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Rules versus Discretion:
Empirical Evidence from Indonesia's Intergovernmental Transfer System

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Abstract

Can formula-based transfers effectively limit favoritism and political patronage in public funds allocations? Formula-based transfers that tie the allocation of public funds to local development indicators are often seen as one effective measure to reduce special-interest politics, although the limited empirical evidence on formula-based transfers suggests the opposite. However, the few existing empirical studies evaluate formula-based transfers without comparing them to a more discretionary counterfactual, such as a non-formula-based institutional transfer design. Indonesia's institutional public grant design provides a unique opportunity to compare these two transfer designs within the same country for the first time. My analysis allows me to investigate special interests in public funds allocations holding the political system, the observation period, and the government officials involved constant, while varying the institutional transfer design. Using a fixed-effects model on an unbalanced panel data set of 428 Indonesian districts from 2004-2017, the results show that non-formula-based special allocation grants are systematically biased toward Indonesia's national Budget Commission members' home districts. The home districts of the same set of Budget Commission members do not, in contrast, receive significantly higher per capita transfers under the formula-based transfer design. These results illustrate that—in contrast to its more discretionary alternative—a formula-based institutional public grant design can effectively limit public fund manipulations by government officials.

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1. Introduction

Misallocations of public funds based on government officials' personal interests can create development costs for regions without personal connections to policymakers (Hodler & Raschky, 2014), and erodes political competition (Aspinall & Berenschot, 2019) and local governance (Berenschot & Mulder, 2019), in particular in countries with lower institutional quality (Hodler & Raschky, 2014; Burgess et al., 2015). Most of the empirical evidence on public funds manipulations looks at discretionary grants, showing that incumbent politicians allocate discretionary public funds based on strategic election interest, i.e. political patronage (inter alia Arulampalam et al., 2009; Kauder et al., 2016; Gonschorek et al., 2018) and personal connections to a region, i.e., favoritism (inter alia Carozzi & Repetto, 2016; Dreher et al., 2019; Gonschorek, 2021). The findings on these misallocations of discretionary grants support the notion that non-discretionary, formula-based, transfers are an effective measure against misallocation. Formula-based transfers tie transfers to a set of local development indicators. In theory, this reduces the discretionary scope based on strategic electoral motives (past electoral support) or personal ties to a region (e.g., family ties), by institutionalizing normative criteria as the basis for transfer allocations (e.g., the fiscal need or the local development of a region).

Yet, the limited empirical evidence on formula-based transfer suggests that even these schemes are not a panacea against public funds manipulations.[1] The extant studies all show that formula-based transfers have been manipulated by government officials for strategic electoral reasons. Yet, they overlook the possibility that these manipulations of public transfers might have been even higher under a more discretionary, no-formula-based, approach.[2] The existing empirical studies lack a (true) counterfactual, which would allow to compare the institutional design of formula-based transfers to a more discretionary alternative.

Hence, the critical question is how a formula-based transfer design performs relative to a discretionary approach in limiting political patronage and favoritism in public fund allocations. The analysis offered in this paper is the first to address this question, exploiting the differences in the institutional design of Indonesia's two most important intergovernmental transfer schemes (World Bank, 2020).[3] Indonesia's formula-based transfer (*Dana Alokasi Umum*, DAU) and non-formula-based special allocation grant *Dana Alokasi Khusus*, DAK) represent two very different institutional transfer designs. Indonesia—a young democracy and the third-largest democracy in the world—provides a unique institutional setup. Indonesia implemented large-scale fiscal decentralization reforms starting in 1999 to secure its unity (Basri & Hill, 2020) and to improve its public services delivery at the local level (Schulze & Sjahrir, 2014; Hill & Vidyattama, 2016). To provide these public services, local governments depend on various intergovernmental transfers (Lewis, 2014; Gonschorek & Schulze, 2018) with varying institutional designs and normative functions.[4] This makes Indonesia particularly suited for this quasi-experimental analysis. It allows to compare formula-based transfers to more discretionary transfers keeping everything else constant. Yet, it has not been tested whether the formula-based DAU allocations in Indonesia are driven by special

[1] In Brazil (Litschig, 2012) and Ghana (Banful, 2011), formula-based transfers favor "swing districts", i.e. those districts in which the president's vote margins in the previous presidential elections were lower. In Nigeria districts with extensive vote support are favored and areas with strong support for the opposition are penalized (Taiwo & Veiga, 2020).

[2] There is only one study related to such a comparison. Allers & Ishemoi (2011) analyze a shift from a discretionary model to a formula-based allocation model in Tanzania to investigate if this reduced the preferential treatment of regions with larger parliamentary representations. Their results show that Tanzania's formula-based model did not reduce preferential treatment because politicians overrode the formula. Hence Tanzania does not allow a comparison of a formula-based transfer with a discretionary transfer, they also compare two transfer regimes at different points in time, and for a different set of politicians.

[3] Both types of transfers combined account for more than 70 percent of local government revenue, and around 549 trillion Indonesian rupiahs (IDR) in the year 2016 (Gonschorek & Schulze, 2018), equivalent to 40.8 billion US dollars (in 2016).

[4] See Gonschorek & Schulze (2018) for a recent overview of Indonesia's intergovernmental transfer system.

interests.[5] This is even more surprising for Indonesia's non-formula-based special allocation grant (DAK), given the various high profile corruption cases of Indonesian legislative members linked to DAK allocations.[6]

The analysis is the first on formula-based transfers to investigate not only political patronage, but also favoritism. All existing empirical evidence on formula-based transfers (Banful, 2011; Litschig, 2012; Taiwo & Veiga, 2020) focuses on political patronage, i.e., the manipulation of formula-based funds to reward or buy electoral support. Yet, whether the institutional grant design also affects the degree of favoritism, e.g., the preferential treatment of a politician's hometown, has never been tested, despite ample empirical evidence suggesting the prevalence of favoritism in public funds allocations (inter alia Hodler & Raschky, 2014; Luca et al., 2018; Dreher et al., 2019).

Central government officials in Indonesia could systematically bias public transfers to districts[7] for strategic reelection interests but also based on other personal preferences, e.g. based on their personal connection to their home town. They might allocate more funds to their home regions to support their business, their family, or other clan members in their home region (Do et al., 2017; Carozzi & Repetto, 2016; Gonschorek, 2021). I analyze whether transfer allocations in Indonesia are systematically biased towards the place of residence of members of Indonesia's national legislative Budget Commission using a fixed-effects (FE) model on an unbalanced panel data set of 428 districts from 2004-2017. The Budget Commission (*Banggar*) of Indonesia's parliament is very powerful in negotiations of budget allocations to subnational governments (see e.g., Sherlock, 2007; Juwono & Eckhardt, 2008; Blöndal et al., 2009). To measure a budget commissioner's personal connection to a district, I use their home address—outside the capital Jakarta—stated in their official parliamentary profile. I then compare whether there is a difference in favoritism and political patronage under both institutional transfer designs.

