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Fiscal Independence, Local Revenue Effectiveness, and Readiness for Mandatory Spending: Evidence from Local Governments in South Sulawesi, Indonesia

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A R T I C L E I N F O

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A B S T R A C T

This study examines whether fiscal independence, revenue effectiveness, and dependence on the General Allocation Fund (DAU) relate to the position of local governments against the mandatory spending thresholds of Law No. 1 of 2022. It uses a panel of 24 regencies and cities in South Sulawesi for 2019 to 2024 and estimates random effects models with cluster-robust inference and eight robustness checks. Under proxy measures, no local government reached the 40 percent infrastructure floor in any year, and at most two met the 30 percent personnel cap. Higher DAU dependence is associated with a higher personnel share and a lower infrastructure share, but these associations lose significance under two-way fixed effects. Fiscal independence and revenue effectiveness show no significant association.

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INTRODUCTION

Indonesia's Law No. 1 of 2022 on Financial Relations between the Central Government and Regional Governments (UU HKPD), enacted in January 2022, introduced two rules on the composition of local government spending. Article 146 caps personnel spending at 30 percent of total regional spending. The cap excludes teacher allowances that the central government funds through transfers. Article 147 requires that at least 40 percent of total regional spending go to public service infrastructure, excluding transfers to lower-level governments and villages. The law defines this infrastructure by its function in public service delivery, not by the economic classification used in budget reports. Local governments received a five-year transition period, so both rules were due to apply in full from 2027 (Republic of Indonesia, 2022).

The policy context changed during the preparation of this study. On 29 September 2026, during deliberations on the 2027 state budget, the House of Representatives and the government agreed to postpone the enforcement of the two rules in order to protect local fiscal space (Investortrust, 2026). The government also plans to take over the payment of contract government employee (PPPK) wages in the regions, with an allocation of Rp 23 trillion for 2027 (Investortrust, 2026). At the time of writing, the legal instrument for the postponement and the new deadline had not been published. The postponement therefore changes the timing of enforcement, but it does not remove the rules or the gap between current spending patterns and the thresholds.

The thresholds are demanding. Indonesian districts have long allocated a large share of their budgets to administration and personnel. Sjahrir et al. (2014) show that administrative overspending across 399 districts reflected weak political accountability. Lewis and Oosterman (2011) find that local capital spending barely covered the depreciation of fixed assets, and that much of it financed office buildings. Lewis (2017) shows that additional spending improves access to services only up to a point, beyond which it is associated with worse outcomes. Lewis (2023) argues that UU HKPD relies on spending mandates and earmarks to extend central control, and that the design of these instruments is flawed.

A growing Indonesian literature examines how transfers and own-source revenue (PAD) shape local spending. Most studies test the flypaper effect on spending levels. Fikri (2020) confirms the effect in East Java. Nurlaela et al. (2022) find it nationally during the COVID-19 period. Septianingrum et al. (2025) find it in poorer local governments across 226 regencies and cities. Asmarawati and Randos (2025) and Zr and Fachruzzaman (2026) find that transfers, including specific grants, have a stronger influence on capital expenditure than PAD in West Java and Bengkulu. Purnama and Qibthiyyah (2025) find a strong flypaper effect in personnel expenditure across 480 local governments. In South Sulawesi, Reski et al. (2025) show that the DAU increases total regional spending and that the flypaper effect is strongest in regions with low fiscal capacity.

This study advances that literature in four ways. First, it models the composition of spending as shares that correspond to the legal thresholds, rather than spending levels, and it reports proxy-based gaps to each threshold. Reski et

al. (2025) study the same province, but they examine total spending and do not relate spending composition to UU HKPD. Second, it estimates the personnel and infrastructure shares in parallel models, because both rules bind the same budget. Third, it adds PAD effectiveness as a measure of revenue management capacity. Fourth, it covers the first three fiscal years under UU HKPD and uses inference methods suited to a small number of clusters, together with a within-between decomposition that shows which source of variation drives each result.

South Sulawesi offers a suitable setting. The province has 24 local governments, consisting of 21 regencies and three cities. Their fiscal capacity varies widely. Over the 2019 to 2024 period, PAD equaled on average 16 percent of transfer revenue, ranging from about 5 percent in North Toraja to about 60 percent in Makassar, based on the author's calculation from Ministry of Finance budget realization data (Directorate General of Fiscal Balance, 2026). Accordingly, this study examines whether fiscal independence and PAD effectiveness are associated with a higher infrastructure share and a lower personnel share, and whether DAU dependence is associated with a higher personnel share, in the 24 local governments of South Sulawesi over the 2019 to 2024 period.

