# Protest Matters: The Effects of Protests on Economic Redistribution*

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**Abstract**

Can citizen-led protests lead to meaningful economic redistribution and nudge governments to increase redistributive fiscal transfers? We study the effects of protests on fiscal redistribution using evidence from Nigeria. We digitized twenty-six years of public finance data from 1988 to 2016 to examine the effects of protests on intergovernmental transfers. We find that protests increase transfers to protesting regions, but only in areas that are politically aligned with disbursing governments. Evidence from the large-scale 2012 Occupy Nigeria protests confirms these results. Protesters also face increased police violence, particularly in non-aligned regions. The results show that protests can influence fiscal redistribution.

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# 1 Introduction

*"We turn out in the streets and nothing seems to happen. Maybe we're doing it wrong"*

- Nathan Heller, *The New Yorker, August 14, 2017*

On September 17, 2011, hundreds of people marched on Zuccotti Park in Manhattan to protest income and wealth inequality in the United States under the banner of 'Occupy Wall Street'.[1] The march marked the start of months-long protests against economic inequality in the US and worldwide, collectively labeled the Occupy movement. Three months after the movement began, another series of demonstrations erupted in Nigeria under the banner of "Occupy Nigeria", following the removal of a long-standing fuel subsidy in January 2012. The subsidy removal, implemented without warning by the federal government on January 1, 2012, led to an overnight 115% increase in gasoline prices (Akanle, Adebayo, and Adetayo, 2014). Protests began the following day on January 2, 2012, with, reportedly, millions of Nigerians participating nationwide, making it the largest mass mobilization in the country's history at that time (Adebayo, 2015; Adigun, 2018). Drawing inspiration from the economic redistribution demands of Occupy Wall Street, protesters demanded the reversal of the subsidy removal, viewing fuel subsidies as the most visible and directly impactful form of economic redistribution from government to citizens (Akanle, Adebayo, and Adetayo, 2014). The protests lasted nearly two weeks, with numerous protesters killed or injured by police and security forces.[2] Given that a major stated driver of citizen participation in protests like those in the Occupy movement is demand for economic redistribution, can protests actually lead to meaningful changes in government policy, particularly regarding the redistribution of economic resources? This is a difficult empirical question to answer due to both the complexity of fiscal systems globally and the paucity of subnational public finance data.

We address this question using evidence from Nigeria, Africa's most populous country and the world's sixth most populous by United Nations estimates. Nigeria's highly centralized, rule-based intergovernmental fiscal transfer system provides an informative setting to examine how governments might deploy fiscal resources in response to citizen-led protests. Nigeria is also one of more than 30 countries with revenue-sharing schemes that are based on

[1]Source: https://www.history.com/this-day-in-history/september-17/occupy-wall-street-begins-zuccotti-park

[2]Source: Vanguard News, https://www.vanguardngr.com/2012/01/12-killed-as-subsidy-protests-turn-bloody/

natural resource revenues.[3] This allows us to study the effects of protests on revenue distribution from a plausibly exogenous source (oil in the Nigerian case), where federal governments do not depend on subnational entities or citizens for revenue. It also enables us to examine these effects under a heavily consolidated top-down revenue-sharing system where the central government can choose to respond to ostensibly economic grievance-driven protests by directly disbursing fiscal resources to quell unrest in contentious regions. We construct a new dataset from 26 years of archival public finance records from 1988 to 2016, assembling data on revenues and expenditures along with geocoded information on protests to test our hypotheses. The breadth of data spanning these years and the richness of Nigeria's political history also allow us to test hypotheses from the electoral politics literature regarding differential responses of central governments to protests under democratic versus autocratic regimes (Ellman and Wantchekon, 2000; Hollyer, Rosendorff, and Vreeland, 2015).[4]

This paper investigates the effects of protests on fiscal redistribution and examines how governments that can directly control the distribution of fiscal resources respond to protests. We proceed in four steps. First, to fix ideas about the links between protests and intergovernmental transfers, we outline a simple principal-agent conceptual framework. The principal is the federal government leader (e.g. the president) with full control over disbursement of centrally collected revenues, and the agent is a state government leader (e.g. a governor) dependent on the principal for revenue transfers. The principal's objective is to quell protests that may destabilize their tenure in office, and this requires some level of cooperation or effort from state government leaders. Assuming agents cannot be perfectly monitored, the principal must motivate them by sharing some portion of revenues. Given simple assumptions about the cost of agent effort, one prediction is that the principal may transfer more or less revenue to agents in protesting regions depending on the perceived cost of agent effort in quelling protests. When the agent's optimal effort is positive- as may occur when agents share political preferences or are politically aligned with the principal and thus have incentives to keep the principal in office- the principal may transfer a greater share of revenues to the agent. When perceived agent effort is null- as may be the case for non-aligned agents- the principal reduces transfers to the agent. Concretely, the principal (federal government leader) and agent (state government leader) are considered politically aligned if they belong to the same political party. The principal can more effectively use

[3] As shown in Figure A1 in the Appendix (Oates, 1999).

[4] Nigeria had a military government for most of the period from 1970 to 1999, and a democratic government after 1999.

transfers to respond to protests in these ways when among citizens, there is information asymmetry about the distribution of transfers.

Second, we test predictions from the framework and examine associations between protests and transfers. In the Nigerian context, two primary types of transfers flow from federal to state governments: allocation transfers and VAT transfers. Allocation transfers are regularly publicized in news media and information about their distribution among states is made readily available to citizens. In contrast, the distribution of VAT transfers is less transparent and is not similarly publicized or made readily available to citizens. We measure protests at the state level in two ways: first, as protest intensity or the state-level z-scores relative to the national mean within a particular month and year; and second, as an indicator that equals one if the state's total number of protests is above the national mean in a month and year. Our main measure is the first, which captures the relative intensity of protests within a state, and the sensitivity of federal government responses to marginal deviations in a state's protest level from the national average. The results show that during the democratic period, higher protest levels in a state are associated with both increases and decreases in revenue transfers from federal governments to protesting states, although the effects are imprecise. The results sharpen when, following the conceptual framework, we examine protest effects on transfers by political alignment.

The estimates show that a one-standard deviation increase in protests is associated with a 0.5% decrease in monthly VAT transfers in non-aligned states.[5] At the monthly average of 640 million Naira, this represents approximately 3.2 million Naira (US$21,000) per standard deviation increase in protests. In contrast, protests increase transfers in aligned states, with a one-standard deviation increase in protests associated with a relative 1.6% increase in monthly VAT transfers and a total 1.1% increase in monthly VAT transfers (7 million Naira or US$47,000). The differential between aligned and non-aligned states is thus 10.2 million Naira (US$68,000) per month per standard deviation of protest intensity. The magnitude of protest effects on VAT transfers by alignment is larger when examining yearly outcomes. A one-standard deviation increase in yearly protests is associated with a 1.5% decrease in yearly VAT transfers in non-aligned states (105 million Naira or US$700,000) and a relative

[5]During the democratic period, between 2000 and 2016, the average monthly allocation and VAT transfers to each state were approximately 4 billion Naira and 640 million Naira, respectively, in real 2010 figures. The corresponding average yearly allocation and VAT transfers were 44 billion Naira and 7 billion Naira, respectively. The average exchange rate in 2010 was 1 US Dollar = 150 Nigerian Naira (https://fred.stlouisfed.org/series/FXRATENGA618NUPN). Details about the data are provided in Section 4.

3.7% increase in yearly VAT transfers to aligned states- a total 2.2% increase (154 million Naira or US$1.03 million). The annual differential between aligned and non-aligned states is 259 million Naira (US$1.73 million) per standard deviation of yearly protest intensity. While the signs of protest effects on allocation transfers are qualitatively similar to the VAT transfers results, the effects are not robust. The results on VAT but not allocation transfers are consistent with the conceptual framework that highlights the role of citizen information asymmetry in the case of VAT disbursements, but not allocation transfers, in government effectiveness in using transfers to respond to protests.

Third, we estimate the causal effect of protests on intergovernmental transfers using evidence from the Occupy Nigeria demonstrations. Results show protests decreased VAT transfers to non-aligned states by 0.9% but increased them to aligned states. A one-standard deviation increase in protests resulted in a relative increase of 1.5% in VAT transfers to aligned states- equivalent to a total increase of 0.6% in VAT transfers to aligned states. The trends in the causal difference-in-differences estimates of protest effects using evidence from the Occupy Nigeria demonstrations echo the OLS results. We validate the alignment mechanism using the 2015 presidential election, when 23 states switched alignment following an unexpected opposition victory. Dynamic analysis reveals protests increase VAT transfers in aligned states persistently, with governments strategically reallocating budgets: temporary recurrent expansion followed by substantial delayed capital spending, prioritizing visible infrastructure over routine operations. We conduct several falsification tests and show our results are robust to alternate specifications of our protest measure and to examining protest effects on transfers over the military period. Our results are not driven by other conflict events, and protests in aligned states are not associated with increases in non-transfer revenue, such as internally generated revenue.

Fourth, we explore other government responses to protests, specifically policing and incarceration. Government responses to protests are not only fiscal; they often include increased violence toward protesters. We examine protest effects on policing and find suggestive evidence that protests increase policing and police violence against protesters, particularly in states that are not politically aligned with the federal government. A one-standard deviation increase in the protest measure is associated with a 2.6 percentage point (pp) increase in the police share of actors at protests. The effects differ significantly for politically aligned versus non-aligned states. While protests are associated with a 4.9 pp increase in police share in non-aligned areas, they are associated with a relative reduction (-4.6 pp) in police share in politically aligned states. The total effect of a one-standard deviation increase in protests in

aligned states is a 0.3 pp increase in the police share of actors. Protests are also positively associated with incarceration, especially during the military period. Altogether, the results provide evidence that protests can influence fiscal redistribution. The manner in which they do so depends on the political relationships between disbursing federal governments and protesting states. Governments can also respond to protests with increased state violence against protesters.

We add to two distinct literatures. First, we add to the literature on the political economy of protest (Cantoni et al., 2019, 2024; El-Mallakh, 2020; Madestam et al., 2013; Acemoglu, Hassan, and Tahoun, 2018; Mazumder, 2018). Previous work has highlighted the role of social media in lowering collective action costs and mobilizing protests (Enikolopov, Makarin, and Petrova, 2020; Manacorda and Tesei, 2020; Battaglini, 2017) and examined the effects of protests on voting behavior and electoral competition (Madestam et al., 2013; El-Mallakh, 2020; Ellman and Wantchekon, 2000), stock market valuations (Acemoglu, Hassan, and Tahoun, 2018; Ba, Rivera, and Whitefield, 2023), women's labor market outcomes (El-Mallakh, Maurel, and Speciale, 2018), and political attitudes (Mazumder, 2018). However, there is almost no research on the effects of protests on economic redistribution. Most work on protest effects on economic outcomes has focused on the economic costs of protests, with evidence showing that protests decrease stock market valuations of politically connected firms (Acemoglu, Hassan, and Tahoun, 2018) and decrease property values (Collins and Margo, 2007). Given that a major stated driver of citizen participation in protests is demand for economic redistribution, whether these protests can nudge governments to engage in more fiscal redistribution is an important but largely unaddressed question in the literature.

We also contribute to the economics literature on fiscal federalism and fiscal decentralization and a related literature on the role of party affiliation and regional favoritism in the distribution of fiscal resources (Oates, 1999, 1993; Musgrave, 1997; Poterba, 1994; Buchanan, 1950; Hoover and Pecorino, 2005; Zhuravskaya, 2000; Boadway and Shah, 2007; Hodler and Raschky, 2014; Gerber, Huber, and Washington, 2010). Much of this work has focused on explaining the incentive structure of revenue-sharing schemes in either democratic regimes or authoritarian contexts, but not both. In contrast, we show that the incentive constraints of government entities in revenue-sharing environments can remain stable under both democratic and non-electoral regimes. The social science literature on regional favoritism has highlighted the role of politician origin in economic outcomes, (Hodler and Raschky, 2014; Fiva and Halse, 2016), the role of political party alignment in economic and political outcomes (Cullen, Turner, and Washington, 2019; Gerber, Huber, and Washington, 2010), and

the distortions in incentives of political stakeholders that can arise from regional and party favoritism (Zantman, 2002; Zhuravskaya, 2000; Casey, 2015). We add to this literature and show that political alignment affects how central governments respond in terms of disbursement behavior to protests. We also provide suggestive evidence that alignment can affect governments' use of violence in response to protests.

The paper is organized as follows: Section 2 provides context and historical background on intergovernmental transfers and protests in Nigeria. Section 3 outlines a simple conceptual framework. Section 4 describes the data on public finance and protests. Section 5 reports quantitative estimates of protest effects on fiscal redistribution. Section 6 examines policing and incarceration outcomes. Section 7 concludes.

# 2 Fiscal Redistribution and Protests in Nigeria

## 2.1 Intergovernmental Transfers

Nigeria is a federation comprised of a democratically elected federal government and 37 administrative 'states', consisting of 36 official states, as designated by the 1999 constitution, and a Federal Capital Territory (FCT) at Abuja.[6] (Archibong, 2019) Following Nigeria's discovery of oil in 1956, independence from British colony status in 1960 and a civil war from 1967 to 1970 (partly over control over oil resources), the country has operated under fiscal federalism. Under this system, government revenue- 80% of which comes from oil receipts- is distributed centrally from the federal government to subnational entities: i.e. states and local government areas (LGAs) (Archibong, 2019; Maystadt and Salihu, 2019).

The country experienced nearly three decades of military rule from 1970 to 1999,[7] followed by democratic governance since 1999. Apart from a constitutional requirement that 13% of gross oil revenue be shared among oil-producing states in proportion to their production volumes, all revenues are remitted to the federal government (Maystadt and Salihu, 2019). The remaining revenue is paid into a Federation Account. The Federation Account includes revenues from oil, corporate income taxes, custom and excise duties and, notably,

[6]The states can be further subdivided into 774 local government areas (LGAs), the smallest administrative unit in the country, and 6 geopolitical zones, with geographies correlating strongly with ethnicity in Nigeria as shown in Figure A2 in Appendix A.1. 6Six political zones comprise Nigeria's states and LGA. The North-West zone is dominated by the Hausa and Fulani ethnic groups, the North-East by the Kanuri ethnic group, the South-West by the Yoruba ethnic group, and the South-East by the Igbo ethnic group. The Ijaw/Edo/Bini/Ibibio weakly dominate the South-South zone, while the North-Central is home to the Tiv, Nupe and other, smaller ethnic populations (Archibong, 2019).

[7]There were brief periods of civilian rule between 1979 and 1983, and for a few months in 1993.

VAT revenue from state governments under Nigeria's highly centralized fiscal and revenue disbursement system (Alm and Boex, 2008). Given the significant share of oil revenues in the Account, the gross amount fluctuates closely with plausibly exogenous changes in the export price of oil (Maystadt and Salihu, 2019). Revenues are then shared among the federal government's three levels according to a vertical and horizontal formula.

Revenue disbursement has shifted over the years. Between 1981 and 2016, the vertical share ranged from 48.5% to 55% for the federal government, 24% to 30.5% for states, and 10% to 20.6% for LGAs (Okauru, 2012; Onuigbo and Innocent, 2015). A separate horizontal allocation formula determined how much disbursed revenue went to each state and local government, and it, too, fluctuated over time. Between 1981 and 2016, five main factors were weighted in the horizontal formula: (1) the equality of states- each state should receive an equal share (40% to 50%); (2) population (30% to 50%); (3) each state's internal revenue generation efforts (0% to 10%); (4) landmass and terrain (0% and 10%); and (5) social development factors like school enrollment, health and water (0% and 15%). Transfers to states consisted of transfers from the Federation Account, known as Allocations, and VAT transfers remitted back to states. VAT transfers followed the general horizontal allocation formula: approximately 50% of transfers were shared equally among states; 30% were awarded in proportion to population; and 20% were based on each individual state's relative contribution to VAT revenues (Maystadt and Salihu, 2019).

State and local governments, including oil-producing states, do not have direct control over the rate of federal transfers. The only tax revenue they directly raise and control is internally generated revenue (IGR), largely from personal income taxes and business registration and land leasing fees (Ekpo, 1994; Maystadt and Salihu, 2019; Salami, 2011). Total state revenues largely comprise transfers and IGR. States are heavily dependent on federal transfers for revenue; between 1988 and 2016, 66% of state revenues came from Allocations (allocation transfers) and 14% from VAT transfers. On average, total transfers from the federal government have comprised 80% of state revenues. In contrast, IGR has remained relatively small at only 20% of state revenues, during the military and democratic periods.[8]

The determination of the formulas and their distribution are opaque processes in Nigeria. Since the 1980s, the Account has been administered by a federally appointed committee, currently known as the Federation Account Allocation Committee (FAAC), which meets monthly to allocate the previous month's revenue among the three levels of government.

[8]Source: Author calculations from archival data. Details provided in Section 4.

These disbursements generally occur around mid-month and are supposed to be publicly announced through media outlets such as newspapers and television news.[9] (Maystadt and Salihu, 2019) Despite the ostensibly rule-based nature of revenue sharing, the federal government releases virtually no information about the formula's data components.

Military governments provided little transparency around federal transfers, both for statutory allocations and VAT following its 1994 introduction (Oluwaseun and Samuel, 2018). In the democratic period, transparency differs markedly across transfer types. Statutory allocation data- comprising over 60% of state revenues- are regularly publicized in media and federal documents.[10] In contrast, VAT transfer data remain opaque, with the federal government disclosing little about distribution formulas or state-level allocations. Figure 1 illustrates this transparency gap using Google Trends data from Nigeria (2011-2021).[11] Searches for "allocation" substantially exceed those for "VAT," suggesting greater public awareness of statutory allocations. Related search queries reinforce this pattern: Nigerians search for allocation distribution formulas but for VAT definitions, indicating familiarity with the former and confusion about the latter (Table A1).This differential transparency matters because weak monitoring institutions make federal transfers susceptible to manipulation despite their ostensibly formula-based nature (Maystadt and Salihu, 2019; Ekpo, 1994; Salami, 2011; Banful, 2011). This also allows us to examine how federal governments may use intergovernmental transfers to respond to protests, despite the formula.

### 2.2 Protests and Government Responses

Although citizens participate in protests for many reasons, research on the drivers of protests has highlighted that poor economic conditions and economic grievances, combined with factors that lower communication and organization costs, are strong predictors of higher protest levels within countries (Enikolopov, Makarin, and Petrova, 2020; Manacorda and Tesei, 2020; Battaglini, 2017; Madestam et al., 2013). This is also true in Nigeria, where many large-scale protests have been linked to economic grievances among the population. The Nigerian government's responses to these protests have been a mixture of concession- generally in the form of economic transfers to protesters or policy retractions- and repression through state-sponsored violence and security clampdowns. We outline examples of notable

[9]The committee consists of the Federal Minister of Finance, state representatives and representatives from the Central Bank and Federal Inland Revenue Service, among others. See Maystadt and Salihu (2019) for details.

[10]For example, as outlined in this BBC Pidgin article: https://www.bbc.com/pidgin/media-53470429

[11]Patterns are similar from 2004 onward, though Google revised geolocation methods in 2010, so we show post-revision data.

protests over Nigeria's military and democratic periods here.

