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THE EFFECT OF LOCAL ORIGINAL REVENUE (PAD) AND TRANSFER FUNDS ON REGIONAL EXPENDITURE: A FLYPAPER EFFECT ANALYSIS OF REGENCY/CITY IN NORTH SUMATERA PROVINCE

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Abstract

Fiscal decentralization grants regional governments greater authority to manage their own revenues and expenditures, yet many local governments in Indonesia remain heavily dependent on central government transfers rather than own-source revenue (PAD). This dependency raises the possibility of a flypaper effect, a condition in which regional expenditure responds more strongly to transfer funds than to PAD. This study examines the influence of PAD and transfer funds on capital expenditure and routine expenditure, and tests for the presence of a flypaper effect, among regency and municipal governments in North Sumatra Province. Using an explanatory quantitative approach, the study analyzes panel data from 33 regencies and cities over the 2019–2024 period (198 observations), drawn from official BPS and DJPK publications, with gross regional domestic product and population included as control variables. Panel regression results show that both PAD and transfer funds have a positive and significant effect on capital expenditure and on routine expenditure. In both expenditure models, however, the coefficient of transfer funds exceeds that of PAD, indicating that regional expenditure is more responsive to central transfers than to locally generated revenue. The findings confirm the presence of a flypaper effect among North Sumatra's regency and city governments and underscore the need to strengthen local revenue mobilization to support genuine fiscal independence.

Keywords: Capital Expenditure; Flypaper Effect; Own-Source Revenue; Regional Expenditure; Transfer Funds

INTRODUCTION

The implementation of regional autonomy through fiscal decentralization is one of the Indonesian government's key strategies for building a more effective, efficient, and responsive system of governance. Fiscal decentralization grants regional governments broader authority to manage local financial resources, on both the revenue and expenditure sides, in order to improve public service quality and accelerate regional development. Within this framework, regional governments are expected to strengthen their fiscal capacity by optimizing Own-Source Revenue (Pendapatan Asli Daerah, PAD), thereby reducing dependence on transfers from the central government. The larger the contribution of PAD to total regional revenue, the higher a region's fiscal independence in financing its own development and public services.

In practice, however, transfer funds from the central government remain the dominant source of revenue for most Indonesian regional governments. These transfers, comprising the General Allocation Fund (DAU), the Special Allocation Fund (DAK), and the Revenue-Sharing Fund (DBH), are intended to reduce fiscal disparities between regions and support the implementation of regional governance. While transfer funds play an important role in maintaining regional fiscal stability and equitable development, their dominance in the structure of regional revenue can also generate high fiscal dependency when not balanced by improvements in PAD capacity, potentially shaping regional expenditure behavior in ways that diverge from the original goals of decentralization.

This dependency is closely linked to a phenomenon well documented in the public finance literature: the flypaper effect, a condition in which regional expenditure responds more strongly to transfer funds than to PAD. From the perspective of fiscal illusion theory, transfer funds are perceived by regional governments as an external resource that does not impose a direct tax burden on local constituents, making it easier for governments to expand expenditure when transfers increase. From the perspective of bureaucratic expansion theory, rising fiscal transfers tend to encourage the expansion of operational expenditure, particularly personnel and goods-and-services spending, rather than productive capital investment.

Evidence of this dependency is also visible among regency and city governments in North Sumatra Province. Budget data for 2024 show that transfer funds substantially exceed PAD in most of the province's 33 regencies and cities; for instance, Langkat Regency received approximately IDR 4.2 trillion in transfers against only around IDR 350 billion in PAD, while similarly wide gaps are observed in North Padang Lawas, South Tapanuli, and Labuhan Batu. Such patterns suggest that nearly half of the province's local governments show indications of a flypaper effect. Beyond the revenue side, the composition of regional expenditure in North Sumatra also tends to favor routine or operational spending over capital expenditure, raising further concerns that additional transfer revenue is not being optimally directed toward productive, development-oriented investment.

Despite a substantial body of research on the flypaper effect in Indonesia, prior studies show inconsistent findings regarding the relative influence of PAD and transfer funds, and relatively few studies explicitly disaggregate regional expenditure into capital and routine categories when testing for the phenomenon. This study addresses that gap by jointly examining the influence of PAD and transfer funds on capital expenditure and routine expenditure, and by explicitly testing for the presence of a flypaper effect, among regency and city governments in North Sumatra Province during the 2019–2024 period. The findings are expected to contribute to the public finance literature and to provide an empirical basis for regional governments in designing more effective and development-oriented fiscal management strategies.

LITERATURE REVIEW

A. Fiscal Decentralization Theory

Fiscal decentralization theory holds that delegating revenue and expenditure authority to subnational governments improves the efficiency of public service delivery, since local governments are better positioned to identify and respond to local needs. A central proposition of this theory is that regions with higher own-source revenue enjoy greater fiscal space to prioritize productive, development-oriented expenditure, whereas regions that depend heavily on transfers retain less discretion over their spending priorities.