LITERATURE REVIEW

Fiscal Federalism Theory

Fiscal federalism theory explains how the assignment of revenue and spending across levels of government shapes public sector outcomes. The second generation of this theory focuses on the incentives that fiscal institutions create for local officials (Weingast, 2009). Weingast (2009) argues that local governments that rely on their own revenue have stronger incentives to provide market-enhancing public goods, such as roads and other infrastructure, because these goods expand the local tax base. Local governments that rely on transfers face weaker incentives and can expand spending that benefits officials, including the bureaucracy itself. A survey by Martinez-Vazquez et al. (2017) reviews the empirical evidence on the effects of fiscal decentralization and shows that these effects vary across settings. Masaki (2018) adds that transfers and own revenue can complement each other where tax administration capacity is weak, as in rural Tanzanian districts.

Indonesian evidence is broadly consistent with the incentive view, although not uniformly. Kis-Katos and Sjahrir (2017) find that, after the 2001 expenditure decentralization, districts with lower levels of public infrastructure started to invest more in these sectors. Asmarawati and Randos (2025) report that PAD has a positive effect on capital expenditure in West Java. Hasanah et al. (2025) examine the role of PAD in strengthening fiscal independence. Syafri et al. (2024) note that fiscal decentralization has not reduced the reliance of local governments on central transfers. Based on this reasoning, a local government with higher fiscal independence should allocate a larger share of its budget to infrastructure and a smaller share to personnel.

H1: Fiscal independence is positively associated with the share of infrastructure spending.

H2: Fiscal independence is negatively associated with the share of personnel spending.

Flypaper Effect

The flypaper effect describes an empirical anomaly in public finance. Standard theory predicts that an unconditional grant raises public spending by the same amount as an equal increase in the private income of residents. Empirical studies find a much larger spending response to grants (Hines & Thaler, 1995). Recent international studies continue to examine the effect. Leduc and Wilson (2017) study federal highway grants in the United States. Langer and Korzhenevych (2019) find that equalization transfers raise municipal spending in Germany without lowering tax rates, with most of the money going to social spending and public facilities. Allers and Vermeulen (2016) find no significant effect of Dutch equalizing grants on municipal staffing, which weakens the bureaucratic explanation of the flypaper effect in that setting.

Indonesian evidence points to a stronger link between transfers and routine spending. Chalil (2018) finds that lump-sum grants have a larger effect than matching grants, particularly on routine spending. Purnama and Qibthiyyah (2025) find that the flypaper effect is especially strong for personnel expenditure. The DAU also has an institutional link with personnel spending. Under Law No. 33 of 2004, the DAU consisted of a basic allocation, calculated from the civil servant wage bill of each region, and a fiscal gap component (Republic of Indonesia, 2004). This design rewarded local governments with a larger wage bill. UU HKPD changed the DAU formula (Republic of Indonesia, 2022), but local governments that hired staff under the old formula still carry the resulting wage obligations. Lewis and Smoke (2017) examine how such transfer designs shape local incentives and responses in Indonesia. These conditions suggest that higher DAU dependence is associated with a higher share of personnel spending.

H3: DAU dependence is positively associated with the share of personnel spending.

Budget Realization and Revenue Management Capacity

Public sector accounting treats the budget as both a plan and a performance standard. The budget realization report compares realized revenue and spending with the approved budget. The PAD effectiveness ratio divides realized PAD by budgeted PAD and shows how well a local government estimates and collects its own revenue. Syafri et al. (2024) find that PAD effectiveness is positively related to fiscal independence across Indonesian regions.

Revenue effectiveness may also matter for spending composition. When realized revenue falls below the budget, the local government must cut spending during the year. Personnel spending is a legal obligation and is hard to cut. Capital projects are easier to delay or cancel. A local government that collects revenue as planned can therefore execute more of its planned capital spending. Lewis and Oosterman (2011) identify weak capacity to plan and implement investment projects as a main constraint on local capital spending, and Hendaris and Siraz (2026) emphasize the efficiency with which local governments turn

funds into public investment. Revenue effectiveness is one observable sign of such capacity.

H4: PAD effectiveness is positively associated with the share of infrastructure spending.