### 2.2.1 Military Rule

Many protests occurred throughout Nigeria's history of military rule. To illustrate the government's response to protests, we highlight the so-called "economic riots" of the Structural Adjustment Program (SAP) era of the 1980s and 1990s (Shettima, 1993). During the debt crisis of the 1980s, Nigeria was one of several African countries that qualified for loans from international financial institutions such as the International Monetary Fund (IMF) and the World Bank. The loans came with strict conditions: to qualify for debt relief under SAP, participants had to increase the number of their free-market-based policies (Archibong, Coulibaly, and Okonjo-Iweala, 2021). Some SAP policies, like the removal of agricultural subsidies which kept food prices low, led to increases in food prices. These increases were then blamed for the stagnation of economic growth and increases in youth unemployment and poverty (Archibong, Coulibaly, and Okonjo-Iweala, 2021; Sender, 1999). During the 1980s and 1990s, these poor economic conditions led to numerous protests, characterized by the international press as "economic riots", that were often organized by university students and labor unions[12] (Sneyd, Legwegoh, and Fraser, 2013; Shettima, 1993). These protests foreshadowed the wave of pro-democracy demonstrations that erupted between 1993-1998 (Ogbondah, 2000). The military government responded with a combination of concession- in the form of transfers, such as salary payments to workers- and repression, including beatings, arrests, and the killing of protesters (Shettima, 1993).

### 2.2.2 The Democratic Period and the Occupy Nigeria Movement

As in the military period, the drivers of protest since the onset of Nigeria's democratic period in 1999 have varied, with a common theme being protests against economic conditions led by labor unions and opposition party leaders (Sneyd, Legwegoh, and Fraser, 2013; Bellemare, 2015; Omotola, 2009). Poor economic conditions coupled with periodic failure to pay the salaries of public sector workers are often identified as reasons for protests, with unions organizing workers from teachers to healthcare workers to protest government non-payment of salaries and demand improved working conditions (Adeloye et al., 2017).[13] Additionally, in southern Nigeria, and particularly in the country's southeast, where most of the nation's petroleum is located, protests have focused on poor economic and environmental conditions, which protesters attribute to environmental degradation caused by oil extraction (Nwajiaku-

[12] A headline from the New York Times from this period is shown in Figure A5.

[13] Figure A6 in Appendix A.2 shows recent newspaper headlines that document workers' discontent over their governments' failure to pay their salaries.

Dahou, 2012).

Notable protests in the past few decades include the 2007 electoral protests, the 2020 End SARS protests and the 2012 Occupy Nigeria fuel subsidy protests.[14] The 2012 Occupy Nigeria protests stand out as the first large-scale protest of the post-military democratic period and one of the largest in Nigeria's history (Adebayo, 2015; Adigun, 2018). As discussed previously, the 2012 Occupy Nigeria protests occurred after President Good-luck Jonathan withdrew long-standing fuel subsidies, leading to an overnight 115% spike in gasoline prices (Akanle, Adebayo, and Adetayo, 2014). On January 1, 2012, the federal government removed fuel subsidies without warning, and on the next day, January 2, protests began. Millions of protesters (Adebayo, 2015) demanded that the subsidy, widely viewed as a visible and impactful form of government redistribution, be restored (Akanle, Adebayo, and Adetayo, 2014). Labor unions played a significant role in organizing protesters and strikes. During the most intense period of protest, which lasted almost 2 weeks, numerous protesters were killed or injured by police and security forces.[15] Protests subsided after President Jonathan announced a partial reinstatement of the fuel subsidy, reducing fuel prices by 45% relative to the post-subsidy removal price.

## 3 Conceptual Framework

As documented in Section 2.2, federal governments typically respond to protests through both concession and repression aimed at quelling threats to leadership tenure. To fix ideas about the links between protests and intergovernmental transfers, we outline a simple principal-agent framework. Consider a revenue-sharing fiscal system with two actors: a federal government leader (principal, $f$) with full control of disbursement over centrally collected revenues $R$, and state government leaders (agents) dependent on $f$ for revenue transfers.

The principal's objective is to maximize tenure in office- through minimizing the risk of coups under military rule or maximizing the probability of reelection under democracy. This

[14]The 2007 electoral protests, which followed the election of then president Umaru Yar'Adua, was motivated by the belief that the voting had been rigged and that the incumbent party, the People's Democratic Party (PDP), which had been in power for the entirety of the democratic period, had not done enough to improve economic conditions (Omotola, 2009). The 2020 End SARS protesters, who were inspired in large part by the BLM anti-police brutality protests, demanded an end to police brutality by the Special Anti-Robbery Squad (SARS) and an improvement in young people's economic conditions. Source: https://www.bbc.com/news/world-africa-54662986

[15]Source: Vanguard News, https://www.vanguardngr.com/2012/01/12-killed-as-subsidy-protests-turn-bloody/

requires cooperation or effort from state government leaders to suppress protests that can threaten $f$'s tenure. Assume agents cannot be perfectly monitored so the principal shares $\theta R$ to incentivize effort. We focus on cases where $R$ is exogenously determined by natural resource revenues (e.g., oil), with the value of $R$ dependent on external price shocks.

Suppose there are $n$ agents, and $e_i$ refers to agent $i's$ effort, with $i = 1, ...., n$, and $e_i \in [0, +\infty)$. Agent $i$ can choose to exert $e_i > 0$ and assist $f$ in quelling protests or choose not to (which $f$ may interpret as opposition to $f$'s objectives or support for protesters) by exerting $e_i = 0$. The cost of effort to agent $i$ is $c(e_i)$ which is increasing and convex with $c(0) = 0$.

Under revenue sharing, agent $i$ receives transfer $\theta_i R$, where $\theta_i$ is defined such that for $(\theta_1, \theta_2, ..., \theta_n)$, $\theta_i \geq 0$ for all $i$ and $\sum_i \theta_i \leq 1$.

The principal's objective function is:

$$\max_{\theta_i} (1 - \theta_i) R(p, \delta) e_i \tag{1}$$

where $R(.)$ is a strictly increasing function of exogenous natural resource prices $p$ and $\delta$ captures stochastic revenue components.[16]

Agent $i's$ objective function is:

$$\max_{e_i} (\theta_i) R(p, \delta) e_i - c(e_i) \tag{2}$$

and agent $i$ chooses effort, $e_i^*$, such that

$$\frac{d}{de_i} (\theta_i R(p, \delta) e_i - c(e_i)) = 0; \tag{3}$$

and

$$\theta_i = \frac{c'(e_i^*)}{R(p, \delta)} \tag{4}$$

Without loss of generality, assume $R(p, \delta) = 1$.

[16] Assuming the principal's country is a price-taker, $\delta$ can include factors like political instability, causing price shocks in natural resource markets.

***Prediction 1:*** *An increase in the marginal cost of agent effort, all else being equal, is associated with an increase in the share of revenues transferred to the agent.*

***Prediction 1a:*** *The principal transfers a greater revenue share to agent $i$ when $e_i^* > 0$ , but reduces transfers when $e_i^* = 0$.*

Under heterogeneous political preferences- reflected in party systems- agents sharing the principal's preferences (same party or politically aligned) have incentives to maintain the principal in office and exert non-negative effort to do so; one way they might do this is by facilitating transfers to satisfy protesting public sector workers' salary demands (Section 2.2). Conversely, opposition agents may choose $e_i^* = 0$, by, for example, funding media campaigns criticizing the principal or supporting protesters (Section 2.2). For these agents, Prediction 1a holds. Since the principal imperfectly monitors agent effort, Prediction 1a applies even when the principal only assumes or perceives negative effort.

Additionally, regions with higher protest levels may have greater social capital to mobilize communities for protest, raising the political cost of quelling protests (Bratton and Van de Walle, 1992). Agents in these regions must exert more effort to quell protests and require more resources to accomplish this, so Prediction 1 will hold and transfers will increase in the marginal cost of agent effort. Importantly, $f$ responds to protests with increased transfers, $\theta_i$, to aligned regions based on the marginal cost of agent effort, but not to other events, like armed conflicts or battles. This is because citizen-led protests directly reveal citizens' relatively higher levels of social capital, reflected in their ability to mobilize against the government through protests that can threaten the principal's tenure.[17] The principal will be more effective in using transfers in the manner described here when citizens lack complete information about transfer distributions.

In the Nigerian context, the principal is the federal government leader or president and the agent is the state government leader or governor. Under military rule, all agents or state governors are politically aligned since state governors were military president appointees. Under democracy, political alignment is signaled by party affiliation, following results from the electoral politics literature (Ellman and Wantchekon, 2000; Cox and McCubbins, 1986). As discussed in Section 2.1, while both transfer types lacked transparency under military

[17]Regions with higher levels of social capital, among less fractionalized populations where the costs of coordinating protests are lower, may experience high levels of protests that clearly signal this social capital to regimes, especially during economic downturns (Enikolopov, Makarin, and Petrova, 2020; González, 2020). In contrast, other conflict events like battles between citizens signal low social capital and polarization, which do not threaten $f$'s objectives (Montalvo and Reynal-Querol, 2005).

rule, VAT distribution remains opaque in the democratic period- unlike statutory allocations, which are regularly publicized.[18]

# 4 Description of Data

## 4.1 Public Finance

We digitized 26 years of archival data on state revenues and expenditures from the Nigerian Annual Abstract of Statistics (AAS) and Ministry of Finance FAAC Reports covering 1988 to 2016. The AAS reports contain annual data on allocation and VAT transfers, internally generated revenue (IGR) and recurrent and capital expenditures at the state level from 1988 to 1996 (the military period).[19] The FAAC reports document monthly and total yearly transfers and allocations to states from 2000-2016 (the democratic period), with IGR and expenditure data available only annually. These data sources and the variables we use in our analysis are described in detail in the data appendix in Appendix A.1.1.

Figure 2 show maps of Nigeria with its states outlined, as well as the shares of VAT and allocation transfers and IGR in total state revenues from 2000 to 2016. The spatial distribution of state revenues remained relatively stable between the military and democratic periods, reflected in the significant positive correlations between state revenues across both periods[20]. Consistent with prior work[21], increases in plausibly exogenous oil prices are strongly positively associated with total allocation and VAT transfers (Maystadt and Salihu, 2019).

As noted in Section 2, transfers constitute most state revenues. Allocation transfers comprise 67% and 66% of total state revenues over the military and democratic periods, respectively, while VAT transfers make up 13% (military) and 15% (democratic). Transfers show no clear spatial patterns, featuring prominently across regions. In contrast, IGR constitutes a larger share of total state revenues in wealthier southern states (Figure 2).[22] Between 2000 and 2016, states received, on average, 32 billion Naira in allocation transfers

[18] Prior research shows this information asymmetry makes VAT transfers more susceptible to clientelistic uses during elections (Maystadt and Salihu, 2019).

[19] An example of the archival data from the AAS reports is shown in Figure A3.

[20] The correlation between state revenues in both periods is largest for IGR at 0.97 ($p < 0.001$), followed by VAT transfers (0.93, $p < 0.001$) and allocation transfers (0.67, $p < 0.001$).

[21] See Figure A4 in Appendix A.1.

[22] Only in Lagos and Rivers states, located in the country's southern region, did IGR (and not transfers) constitute the majority of state revenues.

and 7.4 billion Naira in VAT transfers annually.[23] Recurrent expenditures[24] account for 68% (military) and 59% (democratic) of total spending with capital expenditures representing 33% and 41%, respectively. Table A2 in Appendix A.1 provides a detailed summary of the public finance statistics.

### 4.2 Protests

We measure protests using two geocoded datasets that span the period 1988-2016. For the democratic period (2000-2016), we use Armed Conflict Location and Event Data (ACLED), which provides geocoded data on conflict events from media, newspaper and news agency sources starting in 1997 (Raleigh et al., 2010). There are eight conflict event categories recorded in the ACLED database including organized group "battles" among others; our main variable of interest is the "protests and riots" category (hereafter "protests"). Since ACLED does not record data from the military period from 1988 to 1996, we use another dataset, the Global Data on Events Location and Tone (GDELT) project, which similarly records geocoded data on conflict and mediation events from media and news sources for 1979-1999 (Ward et al., 2013).[25] ACLED describes protests as "demonstrations against a political entity such as a government institution" and battles as "violent interactions between two politically organized armed groups at a particular time and location" (Raleigh et al., 2010). Protests are typically less violent than battles and result in lower fatalities.[26]

Figure 3 shows the spatial distribution of protests and battles from 2000 to 2016. Southern states, especially those in the southeast region as discussed in Section 2.2.2, had a relatively higher share of protests, while the northeast saw more battles following increased attacks from Boko Haram, the Islamic terrorist group (Ekhator and Asfaw, 2018). During democratic periods, states are more likely to experience high-intensity protests than battles; this pattern reverses under military rule.[27] The ACLED and GDELT datasets also list actors involved in protests for a small subset ($< 10\%$) of events. The top three non-state

[23] In real 2010 currency.

[24] Over the democratic period, major spending categories for recurrent expenditures include personnel costs (41%), overhead costs (21%) and pensions (36%).

[25] GDELT includes twenty main event categories, including classifications like organized group "fights" or battles and, our main variable of interest, "protest", including reported protest and riot events. For the period of ACLED/GDELT data overlap, from 1997 to 1999 in our sample, there is a high, significant positive correlation between the number of protests recorded in the ACLED and GDELT datasets of 0.86 ($p < 0.001$).

[26] There were 4,060 fatalities recorded from protests in Nigeria between 2000 and 2016 versus 30,943 fatalities recorded from battles in the ACLED data.

[27] We define high intensity as protest counts exceeding the national mean. Table A2 provides summary statistics.

security force actors in democratic-period protests are labor unions, students and political party members.[28]

### 4.3 Political Parties

To test the hypothesis regarding political alignment as a primary channel linking protests and transfers, outlined in the framework in Section 3, we compile governor and presidential party affiliations for 2000-2016 from public sources.[29] Two parties dominate presidential politics: the People's Democratic Party (PDP) held the presidency in 88% of sample years, while the All Progressives Congress (APC) won in 2015. Gubernatorial politics are more competitive, with ten parties electing governors over this period.[30] Political alignment varies substantially across states and time. State politics are highly localized, driven by ethnoregional coalitions (Azeez, 2009), producing heterogeneous governor-president alignments (Figure 4). Crucially, alignment status responds to electoral outcomes: gubernatorial elections coincide with presidential elections every four years (2003, 2007, 2011, 2015), creating discrete alignment switches. The 2015 election produced the largest realignment: consolidated opposition parties formed the APC and defeated incumbent PDP president Goodluck Jonathan- the first time an incumbent lost reelection in Nigeria's history. This regime change shifted gubernatorial control from majority PDP to majority APC, causing 23 of 36 states (64%) to switch alignment status (Figure 4). This variation provides two sources of identification. First, cross-sectional variation: some states persistently align while others never do, reflecting durable ethnoregional coalitions. Second, temporal variation: 30 states switch alignment at least once (57 total switches), with switches clustering around elections and driven by exogenous electoral outcomes.

## 5 Protests and Fiscal Redistribution

### 5.1 Protests and Intergovernmental Transfers

We examine the relationship between protests and intergovernmental transfers by estimating:

[28]The GDELT categories are less detailed than their ACLED counterparts, with the top actors for protest participants in the military period listed as 'Nigerians' against the 'government'. Table A2 provides a summary of protest and public finance statistics in the democratic and military periods.

[29]Data sources detailed in Appendix A.3.

[30]Governors serve four-year terms with a two-term limit. Individual governors rarely switch parties (1.5% of cases); when they do, 56% switch from aligned to non-aligned status. Ethnoregional politics are stable: geographies correlate strongly with ethnicity and party preferences (Azeez, 2009). See Appendix A.3 for party composition over time (Table A3) and spatial patterns (Figure A7).

$$y_{smt} = \phi \text{Protest}_{smt} + \mu_s + \delta_{mt} + \epsilon_{smt} \tag{5}$$

where $y_{smt}$ is the outcome for state $s$ at month $m$ in year $t$. The main outcome of interest is total transfers (allocation or VAT) to state $s$ in month $m$ and year $t$. State fixed effects ($\mu_s$) capture time-invariant state characteristics- including population and geographic characteristics like landmass and terrain that are components of the standard formula for transfers as described in Section 2.1. The month-year fixed effects, $\delta_{mt}$, control for changes in national policies (e.g. fiscal policies) and other macroeconomic factors that are changing at the month-year level. Standard errors are clustered at the state level to allow for arbitrary correlations, and all regressions include both state and month-year fixed effects. The specification captures the month to month disbursement structure of Nigeria's allocation transfers, which generally occur around mid-month as discussed in Section 2. For outcomes available only annually (IGR and state expenditures), we estimate Equation 5 at the state-year level with state and year fixed effects.

We measure "Protest" in two ways to capture both extensive and intensive margin effects of protests. Our main measure is Protest (Continuous), which is the z-score, calculated as standard deviations of the total number of protests in each state from the national monthly mean[31] As a robustness check, our alternate protest measure is Protest (Indicator), which is an indicator that equals one if the total number of protests in each state and month-year is greater than the national monthly mean. These measures capture relative protest levels- testing whether federal governments respond to notably high protests within states rather than raw counts. While protests appear uncorrelated with geographic and institutional characteristics (Table A5 in Appendix A.5), we interpret Equation 5 results as robust correlations due to potential endogeneity of the protest measure. Section 5.3 addresses endogeneity concerns and estimates the causal effect of protests on transfers by exploiting the January 2012 fuel subsidy removal and subsequent Occupy Nigeria protests (Section 2.2.2).

### 5.1.1 Mechanisms: The Role of Political Alignment

To test the hypothesis that the primary channel linking protests and intergovernmental transfers is political alignment, with federal governments increasing transfers to aligned states and reducing transfers to non-aligned states, we estimate Equation 6:

[31] Measured as $\frac{(x_{it} - \bar{x}_t)}{\sigma_t}$ where $x_{it}$ is the sum of protest events in state $i$ at time $t$, $\bar{x}_t$ is the average number of protests in month-year $t$ and $\sigma_t$ is the standard deviation.

$$y_{smt} = \alpha \text{Protest}_{smt} + \beta \text{GP Aligned}_{st} + \gamma \underbrace{\text{Protest}_{smt} \times \text{GP Aligned}_{st}}_{} + \mu_s + \delta_{mt} + \epsilon_{smt} \quad (6)$$

where "GP Aligned" is an indicator that equals one if the president and state governor come from the same political party. During the military period, "GP Aligned" always equaled one (governors are presidential appointees); thus Equation 6 reduces to Equation 5.[32] The key parameter of interest, $\gamma$, tests whether protest effects on transfers differ between aligned and non-aligned states. Our identification exploits variation in alignment across two margins. First, cross-sectionally, ethnoregional coalitions create persistent aligners (6 states never switch) and persistent non-aligners. Second, temporally, 30 states switch alignment at least once, with 57 total switches driven by electoral outcomes. Importantly, the timing of switches is plausibly exogenous to state-level protests: elections generally occur on a fixed four-year cycle nationwide, and switches concentrate in election years (Figure 4). When the APC defeated the PDP in 2015, 23 states switched alignment status (Figure 4).