My main results show that non-formula-based transfer allocations (DAK) are systematically biased toward the home districts of Indonesia's national Budget Commission members. They receive around 12 percentage points higher DAK grant allocations per capita. In contrast, the places of residence of the same set of Budget Commission members do not receive significantly higher per capita transfers under the formula-based transfer design (DAU). These results are robust to various competing hypotheses, e.g., the inclusion of personal and/or strategic electoral interests of Indonesian presidents and cabinet ministers. Ultimately, the formula-based transfer design seems to limit this type of public fund manipulation in Indonesia effectively. Moreover, the preferential treatment under DAK, in contrast, seems to be motivated by election interests. It is only empirically noticeable when the residential district of a Budget Commission member lies within the Budget Commission member's electoral district, hence if it is of electoral relevance. Despite those commission members are likely also to be informed about the local situation in their residential district, or have an extended family network which could motivate fund allocations no such bias was detected when a Budget Commission member simply lives in a district, but the district is not part of his/her electoral district. My results also show that the preferential treatment of home districts is driven by the period of 2009-2017, or after Indonesia adopted the open-party list. These results are in line with the notion that the introduction

[5] DAU is often correctly criticized for several other reasons, e.g., its strong degree of per capita inequality in its allocations, rather equalizing per region as per capita (see Gonschorek & Schulze, 2018 for a summary on other issues).

[6] The Deputy Speaker of Indonesia's National Parliament, Taufik Kurniawan, was sentenced to six years in prison in 2019 for accepting bribes connected to DAK allocations in 2016. The national parliament member Amin Santono was sentenced to eight years in prison for accepting bribes of around 3.3 billion rupiahs (IDR) (around 228 000 US dollars) to influence the 2018 DAK allocations. Putu Sudiartana, also a national parliament member, was sentenced to six years in prison in 2017 for accepting bribes of around 500 million rupiahs (IDR) (around 35 000 US dollars) related to DAK allocations for an infrastructure project in West Sumatra in 2016. In a public opinion survey in 2014, the Indonesian parliament (DPR) was seen as the most corrupt institution in Indonesia *Lembaga Survei Indonesia* (LSI) 2014.

[7] *Kabupaten* (Regency) and *Kota* (City)

of the open party-list increased individual electoral competition between DPR candidates in Indonesia and the need for patronage and favoritism (Aspinall, 2014).

The remainder of this paper proceeds as follows. Section Two provides a brief institutional background relevant for this analysis of Indonesia's fiscal transfer system and all relevant stakeholders in its budget process. Section Three describes the data, the empirical model, the results, and section Four concludes. The Appendix provides details on Robustness Checks.

2. Institutional Background

2.1 National Parliament *(DPR)* and the Budget Commission (*Banggar*)

Indonesia is a presidential democracy. The president appoints his or her cabinet members and has been directly elected by popular vote at the national level since 2004, for a maximum of two five-year terms. Although the president has veto-power according to the constitution, laws must be made by "joint agreement" between the president and the House of Representatives (*Dewan Perwakilan Rakyat*, DPR) (Sherlock, 2010). The DPR consists of 550-560 members[8] (during my observation period from 2004-2017) and is elected using proportional representation across 77 multi-member electoral districts every five years. Since 2009, DPR members have been elected using an open party-list. The second chamber of Indonesia's parliament is the Regional Representative Council (*Dewan Perwakilan Daerah*, DPD). It consists of 132 members, four from each province, and is elected at the provincial level. It is not very influential and only has an advisory function to the DPR. Together the DPR and DPD constitute Indonesia's People's Consultative Assembly (*Majelis Permusyawaratan Rakyat, MP*R) which oversees presidential decisions.

Unlike the DPD, the DPR has the right to pass and monitor budget decisions by the executive government (Law 17/2003 Article 12 to 15). In its earlier years, the quality of this oversight was often criticized because of its members' inexperience and financial and procedural deficiencies (Sherlock, 2007). When DPR members criticized the budget, it was mainly out of personal financial interests, e.g., by changing a budget line item in favor of a contractor (Sherlock, 2007) or to allow the payback of businesspeople at home for their electoral sponsorship in the past (Aspinall, 2014). Hence many parliament members were incentivized to become part of the budget process to gain access to social programs, development projects and other resources for their supporters (Aspinall, 2014). This access to funds is highest in the commissions (Sherlock 2007).

The DPR is divided into 11 commissions, each responsible for a policy area along the lines of the different Indonesian sector ministries. These commissions hold close working and patronage relations with the corresponding executive counterpart (Aspinall & Berenschot, 2019). Each DPR member is a member of one commission (Sherlock, 2007), but there is strong competition to become a member of a "wet" commission (e.g., the Commission V on Transportation, Public Works, and Telecommunications), which allows more discretionary access to funds and government programs than other commissions (e.g., the Commission II on Internal Affairs) (Aspinall & Berenschot, 2019).

The Budget Commission (*Banggar*) is a special committee composed of an equal number of members from all the commissions (Sherlock, 2007). Its primary task is the formulation and negotiations of budget

[8] The DPR had 550 members from 2004-2009, 560 members from 2009-2014, and 560 members from 2014-2019.

allocations to subnational governments (Sherlock, 2007; Juwono & Eckhardt, 2008; Blöndal et al., 2009). It has 89 members and has a working committee on central government finances and one on intergovernmental regional transfers.[9] Despite its importance for transfer allocations, the plenary meetings of the Budget Committee and its working committee meetings are rarely open to the public (Sherlock, 2007) and are poorly covered by the media.[10] Yet, there is various anecdotal evidence that Indonesian legislative members divert funds to "their" constituencies, particularly if they are part of the national Budget Commission (e.g., Aspinall, 2014, Aspinall & Berenschot, 2019)). Since the 2009 and the adoption of the open-party list form of proportional representation, this misappropriation has apparently even increased (Aspinall, 2014) because of increased (within-party) electoral competition, DPR candidates now compete for limited seats even within the same political party. Parliament members often even disagree on budget decisions with members of their own political party or fraction in another commission (Sherlock, 2010, 2012).

2.2 Fiscal Transfers

Indonesia has three main levels of government: central, provincial, and district. The central government is responsible for law enforcement, the judiciary, monetary and macroeconomic policies, religious affairs, foreign relations, security policy, and defense. The subnational governments are responsible for all remaining functions. Districts are especially responsible for decentralized public services provision in the areas of education, health, and infrastructure. Districts have almost no own revenue-raising authority; hence are very dependent on transfers from the central and provincial governments (Lewis, 2014; Schulze & Sjahrir, 2014). In 2016, central government transfers accounted for more than 80 percent of districts' and approximately 40 percent of provincial revenue (Gonschorek & Schulze, 2018). DAU and DAK are the two primary funding sources[11] for Indonesian districts and differ significantly in their institutional design, which makes them ideal for the present analysis. Both types of transfer are critical to allocate funds to Indonesian districts and provide public services to all of Indonesia's 273 million people. DAU is the largest subnational revenue source, accounting for more than 50 percent of subnational revenues between 2001-2016 (Augustina et al., 2012; Gonschorek & Schulze, 2018). The share of DAU funding has decreased slightly in recent years but only because of a sharp increase in DAK (Gonschorek & Schulze, 2018).[12]

***Formula-based Transfer** (DAU)*

The general allocation grant DAU (*Dana Alokasi Umum*) is a non-earmarked, formula-based, general purpose grant. It is determined by a formula based on the fiscal capacity and the fiscal needs of a district. It aims to reduce interregional disparities in fiscal capacity and ultimately development.