Figure 1 presents the conceptual framework. Fiscal independence relates to both spending shares (H1 and H2). DAU dependence relates to the personnel share (H3). PAD effectiveness relates to the infrastructure share (H4). Local government size, a pandemic period indicator, and the type of local government enter both models as controls.

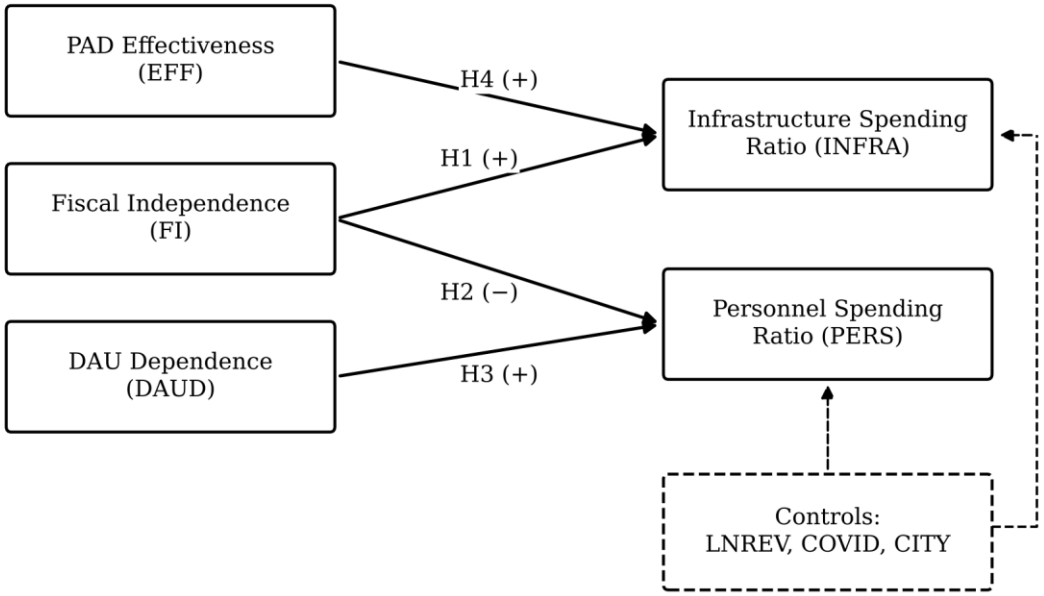


Figure 1. Conceptual Framework

METHODOLOGY

Research Design and Sample

This study uses a quantitative explanatory design with panel data. The population consists of all 24 local governments in South Sulawesi Province, namely 21 regencies and three cities, and the study uses the whole population as the sample. The observation period runs from 2019 to 2024. It covers the year before the pandemic, the pandemic years, and the first three fiscal years under UU HKPD. The design yields 144 local government-year observations. The provincial government is excluded because its spending functions differ from those of regencies and cities. The study identifies associations rather than causal effects.

Data Sources

The study uses secondary data from the regional finance information system (SIKD) portal of the Directorate General of Fiscal Balance (DJPK), Ministry of Finance (Directorate General of Fiscal Balance, 2026). The APBD menu provides budgeted and realized revenue and expenditure for each local

government and year, and the transfer menu provides the realized DAU. The author retrieved the data on 7 October 2026. The portal records realization as reported by each local government. Some reports reflect audited figures, while others reflect year-end realization before audit. The budget basis also differs by year. For 2019 and 2020 the portal reports the original or revised budget, and for 2021 to 2024 it reports the original budget. The DAU for Makassar in 2022 was not retrievable from the portal, so models that include DAU dependence use 143 observations. The full dataset is available from the author on request.

Variable Measurement

Table 1 presents the operational definition of each variable.

Table 1. Operational Definition of Variables

Code	Variable	Measurement	Role
INFRA	Infrastructure spending share (proxy)	Capital expenditure / (total expenditure − profit-sharing and financial aid expenditure)	Dependent
PERS	Personnel spending share (proxy)	Personnel expenditure / total expenditure	Dependent
FI	Fiscal independence	PAD / (central and inter-regional transfer revenue)	Independent
DAUD	DAU dependence	Realized DAU / total revenue	Independent
EFF	PAD effectiveness	Realized PAD / budgeted PAD	Independent
LNREV	Local government size	Natural logarithm of total realized revenue	Control
COVID	Pandemic period	1 for 2020 and 2021; 0 otherwise	Control
CITY	Type of local government	1 for city; 0 for regency	Control

Note: All amounts are realized values unless stated otherwise. Source: Compiled by the author.