### 5.2 OLS Estimates

We focus on the democratic period to explicitly estimate political alignment effects. Figure 5 shows average monthly VAT and allocation transfers from 2000-2016. Unconditional means suggest higher transfers in protesting areas, with notably more variance in less-publicized VAT transfers than in publicly announced allocation transfers. While VAT transfers constitute only 18% of total transfers, they exhibit significantly higher volatility (coefficient of variation of 1.26 in non-aligned states versus 0.41 for allocation transfers), with this volatility differing markedly by political alignment.[33] This pattern confirms that VAT represents the primary margin of discretionary fiscal adjustment in response to protests and aligns with the conceptual framework: federal government leaders can more effectively use transfers with lower citizen information (VAT) to respond to protests.

Panel A of Table 1 reports estimates of protest effects on transfers. The results in Table 1 show that protests are associated with both increases (column (1)) and decreases (column (2)) in transfers, though estimates are imprecise. Results sharpen when examining protest effects by political alignment (Panel B of Table 1). A one-standard deviation increase in protests is associated with a 0.5% decrease in monthly VAT transfers in non-aligned states.

[32] $\gamma$ in Equation 6 equals $\phi$ in Equation 5 during the military period.

[33] Non-aligned VAT transfers vary 2.25 times more than aligned VAT while non-aligned allocation transfers are just 1.24 times more than aligned allocation transfers.

Conversely, protests increase transfers in aligned states: a one-standard deviation increase in protests associated with a relative 1.6% increase in monthly VAT transfers and a total 1.1% increase. Effects are larger at the yearly level (Table 2, Panel B): a one-standard deviation increase in yearly protests is associated with a 1.5% decrease in VAT transfers in non-aligned states (column (1)) but a relative 3.7% increase- and total 2.2% increase- in aligned states. While protest effects on allocation transfers are qualitatively similar, they are not robust (column (2)). The results are robust to alternate measures of protest intensity with the indicator measure (columns (4)-(6) of Table 1 and columns (5)-(8) of Table 2) and appear in total transfers (Table 1, columns (3) and (6) and Table 2, columns (3) and (7)) but not allocation transfers, with the results on total transfers mirroring the VAT results and confirming that VAT represents the primary margin of strategic fiscal redistribution.

To test whether protests increase only transfer revenues or all state revenue, we examine yearly IGR (Table 2).[34] Protests have no significant effect on IGR (columns (4) and (8) of Panel A). The interaction term with alignment is statistically insignificant (Panel B). One hypothesis is that high protest aligned states that receive more transfers may experience substitution effects; thus they collect less IGR- and vice versa. The IGR estimates in Panel B do not provide robust evidence of fiscal substitution effects. Collectively, the results show that protests are positively associated with VAT transfers in aligned states, but negatively associated with transfers in non-aligned states. Protests in aligned states are not associated with increases in non-transfer, internally generated revenue. The OLS estimates in Tables 1 and 2 are robust correlations but do not estimate a causal effect of protests on transfers, as omitted variables may affect both.

To estimate causal effects, we exploit two complementary natural experiments. First, we exploit the sudden increase in protests during the 2012 Occupy Nigeria demonstrations following the fuel subsidy removal (Section 5.3). Second, we exploit the 2015 presidential election, which caused exogenous variation in alignment status as 23 states switched when the opposition APC defeated the ruling PDP (Section 5.4). The January 2012 fuel subsidy crisis provides exogenous variation in protest intensity, while the 2015 presidential election provides exogenous variation in alignment status, together validating both the protest effects and the alignment mechanism.

[34]The internally generated revenue is not available at the month-year level

### 5.3 Evidence from the 2012 Occupy Nigeria Protests

To estimate the causal effects of protests on transfers, we study fiscal responses to the Occupy Nigeria demonstrations that erupted following the fuel subsidy removal in January 2012 and shown in Figure 6. Our two-step strategy first uses an event study centered on January 2012, tracing transfers six months before and after. This identifies 2012 protest effects without confounding from longer-run shocks or prior protests (Figure 6). The baseline event study is:

$$\text{Transfers}_{smt} = \alpha_s + \gamma_{mt} + \sum_{\ell \neq -1} \beta_\ell \, \mathbf{1}\{\tau_{mt} = \ell\} \text{Protest}_{smt} + \varepsilon_{smt}, \tag{7}$$

where "Protest" is the protest intensity or main z-score, standard deviation measure of protests at the state ($s$), month ($m$), year ($t$) level. $\alpha_s$ and $\gamma_{mt}$ are state and month-year fixed effects respectively. $\tau_{mt}$ denotes the event time, measured in months relative to the fuel subsidy removal and onset of the 2012 Occupy Nigeria protests (January 2012). Our empirical test for identification is that, in the six-months before the January 2012 fuel subsidy removal and Occupy Nigeria protests, high and low protest states had similar transfer amounts- i.e., parallel pre-trends with $\beta_\ell$ coefficients near zero and statistically insignificant. We also test Equation 7 replacing "Protest" with our political alignment ("GP Aligned") measure to test for pre-trends in aligned versus non-aligned state transfers.

If parallel pre-trends hold, we estimate a simplified difference-in-differences (DD) specification in Equation 8:

$$\text{Transfers}_{smt} = \alpha_s + \gamma_{mt} + \theta \, \text{Protest}_{smt} + \beta \, (\text{Protest}_{smt} \times \text{Post}_{mt}) + \varepsilon_{smt}, \tag{8}$$

where "Post" is an indicator that equals one for months after January 2012. $\theta$ captures protest effects on transfers prior to the removal of the fuel subsidy (pre-January 2012). $\beta$ in Equation 8 is the DD estimate that measures how the effect of protests on transfers changed post-January 2012 relative to the pre-period. We explore political alignment with Equation 9:

$$\text{Transfers}_{smt} = \alpha_s + \gamma_{mt} + \eta\left(\text{Post}_{mt} \times \text{Protest}_{smt}\right) + \delta\left(\text{Post}_{mt} \times \text{Protest}_{smt} \times \text{GP Aligned}_{st}\right) + \varepsilon_{smt} \tag{9}$$

where $\eta$ measures the effect of protests on transfers in the post-period for non-aligned states, and $\delta$ measures the differential effect of protests on transfers in aligned states, relative to non-aligned states. The parsimonious model in Equation 9 assumes that there are no pre-trends in protest effects on transfers ("Protest" omitted), and that there is no alignment effect of protests on transfers outside the post-period ("Protest x GP Aligned" omitted). It also assumes that there is no separate "Post × Aligned" difference in transfers or that alignment does not affect transfers simply because it's in the post period ("Post × Aligned" omitted). Finding no pre-trends in Equation 7 and no trends in the alignments and transfers event study would provide empirical support for these assumptions. The parsimonious model also facilitates interpretation of the total effect of protests on transfers in aligned areas as the sum of $\eta$ and $\delta$ in Equation 9. As a robustness check, we also provide results from the fully saturated triple interaction model.[35]

### 5.3.1 DD Estimates

The event study plot in the top panel of Figure 7 shows no pre-trends in the effects of protests on VAT transfers pre-January 2012. Post-January 2012, following the fuel subsidy removal and sudden spike in protest activity, VAT transfers increased notably in the month after protests started (though this is imprecisely estimated), then decreased in subsequent months. Parallel trends do not hold for allocation transfers (bottom panel). Figure 8 shows no differential trends in alignment effects on transfers over the study period. Since the event study plots show no pre-trends in the effects of protests on VAT transfers and no alignment trends, this validates the DD designs in Equation 8 and Equation 9 with VAT transfers as the outcome. The results in column (1) of Table 3 show that protests have no significant effect on VAT transfers in the post January 2012 period, though the sign is negative. Column (2) of Table 3 presents the results from Equation 9. A one-standard deviation increase in protests decreases VAT transfers to non-aligned states by 0.9% in the post-period. Conversely, a one-standard deviation increase in protests results in a relative increase of 1.5% in VAT transfers to aligned states in the post January 2012 period, equivalent to a total 0.6% increase. The results by alignment are robust to the fully saturated model specification in column (3) of

[35] Excluding the "post" and "GP Aligned" main effects which are dropped from the estimation because of collinearity.

Table 3. The DD results provide evidence for a causal effect of protests on VAT transfers by political alignment, confirming the results from the OLS estimates in Section 5.2.

### 5.4 Evidence from the 2015 Presidential Elections

When the APC defeated the PDP in 2015, 23 states switched alignment status, providing exogenous variation to test the alignment mechanism. Figure 9 illustrates the alignment mechanism in 2015. Both panels reveal steeper slopes for aligned states (blue) than non-aligned states (red), though the differential is larger for VAT (left panel). This reflects VAT's greater discretion: while both transfer types show alignment-contingent responsiveness, the federal government has more latitude to manipulate VAT than more widely publicized allocation transfers. The 23 states that switched alignment in 2015 (triangles) validate the mechanism in both panels, clustering along their new group's lines rather than their historical patterns. States gaining alignment cluster along the steeper aligned-state lines, while those losing alignment follow the flatter non-aligned patterns, demonstrating that differential responsiveness operates through alignment status rather than fixed state characteristics. To test the alignment mechanism, we estimate:

$$\text{Transfers}_{st} = \beta_1(\text{Protest}_{st} \times \text{Gained}_s \times \text{Post2015}_t) + \beta_2(\text{Protest}_{st} \times \text{Lost}_s \times \text{Post2015}_t) + \alpha_s + \delta_t + \varepsilon_{st} \tag{10}$$

where $\text{Gained}_s$ ($N = 12$) and $\text{Lost}_s$ ($N = 11$) identify states switching alignment in 2015. We test parallel trends by estimating equation 11 on pre-2015 data:

$$\text{Transfers}_{st} = \gamma_1(\text{Protest}_{st} \times \text{Gained}_s \times \text{Year}_t) + \gamma_2(\text{Protest}_{st} \times \text{Lost}_s \times \text{Year}_t) + \alpha_s + \varepsilon_{st} \tag{11}$$

Table 4 presents results for VAT transfers and shows that states gaining alignment increased protest effects by 14% (Column (1)) or 10.1% excluding Lagos (Column (2)). Pre-trends tests validate the design: lost-alignment states exhibit no differential trend ($\gamma_2 = -0.004$, $p = 0.70$) in both specifications. Gained-alignment states show a significant upward pre-trend with Lagos ($\gamma_1 = 0.008$, $p = 0.04$), which disappears without Lagos ($\gamma_1 = 0.005$, $p = 0.41$).[36] Statutory allocations show no effects, as in the OLS specification (Table A4).

[36]This Lagos-specific pre-trend likely reflects the PDP federal government's strategic efforts to maintain support in Nigeria's largest city, commercial capital and an APC stronghold. Excluding Lagos provides clean

### 5.5 Dynamic Effects and Public Expenditure

Table 5 tests whether protest effects persist over time and whether the alignment effect is robust to lagged effects. Columns (1)-(3) estimate separate lag structures; column (4) includes all lags simultaneously. Results show protests affect VAT transfers for multiple years. In non-aligned states (baseline coefficients), protests decrease transfers by 1.5-1.6% across all specifications. In aligned states, the interaction terms show that protests increase transfers by an additional 3.4-3.7%, yielding net positive effects of approximately 2%. Column (4) confirms these patterns persist when controlling for all lags simultaneously. Both the one-year lagged interaction (relative 1.4%) and two-year lagged interaction (relative 2.3%) remain significant, demonstrating robust and persistent differential responsiveness conditional on political alignment.[37] There are no dynamic effects of protests on allocation transfers (Table A7).

Along with increases in VAT transfers, Table 6 shows aligned governments strategically reallocate budgets in response to protests. Following results from the most robust specification in column (4), Recurrent expenditure initially expands (total 1.9% contemporaneously, 7.3% at lag 1) before declining sharply at lag 2 (total -2.7%). Capital spending exhibits the opposite dynamics (column (8)): null to negative immediate effects, but substantial delayed increases (total 9.1% and 13.4% at lags 1-2). This pattern reflects strategic fiscal redistribution: governments initially fund operational responses, then shift toward visible infrastructure projects while cutting routine expenditures. The delayed capital effects are consistent with planning lags for construction, while the recurrent reversal suggests operational expansions prove temporary as governments prioritize tangible, visible responses to citizen demands. Figure 10 illustrates these dynamics. The contemporaneous recurrent spending response concentrates in pension transfers to state employees and retirees (Appendix Table A8), suggesting targeting of organized constituencies rather than general capacity expansion.[38]

### 5.6 Robustness and Falsification Tests

We conduct several falsification tests and explore alternate hypotheses. Table A9 includes future protest levels (leads) as a falsification test. Lead coefficients are statistically insignif-

causal identification for the remaining 11 states gaining alignment, with validated parallel pre-trends and plausibly exogenous treatment timing.

[37] Pooled models without the alignment interaction yield null results for all lags (Table 5).

[38] Pension transfers were 36% of recurrent expenditures between 2011 and 2015. Personnel costs were 42% and overhead costs were 28% between 2001-2016. See Appendix A.4 for details.

icant, ruling out reverse causality and anticipatory responses. Contemporaneous and lagged alignment interactions remain significant even controlling for leads, confirming protest effects on transfers. The results in Table 1 are robust to dropping the most populous states[39] from the sample (Table A10 in Appendix A.5) and to alternative protest measures using total protests per capita or raw totals[40] (Table A11 in Appendix A.5). Here, we show that the results are robust to the military period and other conflict events, and we explore close elections and ethnic favoritism as potential channels.

### 5.6.1 Military Period

Table 7 examines the military period, when all governors were aligned with the military president and both VAT and statutory allocation transfer distributions lacked transparency. Data availability varies: VAT (1994-1996), statutory allocation (1990-1996), and IGR (1989-1996). Columns (1)-(4) use all available years; columns (5)-(8) restrict to 1994-1996 for comparability. Results reveal a notable pattern. Using full samples, protests increase VAT transfers by 2.6% and total transfers by 4.6%, yet show no significant effect on allocations. The explanation lies in sample periods. Restricting statutory allocations to 1994-1996 yields a 4.5% effect, matching the total transfer result. Both channels thus responded during the 1994-1996 transition, when pro-democracy demonstrations peaked. IGR shows no effects, similar to the democratic period results. These findings suggest federal responsiveness arose during the later political transition period rather than under earlier consolidated military rule. The significant 1994-1996 effect when the weakening regime faced sustained mobilization-foreshadow the alignment-contingent responsiveness we document in the democratic period. Results are robust to the binary protest measure (Appendix Table A12). Overall, these results provide suggestive evidence that federal responsiveness to protests through intergovernmental transfers emerged even before full democratization.

### 5.6.2 Other Conflict Events

To test whether results are driven by protests rather than by other conflict events, we examine the relationship between battles and transfers (Table 8) as well as all conflict events and transfers (Table A13).The OLS results show that battles had no effects on VAT transfers, including by alignment (column (1) of Panels A and B of Table 8). Battles are positively associated with allocation transfers (column (2) of Panel A), but not differentially by alignment (column (2) of Panel B), and there is no association between battles and total transfers

[39] Lagos and Kano states.

[40] These specifications rely explicitly on population levels, which is a major component of the intergovernmental transfer formula as discussed in Section 2.

(column (3)). Using the event study approach, there are pre-trends in the effects of battles on VAT transfers in the top panel of Figure A9. There are no pre-trends in the effects of battles on allocation transfers in the bottom panel of Figure A9, but the post January 2012 period trend also looks largely flat, which suggests that the associations between battles and allocation transfers are not linked to the Occupy Nigeria protests.[41] There is no effect of all conflict events on transfers (Table A13).

### 5.6.3 Close Elections

An alternative channel is direct electoral competition during close elections, where incumbent presidents may increase transfers to protesting regions facing close races with the opposition. With limited vote share data (Section 4.3), we examine protest effects on transfers by vote margins from close elections, using three years of available data from 2007, 2011 and 2015.[42] The results in Table A14 of Appendix A.5 do not show robust effects of protests on transfers by close election status[43], and close elections alone do not affect transfers.

### 5.6.4 Ethnic Favoritism

Another potential channel is ethnic favoritism, where incumbent presidents may increase transfers to protesting regions if they share the same ethnicity with the governor.[44] There is no correlation between political alignment and shared governor-president ethnicity (Figure A10). In contrast to the political alignment results, protests in GP ethnicity-matched states are associated with decreased VAT transfers, with no significant effects on allocation transfers (Table A17, Appendix A.5).

## 6 Other Government Responses to Protests: Policing and Incarceration

Thus far, our framework has examined the indirect effects of protests on citizens through intergovernmental transfers in a game between federal and state government leaders. How-

[41] The federal government often provides more allocation transfers to high battle areas in the Northeast to combat Boko Haram terror attacks, and this is publicized in news media (Abiodun, Asaolu, and Ndubuisi, 2020)

[42] The measure of close elections is 1 minus the difference between the vote share going to the winners of the gubernatorial elections and the 2nd place contestants during elections where the incumbent president's party is in the top 2 spots (all 3 elections in 2007, 2011 and 2015 where the incumbent president's party, the PDP, was running in the top 2 spots). Hence, the measure is a continuous number between 0 and 1, where higher values indicate a closer election.

[43] Column (3) of Table A14 provides suggestive evidence, using the indicator protest measure that higher protests in close election states may be associated with increases in VAT transfers versus decreases in transfers for higher protests in non-close election states.

[44] In all states, the governor's ethnicity is also the modal ethnicity of the state's population.

ever, protesters can also face direct consequences, including violent government repression expressed as increased police violence and incarceration. We test the hypothesis here that governments respond to protests by increasing violence against protesters.

The Nigerian Police Force, a national body under the operational and administrative authority of an Inspector General appointed by the president, is charged with maintaining security in the country (Archibong and Obikili, 2020). The police are also a primary instrument of state violence.[45] To test our hypothesis, we examine whether protests are associated with more policing, measured as the police share among protest actors documented in the ACLED data.[46] The ACLED data provides the most detailed record of protest actors over the democratic period as discussed in Section 4. We report results from this dataset. Because data are complete only at the year level, we evaluate OLS estimates at the state-year level. Given that more policing does not necessarily imply more police violence, we examine the ACLED notes that contain qualitative newspaper accounts coded by independent researchers, that describe police actions toward protesters. While the notes are typically unique entries, the most frequently repeated note (appearing at least six times) is "Police disperse protest violently". In 58% of cases involving police actors, notes mention police firing tear gas, shooting, killing, or otherwise clashing with protesters. This provides suggestive evidence that higher police shares in protesting areas are associated with greater police violence against protesters.

As a falsification test, we examine shares of other major actors in protests, including the military, political parties, and labor unions.Table 9 reports the estimates of the effects of protests on policing. The results show that protests are strongly positively associated with policing. A one-standard deviation increase in the protest measure is associated with a 2.6 percentage point (pp) increase in the police share of actors on average (column (1)). The effects differ significantly for politically aligned versus non-aligned states as shown in column (2). While protests are associated with a 4.9 pp increase in police share in non-aligned areas, they are associated with a relative reduction (-4.6 pp) in police share in aligned states. The total effect of a one-standard deviation increase in protests in aligned states is a 0.3 pp increase in the police share of actors. There is no effect of protests on the share of military actors involved (column (3) and column (4)). Columns (5)-(7) present suggestive evidence

[45]A fact which was a major driver of protests in the anti police brutality End SARS movement described in Section 2.2.

[46]The data on actors is incomplete at the month level so we aggregate to the state-year level to examine the share of police and other actors, among all protest actors.

that protests are associated with increased political party actor and union involvement, in line with the historical account in Section 2.2, but not differentially by political alignment. Collectively, the results in Table 9 suggest that protests increase policing and police violence against protesters, particularly in states that are not politically aligned with the federal government.