The amount of DAU allocations for each district i is determined by the sum of a "basic allocation" (BA_i) and a "fiscal gap" (FG_i). In 2015, 49 percent of the DAU allocation budget for the districts went to the basic allocation, while 51 percent was determined by the fiscal gap. The basic allocation for a district is

[9] In addition, the budget commission also has one working committee macro-economic assumptions and one the composition of the budget (APBN) law, both also connected to the available transfer allocations.
[10] When the media covers these budget discussions, it often only focuses on local spending and projects (Sherlock, 2007). In theory, this actually increases the incentives of Budget Commission members to allocate more fund to their home town and/or electoral base.
[11] For more information on Indonesia's other (much smaller) intergovernmental transfers, see Gonschorek and Schulze (2018).
[12] Although DAU is still much larger in absolute terms, with 401 trillion IDR in 2018 (around 25 billion US dollars), the DAK increased from 31 trillion IDR in 2014 to 163 trillion IDR in 2016 and to around 185 trillion in 2018 (nearly 11 billion US dollars).

determined by the personnel expenditures for the respective district divided by the sum of personnel expenditures of all districts multiplied by the pool for the basic allocation.

$$(1)\ \mathrm{DAU_i} = \mathrm{BA_i} + \mathrm{FG_i}$$

The fiscal gap is the difference between the fiscal capacity (FC_i) and the fiscal need (FN_i); the fiscal capacity is the sum of the districts' own-source revenue and shared revenues (DBH).[13]

$$(2)\ \mathrm{FG_i} = \mathrm{FN_i} - \mathrm{FC_i}$$

The fiscal need (FN_i) of a district *i* is defined as a weighted sum of its index of population size, the inverse of the Human Development Index, a cost price index, its surface area, and its gross regional domestic product (GDP) in the previous year (t-1).[14] Finally, the weighted average of all five indices is multiplied with the average spending across all districts to determine a local government's fiscal need. In theory, DAU is a textbook example of a formula-based transfer scheme. It ties transfer allocations to a set of local development indicators, that potentially limit the discretionary scope of government officials to allocate public funds based on personal interests.[15]

Non-formula-based Transfer (DAK)

In contrast to DAU, DAK is not formula-based. The specific allocation fund DAK (*Dana Alokasi Khusus*) is an earmarked fund for physical capital investments and operational and maintenance needs in line with national development priorities. While DAK allocations officially are determined by general criteria (e.g., the fiscal capacity of a local government), technical criteria (e.g., guidelines by the responsible ministry), and special criteria (e.g., specific geographical characteristics of a region), critics argue that DAK capital grants lack allocative efficiency, transparency, and accuracy in their definition and planning (Shah, 2012), which allows for ad hoc projects determined by pork-barrel politics (Shah, 2012). Since 2016 DAK requires specific project proposals. However, specific proposals have not decreased concerns regarding its transparency, predictability nor its targeting (World Bank, 2020). Compared to the formula-based DAU transfers, Indonesia's Budget Commission can theoretically allocate DAK transfers based on strategic re-election interests or pure favoritism more easily (the same holds true for the president and cabinet ministers).

3. Empirical Evidence

3.1 Data

I use a panel dataset of 428 districts[16] for the period 2004-2017. Biographical information on Indonesia's parliament members from 2004-2014 was collected form Indonesia's National Election Commission (KPU).

[13] The DBH (*Dana Bagi Hasil*) is Indonesia's tax and natural resource revenue-sharing system. Its amount is based on natural resource revenue (from forestry, oil, gas, general mining, and geothermal energy), personal income tax, and the property tax at the subnational government level. For more information on DBH, see Agustina et al. (2012) and Gonschorek & Schulze (2018).

[14] The weights are picked to achieve a given numerical value of the so-called Williamson index (weighted coefficient of variation). However, those weights and how they are set in detail lack transparency regarding the DAU formula allocation.

[15] This paper investigates whether this lack of concern regarding political motivations in DAU allocations should be added to the list of discussions. DAU so far has been criticized for generating a large degree in variation between DAU per capita amounts across Indonesia, among other issues, political manipulation has not been one of them. For a recent summary, see Gonschorek & Schulze (2018).

[16] The districts of the special autonomy region Aceh are not included. Moreover, the districts of DKI Jakarta are not included as they have a special legal status and are not autonomous. Papua had to be excluded due to data limitations.

For the national parliament members from 2014-2017 biographical data are collected from the official website of the national parliament of Indonesia.[17] Information on electoral district composition was collected from the Indonesia's National Election Commission (KPU). This elaborately compiled data set on all parliamentary members elected in 2004, 2009, and 2014 contains information on their place of residence (official home address, outside Jakarta), whether they are part of the national Budget Commission, and whether they live in their electoral district. My main data sources for intergovernmental transfers and the socioeconomic characteristics of the Indonesian districts include the Indonesian Database for Policy and Economic Research (DAPOER) of The World Bank Indonesia, the Ministry of Finance, and the Statistical Office (BPS) of the Republic of Indonesia.

3.2 Empirical Model

To investigate if the institutional grant design influences favoritism or political patronage in Indonesia, I compare the allocations of the formula-based DAU to non-formula-based DAK allocations. My two dependent variables are the natural logarithm of the total formula-based transfers per capita (DAU), and of the total non-formula-based transfers per capita (DAK) in district *d* at time *t*. To control for unobservable time-invariant district characteristics I use a fixed effects (FE) model with standard errors clustered at the district level.

To test for favoritism among budget committee members I add my main variables of interest, a dummy variable that is equal to one if a district *d* at time *t* has at least one member of the Budget Commission living there, and otherwise zero. To control for favoritism of the president, I add a dummy equal one for his/her birth district, and otherwise zero. To control for political patronage by the president, I add dummies based on past electoral vote support during the last local direct presidential elections in a district. I define districts as "core supporters" of the president if they have a voter support of above 70 percent in the last direct presidential elections, and as "weak supporters" if the vote support is below 30 percent.[18] Ministers are appointed by the president, not elected, hence I do not control for strategic reelection interests based on past electoral support but rather add a dummy equal to one if a district is a birth place of a minister to capture their potential personal interest in public funds allocations. Additionally, I always control for the national share of all DPR members living in district *d* at time *t-1*, since districts with more or less DPR members living in them could differ systematically from each other.

In the case of DAU per capita allocations, my baseline controls are a set of time-variant socioeconomic indicators that are part of the DAU allocation formula. This includes a district's GDP per capita[19], HDI, population, area size, personnel expenditure, as well as own source revenue and revenue from natural resources (see section 2.2) in the previous year.[20] The amount of DAK funding a district received in the

[17] I was data scraping this information for the 2014-2019 parliamentary batch from the official parliament website when the biographies of those DPR members were still available online (in January-February 2019). It is now replaced by the newly elected batch of DPR members (for the term 2019-2024).