Measurement Validity and Proxy Limitations

Budget realization data do not measure the two legal ratios directly. Table 2 compares each legal concept with the proxy used in this study and states the expected direction of bias. Two consequences follow for interpretation. First, the threshold positions reported in this study are proxy-based positions, not legal compliance status. A local government that falls below the infrastructure proxy may still meet Article 147, and a local government above the personnel proxy may still meet Article 146. Second, the regression coefficients describe associations with the proxy shares. They describe associations with the legal ratios only if the measurement error is unrelated to the explanatory variables.

Table 2. Legal Definitions, Proxies, and Expected Bias

Legal concept	Legal definition	Proxy used	Main divergence	Expected bias and implication
Personnel cap (Art. 146)	Personnel spending, excluding teacher allowances funded by transfers, as a share of total regional spending	PERS: total personnel expenditure / total expenditure	Proxy includes transfer-funded teacher allowances	PERS overstates the regulated ratio. Personnel gaps are upper bounds, and counts of local governments under the cap are lower bounds.
Infrastructure floor (Art. 147)	Spending on infrastructure that directly serves public service delivery, excluding transfers to lower levels and villages	INFRA: capital expenditure / (total expenditure minus profit-sharing and financial aid)	Proxy includes non-service capital, such as office buildings and vehicles, and omits infrastructure maintenance recorded as goods and services	Direction is ambiguous. Infrastructure gaps are indicative and do not establish non-compliance.
Revenue performance	Not defined in UU HKPD	EFF: realized PAD / budgeted PAD	Budget basis differs by year, and targets can be set conservatively or ambitiously	Adds noise to EFF and is likely to bias its coefficient towards zero.

Source: Compiled by the author from Republic of Indonesia (2022) and the SIKD data structure.

One measurement issue matters most for H3. Teacher allowances are paid from transfers and are included in PERS. If transfer-dependent regencies employ more teachers relative to their budget, part of the association between DAUD and PERS may reflect teacher allowances rather than the personnel spending that Article 146 regulates. The portal does not separate these allowances, so the study cannot remove this component. The discussion returns to this point.

The study also measures the distance of each local government from the statutory thresholds with the proxies. Equations (1) and (2) define the proxy-based gaps. A value of zero means that the proxy meets the threshold.

$$GAP_INFRA_{it} = \max(0;\ 0.40 - INFRA_{it}) \quad (1)$$

$$GAP_PERS_{it} = \max(0;\ PERS_{it} - 0.30) \quad (2)$$

Empirical Models

Equations (3) and (4) present the empirical models, where i denotes the local government and t denotes the year.

$$INFRA_{it} = \alpha + \beta_1 FI_{it} + \beta_2 EFF_{it} + \beta_3 DAUD_{it} + \gamma' X_{it} + u_i + \varepsilon_{it} \quad (3)$$

$$PERS_{it} = \alpha + \delta_1 FI_{it} + \delta_2 EFF_{it} + \delta_3 DAUD_{it} + \gamma' X_{it} + u_i + \varepsilon_{it} \quad (4)$$

X_{it} contains LNREV, COVID, and CITY. The term u_i is a local government effect, and ε_{it} is the idiosyncratic error. H1 predicts $\beta_1 > 0$, H2 predicts $\delta_1 < 0$, H3 predicts $\delta_3 > 0$, and H4 predicts $\beta_2 > 0$. To show which source of variation drives each result, the study also estimates a within-between (Mundlak) specification. This specification adds the local government means of FI, EFF, DAUD, and LNREV to the random effects model. The coefficient on each original variable then measures the within-region association, and the coefficient on its mean measures the difference between the between-region and within-region associations (Bell et al., 2019).

Estimation Procedure and Model Selection

The study estimates each model as a common effect (pooled), fixed effect, and random effect model. The random effect model uses feasible generalized least squares with variance components estimated from the within and between residuals. Three tests guide the choice of specification. The Chow test compares the pooled and fixed effect models. Its rejection shows that local government effects exist, but it does not decide between fixed and random effects. The Hausman test makes that decision by testing whether the random effects are correlated with the regressors. The Breusch-Pagan Lagrange multiplier test compares the pooled and random effect models.