Table 10 examines yearly incarceration rates as a government response to protests. During the democratic period, protests are positively but insignificantly associated with incarceration (column (1)). Alignment effects are qualitatively similar to the policing results but imprecise (column (2)). During the military period, protests are positively associated with incarceration rates (column (3)).[47] Altogether, while protests can yield higher transfers to protesting regions, they also expose protesters to greater state violence, particularly under autocratic regimes.

# 7 Conclusion

Can protests lead to meaningful changes in government policy, particularly regarding the redistribution of economic resources? We address this question and examine the effects of protests on fiscal redistribution using evidence from Nigeria's military and democratic periods from 1988-2016. We construct a new dataset from 26 years of archival public finance records, providing an important contribution to the sparse subnational public finance data landscape, particularly for African countries. We test predictions from a conceptual framework in which federal governments with full control over state revenue transfers adjust transfers in response to protests based on the perceived marginal cost of state government leaders' efforts to quell protests threatening federal government leader tenure. We proxy this effort cost with political alignment between federal and state leaders, finding differential protest effects on intergovernmental transfers by whether leaders are aligned (i.e., belong to the same political party). This government transfer strategy for responding to protests is most effective for transfers where citizens have high information asymmetry about distributions.

Protests increase VAT transfers in politically aligned states but decrease them in non-aligned states- a pattern we validate using two natural experiments: the January 2012 Occupy Nigeria demonstrations and the 2015 presidential election, when 23 states switched alignment following an opposition victory. The alignment mechanism extends beyond federal transfers to state expenditure composition: aligned governments strategically reallocate expenditures: initial recurrent expansion gives way to substantial capital spending increases,

[47] Military governments also incarcerated a higher share of the population than democratic regimes.

prioritizing visible infrastructure over routine operations. This reallocation persists across multiple years.

However, fiscal responsiveness comes with costs. Protesters face increased government violence, reflected in greater policing in high-protest regions, particularly in non-aligned states. This violence intensifies under military regimes, with higher incarceration rates in response to protests. The results demonstrate that protests can influence fiscal redistribution, but how they do depends critically on political relationships between federal and state governments. Further research should examine links between protests and public good provision within states, as well as the welfare implications of this alignment-contingent responsiveness.

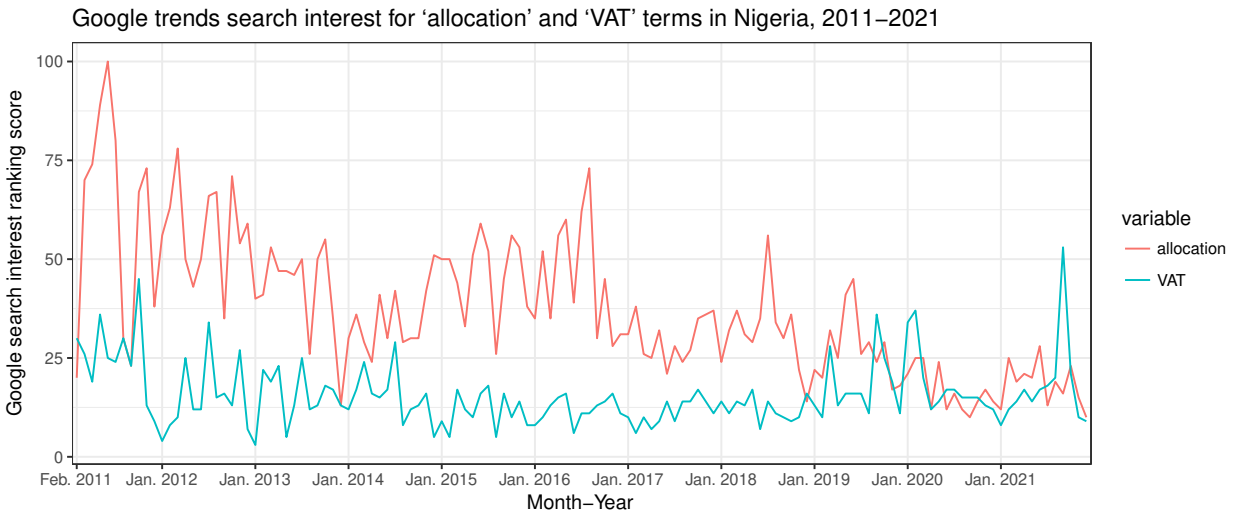



Figure 1: Google trends search interest ranking scores for 'allocation' and 'VAT' terms in Nigeria, 2011-2021

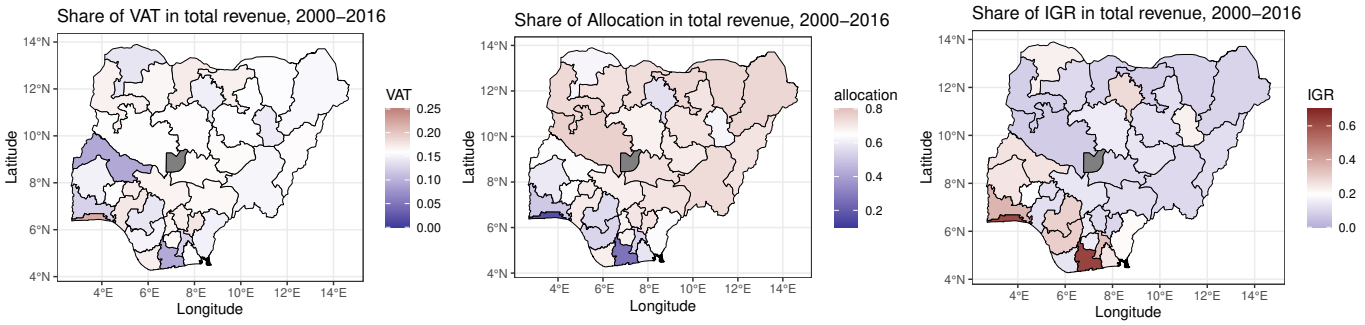



Figure 2: Share of intergovernmental transfers (VAT and Allocation) and internally generated revenue (IGR) in total revenues in democratic (2000-2016) period

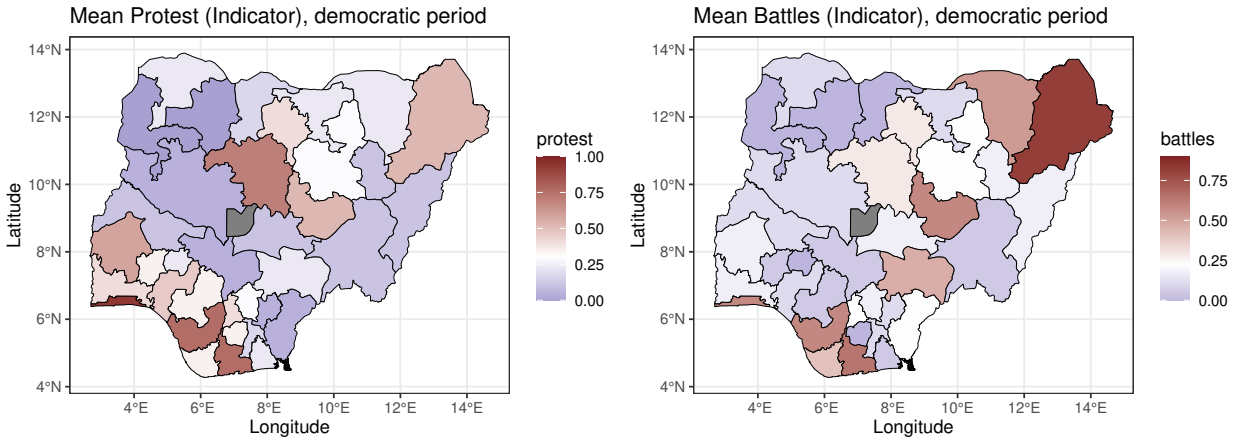



Figure 3: Protest and battle intensity by state (2000-2016). Share of years with above-mean protest and battle levels

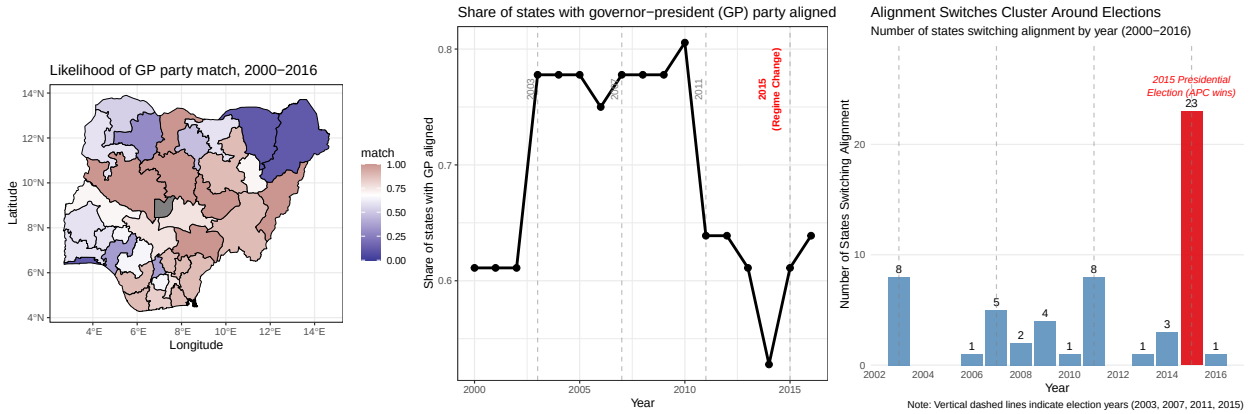



Figure 4: Political alignment patterns, 2000-2016: Geographic variation in alignment frequency (left). Share of states with governor-president party aligned (middle)- dashed lines mark elections. Annual alignment switches, with 2015 presidential election (red bar) producing 23 switches as APC defeated PDP (right)

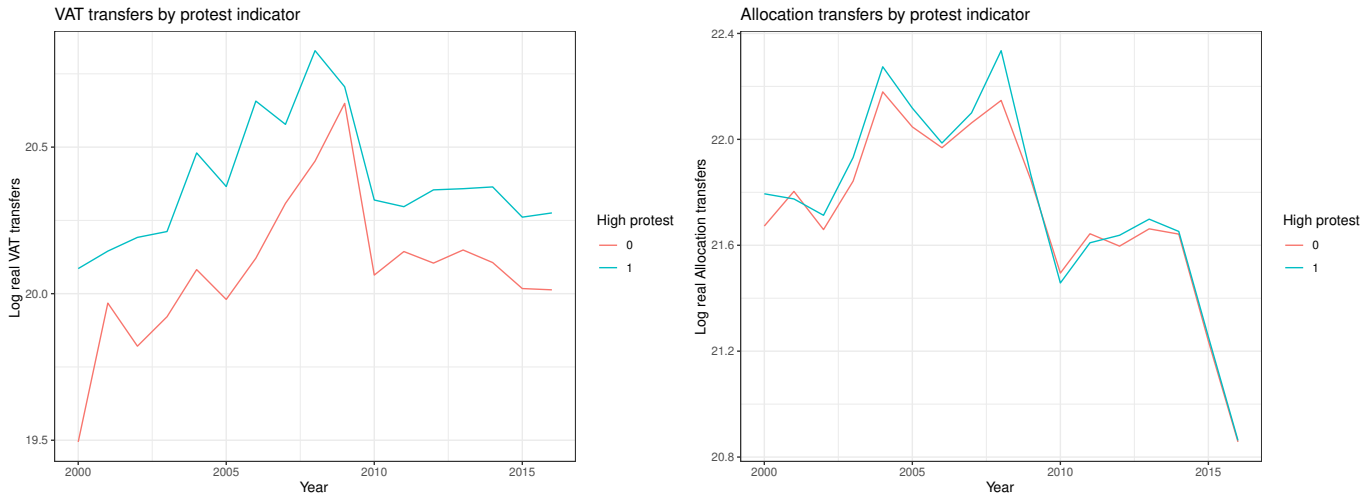



Figure 5: Average monthly VAT and allocation transfers by protest intensity (indicator). Higher variance in VAT transfers than allocation transfers in relatively high vs low protest areas

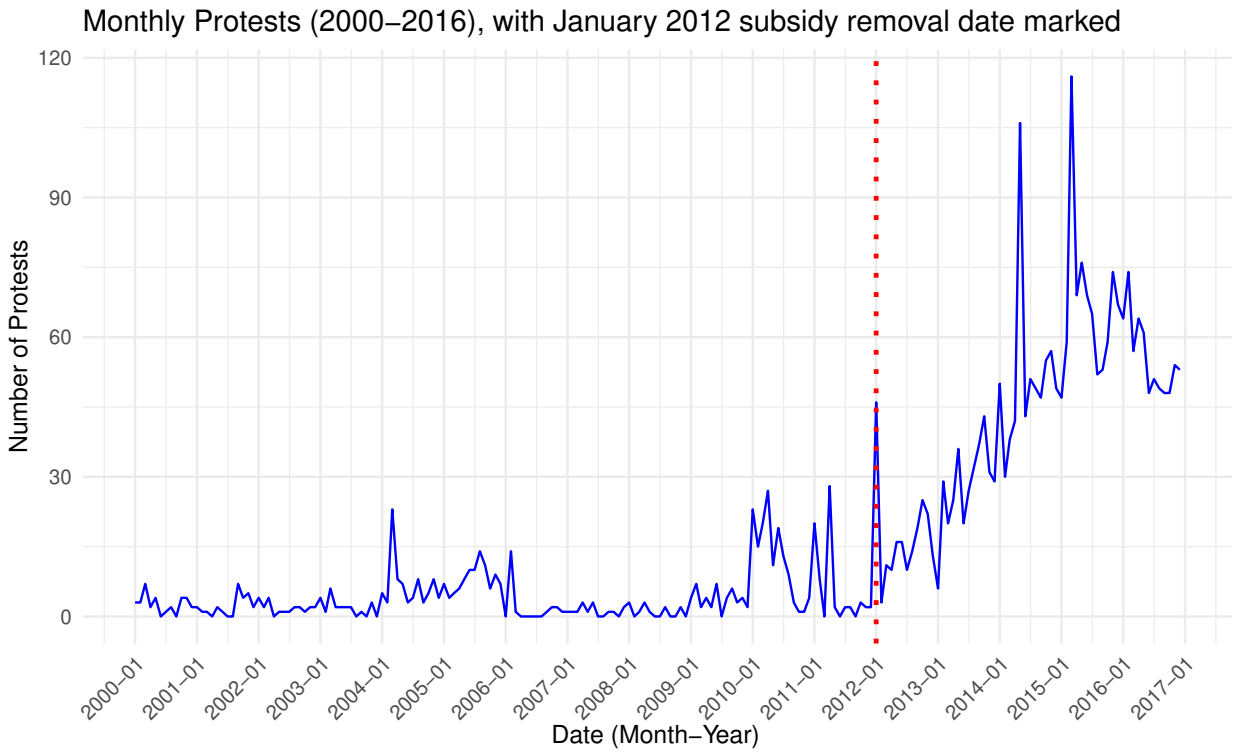



Figure 6: Total number of protests each month, with the January 2012 subsidy removal period marked, 2000-2016

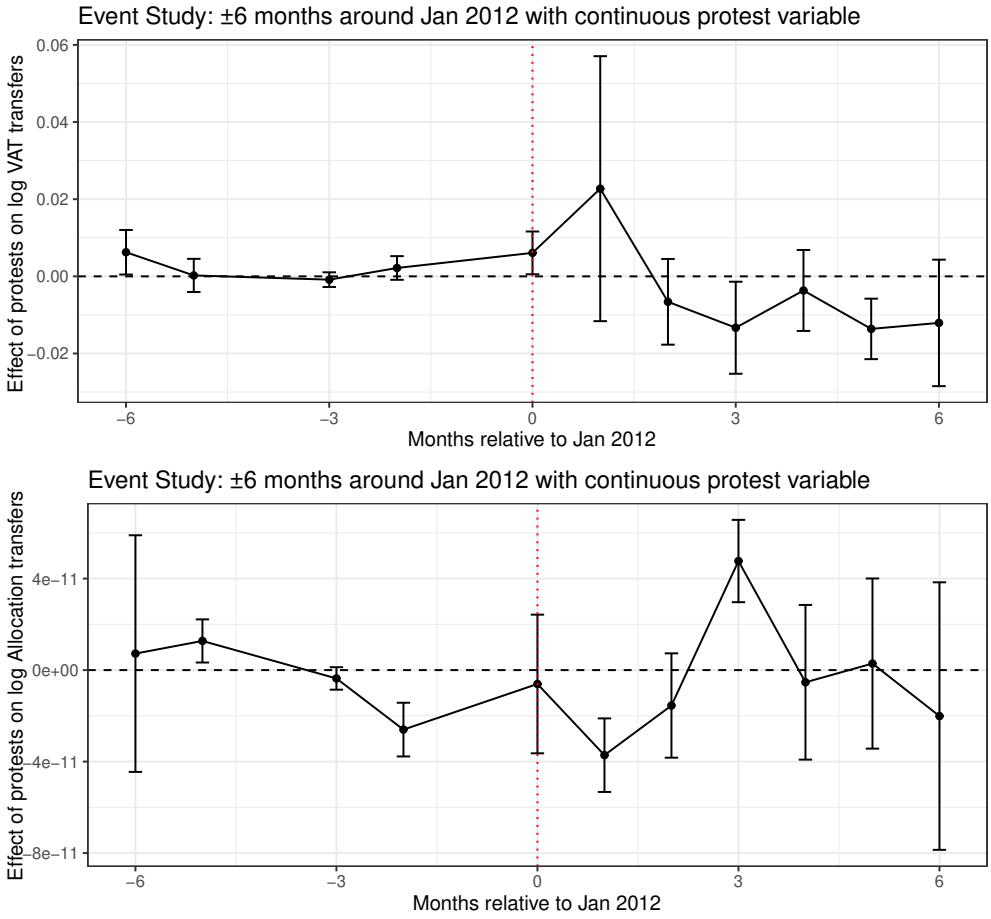



Figure 7: Event study coefficients of effects of protests on intergovernmental transfers (VAT and Allocation) over the January 2012 subsidy removal/Occupy Nigeria protests