[18] The 70 percent threshold is chosen since it is the lower bound of the mean plus one standard deviation in electoral vote support for the incumbent president in the 2004 (77 percent), 2009 (70 percent) and the winner (71 percent) in the 2014 presidential elections. As the president in Indonesia needs to maximize his or her votes nationwide in order to be elected, swing districts with voter support sharply below or above 50 percent are not part of his/her electoral vote maximization calculus.

[19] With prices held constant, including the oil and gas sector.

[20] Based on my correspondence with the Indonesian Statistics Office (BPS), the data on the construction price index from 2004-2007 at the district level is not publicly available nor can it be requested for public use. It is only used for internal purposes of the Ministry of Finance. Other sources informed me that the IKK data before 2008 suffered from inconsistencies. Yet, IKK is also part of the DAU formula (see section 2.2), hence I use the available IKK data from 2008-2017 as a robustness check. My results on DAU do not change after controlling for the local construction price levels (see 3.4 Robustness checks).

previous year is not part of my baseline specification because it is not part of the DAU formula. My baseline for DAK allocations also controls for the overall socioeconomic characteristics of a district, as a district's economic development (GDP per capita; HDI) as well as its size (population; area) should determine its allocations. I also control DAK for a district's overall fiscal capacity (total revenue from all other sources excluding DAK) because it is one of the few official DAK allocation criteria. For both transfers, I lag all time-variant variables by one year because budgetary decisions are made one year in advance and control for year fixed-effects. All time-invariant district characteristics (e.g. specific geographical characteristics, which are another normative criteria for DAK allocations) and time-invariant unobservable characteristics at the district level are captured by the district fixed-effects.

3.3 Results

Indonesia's formula-based transfer design effectively limits public fund manipulation toward the home districts of Budget Commission members. The main results show that the home districts of an incumbent Budget Commission member receives approximately 12 percentage points more DAK grants per capita (Table 1, column 1-4). In contrast, there is no preferential treatment of home districts of Budget Commission members under the formula-based DAU transfer design (Table 2, column 1-4).[21] The results also show that there are no other types of fund manipulations for both transfer types. District that are the birth district of Indonesian ministers or presidents do not receive significantly more DAK grant per capita (Table 1, column 1-4), nor do districts that are of electoral importance for the incumbent president (Table 1, column 2).[22] Neither districts that were electoral "core supporters" (column 3) of the president in the past nor districts dominated by the opposition (column 4-5) receive significantly more DAK per capita grants. Districts of potential electoral importance for the president or their birth districts do not receive significantly more DAU grants per capita (Table 2, 1-4).[23]

The preferential treatment of home districts by Budget Commission members is most likely explained by a repayment to loyal supporters. Budget Commission members in Indonesia could systematically bias public transfers to their home districts for strategic reelection interests (inter alia Dreher et al., 2019) as well as for other personal reasons connected to their home town e.g., to support their business, their family, or other clan members in their home region (Do et al., 2017; Carozzi & Repetto, 2016; Gonschorek, 2021). The Budget Commissioners living in a district might also know more about this district's local development situation, and so try to allocate funds more effectively by allocating them toward the districts they are more familiar with (Fiva & Halse, 2016). To shed light on different possible motivations for favoring the home district, I split my main variable of interest into two different groups of home district dummies. One dummy includes the home district of a Budget Commission member for whom the district is simply his/her place of residence. The other dummy is equal one if a district is the place of residence of a Budget Commission member, but only if it also lies within his/her electoral district and consequently has additional relevance for their (re)election.

[21] Even though formula-based DAU allocations are not driven by personal interest of government officials, my results also show that they are rarely determined by local development needs (see Table 1): districts with a larger population even receive significantly lower per capita DAU allocations. This result is line with the notion that the current DAU formula design rather equalizes per region than per capita (World Bank, 2020). The per-capita inequity in transfer allocations between districts has been criticized for hindering more densely populated urban areas in Indonesia to deliver adequate public services to its citizens (World Bank, 2020).

[22] I also tested for any bias toward districts with other levels of vote support for the president (30-40 percent, etc.) in the last presidential elections. I did not find any significant effects of past electoral performance on DAK allocations.

[23] I also tested for any bias toward districts with other levels of vote support for the president (30-40 percent, etc.) in the last presidential elections. I did not find any significant effects of past electoral performance on DAU allocations.

Table 1: Favoritism and Political Patronage in **DAK (non-formula-based),** 2005-2017, FE

Dependent: Log of DAK per capita (t)	(1)	(2)	(3)	(4)
Log of GDP per capita *(t-1)*	-0.057	-0.058	-0.042	-0.043
	[0.056]	[0.056]	[0.057]	[0.057]
Human Dev. Index (HDI) *(t-1)*	0.013*	0.013**	0.015**	0.014**
	[0.006]	[0.007]	[0.007]	[0.007]
Log of population *(t-1)*	-0.944***	-0.946***	-0.966***	-0.975***
	[0.165]	[0.165]	[0.169]	[0.168]
Log of area size *(t-1)*	0.038	0.038	0.044	0.044
	[0.065]	[0.065]	[0.067]	[0.067]
Log of total revenue per capita, without DAK *(t-1)*	-0.298***	-0.300***	-0.350***	-0.350***
	[0.070]	[0.070]	[0.078]	[0.078]
Share of DPR member living there *(t-1)*	-0.011	-0.010	-0.011	-0.012
	[0.121]	[0.120]	[0.123]	[0.123]
Dmy. Residence Budget Commission *(t-1)*	**0.124****	**0.124****	**0.123****	**0.123****
	[0.055]	**[0.055]**	**[0.056]**	**[0.056]**
Dmy. Birthplace Minister *(t-1)*	-0.004	-0.004	-0.006	-0.004
	[0.056]	[0.056]	[0.057]	[0.056]
Dmy. Birthplace President *(t-1)*		-0.271		
		[0.165]		
Dmy. Core Voters President (> 70%) *(t-1)*			0.029	
			[0.030]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				-0.028
				[0.044]
_cons	25.268***	25.279***	26.018***	26.170***
	[2.340]	[2.341]	[2.477]	[2.458]
R^2	0.64	0.64	0.63	0.63
N	4818	4818	4728	4728

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and Special autonomy regions (Aceh) are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All controls are lagged by one year. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table 2: Favoritism and Political Patronage in **DAU (formula-based),** 2005-2017, FE