The random effect model is the main specification for three reasons. First, the Hausman test does not reject it at the 5 percent level, so it is consistent and more efficient than the fixed effect model. Second, it can estimate the coefficient on CITY, which does not vary over time. Third, DAUD varies much more between local governments than within them. Its between-region standard deviation is 0.054, against a within-region standard deviation of 0.026. A fixed effect model discards the larger source of variation. Because the Hausman p-value for the personnel model is close to the threshold ($p = 0.078$), the study treats the fixed effect and within-between estimates as essential comparisons rather than as secondary checks.

The study checks multicollinearity with the variance inflation factor (VIF), first-order serial correlation with the Wooldridge test for panel data, and heteroskedasticity with the Breusch-Pagan test. All models report standard errors clustered by local government, which remain valid under heteroskedasticity and serial correlation within each unit. With only 24 clusters, conventional cluster-robust inference can be too optimistic (MacKinnon et al., 2023). The study therefore reports wild cluster bootstrap p-values with 4,999 replications and Webb weights for the fixed effect estimates (MacKinnon & Webb, 2017). Eight specifications test robustness: the baseline random effect model, a random effect model with year dummies, a random effect model that excludes four observations with PAD effectiveness below 50 percent, random effect models without FI and without DAUD, a one-way fixed effect model, a two-way fixed effect model, and the within-between specification. All tests use a significance level of 5 percent. The analysis uses Python with the statsmodels and linearmodels packages.

RESEARCH RESULT

Descriptive Statistics

Table 3 reports the descriptive statistics. The mean infrastructure share proxy is 20.4 percent, about half of the 40 percent floor, and its highest value is 36.7 percent. The mean personnel share proxy is 39.6 percent, almost 10 percentage points above the 30 percent cap. Fiscal independence is low. PAD equals on average 16.3 percent of transfer revenue, while the DAU alone accounts for 49.4 percent of total revenue. The mean PAD effectiveness is 91.5 percent, with a wide range from 32.6 to 132.7 percent.

Table 3. Descriptive Statistics

Variable	N	Mean	Std. Dev.	Minimum	Maximum
INFRA	144	0.204	0.049	0.098	0.367
PERS	144	0.396	0.046	0.270	0.532
FI	144	0.163	0.110	0.045	0.648
DAUD	143	0.494	0.058	0.290	0.647
EFF	144	0.915	0.195	0.326	1.327
LNREV	144	27.898	0.319	27.450	29.067
GAP_INFRA	144	0.196	0.049	0.033	0.302
GAP_PERS	144	0.097	0.045	0.000	0.232

Source: Processed data from DJPK (2026).

Proxy-Based Position Relative to the Thresholds

Table 4 reports the number of local governments whose proxies meet each threshold in each year. These counts describe proxy-based positions and should not be read as legal compliance status (Table 2). No local government's infrastructure proxy reached the floor in any year. The personnel proxy met the cap for two local governments in 2019 and 2023, one in 2020 to 2022, and none in 2024. East Luwu met it in five of the six years, and Makassar met it in 2019 and 2023. The proxy-based gaps did not narrow after the law took effect. The mean infrastructure gap widened from 17.4 percentage points in 2022 to 23.4 percentage points in 2024, and the mean personnel gap widened from 8.7 to 11.7 percentage points. Because the personnel proxy includes teacher allowances, the true personnel gaps are smaller than those reported here.

Table 4. Proxy-Based Position Relative to the Thresholds, 2019 to 2024

Year	PERS ≤ 30% (n)	INFRA ≥ 40% (n)	Both (n)	Mean PERS	Mean INFRA	Mean gap PERS	Mean gap INFRA
2019	2	0	0	0.385	0.230	0.087	0.170
2020	1	0	0	0.397	0.203	0.098	0.197
2021	1	0	0	0.411	0.190	0.111	0.210
2022	1	0	0	0.387	0.226	0.087	0.174
2023	2	0	0	0.381	0.206	0.083	0.194
2024	0	0	0	0.417	0.166	0.117	0.234

Note: n = number of local governments out of 24 whose proxy meets the threshold. Source: Processed data from DJPK (2026).

Model Selection and Diagnostic Tests

Table 5 reports the model selection and diagnostic tests. The Chow test rejects the pooled model in favor of local government effects for both dependent variables. The Hausman test does not reject the random effect model at the 5 percent level ($p = 0.127$ for INFRA and $p = 0.078$ for PERS). The Breusch-Pagan LM test rejects the pooled model in favor of the random effect model. The highest VIF is 3.46 for FI, and FI and DAUD correlate at −0.49, so multicollinearity does not threaten the estimates. The Wooldridge test detects first-order serial correlation in both models, and the Breusch-Pagan test detects heteroskedasticity in the PERS model. Standard errors clustered by local government address both problems.