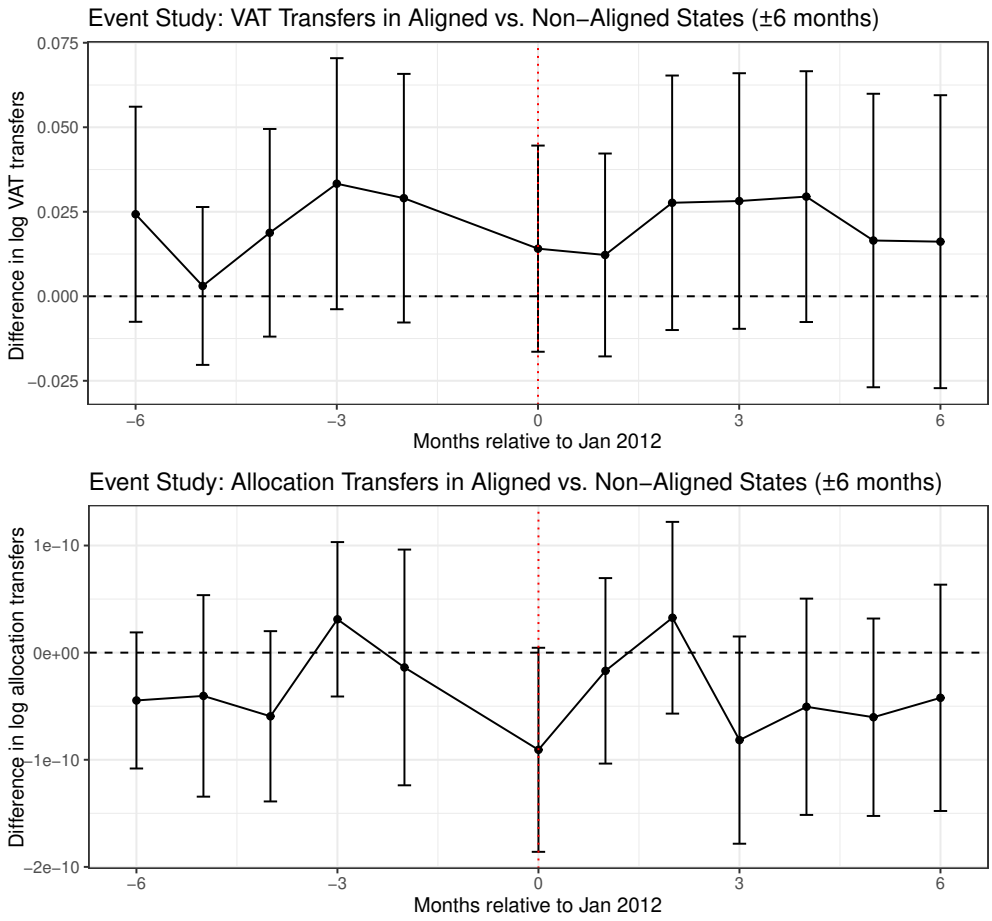



Figure 8: Event study coefficients of effects of political alignment on intergovernmental transfers (VAT and Allocation) over the January 2012 subsidy removal/Occupy Nigeria protests

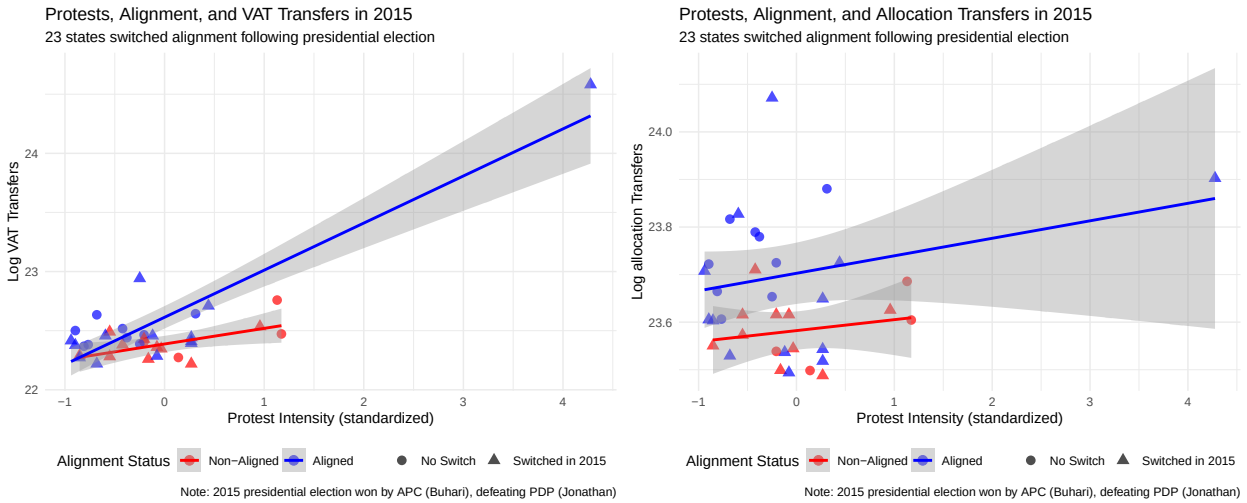



Figure 9: Protests, alignment and yearly VAT (left) and allocation (right) transfers in 2015. Relationship between protest intensity and transfers by alignment status. Blue (red) shows aligned (non-aligned) states. Triangles mark 23 states that switched alignment when APC defeated PDP in 2015 election. Lines show fitted linear relationships with 95% confidence intervals (shaded regions)

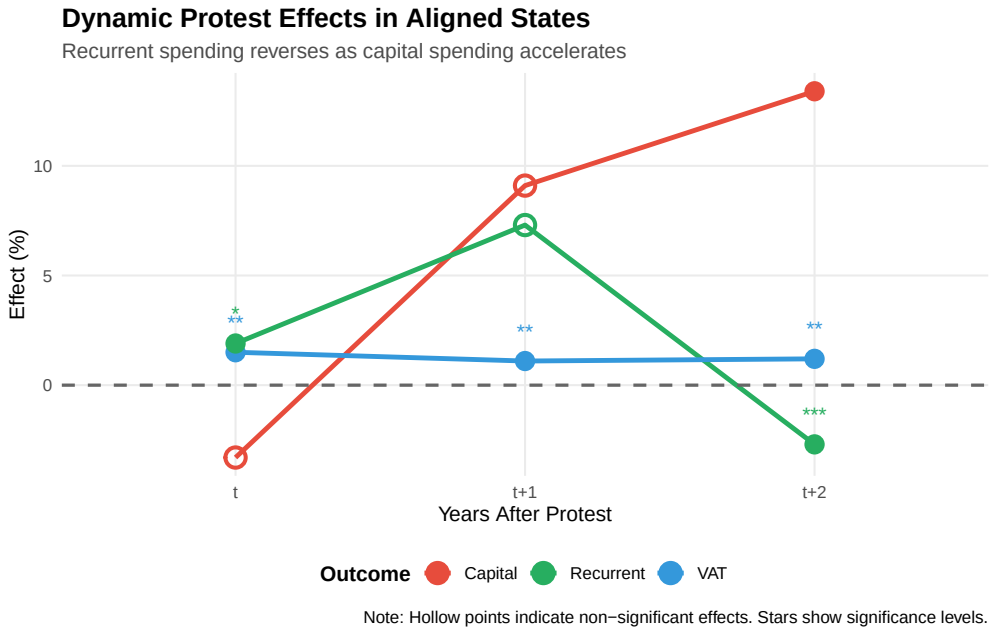



Figure 10: Dynamic protest effects across fiscal outcomes in aligned states. Net effects of protests on VAT transfers, recurrent expenditure, and capital expenditure in politically aligned states over three years. Effects calculated as baseline + alignment interaction from all-lags specifications (Tables 5 and 6). Hollow points indicate non-significant effects; filled points are statistically significant. Stars denote significance levels ($*p < 0.10$, $**p < 0.05$, $***p < 0.01$).

Table 1: OLS Estimates: Effect of protests on intergovernmental transfers (VAT, Allocation)

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Panel A: Protest and State Revenue Outcomes** | | | | | |
| **Covariate Measure**: | Protest (Continuous) | | | Protest (Indicator) | | |
| **Outcome**: | VAT | Allocation | Total Transfers | VAT | Allocation | Total Transfers |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Protest | 0.004 | −0.002* | 0.002 | 0.001 | −0.006** | 0.002 |
| | (0.002) | (0.001) | (0.002) | (0.006) | (0.003) | (0.005) |
| Mean of outcome | 20.120 | 21.726 | 21.928 | 20.120 | 21.726 | 21.928 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 |
| | **Panel B: Protest and State Revenue Outcomes, by GP Alignment** | | | | | |
| **Covariate Measure**: | Protest (Continuous) | | | Protest (Indicator) | | |
| **Outcome**: | VAT | Allocation | Total Transfers | VAT | Allocation | Total Transfers |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Protest | −0.005* | −0.002* | −0.007** | −0.013 | −0.007** | −0.010*** |
| | (0.003) | (0.001) | (0.003) | (0.010) | (0.003) | (0.004) |
| Governor-President (GP) Aligned | 0.023** | 0.001 | 0.013 | 0.017* | 0.0003 | 0.008 |
| | (0.009) | (0.004) | (0.008) | (0.009) | (0.004) | (0.007) |
| Protest x GP Aligned | 0.016*** | 0.0001 | 0.015* | 0.028** | 0.003 | 0.024* |
| | (0.005) | (0.003) | (0.009) | (0.013) | (0.005) | (0.013) |
| Mean of outcome | 20.120 | 21.726 | 21.928 | 20.120 | 21.726 | 21.928 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations and log real total transfers (VAT+ allocation transfers) at the state and month-year level as described in text. Protest is the continuous z-score measure of protests from the ACLED data in columns (1) to (3) and the indicator that equals one if the total number of protests is greater than the national mean in that month and year in columns (4) to (6) as described in text and based on monthly data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. State and month-year fixed effects included in all regressions. Observations are monthly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 2: OLS Estimates: Effects of protests on intergovernmental transfers (VAT, Allocation) and internally generated revenue (IGR), yearly

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Panel A: Protest and State Revenue and IGR Outcomes** | | | | | | | |
| **Covariate Measure**: | Protest (Continuous) | | | | Protest (Indicator) | | | |
| **Outcome**: | VAT | Allocation | Total Transfers | IGR | VAT | Allocation | Total Transfers | IGR |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest | 0.004 | −0.003** | −0.0003 | 0.020 | −0.0002 | −0.004 | −0.005 | 0.019 |
| | (0.003) | (0.001) | (0.001) | (0.038) | (0.005) | (0.003) | (0.003) | (0.077) |
| Mean of outcome | 22.488 | 24.098 | 24.297 | 22.611 | 22.488 | 24.098 | 24.297 | 22.611 |
| *Observations* | 612 | 612 | 612 | 465 | 612 | 612 | 612 | 465 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| | **Panel B: Protest and State Revenue and IGR Outcomes, by GP Alignment** | | | | | | | |
| **Covariate Measure**: | Protest (Continuous) | | | | Protest (Indicator) | | | |
| **Outcome**: | VAT | Allocation | Total Transfers | IGR | VAT | Allocation | Total Transfers | IGR |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest | −0.015** | −0.002 | −0.015* | 0.048 | −0.028** | −0.010* | −0.026* | 0.068 |
| | (0.006) | (0.002) | (0.009) | (0.045) | (0.013) | (0.005) | (0.015) | (0.099) |
| Governor-President (GP) Aligned | 0.026*** | −0.001 | 0.013 | −0.039 | 0.006 | −0.003 | −0.001 | −0.009 |
| | (0.009) | (0.005) | (0.009) | (0.095) | (0.007) | (0.005) | (0.005) | (0.114) |
| Protest x GP Aligned | 0.037*** | −0.002 | 0.028* | −0.056 | 0.048** | 0.008 | 0.036* | −0.092 |
| | (0.012) | (0.004) | (0.016) | (0.060) | (0.020) | (0.007) | (0.021) | (0.125) |
| Mean of outcome | 22.488 | 24.098 | 24.297 | 22.611 | 22.488 | 24.098 | 24.297 | 22.611 |
| *Observations* | 612 | 612 | 612 | 465 | 612 | 612 | 612 | 465 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations, log real total transfers (VAT+ allocation transfers), and internally generated revenue (IGR) at the state and year level as described in text. Protest is the continuous z-score measure of protests from the ACLED data in columns (1) to (4) and the indicator that equals one if the total number of protests is greater than the national mean in that month and year in columns (5) to (8) as described in text and based on monthly data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. State and year fixed effects included in all regressions. Observations are yearly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 3: Effect of the Jan. 2012 fuel subsidy removal and Occupy Nigeria protests on intergovernmental transfers (VAT)

| **Outcome**: | VAT Transfers | | |
|---|---|---|---|
| | (1) | (2) | (3) |
| Protest x post | −0.007 | −0.009*** | −0.016** |
| | (0.006) | (0.002) | (0.007) |
| Protest x post x GP Aligned | | 0.015** | 0.018** |
| | | (0.008) | (0.009) |
| Protest | 0.006 | | 0.007 |
| | (0.004) | | (0.007) |
| Protest x GP Aligned | | | −0.002 |
| | | | (0.007) |
| post x GP Aligned | | | 0.002 |
| | | | (0.007) |
| Mean of outcome | 20.185 | 20.185 | 20.185 |
| *Observations* | 468 | 468 | 468 |
| *Clusters* | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes |

Notes: Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT at the state and month level as described in text. Protest is the continuous z-score measure of protests from the ACLED data in columns (1) to (2) based on monthly data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. Post is an indicator that equals one if the month-year observation is after January 2012. State and month-year fixed effects included in all regressions. All interactions included in the regressions and main effects "post" and "GP Aligned" dropped because of collinearity in saturated model in column (3). Observations are monthly outcomes 6 months before and after the January 2012 fuel subsidy removal. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 4: Effect of alignment changes on protest responsiveness: Evidence from the 2015 election

| **Outcome**: | VAT Transfers | |
|---|---|---|
| Sample: | All | Excluding Lagos |
| | (1) | (2) |
| Protest × Gained × Post-2015 | 0.140*** | 0.101** |
| | (0.043) | (0.046) |
| Protest × Lost × Post-2015 | 0.022 | 0.023 |
| | (0.044) | (0.044) |
| Mean of outcome | 22.488 | 22.434 |
| *Observations* | 612 | 595 |
| *Clusters* | 36 | 35 |
| State FE | Yes | Yes |
| Year FE | Yes | Yes |

Notes: Difference-in-differences estimates exploiting alignment changes from the 2015 presidential election. Robust standard errors in parentheses clustered by state. Dependent variable is log real VAT transfers at the state-year level. "Gained Alignment" identifies 12 states transitioning from non-aligned to aligned status when the opposition APC defeated the ruling PDP. "Lost Alignment" identifies 11 states transitioning from aligned to non-aligned status. Post-2015 covers 2015-2016. Column (1) includes all 36 states; column (2) excludes Lagos. Pre-trends test (2000-2014): lost-alignment states exhibit no differential trend ($\gamma_2 = -0.004$, $p = 0.70$) in both specifications; gained-alignment states show a significant pre-trend with Lagos ($\gamma_1 = 0.008$, $p = 0.04$) that disappears without Lagos ($\gamma_1 = 0.005$, $p = 0.41$), validating identification for the Lagos-excluded specification. State and year fixed effects included in all regressions. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 5: Dynamic effects of protests on VAT transfers

| **Outcome**: | VAT Transfers | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Protest | −0.015** | | | −0.007 |
| | (0.006) | | | (0.004) |
| Protest x GP Aligned | 0.037*** | | | 0.022** |
| | (0.012) | | | (0.008) |
| Protest (t-1) | | −0.015*** | | −0.003 |
| | | (0.005) | | (0.004) |
| Protest (t-1) x GP Aligned | | 0.034*** | | 0.014** |
| | | (0.009) | | (0.006) |
| Protest (t-2) | | | −0.016* | −0.011 |
| | | | (0.008) | (0.007) |
| Protest (t-2) x GP Aligned | | | 0.035*** | 0.023*** |
| | | | (0.012) | (0.007) |
| Mean of outcome | 22.488 | 22.517 | 22.532 | 22.532 |
| *Observations* | 612 | 576 | 540 | 540 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |

Notes: Robust standard errors in parentheses clustered by state. Dependent variable is log real VAT transfers at the state-year level. Protest is the continuous z-score measure of protests from ACLED data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party and is included in all specifications. Columns (1)-(3) test contemporaneous and lagged protest effects separately. Column (4) includes all lags simultaneously to test cumulative effects. State and year fixed effects included in all regressions. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 6: OLS Estimates: Effects of protests on public expenditure (recurrent and capital expenditure)

| **Outcome**: | Recurrent Expenditure | | | | Capital Expenditure | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest | −0.031 | | | −0.080* | −0.002 | | | 0.000 |
| | (0.026) | | | (0.040) | (0.035) | | | (0.050) |
| Protest x GP Aligned | 0.063* | | | 0.099* | 0.049 | | | −0.033 |
| | (0.039) | | | (0.054) | (0.045) | | | (0.063) |
| Protest (t-1) | | 0.031 | | 0.034 | | −0.028 | | 0.035 |
| | | (0.019) | | (0.021) | | (0.044) | | (0.047) |
| Protest (t-1) x GP Aligned | | 0.038 | | 0.039 | | 0.132*** | | 0.056 |
| | | (0.034) | | (0.035) | | (0.046) | | (0.065) |
| Protest (t-2) | | | 0.107*** | 0.127*** | | | −0.030 | −0.031 |
| | | | (0.018) | (0.027) | | | (0.039) | (0.039) |
| Protest (t-2) x GP Aligned | | | −0.106*** | −0.154*** | | | 0.173*** | 0.165*** |
| | | | (0.024) | (0.036) | | | (0.058) | (0.056) |
| Mean of outcome | 24.430 | 24.453 | 24.462 | 24.462 | 24.000 | 24.019 | 24.023 | 24.023 |
| *Observations* | 465 | 429 | 393 | 393 | 461 | 425 | 389 | 389 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Clustered standard errors by state in parentheses. Dependent variables: log real recurrent expenditure (columns 1-4) and log real capital expenditure (columns 5-8). Protest: z-score of ACLED protest events. GP Aligned = 1 if governor and president are from the same party and is included in all specifications. Columns (1)-(3) and (5)-(7) test each lag separately; columns (4) and (8) include all lags simultaneously. State and year fixed effects included in all specifications. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 7: OLS Estimates: Protest and intergovernmental transfers (VAT, Allocation) and internally generated revenue (IGR), military period

| | **Protest and State Revenue Outcomes, Military Period** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Covariate Measure**: | Protest (All data years) | | | | Protest (1994-1996) | | | |
| **Outcome**: | VAT | Allocation | Total Transfers | IGR | VAT | Allocation | Total Transfers | IGR |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest | 0.026* | 0.015 | 0.046*** | 0.014 | 0.026* | 0.045*** | 0.046*** | 0.012 |
| | (0.014) | (0.030) | (0.016) | (0.042) | (0.014) | (0.014) | (0.016) | (0.076) |
| Mean of outcome | 21.551 | 23.773 | 23.361 | 22.050 | 21.551 | 23.177 | 23.361 | 21.738 |
| *Observations* | 96 | 224 | 96 | 251 | 96 | 96 | 96 | 96 |
| *Clusters* | 36 | 36 | 36 | 34 | 36 | 36 | 36 | 34 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations, log real total transfers (VAT+ allocation transfers), and log real internally generated revenue (IGR) at the state-year level as described in text. VAT data is available from 1994-1996. Allocation data is available from 1990-1996, and IGR data is available from 1989-1996. Protest is the continuous z-score measure of protests from the GDELT data as described in text. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 8: OLS Estimates: Battles and intergovernmental transfers (VAT, Allocation) and internally generated revenue (IGR), democratic period