Dependent: Log of DAU per capita (t)	(1)	(2)	(3)	(4)
Log of GDP per capita *(t-1)*	0.029	0.030	0.028	0.029
	[0.044]	[0.043]	[0.045]	[0.046]
Human Dev. Index (HDI) *(t-1)*	-0.005	-0.005	-0.005	-0.005
	[0.003]	[0.003]	[0.003]	[0.003]
Log of population *(t-1)*	-0.454***	-0.470***	-0.471***	-0.471***
	[0.158]	[0.155]	[0.156]	[0.157]
Log of area size *(t-1)*	-0.022	-0.004	-0.003	-0.004
	[0.031]	[0.032]	[0.033]	[0.033]
Log of Own Source revenue *(t-1)*	-0.005	-0.019	-0.021	-0.021
	[0.017]	[0.019]	[0.020]	[0.020]
Log of DBH per capita *(t-1)*	0.001	-0.002	-0.004	-0.004
	[0.019]	[0.018]	[0.019]	[0.018]
Log of Personal exp. per capita *(t-1)*	0.026	0.024	0.023	0.022
	[0.019]	[0.020]	[0.020]	[0.020]
Share of DPR member living there *(t-1)*	-0.006	-0.006	-0.010	-0.011
	[0.033]	[0.031]	[0.031]	[0.031]
Dmy. Residence Budget Commission *(t-1)*	**0.009**	**0.005**	**0.003**	**0.003**
	[0.030]	**[0.029]**	**[0.029]**	**[0.029]**
Dmy. Birthplace Minister *(t-1)*	0.002	0.001	0.001	0.001
	[0.010]	[0.010]	[0.010]	[0.010]
Dmy. Birthplace President *(t-1)*		0.011		
		[0.023]		
Dmy. Core Voters President (> 70%) *(t-1)*			-0.004	
			[0.014]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				0.035
				[0.034]
_cons	19.076***	19.391***	19.429***	19.468***
	[2.261]	[2.215]	[2.232]	[2.230]
R^2	0.55	0.56	0.56	0.56
N	4500	4635	4554	4554

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and Special autonomy regions (Aceh) are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All controls are lagged by one year. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

The results show that preferential treatment for home districts is driven by districts within the electoral districts of Budget Commission members (Table 3). If a home district lies within a Budget Commission member's electoral boundaries, it receives around 16 percentage points higher per capita DAK grants. If the home district lies outside the Budget Commission member's electoral district, and thus has no strategic electoral relevance, I do not detect any preferential treatment the dummy variable *Residence OUTSIDE Electoral District* is insignificant (see Table 3, row 2). Despite commission members living in districts outside their electoral district are still likely to be informed about the local situation in their home district or have an extended family network there. Hence the preferential treatment of home districts by Budget Commission members is most likely explained by strategic reelection interests, that includes e.g., paybacks to electoral campaign donors at home. This is also in line with anecdotal evidence from extensive ethnographic research in Indonesia. Aspinall et al. (2017, p: 13) observed that "most candidates viewed their home village (and, if they were running for a national or provincial seat, their home sub-district and district), along with other areas where they had strong personal connections (*e.g.*, a spouse's home village) as their core area."

The results also show that the preferential treatment of home districts is driven by the period of 2009-2017, or after Indonesia adopted the open-party list (see Table 4). It is often argued that the introduction of the open party-list increased individual electoral competition between DPR candidates in Indonesia (see section 2.1). Since 2009, DPR candidates compete for limited seats even with candidates within the same party, thus increasing the importance of securing resources to engage in political patronage at the local government level (Aspinall, 2014). My results support this notion. In fact, I only detect a preferential treatment of home districts for the period after 2009 (column 2). Yet, I only detect this preferential treatment of home districts in cases in which the home district is of electoral relevance again, i.e. is located within the electoral district of a budget commission member (column 4). I do not detect preferential treatment of the home districts when voters could only vote for a political party instead of individual candidates (column 1 and 3).

Although I cannot examine further what exactly motivates this preferential treatment of home districts in detail,[24] the main results (see Table 1) clearly demonstrate that preferential treatment is only detected under the discretionary, non-formula-based, transfer design. In contrast, Indonesia's formula-based transfer scheme effectively limits fund allocations based on (any) personal interest by Budget Commission members (see Table 2).[25] These results are robust to a variety of robustness checks, e.g. political business cycles due to local mayor elections, using the same set of baseline controls for DAU as for DAK or controlling for the birth place of Budget Commission members (see Appendix).

[24] I have no reliable information on business ties (*e.g.*, based on board member names), and Indonesian surnames are not suitable to measure family ties (often ,e.g., Indonesians have only one name, no surname). But both could be possible explanations behind the hometown bias.
[25] This is also the case if I differentiate between living within or outside of the home district for the DAU allocations. The result show no significant influence on the formula-based DAU allocations.

Table 3: Favoritism and Political Patronage in **DAK**, 2005-2017: Residential district located **inside vs. outside electoral district**, FE

Dependent: Log of DAK per capita (t)	(1)	(2)	(3)	(4)
Dmy. Residence **INSIDE Electoral District *(t-1)***	**0.160****	**0.160****	**0.162*****	**0.159****
	[0.062]	**[0.062]**	**[0.062]**	**[0.062]**
Dmy. Residence **OUTSIDE Electoral District *(t-1)***	**0.021**	**0.020**	**0.016**	**0.019**
	[0.082]	**[0.082]**	**[0.083]**	**[0.082]**
Dmy. Birthplace Minister *(t-1)*	0.000	-0.000	-0.002	0.000
	[0.057]	[0.057]	[0.058]	[0.057]
Dmy. Birthplace President *(t-1)*		-0.270*		
		[0.163]		
Dmy. Core Voters President (> 70%) *(t-1)*			0.033	
			[0.030]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				-0.028
				[0.044]
_cons	25.373***	25.384***	26.113***	26.290***
	[2.333]	[2.334]	[2.468]	[2.452]
R^2	0.64	0.64	0.63	0.63
N	4818	4818	4728	4728

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and Special autonomy regions (Aceh) are excluded from the analysis. Papua is excluded due to data limitations. All baseline controls are included. Year fixed-effects are included (Base year 2005). All controls are lagged by one year. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table 4: Closed (2005-2008) vs. Open list (2009-2017) of proportional representation, **DAK**, FE

Dependent: Log of DAK per capita (t)	(1) Closed-List	(2) Open-List	(3) Closed-List	(4) Open-List
Dmy. Residence Budget Commission *(t-1)*	0.047	**0.106****		
	[0.165]	**[0.050]**		
Dmy. Residence INSIDE Electoral District *(t-1)*			0.090	**0.133****
			[0.221]	**[0.054]**
Dmy. Residence OUTSIDE Electoral District *(t-1)*			0.019	0.026
			[0.077]	[0.083]
_cons	38.205***	23.878***	38.187***	23.997***
	[13.495]	[3.075]	[13.500]	[3.066]
R^2	0.62	0.59	0.62	0.60
N	1204	3969	1204	3969

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and Special autonomy regions (Aceh) are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All baseline controls are included. Dummies for birthplace of ministers are included. To control for the presidential vote support and the birthplace of the president from 2009-2017 does not change the results. All controls are lagged by one year. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

4. Conclusion

This analysis investigates whether a formula-based transfer design limits political patronage and favoritism in public funds allocations. Formula-based transfers tie the allocation of public funds to local development indicators. In theory, this reduces the discretionary scope for preferential allocations based on strategic electoral motive (past electoral support) or personal ties to a region (e.g., family ties). However, the limited empirical evidence on the effectiveness of formula-based transfers against this "form of rent-seeking and possibly corruption" (Hodler & Raschky, 2014: p.1) suggests the opposite (Banful, 2011; Litschig, 2012; Taiwo & Veiga, 2020).