Table 5. Model Selection and Diagnostic Tests

Test	**Model (3) INFRA statistic**	**Model (3) p-value**	**Model (4) PERS statistic**	**Model (4) p-value**
Chow test (F)	2.616	<0.001	5.140	<0.001
Hausman test (χ^2)	8.585	0.127	9.894	0.078
Breusch-Pagan LM test (χ^2)	8.524	0.004	42.812	<0.001
Wooldridge serial correlation test (F)	34.023	<0.001	19.077	<0.001
Breusch-Pagan heteroskedasticity test (LM)	9.683	0.139	14.962	0.021
Maximum VIF (FI)	3.46		3.46	
Selected model	Random effect		Random effect	

Note: VIF values are FI 3.46, CITY 2.38, LNREV 2.20, DAUD 2.11, COVID 1.13, and EFF 1.03.
Source: Processed data.

Regression Results

Table 6 presents the main estimates. In the random effect model for INFRA, DAUD has a negative and significant coefficient (−0.426; $p = 0.003$). A one standard deviation difference in DAUD, about 5.8 percentage points, is associated with an infrastructure share about 2.5 percentage points lower. FI and EFF are not significant. The pandemic years are associated with an infrastructure share 2.3 percentage points lower. In the random effect model for PERS, DAUD has a positive and significant coefficient (0.329; $p = 0.004$). A one standard deviation difference in DAUD is associated with a personnel share about 1.9 percentage points higher. FI and EFF are again not significant, and the pandemic years are associated with a personnel share 1.9 percentage points higher.

Table 6. Panel Regression Results

Variable	REM (3) INFRA	REM (4) PERS	FEM (3) INFRA	FEM (4) PERS
FI	-0.179 (0.188)	-0.034 (0.773)	-0.474* (0.031)	0.096 (0.585)
EFF	0.016 (0.537)	0.000 (0.983)	0.050 (0.265)	-0.008 (0.793)
DAUD	-0.426** (0.003)	0.329** (0.004)	-0.613** (0.001)	0.261 (0.058)
LNREV	-0.029 (0.452)	0.010 (0.684)	-0.126 (0.270)	0.102 (0.108)
COVID	-0.023* (0.022)	0.019** (0.009)	-0.031** (0.005)	0.021** (0.009)
CITY	0.022 (0.398)	0.012 (0.760)	Absorbed	Absorbed
Constant	1.241 (0.256)	-0.041 (0.953)		
R^2 (overall / within)	0.085	0.278	0.173	0.079
Wild bootstrap p: FI			0.169	0.625
Wild bootstrap p: EFF			0.345	0.814
Wild bootstrap p: DAUD			0.003	0.072
Observations	143	143	143	143

Note: Coefficients with cluster-robust p-values in parentheses. * $p < 0.05$; ** $p < 0.01$. REM = random effect model (selected); FEM = fixed effect model. Source: Processed data.

Robustness and Sources of Variation

Table 7 reports the coefficients of DAUD and FI across the eight specifications. EFF is not significant in any specification. Three results stand out. First, the DAUD associations are stable across the random effect specifications, including the model with year dummies (INFRA: −0.439, $p = 0.021$; PERS: 0.421, $p = 0.005$) and the model without the four low-effectiveness observations. Second, the one-way fixed effect model gives a larger DAUD coefficient for INFRA that survives wild bootstrap inference ($p = 0.003$), but a weaker DAUD coefficient for PERS (cluster $p = 0.058$; bootstrap $p = 0.072$). Third, the two-way fixed effect model, which combines local government and year effects, removes the significance of DAUD and FI in both models.

Table 7. Robustness Checks: Coefficients of DAUD and FI

Specification	N	INFRA: DAUD	INFRA: FI	PERS: DAUD	PERS: FI
(1) RE baseline	143	-0.426** (0.003)	-0.178 (0.188)	0.329** (0.004)	-0.034 (0.773)
(2) RE + year dummies	143	-0.439* (0.021)	-0.119 (0.323)	0.421** (0.005)	-0.050 (0.653)
(3) RE excluding EFF < 0.5	139	-0.439** (0.002)	-0.235 (0.090)	0.271** (0.010)	-0.020 (0.876)
(4) RE without FI	143	-0.373* (0.020)		0.329** (0.006)	
(5) RE without DAUD	143		-0.109 (0.436)		-0.031 (0.815)
(6) FE, local government effects	143	-0.613** (0.001)	-0.474* (0.031)	0.261 (0.058)	0.096 (0.585)
(7) FE, local government and year effects	143	-0.224 (0.500)	-0.086 (0.708)	0.129 (0.698)	-0.085 (0.681)
(8) Within-between: within effect	143	-0.613** (0.002)	-0.474* (0.035)	0.260 (0.064)	0.096 (0.593)
(8) Within-between: mean term	143	0.422* (0.047)	0.495 (0.074)	0.308 (0.187)	-0.102 (0.582)