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Panel A: Battles and State Revenue Outcomes** | | | | | |
| **Covariate Measure**: | Protest (Continuous) | | | Protest (Indicator) | | |
| **Outcome**: | VAT | Allocation | Total Transfers | VAT | Allocation | Total Transfers |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Battles | 0.001 | 0.002*** | −0.003 | −0.0004 | 0.003* | −0.004 |
| | (0.005) | (0.001) | (0.004) | (0.009) | (0.002) | (0.006) |
| Mean of outcome | 20.120 | 21.726 | 21.928 | 20.120 | 21.726 | 21.928 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 |
| | **Panel B: Battles and State Revenue Outcomes, by GP Alignment** | | | | | |
| **Covariate Measure**: | Protest (Continuous) | | | Protest (Indicator) | | |
| **Outcome**: | VAT | Allocation | Total Transfers | VAT | Allocation | Total Transfers |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Battles | −0.007 | 0.003** | −0.009 | −0.017 | 0.006** | −0.017 |
| | (0.011) | (0.001) | (0.010) | (0.020) | (0.002) | (0.018) |
| Governor-President (GP) Aligned | 0.022** | 0.001 | 0.013 | 0.018** | 0.002 | 0.009 |
| | (0.010) | (0.004) | (0.009) | (0.008) | (0.004) | (0.006) |
| Battles x GP Aligned | 0.012 | −0.002 | 0.009 | 0.025 | −0.005 | 0.019 |
| | (0.012) | (0.002) | (0.010) | (0.020) | (0.003) | (0.018) |
| Mean of outcome | 20.120 | 21.726 | 21.928 | 20.120 | 21.726 | 21.928 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations and log real total transfers (VAT+ allocation transfers) at the state and month-year level as described in text. Battles is the continuous z-score measure of battles from the ACLED data in columns (1) to (3) and the indicator that equals one if the total number of battles is greater than the national mean in that month and year in columns (4) to (6) as described in text and based on monthly data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. State and month-year fixed effects included in all regressions. Observations are monthly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 9: OLS Estimates: Protest and policing, share of other major actors in events

| **Outcome**: | Police Share | | Military Share | | Party Share | | Union Share | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest | 0.026** | 0.049*** | −0.002 | −0.005 | 0.014* | 0.024** | 0.008* | 0.004 |
| | (0.012) | (0.013) | (0.009) | (0.012) | (0.008) | (0.012) | (0.005) | (0.004) |
| Governor-President (GP) Aligned | | −0.026 | | −0.001 | | −0.019 | | 0.023 |
| | | (0.027) | | (0.015) | | (0.017) | | (0.014) |
| Protest x GP Aligned | | −0.046** | | 0.005 | | −0.021 | | 0.010 |
| | | (0.018) | | (0.009) | | (0.013) | | (0.006) |
| Mean of outcome | 0.151 | 0.151 | 0.026 | 0.026 | 0.074 | 0.074 | 0.032 | 0.032 |
| *Observations* | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are shares of police, military, political party or labor union actors in all protest events over 2000 to 2016 years of available data as described in text. Protest is the continuous z-score measure of protests from the ACLED data as described in text. Observations at the state-year level. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table 10: OLS Estimates: Effect of protests on incarceration rates in the military and democratic periods

| **Time Period**: | Democratic | | Military |
|---|---|---|---|
| **Outcome**: | Total Prisoners per 100,000 pop. | | |
| | (1) | (2) | (3) |
| Protest | 0.379 | 0.394 | 6.301** |
| | (0.473) | (0.747) | (2.462) |
| Governor-President (GP) Aligned | | −2.763* | |
| | | (1.426) | |
| Protest x GP Aligned | | −0.308 | |
| | | (1.151) | |
| Mean of outcome | 34.969 | 34.969 | 88.661 |
| *Observations* | 459 | 459 | 272 |
| *Clusters* | 36 | 36 | 35 |
| State FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variable is incarceration rates of total number of prisoners per 100,000 population in the democratic period (2000-2016) and military period (1988-1995). Data on incarceration rates is from the Annual Abstract of Statistics reports. Protest is the continuous z-score measure of protests from the ACLED and GDELT datasets as described in text. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party in the democratic period. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

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# A Appendix (For Online Publication)

## A.1 Data Appendix

### A.1.1 Data and Variable Descriptions

- Protest data from the military period is from the Global Data on Events, Location and Tone (GDELT) database, which codes contact events from newspapers over the 1979-1999 military period. The dataset can be found online here: https://www.gdeltproject.org/. It includes a classification for protests/riots, along with other event root codes like "fights" or armed battles and "provide aid", among others. Protest are explicitly coded protest/riot events, while battle events are explicitly coded as previously mentioned. Protest data from the democratic period comes form the Armed Conflict Location and Event Data (ACLED) project, which codes conflict events from newspaper reports starting in 1997 but not before. The latest version of the ACLED 2016 dataset code can be found online here: https://acleddata.com. It includes a classification for Protests and Riots combined in a single category here for comparability with the GDELT data. It also includes a category for "Violence against Civilians" and "Battles". Summary statistics are provided in Table A2.

- Data on political parties and vote shares were digitized from WorldStatemen.org. Data on vote shares in gubernatorial elections in 2007 is from Ijim-Agbor (2007). Data from 2011 elections is from the African Elections Database, and from 2015 is from ProshareNG.

- Public finance data from the military period with complete data from 1988 to 1996 were digitized from the Nigerian Annual Abstract of Statistics as shown in Figure A3, along with available years from the Central Bank of Nigeria (CBN) Annual Report. The data from the democratic period from 2000-2016 were digitized from the Annual Abstract of Statistics and the Nigerian National Bureau of Statistics (NBS) website here: https://nigerianstat.gov.ng/elibrary, along with the CBN reports. Summary statistics are provided in Table A2.

- Data on police, military and political party actors participation in protest and battles events comes from the ACLED dataset. Data on incarceration comes from the Annual Abstract of Statistics.

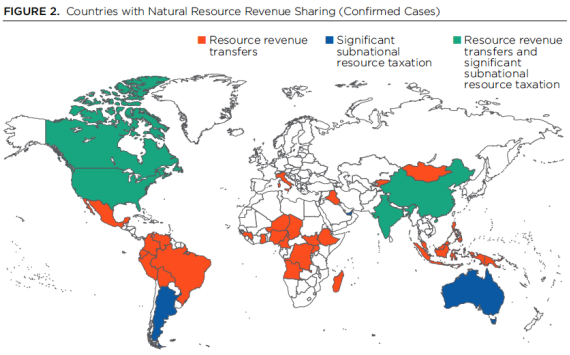



Figure A1: Countries with Natural Resource Revenue-Sharing Arrangements. Source: UNDP, 2016

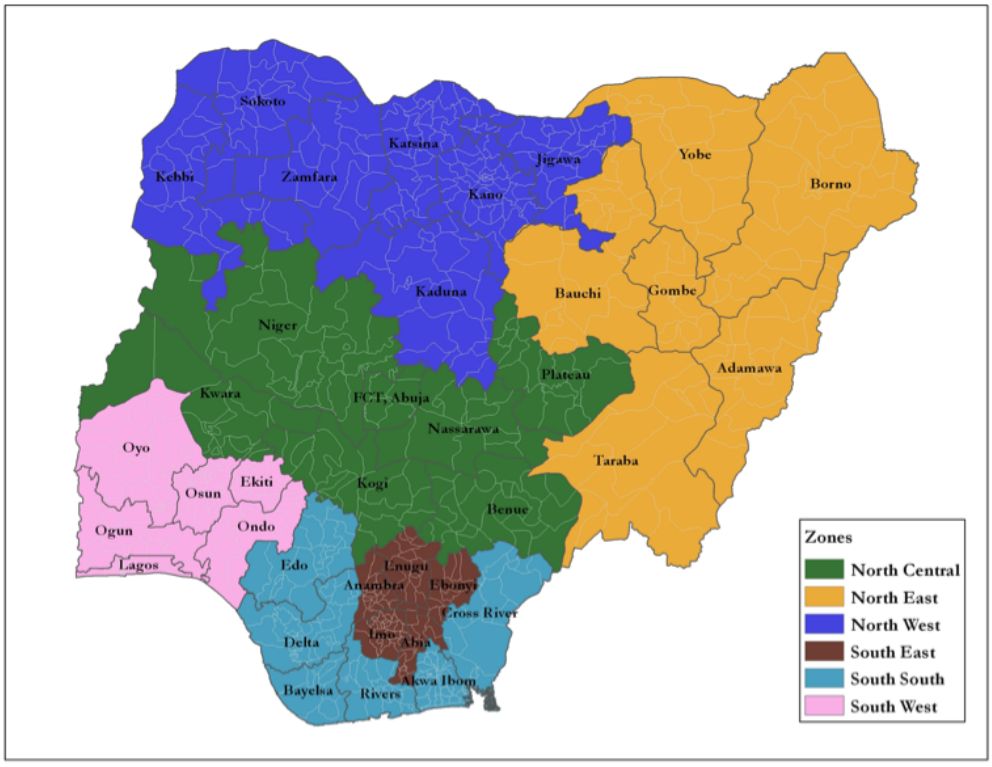



Figure A2: Nigeria with 6 geopolitical (ethnic region proxy) zones colored, LGAs outlined and state names labeled

Table A1: Google trends top related search query terms to 'allocation' and 'vat' in Nigeria, 2011-2016

| **Allocation** | |
|---|---|
| Top 5 allocation related Google queries, February, 2011 to December, 2021 | |
| Query | Ranking |
| revenue allocation | 100 |
| federal allocation | 78 |
| revenue allocation in nigeria | 51 |
| faac allocation | 42 |
| faac | 36 |
| **VAT** | |
| Top 5 VAT related Google queries, February, 2011 to December, 2021 | |
| Query | Ranking |
| nigeria vat | 100 |
| vat in nigeria | 85 |
| what is vat | 28 |
| vat number | 18 |
| vat meaning | 15 |

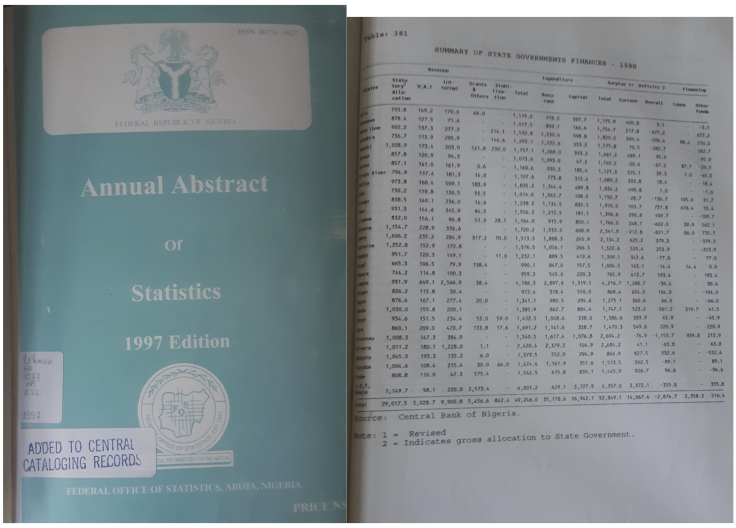



Figure A3: Example of archival data (1990) on public finance from the 1997 Annual Abstract of Statistics

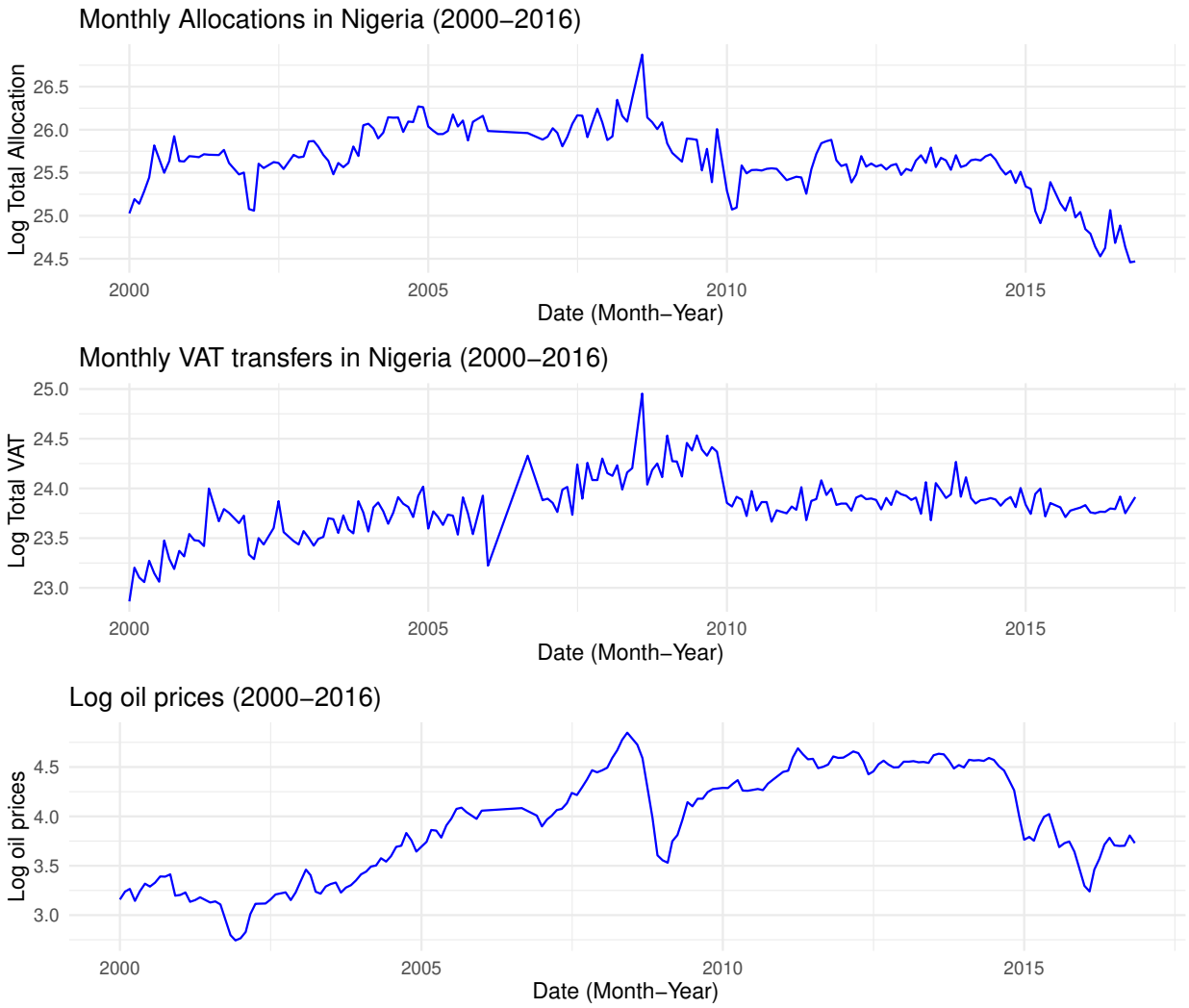



Figure A4: Oil prices and intergovernmental transfers, monthly

# Table A2: Summary Statistics

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| | | | **Public Finance and Protest, Democratic Period** | | |
| VAT | 6,696 | 20.120 | 0.464 | 18.823 | 22.801 |
| Allocation | 6,696 | 21.916 | 0.583 | 20.462 | 24.372 |
| VAT (monthly, Naira) | 6,696 | 640,189,725 | 618,238,113 | 149,540,541 | 7,987,811,179 |
| Allocation (monthly, Naira) | 6,696 | 4,048,422,217 | 3,525,079,642 | 770,379,071 | 38,413,456,285 |
| VAT (yearly, Naira) | 612 | 7,004,428,753 | 6,926,934,854 | 1,316,174,530 | 75,956,027,632 |
| Allocation (yearly, Naira) | 612 | 44,298,219,658 | 39,302,844,326 | 8,727,354,474 | 363,000,000,000 |
| Governor-President (GP) Aligned | 6,696 | 0.683 | 0.465 | 0 | 1 |
| Protest, Continuous (monthly) | 6,696 | −0.026 | 0.889 | −0.913 | 5.918 |
| Protest, Indicator (monthly) | 6,696 | 0.142 | 0.349 | 0 | 1 |
| Protest, Continuous (yearly) | 612 | −0.037 | 0.950 | −0.939 | 5.004 |
| Protest, Indicator (yearly) | 612 | 0.309 | 0.462 | 0 | 1 |
| Battles, Continuous (monthly) | 6,696 | 0.005 | 0.996 | −0.691 | 5.918 |
| Battles, Indicator (monthly) | 6,696 | 0.160 | 0.366 | 0 | 1 |
| Battles, Continuous (yearly) | 612 | 0.007 | 0.999 | −0.824 | 5.826 |
| Battles, Indicator (yearly) | 612 | 0.225 | 0.418 | 0 | 1 |
| VAT Share | 465 | 0.146 | 0.039 | 0.069 | 0.270 |
| Allocation Share | 465 | 0.662 | 0.153 | 0.068 | 0.900 |
| IGR Share | 465 | 0.193 | 0.150 | 0.005 | 0.760 |
| IGR | 465 | 22.611 | 1.075 | 19.237 | 26.448 |
| Recurrent Expenditure | 465 | 24.430 | 0.600 | 22.986 | 26.646 |
| Capital Expenditure | 461 | 24.000 | 0.935 | 18.110 | 27.130 |
| Recurrent Expenditure Share | 461 | 0.589 | 0.170 | 0.129 | 0.998 |
| Personnel Recurrent Share | 429 | 0.415 | 0.178 | 0.064 | 0.959 |
| Overhead Recurrent Share | 425 | 0.276 | 0.147 | 0.002 | 0.760 |
| Pension Recurrent Share | 131 | 0.356 | 0.145 | 0.036 | 0.708 |
| Debt Recurrent Share | 85 | 0.077 | 0.091 | 0.002 | 0.448 |
| Capital Expenditure Share | 461 | 0.411 | 0.170 | 0.002 | 0.871 |
| | | | **Public Finance and Protest, Military Period** | | |
| VAT | 96 | 21.551 | 0.525 | 19.963 | 23.355 |
| Allocation | 224 | 23.773 | 0.800 | 21.112 | 25.444 |
| VAT (yearly, Naira) | 96 | 2,644,512,164 | 1,851,751,445 | 467,676,869 | 13,894,112,739 |
| Allocation (yearly, Naira) | 224 | 27,965,055,206 | 20,787,147,104 | 1,475,679,440 | 112,273,625,759 |
| Protest, Continuous | 324 | −0.030 | 0.721 | −0.275 | 5.918 |
| Protest, Indicator | 324 | 0.031 | 0.173 | 0 | 1 |
| Battles, Continuous | 324 | −0.029 | 0.958 | −0.390 | 5.918 |
| Battles, Indicator | 324 | 0.108 | 0.311 | 0 | 1 |
| VAT Share | 93 | 0.134 | 0.039 | 0.074 | 0.273 |
| Allocation Share | 93 | 0.674 | 0.130 | 0.190 | 0.859 |
| IGR Share | 93 | 0.192 | 0.130 | 0.004 | 0.696 |
| IGR | 251 | 22.050 | 1.278 | 15.935 | 25.913 |
| Recurrent Expenditure | 254 | 23.791 | 0.863 | 19.973 | 26.034 |
| Capital Expenditure | 254 | 0.347 | 0.154 | 0.041 | 0.872 |
| Recurrent Expenditure Share | 254 | 0.653 | 0.154 | 0.128 | 0.959 |
| Capital Expenditure Share | 0.347 | 0.154 | 0.041 | 0.872 | |

Notes: Democratic period data is from 2000-2016. Military period data is from 1988-1996. Protest, Continuous is a z-score representing standard deviations from the national mean. Protest, Indicator is an indicator that equals one if the total number of protests is greater than the national mean. VAT and Allocation public finance values are logs of real values relative to 2010. IGR is internally generated revenue and VAT are transfers from the Value Added Tax revenue. Allocation (monthly, Naira) is the total monthly allocation in real 2010 Naira. Allocation (yearly, Naira) is the total yearly allocation in real 2010 Naira. VAT Share, Allocation Share and IGR Share are share of total yearly VAT, Allocation and IGR revenue in the sum of the total of these 3 revenue categories. Pension Recurrent Share is the share of pension transfers in recurrent expenditure.

