(0.761)	(0.782)
FS 1: F-statistic	1.98	3.07	10.56	10.70	1.33	1.55	5.49	5.59
FS 2: F-statistic					2.74	1.66	2.13	2.03
Observations	3005	2921	3005	2921	3005	2921	3005	2921
Panel B: Time Lag 6 Months								
Elected Council, Lag 6 M.	0.142	0.135	0.152^{+}	0.134*	0.134	0.132	0.140*	0.122*
	(0.105)	(0.083)	(0.075)	(0.062)	(0.096)	(0.081)	(0.065)	(0.056)
Δ Allocations x Elected, Lag 6 M.					−0.124	−0.018	−0.093	−0.092
					(0.165)	(0.174)	(0.171)	(0.158)
Δ Log Revenue Allocations	0.233	0.322	0.492	0.371	0.855	0.407	0.929	0.826
	(0.527)	(0.639)	(0.625)	(0.531)	(1.227)	(1.150)	(1.174)	(1.135)
FS 1: F-statistic	2.33	3.04	3.27	3.64	1.20	1.70	1.65	1.81
FS 2: F-statistic					3.87	3.69	3.68	4.17
Observations	3004	2925	3004	2925	3004	2925	3004	2925
Governor FE	No	No	Yes	Yes	No	No	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Dependent variable is the growth in light $log(light_{t+1}) - log(light_t)$. The variable *Council Elected* is defined as number of months in a year in which the local government was elected by the people (0 – 12 months). A value of zero means that a caretaker committee was appointed by the state government for the whole year. The two endogenous variables *Elected Council* and *Elected Council* x Δ*Log Revenue Allocations* are instrumented by *Pre-colonial Political Institutions* x Δ*Log Oil Price* and *Pre-colonial Political Institutions* x Δ*Log Oil Price* x Δ*Log Revenue Allocations*. The control variables include *Pre-colonial Political Institutions*, *Months Elapsed since Last Election*, *Months Elapsed since Last Term End*, *Governor First Term*, *Governor Party PDP*, *Senate Capture*, *Senate-Governor Capture*, *TV Possession*, *Radio Possession*, *Secondary Education*, *Distance to State Capital*, and *Distance to Coast*, and *Distance to Abuja*. All regressions include year fixed effects. The sample excludes local government areas in the 9 Delta states (Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo, and Rivers) and the Federal Capital Territory. The sample is reduced to the local government areas that have information on pre-colonial political institutions. The time period is restricted to the years 2003–2013. Huber-White standard errors in parentheses are clustered at the state level. + p<0.10, * p<0.05, ** p<0.01 *** p<0.001.