Note: Coefficients with cluster-robust p-values in parentheses. * $p < 0.05$; ** $p < 0.01$. Wild bootstrap p-values for specification (6): INFRA DAUD 0.003, INFRA FI 0.169, PERS DAUD 0.072, PERS FI 0.625. In specification (8), the mean term equals the between-region minus the within-region association. Source: Processed data.

The within-between results explain why the two-way fixed effect model gives a different answer. For INFRA, the within-region association of DAUD (−0.613) is stronger than the between-region association, which equals −0.191 (−0.613 + 0.422), and the difference is significant ($p = 0.047$). For PERS, the within-region association (0.260) and the between-region association (0.568) are both positive, and their difference is not significant ($p = 0.187$). Within-region variation in DAUD is limited. Common year effects explain 53.5 percent of the within-region variance of DAUD, which reflects national changes in DAU allocations, such as the decline in 2020. After year effects are removed, the remaining idiosyncratic variation has a standard deviation of only 1.8 percentage points. The two-way fixed effect model therefore has little variation with which to estimate the DAUD coefficients, and it cannot distinguish a small association from no association. The study treats this result as a central qualification of its findings.

Table 8. Summary of Hypothesis Testing

Hypothesis	Path	Expected	Result
H1	FI → INFRA	Positive	Not supported
H2	FI → PERS	Negative	Not supported
H3	DAUD → PERS	Positive	Supported in random effect models; not robust to two-way fixed effects
H4	EFF → INFRA	Positive	Not supported

Source: Processed data.

DISCUSSION

Fiscal Independence and Spending Composition

Fiscal independence is not associated with spending composition in South Sulawesi, so H1 and H2 are not supported. This result does not fit the incentive mechanism of Weingast (2009) in local governments with a narrow tax base. The low level of fiscal independence offers one explanation. PAD covers on average only one-sixth of transfer revenue, so additional own revenue carries little weight in budget decisions. Makassar shows the limit of the argument. It has the highest fiscal independence in the province, yet its mean infrastructure share of 16.9 percent lies below the provincial mean. The one-way fixed effect model even shows a negative FI coefficient for INFRA, but wild bootstrap inference does not confirm it ($p = 0.169$), so the study does not interpret it.

Earmarking and targets offer a second explanation. Septianingrum et al. (2025) find that capital expenditure did not differ across local governments with different fiscal conditions because every local government had a capital spending target. Asmarawati and Randos (2025) and Zr and Fachruzzaman (2026) find that transfers, including specific grants, have a stronger influence on capital expenditure than PAD. These findings suggest that capital spending follows rules and transfers rather than own revenue. The result also differs from studies that report a positive PAD effect on capital expenditure. The difference likely reflects the dependent variable. Those studies use the amount of capital spending, while this study uses its share of the budget. Higher PAD can raise capital spending in rupiah terms without raising its share.

DAU Dependence and Spending Composition

In the random effect models, local governments with higher DAU dependence have a higher personnel share and a lower infrastructure share. H3 is supported in these models. This pattern is consistent with the flypaper effect in the composition of spending and with Indonesian evidence that transfers stick to routine and personnel spending (Chalil, 2018; Purnama & Qibthiyyah, 2025). It differs from the Dutch case, where Allers and Vermeulen (2016) find no effect of grants on municipal staffing. The legacy of the DAU formula under Law No. 33 of 2004, which tied the basic allocation to the civil servant wage bill, offers an institutional explanation for this difference (Republic of Indonesia, 2004). Weak accountability for transfer-financed spending, which Sjahrir et al. (2014) document for administrative spending, offers a second explanation.