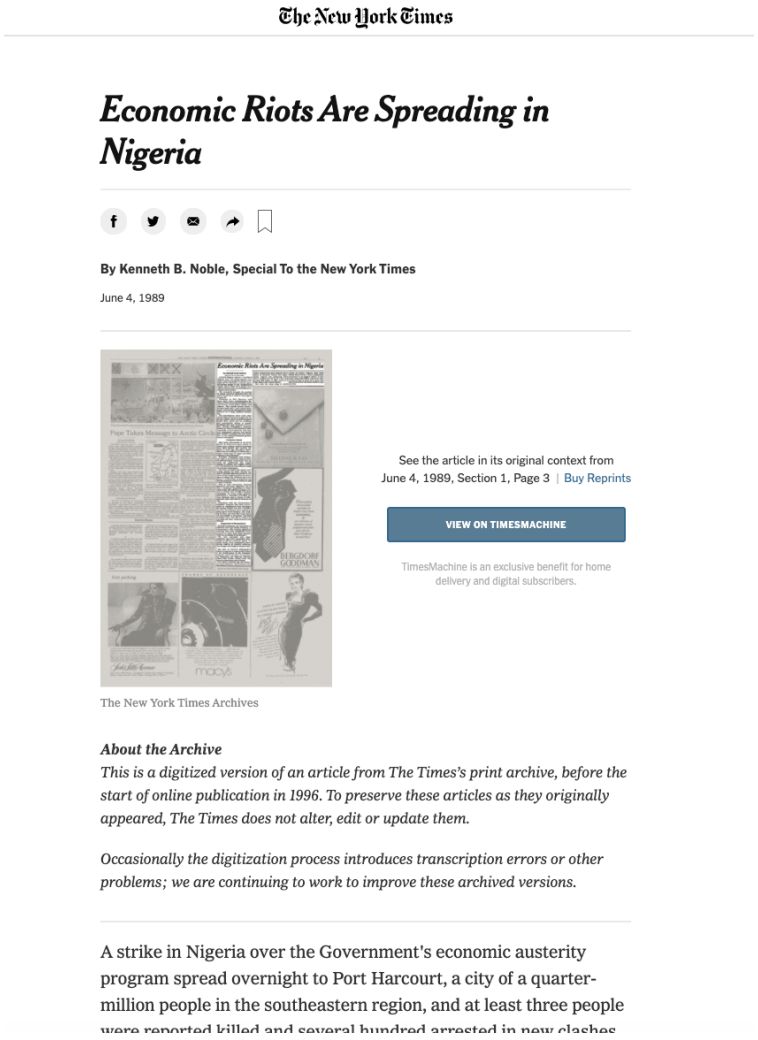
### A.2 Further Detail on Protests in Nigeria

Another example of protests in Nigeria comes from the anti-oil protests in Nigeria's southern Niger Delta region. The anti-oil protests in the Niger Delta were driven by residents in Nigeria's southern oil producing region, who protested the environmental damage caused by oil production, including uncompensated oil spills and damage to farming and fishery, the primary livelihood of residents in the region from operating companies like Royal Dutch Shell (Frynas, 2001; Osaghae, 1995). The protests were ongoing for many years, with the most famous instance being the anti-Shell protests led by the Movement for the Survival of the Ogoni People (MOSOP) and culminating in the infamous execution of the movement's leader, Ken Saro-Wiwa, by then military head of state Sani Abacha, to much international outcry in 1995 (Frynas, 2001). The protests led to a number of concessions from the federal government, like the creation of an Oil Mineral Producing Areas Development Commission (OMPADEC) that allocated 1.5% to 3% of government revenue to these regions. It also led to the introduction of the 13% derivation to oil producing areas rule in the 1999 constitution. The protests were also followed by repressive tactics from military governments, including killings, arrests and floggings of protesters (Osaghae, 1995). Protests continue in this region till the present, with state residents demanding an increase in transfers and ownership rights from the federal government for exploitation of oil resources in their region (Frynas, 2001).

Sixteen states account for all of the high intensity protests in the military period, while 24 states account for 65% of this sample in the democratic period. 31% of high intensity protests in the military period were in the Niger Delta region, and 13% of protest in the SAP protests region in southwestern Nigeria following the historical account in Section 2[48]. In the democratic period, 33% of high intensity protests were in the Niger Delta region, 33% were in states where the likelihood of the president and state governor being from the same party was relatively low, following accounts of opposition party led protests described in Section 2. Altogether, the Niger Delta and opposition party states account for 66% of the high intensity protests in the democratic period[49].

[48]The Niger Delta states include Delta, Rivers, Bayelsa, Edo and Ondo.The SAP protests were concentrated in Lagos, Ogun and Osun states.

[49]The Niger Delta states include Delta, Edo, Rivers, Bayelsa, Imo Ondo, Akwa-Ibom and Abia. The opposition party states include Ekiti, Lagos, Osun, Ogun, Oyo, Kware, Kogi and Borno.



The New York Times

# *Economic Riots Are Spreading in Nigeria*

By Kenneth B. Noble, Special To the New York Times

June 4, 1989



The New York Times Archives

***About the Archive***

*This is a digitized version of an article from The Times's print archive, before the start of online publication in 1996. To preserve these articles as they originally appeared, The Times does not alter, edit or update them.*

*Occasionally the digitization process introduces transcription errors or other problems; we are continuing to work to improve these archived versions.*

A strike in Nigeria over the Government's economic austerity program spread overnight to Port Harcourt, a city of a quarter-million people in the southeastern region, and at least three people were reported killed and several hundred arrested in new clashes

Figure A5: New York Times article on "Economic Riots" in Nigeria (1989)




# Workers protest non-payment of over three years salaries in Cross River

Published on May 25, 2021
By **Edem Edem**




Figure A6: News headlines from the 2000s: Workers protest over unpaid salaries in Nigeria

### A.3 Party Politics in Nigeria

Though political parties existed before Nigeria's 1999 democratic transition, only three parties received registration from military president Abdulsalami Abubakar: the Alliance for Democracy (AD), All People's Party (APP), and People's Democratic Party (PDP) (Azeez, 2009). The PDP dominated national politics for 15 years, winning every presidential election from 1999 to 2011. Gubernatorial elections operate differently, with citizens focused on localized, often ethnic-based regional issues (Azeez, 2009). Ten parties elected governors between 2010 and 2016 (Table A3), though most came from the PDP. PDP gubernatorial dominance declined after 2010 following the sudden death of President Umaru Yar'Adua (Figure A7).

Yar'Adua's death and the subsequent ascension of Vice President Goodluck Jonathan- the first president from the south-south region- proved contentious. Jonathan's 2015 re-election bid violated Nigeria's unofficial north-south power-rotation agreement, contributing to his defeat (Owen and Usman, 2015). Multiple opposition parties (ACN, ANPP, CPC, and APGA) merged to form the All Progressives Congress (APC) in 2013. Jonathan became the first incumbent to lose re-election, and the APC won both the presidency and a majority of governorships, reshaping Nigeria's political landscape (Figure A7) (Owen and Usman, 2015). Figure A8 illustrates the strong ethnoregional clustering of gubernatorial party affiliations.

Table A3: Distribution of state governor and president parties, 2000-2016

| State Governor Party | Share of Total |
|---|---|
| PDP | 0.649 |
| APC | 0.118 |
| ANPP | 0.109 |
| AD | 0.036 |
| ACN | 0.029 |
| APGA | 0.021 |
| APP | 0.015 |
| LP | 0.013 |
| PPA | 0.007 |
| CPC | 0.003 |

| President Party | Share of Total |
|---|---|
| PDP | 0.882 |
| APC | 0.118 |

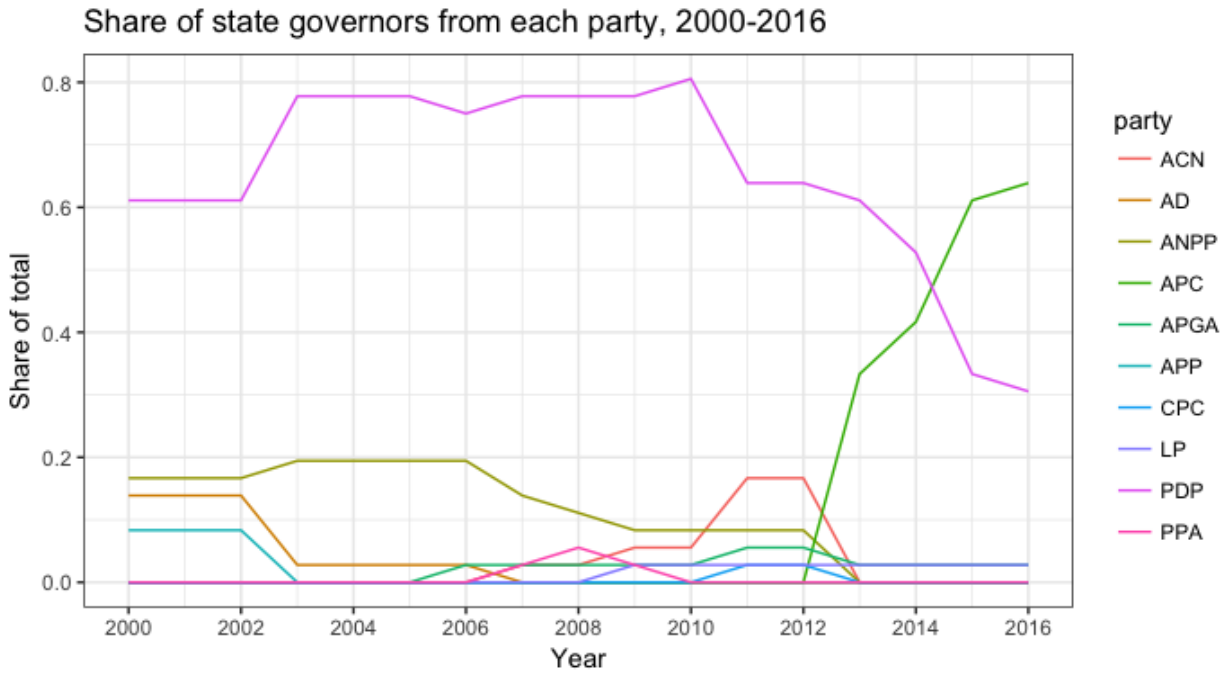



Figure A7: Share of state governors from registered political parties, 2000-2016

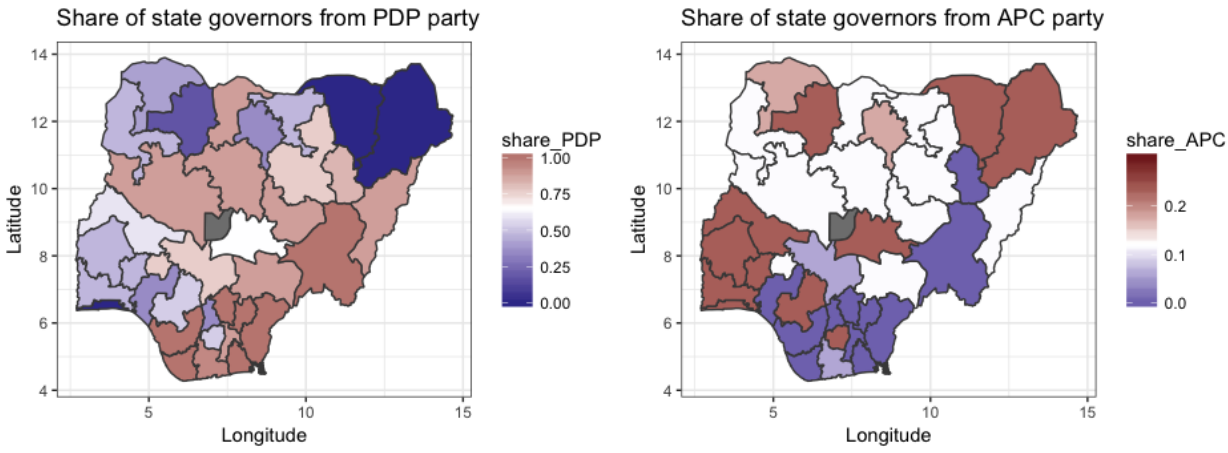



Figure A8: Share of state governors from PDP versus other opposition parties (APC) by state, 2000-2016

Table A4: Effect of alignment changes on protest responsiveness (Allocation): Evidence from the 2015 election

| **Outcome**: | Allocation Transfers | |
|---|---|---|
| Sample: | All | Excluding Lagos |
| | (1) | (2) |
| Protest x Gained x Post-2015 | 0.098 | 0.040 |
| | (0.066) | (0.059) |
| Protest x Lost x Post-2015 | 0.026 | −0.018 |
| | (0.069) | (0.056) |
| Mean of outcome | 24.098 | 24.089 |
| *Observations* | 612 | 595 |
| *Clusters* | 36 | 35 |
| State FE | Yes | Yes |
| Year FE | Yes | Yes |

Notes: Difference-in-differences estimates using statutory allocation transfers instead of VAT. Robust standard errors in parentheses clustered by state. Dependent variable is log real statutory allocation transfers at the state-year level. "Gained Alignment" identifies 12 states transitioning from non-aligned to aligned status when the opposition APC defeated the ruling PDP in 2015. "Lost Alignment" identifies 11 states transitioning from aligned to non-aligned status. Post-2015 covers 2015-2016. Column (1) includes all 36 states; column (2) excludes Lagos. Pre-trends test (2000-2014): gained-alignment states show marginal pre-trend with Lagos ($\gamma_1 = -0.006$, p=0.10) that disappears without Lagos ($\gamma_1 = -0.003$, p=0.68); lost-alignment states exhibit no differential trend ($\gamma_2 = -0.007$, p=0.51) in both specifications. State and year fixed effects included in all regressions. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A5: Balance on geographic and institutional characteristics

| | Protest Average and State Characteristics | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Geographic | | | | | | Institutional | |
| | Petrol | Malaria | Suitability | Elevation | Dist. Coast | Dist. Capital | Slavery | Centralization |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest (Indicator) | 0.376 | −0.054 | −0.130 | 319.411 | 0.398 | 33.413 | −243961.509 | 0.023 |
| | (0.200) | (0.041) | (0.697) | (452.600) | (0.431) | (215.557) | (187416.445) | (0.955) |
| *Observations* | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| $R^2$ | 0.771 | 0.246 | 0.438 | 0.530 | 0.911 | 0.529 | 0.462 | 0.490 |
| Zone FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses. Observations at the state level averages over 2000-2016. Zone is geopolitical zone. 'Protest (Indicator)' is the share of years where the state is experiencing high levels (above the national average in total numbers) of protests, taking the long-run average of the Protest indicator. Petrol is an indicator that equals 1 if the state has recorded deposits of petroleum from the PRIO dataset. Suitability is land suitability for agriculture from FAO data. Elevation is mean elevation in km from the Global Climate database. Seacoast is an indicator that equals one if the state shares a border with the sea coast. Dist. Capital is average distance to the capital in km. Malaria stability is from the malaria ecology index from Kiszewski et al., (2004). Pop. Density is the average LGA population density in 2006. Slavery is the total exports of slaves from the region during the Atlantic slave trade. Centralization index is the level of precolonial centralization from Murdock ethnicity data (Murdock, 1967) (following Archibong (2019)). ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

## A.4 Dynamic Effects and Recurrent Expenditure Components

Table A8 disaggregates total recurrent expenditure to identify which components drive the protest response documented in Table 6. Three components are examined: pensions for retired government employees (36% of recurrent expenditure), personnel costs (salaries and wages for current staff, 42%), and overhead/administrative expenses (28%). The alignment interaction is concentrated entirely in pensions: protests increase pension spending in aligned states by 26.8%, yielding a net effect of 15.5%. Personnel costs and administrative overhead show no significant alignment effects. This pattern suggests fiscal targeting. Rather than expanding general operational capacity through new hiring or administrative overhead, aligned governments direct recurrent increases toward pensions- politically salient transfers to state employees and retirees who represent organized, vocal constituencies. Pension increases provide visible benefits to key groups while avoiding long-term commitments from permanent staffing expansions. The pension result should be interpreted with caution given the limited sample.