My analysis adds to this limited empirical evidence by analyzing formula-based transfers in three unique ways. First, it is the first analysis to compare the institutional design of formula-based transfers to a discretionary alternative within the same country. All the existing empirical evidence lacks this in-country counterfactual. Second, it is the first analysis to investigate formula-based transfers looking at political patronage and favoritism at the same time. Third, it is the first analysis investigating patronage and favoritism of formula-based transfers in Indonesia, the fourth most populous nation and third largest democracy in the world that has often been characterized by its prevalence of clientelistic practices and political patronage (Mietzner, 2013; Aspinall & Sukmajati, 2016; Aspinall et al., 2017; Aspinall & Berenschot, 2019; Berenschot & Mulder, 2019). Using a fixed-effects model on an unbalanced panel data set of 428 Indonesian districts from 2004-2017, the analysis shows that non-formula-based special allocation grants are systematically biased toward Indonesia's national Budget Commission members' home districts. In contrast, the home districts of the same set of Budget Commission members do not receive significantly higher per capita transfers under the formula-based transfer design.

My analysis has limitations. It strongly suggests that strategic election interests motivate home district favoritism, but it cannot identify what exactly motivates this preferential treatment of home districts (e.g., whether it is donor obligations at home). Yet, my main results are not affected by these limitations. They clearly reveal that this bias is only detected under the discretionary, non-formula-based transfer design. In contrast, Indonesia's formula-based transfer scheme effectively limits funds allocations based on personal interests by Budget Commission members, regardless of motivation.

The results are not only relevant from an institutional economics perspective; they also provide relevant insights for Indonesia's fiscal transfer system. They support demands to make DAK allocations more transparent and to decrease the discretion of the governmental officials involved in order to reduce the risk of pork-barrel politics (Shah, 2012). These demands are particularly relevant in the light of the recent suggestion to extend the share of DAK (which is already increasing in size) to compensate for the large per capita inequality created by DAU (Akita et al., 2020). Based on my results, any further increase in the share of DAK should be combined with a reform of the DAK's institutional design in order to lower its degree of discretion. This point is complemented by results on other discretionary transfers within Indonesia's intergovernmental transfer system. For example, the allocation of central transfers under the full discretion of the Indonesian president (*Tugas Pembantuan*, Tp) have been shown to be influenced by the strategic reelection interests of the president (Gonschorek et al., 2018) and discretionary transfers co-administered with Indonesian governors (*Dana Dekonstrasi*, Dekon) have been shown to favor the governor's birthplace (Gonschorek, 2021). Combined, this empirical evidence provides a clear idea how the determinants of fund allocations in Indonesia would look if larger parts of Indonesia's transfer system were not formula-based.

My results also support the recent opposition against more individual disposal funds for all Indonesian parliamentarians,[26] which would ultimately increase their degree of discretion in fund allocations.

These results on Indonesia are also of high relevance for various other countries that have embarked on fiscal decentralization reforms (e.g., Myanmar, Thailand, or the Philippines). Formula-based transfers that tie the allocation of public funds to local development indicators are often seen as one effective measure to reduce special-interest politics, although the limited empirical evidence on formula-based transfers suggests the opposite. However, the few existing empirical studies (Banful, 2011; Litschig, 2012), evaluate formula-based transfers without comparing them to a more discretionary counterfactual, such as a non-formula-based institutional transfer design. My results for Indonesia show that formula-based allocation schemes can effectively limit public funds manipulations relatively to a more discretionary design. Although formula-based transfers offer no panacea against fund manipulation this type of institutional transfer design reduces the risk of public funds misallocations *relative* to more discretionary alternatives within Indonesia's political system, a system often characterized by high levels of political patronage and rent-seeking.

Future research should investigate which institutional features of a formula-design are crucial in reducing public fund manipulations, e.g., in a cross-country study. One determining factor could be who is involved in the design and adjustment of the formula, e.g., direct appointees of the president (Banful, 2011) or members of an independent agency (Khemani, 2007). Another important question to ask is how to design the data collection process for the formula components in a way to effectively avoid over- or underreporting by local governments (Foremny et al., 2017).

[26] "In June 2015, the DPR adopted a proposal to allocate 20 billion rupiah ($1.77 million) as constituency funds to each of its 560 members. After a public outcry, the government ruled this out but granted a more modest program of funding of 150 million rupiah for 'aspiration houses' for each national parliamentarian" (Aspinall & Berenschot 2019, p: 167).

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APPENDIX

Baseline Controls

The results do not depend on the selection of baseline controls. As both transfer designs have slightly different normative criteria (see section 2.2), I use two different sets of baseline controls for my main specifications. However, if I run my regression on DAK using the same baseline controls I used for DAU[27] my results do not change. Table RB1 shows that the results do not change using this different set of baseline controls. The home districts of members of Indonesia's Budget Commission receive larger DAK per capita grants (see Table RB1). Similarly, the results for DAU do not change using the set of DAK baseline controls (see Table RB2). In Table RB2 I use the same controls as for DAK, only this time I calculate the total fiscal capacity from all revenue sources reduced by DAU not DAK. Once again, I do not detect any significant bias towards the home districts of Budget Commission members under the formula-based transfer design.

DAK as Part of the DAU Formula

If Budget Commissioners can exert influence on the DAU allocations then they could implicitly account for DAK by giving less DAU to districts with larger DAK allocations, despite the formula rules. DAK allocations are not part of the DAU formula's official fiscal capacity calculations, thus they are not part of my baseline controls (see Table 2). In fact, my result show that the opposite is the case (see Table RB3). Districts that already receive larger DAK per capita grants also receive lager DAU per capita grants. In light of these results (see Table RB3), incorporating DAK into the DAU formula's fiscal capacity measure would increase the fiscal capacity measure of districts, leading to lower DAU allocations[28] (and potentially more equity between districts). However, accounting for any implicit bias, i.e., the fact that Budget Commissioners might know the amount of DAK allocations for a district, does not affect my results on the DAU allocations.

Local Mayoral Elections

District heads facing local elections could lobby for more funds from the central government to increase their chances of reelection.[29] Local governments can propose DAK allocations at the central government level. To control for this, I include a dummy equal to one for the year of a district head election in year t and t+1. For a restricted sample from 2004-2014,[30] the results indicate that DAK per capita allocation decreases in a local mayoral election year, but increase significantly one year before (see Table RB4), although not persistently. For the period of 2004-2014 "core supporters" of the president received significantly lager DAK per capita grants compared to other vote support groups.[31] However, my main result

[27] The DAU controls additionally control DAK allocations for a district's local personnel expenditure because this expenditure is part of the DAU formula. Additionally, the DAU controls only contain a district's own source revenue and its revenue from DBH because only these two revenue sources are part of the DAU formula. All other baseline controls remain the same.
[28] Not accounting for this additional district revenue in the DAU formula has already been criticized in the past. It is, e.g., unclear why DBH transfers are part of the DAU formula while DAK is not (see Gonschorek & Schulze 2018).
[29] Local direct mayoral elections take place independent of national elections.
[30] In 2004 the first local direct mayoral elections took place. Since 2014, local mayoral elections take place simultaneously in all districts in which a mayor faces a term limit in that particular year.
[31] For the period 2004-2014 Indonesia had the same president, hence the birth place dummy of the president is omitted.

remains unchanged: the home districts of members of Indonesia's Budget Commission still receive significantly larger DAK per capita grants after controlling for local budget cycles.