B. Flypaper Effect Theory

The flypaper effect describes a condition in which regional government expenditure responds more strongly to intergovernmental transfers than to increases in own-source revenue of an equivalent amount, even though, under a standard fiscal model, both sources should be treated symmetrically as part of the same regional budget constraint. Because transfer funds appear to “stick where they land” rather than being treated as fungible income, the theory predicts that a marginal increase in transfers is more strongly associated with higher regional expenditure than an equivalent marginal increase in PAD.

C. Fiscal Illusion Theory

Fiscal illusion theory complements the flypaper effect by explaining the behavioral mechanism behind it: because transfer funds are not perceived by local taxpayers as a direct cost, regional governments face less political resistance when expanding expenditure financed by transfers compared to expenditure financed by local taxation. This asymmetry in perceived cost helps explain why regional governments may be less motivated to optimize PAD even when fiscal capacity could otherwise be strengthened.

D. Own-Source Revenue, Transfer Funds, and Regional Expenditure

Own-source revenue (PAD) comprises regional taxes, levies, returns on separated regional assets, and other legitimate local revenue, and is widely regarded as the key indicator of a region's fiscal independence. Transfer funds, comprising the General Allocation Fund (DAU), Special Allocation Fund (DAK), and Revenue-Sharing Fund (DBH), are designed to narrow fiscal gaps between regions and support the financing of regional development and public services. Regional expenditure is conventionally divided into capital expenditure, used to acquire or expand fixed assets and infrastructure with long-term benefits, and routine (operational) expenditure, used to finance recurring administrative needs such as personnel and goods-and-services costs.

Empirical findings on the relationship between these revenue sources and expenditure remain mixed. Some studies report that PAD exerts a significant positive influence on capital expenditure, while others find no significant relationship, suggesting that the strength of this relationship is context-dependent. Similarly, while some studies find that transfer funds significantly support capital expenditure and economic growth, others report that transfers are directed mainly toward routine expenditure, with only a limited effect on capital spending. This inconsistency across prior studies, summarized in Table 1 below, motivates a renewed empirical test in the context of North Sumatra Province.

Table 1. Summary of Prior Studies on PAD, Transfer Funds, and Regional Expenditure

Study	Key Finding	Focus
Rizal & Erpita (2019)	PAD has a significant effect on capital expenditure.	Langsa City
Suryani & Pariani (2018)	PAD has no significant effect on capital expenditure.	Capital expenditure
Sidhi & Dewi (2023)	Transfers are directed mainly to routine expenditure; limited effect on capital expenditure.	Bali & Java
Pasa et al. (2023)	Transfer funds significantly affect capital expenditure and economic growth.	Bitung City
Kurniati & Devi (2022)	DAU has no significant effect on routine expenditure.	Lampung Province
Solicha & Hanifa (2024)	DAU and DAK dominate PAD in influencing regional expenditure.	East Nusa Tenggara

Source: Compiled by the author from the cited studies.

E. Hypothesis Development

Based on fiscal decentralization theory, regions with higher PAD are expected to have greater flexibility to allocate spending toward long-term, productive capital investment. Although prior studies disagree on the strength of this relationship, the theoretical expectation and the institutional context of North Sumatra justify testing it directly: H1: Own-Source Revenue (PAD) has a positive and significant effect on Capital Expenditure among regency and city governments in North Sumatra Province. Transfer funds are intended under fiscal decentralization theory to narrow fiscal gaps and support regional development financing, while fiscal illusion theory suggests that transfers may also stimulate expenditure expansion because they are not directly felt as a tax burden by local residents: H2: Transfer Funds have a positive and significant effect on Capital Expenditure among regency and city governments in North Sumatra Province. PAD is also expected, under fiscal decentralization theory, to provide regional governments with the flexibility needed to finance ongoing operational needs, while fiscal illusion theory suggests that revenue raised directly from local constituents tends to be allocated more cautiously toward essential operational needs: H3: Own-Source Revenue (PAD) has a positive and significant effect on Routine Expenditure among regency and city governments in North Sumatra Province. Because transfer funds are intended to ensure that regional governments can sustain public service delivery, and because fiscal illusion theory predicts that transfers not directly tied to local tax burdens encourage expenditure expansion, transfer funds are also expected to influence routine spending: H4: Transfer Funds have a positive and significant effect on Routine Expenditure among regency and city governments in North Sumatra Province. Finally, if regional expenditure, whether capital or routine, responds more strongly to transfer funds than to PAD, this constitutes direct empirical evidence of the flypaper effect: H5: A flypaper effect is present among regency and city governments in North Sumatra Province, as indicated by a stronger effect of Transfer Funds on Regional Expenditure than that of Own-Source Revenue (PAD).

METHOD

This study employs a quantitative explanatory research design, aimed at analyzing the causal relationships among research variables in an objective and measurable manner through the processing of numerical data (Creswell & Creswell, 2018). The explanatory approach is used to assess the extent to which the independent variables, namely PAD and transfer funds, influence the dependent variables, namely capital expenditure and routine expenditure, and to test hypotheses derived from theory and prior empirical findings (Sekaran & Bougie, 2020).