Table A6: Dynamic effects of protests on VAT transfers, no alignment

| **Outcome**: | VAT Transfers | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Protest | 0.004 | | | 0.005 |
| | (0.003) | | | (0.004) |
| Protest (t-1) | | 0.004 | | 0.005 |
| | | (0.003) | | (0.004) |
| Protest (t-2) | | | 0.004 | 0.003 |
| | | | (0.004) | (0.004) |
| Mean of outcome | 22.488 | 22.517 | 22.532 | 22.532 |
| *Observations* | 612 | 576 | 540 | 540 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |

Notes: Clustered standard errors (state) in parentheses. Dependent variable: log real VAT transfers. Protest: z-score of ACLED protest events. Columns (1)-(3) test each lag separately; column (4) includes all lags simultaneously. State and year fixed effects included in all specifications. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A7: Dynamic effects of protests on Allocation transfers

| **Outcome**: | Allocation Transfers | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Protest | −0.002 | | | −0.003* |
| | (0.002) | | | (0.001) |
| Protest x GP Aligned | −0.002 | | | −0.000 |
| | (0.004) | | | (0.002) |
| Protest (t-1) | | −0.002 | | −0.002 |
| | | (0.002) | | (0.002) |
| Protest (t-1) x GP Aligned | | −0.001 | | −0.001 |
| | | (0.004) | | (0.002) |
| Protest (t-2) | | | −0.001 | −0.001 |
| | | | (0.001) | (0.001) |
| Protest (t-2) x GP Aligned | | | −0.002 | −0.001 |
| | | | (0.004) | (0.003) |
| Mean of outcome | 24.098 | 24.092 | 24.091 | 24.091 |
| *Observations* | 612 | 576 | 540 | 540 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |

Notes: Clustered standard errors (state) in parentheses. Dependent variable: log real statutory allocation transfers. Protest: z-score of ACLED protest events. GP Aligned = 1 if governor and president are from the same party and is included in all specifications. Columns (1)-(3) test each lag separately; column (4) includes all lags simultaneously. State and year fixed effects included in all specifications. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A8: OLS Estimates: Protests and recurrent expenditure components

| **Outcome**: | Pensions | Personnel | Overhead |
|---|---|---|---|
| | (1) | (2) | (3) |
| Protest | −0.113 | −0.035 | −0.034 |
| | (0.086) | (0.029) | (0.036) |
| Protest x GP Aligned | 0.268*** | −0.025 | 0.021 |
| | (0.085) | (0.054) | (0.072) |
| Mean of outcome | 14.756 | 16.412 | 14.988 |
| *Observations* | 134 | 429 | 425 |
| *Clusters* | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |

Notes: Clustered standard errors by state in parentheses. Dependent variables are components of recurrent expenditure: log real pensions (column 1), personnel costs (column 2), and overhead/administrative costs (column 3). Protest: z-score of ACLED protest events. GP Aligned = 1 if governor and president are from the same party and is included in all specifications. State and year fixed effects included in all specifications. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

## A.5 Robustness

Table A9: Dynamic effects of protests on VAT transfers, testing leads

| **Outcome**: | VAT Transfers | |
|---|---|---|
| | (1) | (2) |
| Protest (t+1) | 0.003 | 0.006 |
| | (0.007) | (0.006) |
| Protest (t+1) x GP Aligned | 0.002 | −0.004 |
| | (0.009) | (0.010) |
| Protest | −0.013** | −0.009 |
| | (0.006) | (0.006) |
| Protest x GP Aligned | 0.032*** | 0.025** |
| | (0.011) | (0.009) |
| Protest (t-1) | | −0.003 |
| | | (0.003) |
| Protest (t-1) x GP Aligned | | 0.014*** |
| | | (0.005) |
| Protest (t-2) | | −0.010 |
| | | (0.007) |
| Protest (t-2) x GP Aligned | | 0.022*** |
| | | (0.008) |
| Mean of outcome | 22.488 | 22.535 |
| *Observations* | 576 | 504 |
| *Clusters* | 36 | 36 |
| State FE | Yes | Yes |
| Year FE | Yes | Yes |

Notes: Clustered standard errors (state) in parentheses. Dependent variable: log real VAT transfers. Protest: z-score of ACLED protest events. GP Aligned = 1 if governor and president are from the same party. Column (1) includes one-year lead protest as a placebo/falsification test; column (2) includes full dynamic specification with lead, contemporaneous, and two lags. State and year fixed effects included in all specifications. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A10: OLS Estimates: Protest and intergovernmental transfers (VAT, Allocation) dropping most populous states, Lagos and Kano

| **Sample**: | No Lagos | | No Kano | |
|---|---|---|---|---|
| **Outcome**: | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) |
| Protest | −0.007* | −0.003** | −0.006** | −0.002* |
| | (0.004) | (0.001) | (0.003) | (0.001) |
| Governor-President (GP) Aligned | 0.018** | 0.003 | 0.025*** | 0.001 |
| | (0.008) | (0.004) | (0.009) | (0.005) |
| Protest x GP Aligned | 0.013** | 0.003** | 0.017*** | 0.0001 |
| | (0.006) | (0.001) | (0.005) | (0.003) |
| Mean of outcome | 20.066 | 21.912 | 20.107 | 21.909 |
| *Observations* | 6,510 | 6,510 | 6,510 | 6,510 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations at the state and month-year level as described in text. Protest is the continuous z-score measure of protests from the ACLED data as described in text and based on monthly data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. State and month-year fixed effects included in all regressions. Observations are monthly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A11: OLS Estimates: Other protest measures and intergovernmental transfers (VAT, Allocation)

| **Outcome**: | **Panel A: Other Protest Measures and State Revenue Outcomes** | | | |
|---|---|---|---|---|
| | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) |
| Protests per cap. | 0.014 | −0.031 | | |
| | (0.104) | (0.064) | | |
| Total Protests | | | 0.004 | −0.004*** |
| | | | (0.007) | (0.001) |
| Mean of outcome | 20.120 | 21.726 | 20.120 | 21.726 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 |
| **Outcome**: | **Panel B: Other Measures and State Revenue Outcomes, by GP Alignment** | | | |
| | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) |
| Protests per cap. | −0.097 | −0.012 | | |
| | (0.129) | (0.064) | | |
| Total Protests | | | −0.00001 | −0.004*** |
| | | | (0.008) | (0.001) |
| Governor-President (GP) Aligned | 0.018* | 0.001 | 0.017* | 0.001 |
| | (0.010) | (0.004) | (0.009) | (0.004) |
| Protests per cap. x GP Aligned | 0.296** | −0.035 | | |
| | (0.146) | (0.056) | | |
| Total Protests x GP Aligned | | | 0.010** | −0.001 |
| | | | (0.005) | (0.002) |
| Mean of outcome | 20.120 | 21.916 | 20.120 | 21.916 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations at the state and month-year level as described in text. Protests per cap. is total numbers of protests per 100,000 population (2016 population). Total protests is the total number of protests. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. State and month-year fixed effects included in all regressions. Observations are monthly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

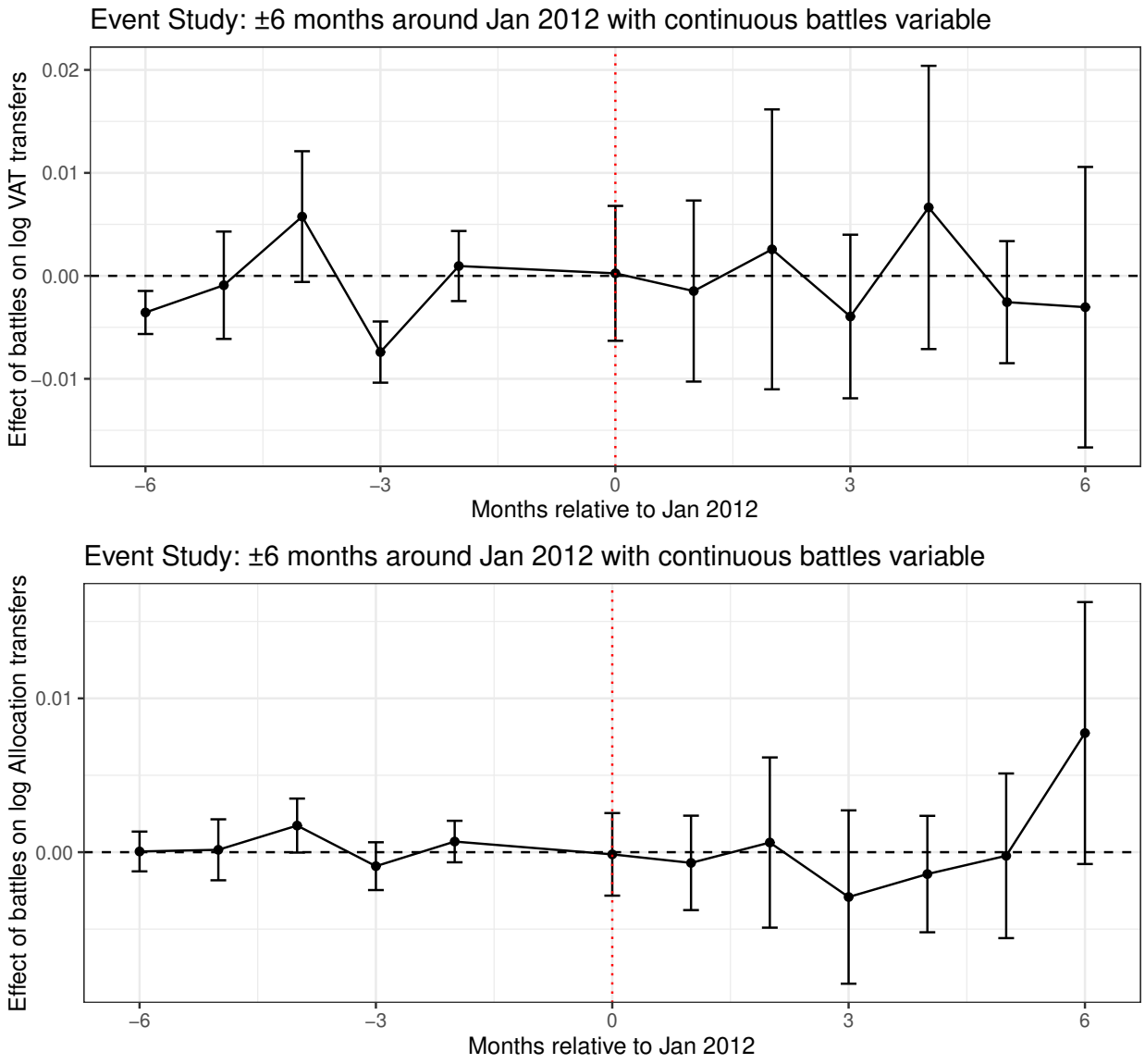



Figure A9: Event study coefficients of effects of battles on intergovernmental transfers (VAT and Allocation) over the January 2012 subsidy removal

Table A12: OLS Estimates: Protest effects on transfers (military period)

| | **Protest (Indicator) and State Revenue Outcomes, Military Period** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Covariate Measure**: | Protest (All data years) | | | | Protest (1994-1996) | | | |
| **Outcome**: | VAT | Allocation | Total Transfers | IGR | VAT | Allocation | Total Transfers | IGR |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Protest | 0.051 | 0.042 | 0.145*** | 0.016 | 0.051 | 0.138*** | 0.145*** | −0.054 |
| | (0.053) | (0.114) | (0.041) | (0.153) | (0.053) | (0.035) | (0.041) | (0.271) |
| Mean of outcome | 21.551 | 23.773 | 23.361 | 22.050 | 21.551 | 23.177 | 23.361 | 21.738 |
| *Observations* | 96 | 224 | 96 | 251 | 96 | 96 | 96 | 96 |
| *Clusters* | 36 | 36 | 36 | 34 | 36 | 36 | 36 | 34 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations, log real total transfers (VAT+ allocation transfers), and log real internally generated revenue (IGR) at the state-year level as described in text. VAT data is available from 1994-1996. Allocation data is available from 1990-1996, and IGR data is available from 1989-1996. Protest is the indicator that equals one if the total number of protests is greater than the national mean in that year from the GDELT data as described in text. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

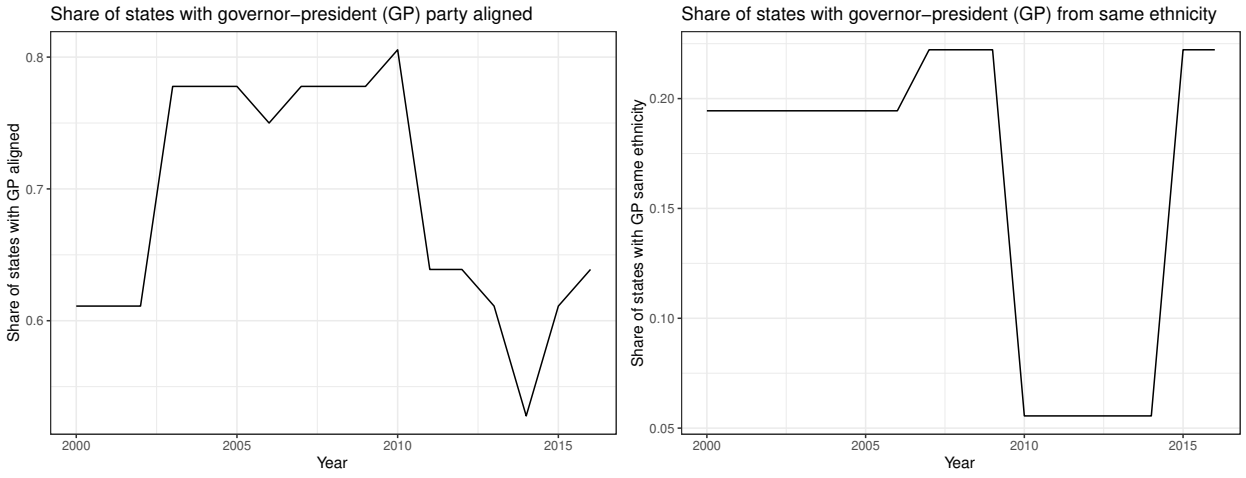



Figure A10: Share of governors from the same political party (left) and from the same ethnicity (right) as the president

Table A13: OLS Estimates: All conflict events and intergovernmental transfers (VAT, Allocation)

| | | | | |
|---|---|---|---|---|
| | **Panel A: All Events and State Revenue Outcomes** | | | |
| **Covariate Measure**: | All Events (Continuous) | | All Events (Indicator) | |
| **Outcome**: | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) |
| All Events | 0.002 | 0.001* | 0.001 | 0.0002 |
| | (0.005) | (0.001) | (0.005) | (0.001) |
| Mean of outcome | 20.120 | 21.726 | 20.120 | 21.726 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 |
| | **Panel B: All Events and State Revenue Outcomes, by GP Alignment** | | | |
| **Covariate Measure**: | All Events (Continuous) | | All Events (Indicator) | |
| **Outcome**: | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) |
| All Events | −0.012 | 0.003* | −0.020 | 0.003 |
| | (0.013) | (0.001) | (0.016) | (0.003) |
| Governor-President (GP) Aligned | 0.024** | 0.001 | 0.015** | 0.002 |
| | (0.010) | (0.004) | (0.006) | (0.004) |
| All Events x GP Aligned | 0.021 | −0.002 | 0.031 | −0.004 |
| | (0.015) | (0.002) | (0.021) | (0.005) |
| Mean of outcome | 20.120 | 21.916 | 20.120 | 21.916 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations at the state and month-year level as described in text. All Events is the continuous z-score measure of all conflict events from the ACLED data in columns (1) to (2) and the indicator that equals one if the total number of events is greater than the national mean in that month and year in columns (3) to (4) as described in text and based on monthly data. Governor-President (GP) Aligned is an indicator that equals one if the president and governor of the state come from the same political party. State and month-year fixed effects included in all regressions. Observations are monthly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A14: OLS Estimates: Protest and intergovernmental transfers (VAT, Allocation) by close election vote margin

| **Covariate Measure**: | **Protest (Continuous)** | | **Protest (Indicator)** | | **Vote Margin** | |
|---|---|---|---|---|---|---|
| **Outcome**: | VAT | Allocation | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Protest | 0.001 | −0.001 | −0.050* | −0.010 | | |
| | (0.006) | (0.004) | (0.029) | (0.011) | | |
| Vote Margin (Close Election, CE) | −0.020 | −0.003 | −0.033 | −0.004 | −0.019 | −0.005 |
| | (0.031) | (0.014) | (0.038) | (0.014) | (0.030) | (0.015) |
| Protest x CE | 0.007 | −0.007 | 0.096* | −0.005 | | |
| | (0.013) | (0.007) | (0.053) | (0.023) | | |
| Mean of outcome | 20.120 | 21.916 | 20.120 | 21.916 | 20.120 | 21.916 |
| *Observations* | 1,039 | 1,039 | 1,039 | 1,039 | 1,039 | 1,039 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations at the state and month-year level as described in text. Protest is the continuous z-score measure of protests from the ACLED data in columns (1) to (2) and the indicator that equals one if the total number of protests is greater than the national mean in that month and year in columns (3) to (4) as described in text and based on monthly data. Vote Margin is 1 minus the vote margin, which is the difference between the share of votes by the winner of the gubernatorial elections and the 2nd place party when the incumbent president's party (PDP) is running in elections, and generally placed within the top 2 candidates in the 2007, 2011 and 2015 elections. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A15: OLS Estimates: Battles and policing, share of other major actors in events

| **Outcome**: | Police Share | | Military Share | | Party Share | | Union Share | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Battles | 0.023** | 0.038*** | 0.012 | 0.004 | 0.008 | 0.004 | −0.004 | −0.006 |
| | (0.010) | (0.010) | (0.011) | (0.006) | (0.010) | (0.005) | (0.003) | (0.004) |
| Governor-President (GP) Aligned | | −0.033 | | −0.003 | | −0.021 | | 0.021 |
| | | (0.027) | | (0.013) | | (0.018) | | (0.013) |
| Battles x GP Aligned | | −0.021 | | 0.012 | | 0.008 | | 0.001 |
| | | (0.015) | | (0.012) | | (0.016) | | (0.005) |
| Mean of outcome | 0.151 | 0.151 | 0.026 | 0.026 | 0.074 | 0.074 | 0.032 | 0.032 |
| *Observations* | 352 | 352 | 352 | 352 | 352 | 352 | 352 | 352 |
| *Clusters* | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are shares of police, military, political party or labor union actors in all battles events over 2000 to 2016 years of available data as described in text. Battles is the continuous z-score measure of battles from the ACLED data as described in text. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A16: Petroleum prices and protest

| **Outcome**: | Protest (Continuous) | Protest (Indicator) |
|---|---|---|
| | (1) | (2) |
| Petrol x Petrol Price | −0.001 | −0.0003 |
| | (0.001) | (0.0004) |
| Mean of outcome | −0.026 | 0.142 |
| *N* | 6,696 | 6,696 |
| *Clusters* | 36 | 36 |
| State FE | Yes | Yes |
| Month-Year FE | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are protest variables. Protest is the continuous z-score measure of protests from the ACLED data in column (1) and the indicator that equals one if the total number of protests is greater than the national mean in that month and year in columns (2) as described in text and based on monthly data. Petrol is an indicator that equals one if the state is a petroleum producing area. Petrol Price is the log oil price of petroleum over 2000-2016. Observations are at the month-year level and month-year fixed effects are included in all specifications. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A17: OLS Estimates: Protests and intergovernmental transfers (VAT, Allocation), by shared governor-president ethnicity

| **Covariate Measure**: | Protest (Continuous) | | Protest (Indicator) | |
|---|---|---|---|---|
| **Outcome**: | VAT | Allocation | VAT | Allocation |
| | (1) | (2) | (3) | (4) |
| Protest | 0.009 | −0.002 | 0.011 | −0.006** |
| | (0.006) | (0.001) | (0.011) | (0.003) |
| Governor-President (GP) Same Ethnicity | −0.010 | 0.018*** | −0.0001 | 0.017*** |
| | (0.023) | (0.004) | (0.022) | (0.005) |
| Protest x GP Same Ethnicity | −0.035** | 0.003 | −0.076* | 0.008 |
| | (0.014) | (0.002) | (0.040) | (0.006) |
| Mean of outcome | 20.120 | 21.916 | 20.120 | 21.916 |
| *Observations* | 6,696 | 6,696 | 6,696 | 6,696 |
| *Clusters* | 36 | 36 | 36 | 36 |
| State FE | Yes | Yes | Yes | Yes |
| Month-Year FE | Yes | Yes | Yes | Yes |

Notes: Regressions estimated by OLS. Robust standard errors in parentheses clustered by state. Dependent variables are intergovernmental transfers: log real VAT and state allocations at the state and month-year level as described in text. Protest is the continuous z-score measure of protests from the ACLED data in columns (1) to (2) and the indicator that equals one if the total number of protests is greater than the national mean in that month and year in columns (3) to (4) as described in text and based on monthly data. Governor-President (GP) Same Ethnic is an indicator that equals one if the president and governor of the state share the same ethnicity. State and month-year fixed effects included in all regressions. Observations are monthly outcomes. ***Significant at the 1 percent level, **Significant at the 5 percent level, *Significant at the 10 percent level.

Table A18: Economic magnitude of protest effects on VAT transfers

| | Monthly | | Yearly | |
|---|---|---|---|---|
| | Naira (mn) | US$ (000s) | Naira (mn) | US$ (mn) |
| Non-Aligned States | −3.2 | −21 | −105 | −0.70 |
| Aligned States | +7.0 | +47 | +154 | +1.03 |
| **Differential** | **10.2** | **68** | **259** | **1.73** |

*Notes:* Effects per one standard deviation increase in protests. Based on average transfers 2000-2016: monthly VAT = 640 million Naira; yearly VAT = 7 billion Naira. Exchange rate: 1 USD = 150 Naira (2010). Differential shows the advantage aligned states receive relative to non-aligned states for the same protest intensity.