Three qualifications limit this conclusion. First, the results are associations. The study does not identify a causal effect of DAU dependence. Second, the associations lose significance in the two-way fixed effect model. The within-between results show that the personnel association rests mainly on persistent differences between local governments, while the infrastructure association also draws on within-region changes that are largely common across the province. The evidence therefore supports a structural reading. Local governments with a persistently high DAU share tend to have a persistently high personnel share. The data cannot show whether a local government shifts towards personnel spending when its own DAU share changes from one year to the next. Third,

teacher allowances are included in the personnel proxy. If transfer-dependent regencies employ more teachers relative to their budgets, part of the DAUD and PERS association may reflect these allowances rather than the spending that Article 146 regulates.

A policy change will also affect the personnel ratio after the study period. The central government will pay PPPK wages in the regions from 2027 (Investortrust, 2026). This shift will lower the reported personnel share of many local governments without any change in their own allocation decisions. Compliance reporting under Article 146 should therefore separate the effect of central wage policy from the effect of local budget choices.

PAD Effectiveness and Infrastructure Spending

PAD effectiveness is not associated with the infrastructure share, so H4 is not supported. Syafri et al. (2024) find that PAD effectiveness relates to fiscal independence, but this study finds no link with spending composition. Target setting is a likely reason. A local government can reach a high effectiveness ratio by setting a low PAD target, and a low ratio by setting an ambitious one. The data show both patterns. Takalar, Enrekang, and North Toraja recorded ratios below 60 percent in two or three years each, while Gowa, Luwu, Soppeng, and Bone exceeded 120 percent in at least one year. The change in budget basis across years adds further noise. In this setting, the ratio may measure the conservatism of the budget more than the capacity of revenue administration, and measurement error is likely to bias its coefficient towards zero (Table 2).

Implications for the Postponed Thresholds

The proxy-based positions give context to the postponement. No local government met both proxy thresholds in any year, and the proxy-based gaps widened in 2024. Part of the personnel gap reflects measurement, because the proxy includes teacher allowances. The infrastructure gap of about 20 percentage points is large, but the proxy does not capture the functional definition in Article 147, so it does not show the true legal gap. A uniform postponement treats all local governments the same, although their distance from the thresholds differs. A transition path based on audited, functionally classified data for each local government would match the adjustment burden to fiscal capacity. Such a path requires better data. Budget realization reports classify spending by economic type and cannot show compliance with Article 147. A functional tag for public service infrastructure spending in the regional government information system (SIPD) would allow the central government to measure compliance directly.

CONCLUSIONS AND RECOMMENDATIONS

This study examined whether fiscal independence, PAD effectiveness, and DAU dependence are associated with the position of 24 local governments in South Sulawesi relative to the mandatory spending thresholds of UU HKPD. Under proxy measures, no local government reached the 40 percent infrastructure floor in any year from 2019 to 2024, and at most two met the 30 percent personnel cap. In random effect models, higher DAU dependence is associated with a higher personnel share and a lower infrastructure share. These

associations are robust to year dummies and to the exclusion of outliers, but they lose significance under two-way fixed effects, and they rest largely on persistent differences between local governments. Fiscal independence and PAD effectiveness show no significant association with either share.

The study offers three recommendations, each conditional on the measurement limits above. First, the Ministry of Finance and the Ministry of Home Affairs should base the transition after the postponement on audited and functionally classified data for each local government, rather than on a uniform deadline. Second, the government should add a functional tag for public service infrastructure spending in SIPD and separate transfer-funded teacher allowances in personnel reporting, so that budget realization reports can show compliance with Articles 146 and 147. Third, local governments should set PAD targets on a realistic basis, so that the effectiveness ratio becomes a credible indicator of revenue performance.

ADVANCED RESEARCH

This study has six limitations. First, capital expenditure is an imperfect proxy for public service infrastructure spending, and the personnel proxy includes teacher allowances that the law excludes. Second, the SIKD data reflect reported realization, not all reports are audited, and the budget basis differs across years. Third, the size control replaces population and regional product data that were not available in usable form. Fourth, 24 cross-sectional units limit statistical power, and the DAU associations lose significance once local government and year effects enter together. Fifth, the models identify associations and do not address reverse causality. Sixth, the results may not apply to provinces with different fiscal structures. Future studies should use a national sample of regencies and cities, audited LKPD data, a functional measure of infrastructure spending, and personnel data that separate teacher allowances. They should also use designs that can identify causal effects, such as changes in the DAU formula under UU HKPD, and include political variables such as the timing of regional head elections (Sjahrir et al., 2014). A study after the thresholds take effect could evaluate how local governments respond to enforcement and to central payment of PPPK wages.

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