Construction Price Index (IKK)

The results do not change after controlling for local construction prices (see Table RB5). Due to data limitations, I could not control my baseline specification for the construction price index (IKK)[32] despite it being a part of the official DAU formula (see section 2.2) (see Table 2). Although, the low district variation of IKK should not affect my fixed-effects results substantially, I still control my results on DAU by including IKK from 2008-2017 as an additional robustness check.

Birth District of Budget Commission Members

Budget Commission members might also favor their birthplace and sometimes those overlap with their place of residence. As a robustness check, I add dummy for a Commission member's birthplace over a restricted sample during the period of 2005-2015.[33] Unfortunately, the official profiles of the government officials often only state the name of a region, without defining if the members were born in the Kota (city) or the Kabupaten (regency) (e.g., in case of Semarang it would only state *Semarang*, not Kabupaten *Semarang* or Kota *Semarang*). To be able to control for the influence of a connection to one's birth district, I ran three separate regressions for DAK including this birthplace dummy (see Table RB6). First, I assign all undefined birthplaces to the group of Kotas (column 1). Second, I assign all undefined cases to the group of Kabupatens (column 2). Third, I randomly assign half of those cases to each group (column 3). The results show that—unlike with the residential district—the birthplace of a Budget Commission member does not receive significantly lager DAK grants per capita. They also do not drive my results, independent of how I assign the group of undefined birth places within my sample.

[32] Based on my correspondence with the Indonesian Statistics Office (BPS), the data on the construction price index from 2004-2007 at the district level is not publicly available nor can be requested for public use. Other (anonymous) sources also informed me that the IKK data before 2008 suffers from severe inconsistencies.

[33] Any consistent birthplace data for the 2014-2019 parliamentary members is missing. This data would allow me to extend this analysis by two more years, to my main observation period from 2005-2017.

Table RB1: DAK with DAU controls, 2005-2017, FE

Dependent: Log of DAK per capita (t)	(1)	(2)	(3)	(4)
Log of GDP per capita *(t-1)*	-0.052	-0.054	-0.039	-0.040
	[0.057]	[0.057]	[0.059]	[0.058]
Human Dev. Index (HDI) *(t-1)*	0.010	0.011*	0.013*	0.012*
	[0.006]	[0.006]	[0.007]	[0.007]
Log of population *(t-1)*	-0.883***	-0.885***	-0.868***	-0.877***
	[0.180]	[0.180]	[0.184]	[0.183]
Log of area Size *(t-1)*	0.024	0.025	0.020	0.020
	[0.070]	[0.070]	[0.072]	[0.072]
Log of Own Source revenue *(t-1)*	-0.049	-0.051	-0.057	-0.056
	[0.038]	[0.038]	[0.040]	[0.040]
Log of DBH per capita *(t-1)*	-0.045	-0.047	-0.040	-0.042
	[0.038]	[0.038]	[0.039]	[0.039]
Log of Personal exp. per capita *(t-1)*	-0.133**	-0.133**	-0.135**	-0.135**
	[0.055]	[0.055]	[0.057]	[0.057]
Share of DPR member living there *(t-1)*	0.072	0.073	0.078	0.077
	[0.119]	[0.119]	[0.122]	[0.121]
Dmy. Residence Budget Commission *(t-1)*	**0.111****	**0.111****	**0.109****	**0.109****
	[0.055]	**[0.055]**	**[0.055]**	**[0.055]**
Dmy. Birthplace Minister *(t-1)*	-0.019	-0.019	-0.021	-0.018
	[0.061]	[0.061]	[0.061]	[0.061]
Dmy. Birthplace President *(t-1)*		-0.264		
		[0.176]		
Dmy. Core Voters President (> 70%) *(t-1)*			0.031	
			[0.030]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				-0.040
				[0.049]
_cons	23.429***	23.456***	23.157***	23.322***
	[2.385]	[2.384]	[2.443]	[2.418]
R^2	0.65	0.65	0.65	0.65
N	4509	4509	4429	4429

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and the special autonomy regions are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All controls are lagged by one year. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table RB2: DAU with DAK controls, 2005-2017, FE

Dependent: Log of DAU per capita (t)	(1)	(2)	(3)	(4)
Log of GDP per capita *(t-1)*	0.026	0.026	0.025	0.025
	[0.042]	[0.042]	[0.044]	[0.044]
Human Dev. Index (HDI) *(t-1)*	-0.005**	-0.005**	-0.005*	-0.005*
	[0.003]	[0.003]	[0.003]	[0.003]
Log of population *(t-1)*	-0.452***	-0.452***	-0.449***	-0.450***
	[0.126]	[0.126]	[0.127]	[0.128]
Log of area Size *(t-1)*	-0.005	-0.005	-0.006	-0.006
	[0.028]	[0.028]	[0.029]	[0.029]
Log of total revenue per capita, without DAK *(t-1)*	-0.020	-0.020	-0.020	-0.021
	[0.018]	[0.018]	[0.019]	[0.019]
Share of DPR member living there *(t-1)*	-0.005	-0.005	-0.010	-0.010
	[0.026]	[0.026]	[0.026]	[0.026]
Dmy. Residence Budget Commission *(t-1)*	**0.004**	**0.004**	**0.003**	**0.003**
	[0.028]	**[0.028]**	**[0.028]**	**[0.028]**
Dmy. Birthplace Minister *(t-1)*	0.003	0.003	0.002	0.003
	[0.009]	[0.009]	[0.009]	[0.009]
Dmy. Birthplace President *(t-1)*		0.013		
		[0.017]		
Dmy. Core Voters President (>70%) *(t-1)*			0.001	
			[0.013]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				0.026
				[0.028]
_cons	19.531***	19.531***	19.479***	19.517***
	[1.770]	[1.770]	[1.784]	[1.794]
R^2	0.56	0.56	0.56	0.56
N	4968	4968	4876	4876

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and other special autonomy regions are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All controls are lagged by one year. * p<0.1; ** p<0.05; *** p<0.01

Table RB3: DAK as part of fiscal capacity measure, 2005-2017, FE

Dependent: Log of DAU per capita (t)	(1)	(2)	(3)	(4)
Log of DAK per capita *(t-1)*	**0.116****	**0.116****	**0.116****	**0.116****
	[0.051]	**[0.051]**	**[0.051]**	**[0.051]**
Log of GDP per capita *(t-1)*	0.037	0.037	0.034	0.034
	[0.046]	[0.046]	[0.048]	[0.048]
Human Dev. Index (HDI) *(t-1)*	-0.006*	-0.006*	-0.006*	-0.006*
	[0.003]	[0.003]	[0.003]	[0.003]
Log of population *(t-1)*	-0.356**	-0.356**	-0.357**	-0.358**
	[0.151]	[0.151]	[0.153]	[0.154]
Log of area Size *(t-1)*	-0.021	-0.022	-0.021	-0.021
	[0.032]	[0.032]	[0.032]	[0.032]
Log of Own Source revenue *(t-1)*	-0.006	-0.006	-0.006	-0.007
	[0.017]	[0.017]	[0.018]	[0.018]
Log of DBH per capita *(t-1)*	0.003	0.004	0.002	0.001
	[0.018]	[0.019]	[0.019]	[0.019]
Log of Personal exp. per capita *(t-1)*	0.044*	0.043*	0.043*	0.043*
	[0.023]	[0.023]	[0.024]	[0.024]
Share of DPR member living there *(t-1)*	-0.017	-0.018	-0.022	-0.023
	[0.035]	[0.035]	[0.036]	[0.036]
Dmy. Residence Budget Commission *(t-1)*	**-0.006**	**-0.006**	**-0.007**	**-0.007**
	[0.031]	**[0.031]**	**[0.031]**	**[0.031]**
Dmy. Birthplace Minister *(t-1)*	0.001	0.002	0.002	0.001
	[0.013]	[0.013]	[0.013]	[0.013]
Dmy. Birthplace President *(t-1)*		0.045		
		[0.029]		
Dmy. Core Voters President (>70%) *(t-1)*			-0.004	
			[0.014]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				0.039
				[0.033]
_cons	16.490***	16.485***	16.520***	16.561***
	[2.331]	[2.332]	[2.360]	[2.352]
R^2	0.58	0.58	0.57	0.57
N	4554	4554	4473	4473

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and other special autonomy regions are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All controls are lagged by one year. * p<0.1; ** p<0.05; *** p<0.01

Table RB4: DAK and Local Mayor Elections, 2005-2014, FE

Dependent: Log of DAK per capita (t)	(1)	(2)	(3)
Dmy. Direct Election *(t)*	-0.043*	-0.046*	-0.047*
	[0.025]	[0.026]	[0.026]
Dmy. Direct Election *(t+1)*	0.054*	0.047	0.047
	[0.030]	[0.031]	[0.031]
Dmy. Residence Budget Commission *(t-1)*	**0.243****	**0.235****	**0.246*****
	[0.095]	**[0.095]**	**[0.095]**
Dmy. Birthplace Minister *(t-1)*	-0.027	-0.027	-0.028
	[0.076]	[0.076]	[0.076]
Dmy. Core Voters President (>70%) *(t-1)*		0.120**	
		[0.055]	
Dmy. Weak Supporters President (< 30%) *(t-1)*			0.052
			[0.085]
_cons	26.234***	25.964***	27.241***
	[3.032]	[3.356]	[3.301]
R^2	0.32	0.32	0.32
N	3188	3111	3111

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and other special autonomy regions are excluded from the analysis. Papua is excluded due to data limitations. All baseline controls are included. Year fixed-effects are included. All controls are lagged by one year. * p<0.1; ** p<0.05; *** p<0.01

Table RB5: DAU including Construction Price Index (IKK), 2009-2017, FE

Dependent: Log of DAU per capita (t)	(1)	(2)	(3)	(4)
Construction Price Index (IKK) (t-1)	**0.001**	**0.001**	**0.001**	**0.001**
	[0.001]	**[0.001]**	**[0.001]**	**[0.001]**
Log of GDP per capita *(t-1)*	-0.010	-0.010	-0.015	-0.014
	[0.049]	[0.049]	[0.053]	[0.053]
Human Dev. Index (HDI) *(t-1)*	-0.005	-0.005	-0.004	-0.004
	[0.004]	[0.004]	[0.004]	[0.004]
Log of Population *(t-1)*	-0.484*	-0.484*	-0.487*	-0.489*
	[0.271]	[0.271]	[0.274]	[0.276]
Log of Area Size *(t-1)*	-0.144	-0.144	-0.144	-0.145
	[0.163]	[0.163]	[0.163]	[0.164]
Log of Own Source revenue *(t-1)*	-0.017	-0.017	-0.021	-0.021
	[0.026]	[0.026]	[0.028]	[0.028]
Log of DBH per capita *(t-1)*	0.030	0.030	0.031	0.030
	[0.033]	[0.033]	[0.036]	[0.034]
Log of Personal exp. per capita *(t-1)*	-0.029	-0.029	-0.030	-0.030
	[0.029]	[0.029]	[0.029]	[0.029]
Share of DPR member living there *(t-1)*	-0.007	-0.007	-0.010	-0.011
	[0.052]	[0.052]	[0.052]	[0.053]
Dmy. Residence Budget Commission *(t-1)*	**-0.019**	**-0.019**	**-0.020**	**-0.019**
	[0.035]	**[0.035]**	**[0.035]**	**[0.035]**
Dmy. Birthplace Minister *(t-1)*	0.001	0.001	0.000	0.001
	[0.015]	[0.015]	[0.015]	[0.015]
Dmy. Birthplace President *(t-1)*		0.016		
		[0.033]		
Dmy. Core Voters President (>70%) *(t-1)*			0.008	
			[0.022]	
Dmy. Weak Supporters President (< 30%) *(t-1)*				0.023
				[0.050]
_cons	21.325***	21.323***	21.356***	21.453***
	[4.381]	[4.381]	[4.439]	[4.445]
R^2	0.38	0.38	0.37	0.37
N	3524	3524	3455	3455

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and other special autonomy regions are excluded from the analysis. Papua is excluded due to data limitations. All baseline controls are included. Year fixed-effects are included. All controls are lagged by one year. * $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table RB6: DAK and Birth District Budget Commission Member, 2005-2014, FE

Dependent: Log of DAK per capita (t)	(1)	(2)	(3)
Log of GDP per capita *(t-1)*	-0.056	-0.055	-0.068
	[0.103]	[0.103]	[0.108]
Human Dev. Index (HDI) *(t-1)*	0.002	0.003	0.002
	[0.013]	[0.013]	[0.013]
Log of Population *(t-1)*	-1.186***	-1.182***	-1.213***
	[0.196]	[0.194]	[0.205]
Log of Area Size *(t-1)*	0.050	0.048	0.052
	[0.072]	[0.073]	[0.071]
Log of total revenue per capita, without DAK *(t-1)*	-0.151*	-0.155*	-0.148*
	[0.082]	[0.082]	[0.082]
Share of DPR member living there *(t-1)*	-0.072	-0.068	-0.089
	[0.192]	[0.191]	[0.198]
Dmy. Residence Budget Commission *(t-1)*	**0.257*** **	**0.214** **	**0.273*** **
	[0.088]	**[0.089]**	**[0.090]**
Dmy. Birthplace Budget Commission *(t-1)*	-0.093	0.019	-0.075
	[0.085]	[0.092]	[0.083]
_cons	26.953***	26.932***	27.272***
	[3.005]	[2.988]	[3.088]
R^2	0.32	0.32	0.32
N	3607	3607	3537

Note: Fixed-Effects Model (FE). Robust standard errors clustered at the district level are reported in brackets. DKI Jakarta and other special autonomy regions are excluded from the analysis. Papua is excluded due to data limitations. Year fixed-effects are included. All controls are lagged by one year.
* p<0.1; ** p<0.05; *** p<0.01