The study uses panel data analysis, combining time-series data, which captures changes in the research variables over time, with cross-sectional data, which captures variation across regencies and cities in North Sumatra Province. Panel data analysis offers several methodological advantages: it controls for unobserved regional heterogeneity, improves the efficiency of parameter estimation by exploiting a larger number of observations, and allows for a more accurate identification of dynamics in regional fiscal behavior over time (Baltagi, 2021; Gujarati & Porter, 2018).

The population of this study consists of the annual financial reports of all regency and city governments in North Sumatra Province that prepare and report a Regional Revenue and Expenditure Budget (APBD), totaling 33 local governments (25 regencies and 8 cities). A census sampling technique was applied, in which the entire population was used as the research sample, given the relatively limited and fully available population of financial reports (Sugiyono, 2022). The sample comprises annual financial reports covering the 2019–2024 period, yielding 33 regencies/cities × 6 years = 198 panel observations covering PAD, transfer funds, capital expenditure, and routine expenditure.

This study relies on secondary quantitative data obtained from the Central Statistics Agency (BPS) of North Sumatra Province, which publishes regional financial statistics and macroeconomic indicators, and from the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance of the Republic of Indonesia, which publishes realized data on PAD, central government transfers, and regional expenditure. Both sources apply standardized national data-collection methodologies, ensuring the consistency and comparability required for panel analysis (Sekaran & Bougie, 2020; Solicha & Hanifa, 2024). Operational definitions of the variables used in the regression models are presented in Table 2.

Table 2. Operational Definitions of Variables

Variable	Operational Definition	Measurement Formula	Scale
Own-Source Revenue (PAD)	Locally generated revenue from regional taxes, levies, returns on separated regional assets, and other legitimate local revenue.	Total Own-Source Revenue (IDR)	Ratio
Transfer Funds (DT)	Funds received from the central government, comprising the General Allocation Fund, Special Allocation Fund, and Revenue-Sharing Fund.	DAU + DAK + DBH (IDR)	Ratio
Capital Expenditure (Y1)	Government spending to acquire or add fixed assets that provide benefits beyond one accounting period.	Total Capital Expenditure (IDR)	Ratio
Routine/Operational Expenditure (Y2)	Recurring government spending to support daily administrative operations.	Personnel + Goods/Services + Other Operational Expenditure (IDR)	Ratio

Source: Compiled by the author based on Bastian (2020) and DJPK (2022).

To strengthen the analytical model and reduce potential bias, gross regional domestic product (GRDP) and population were included as control variables, given their established theoretical relevance to regional fiscal capacity and expenditure needs. Data were analyzed using panel data regression in EViews, following the standard sequence of model-selection tests, namely the Chow test, the Hausman test, and the Lagrange Multiplier test, to determine the most appropriate estimation model (Common Effect, Fixed Effect, or Random Effect) for each of the two expenditure models. Classical assumption tests, comprising normality, multicollinearity, heteroscedasticity, and autocorrelation tests, were conducted prior to hypothesis testing. Hypotheses were then tested using the partial t-test, the Wald test for comparing coefficient magnitudes, the simultaneous F-test, and the coefficient of determination (Adjusted R^2), following standard panel data regression procedures (Baltagi, 2021). The general empirical models estimated in this study are specified as follows, with t denoting the time period (2019–2024) and i denoting the regency/city cross-sectional unit:

$$Y1it = \alpha 0 + \beta 1\ PADit + \beta 2\ DTit + \beta 3\ PDRBit + \beta 4\ POPit + \varepsilon it \quad (1)$$

$$Y2it = \beta 0 + \beta 1\ PADit + \beta 2\ DTit + \beta 3\ PDRBit + \beta 4\ POPit + \varepsilon it \quad (2)$$

where Y1 denotes Capital Expenditure (Model I), Y2 denotes Routine/Operational Expenditure (Model II), PAD denotes Own-Source Revenue, DT denotes Transfer Funds, PDRB and POP denote the control variables (gross regional domestic product and population, respectively), and ε is the error term, with all monetary variables expressed in natural logarithms (Rupiah).

RESULTS AND DISCUSSION

A. Model Selection and Classical Assumption Tests

Model-selection tests (Chow, Hausman, and Lagrange Multiplier) indicated that the Fixed Effect Model was the most appropriate specification for both Model I (capital expenditure) and Model II (routine expenditure), reflecting the presence of significant unobserved heterogeneity across regencies and cities. Classical assumption tests confirmed that the residuals were normally distributed, free from problematic multicollinearity and autocorrelation, and, after applying cross-section weighting, free from heteroscedasticity, satisfying the requirements for valid panel regression estimation in both models.

B. Partial Test Results (t-test)

Table 3 presents the results of the partial t-test for Model I, in which capital expenditure (Y1) is regressed on PAD, transfer funds, and the control variables.

Table 3. Partial Test Results (t-test) – Model I (Capital Expenditure)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.249540	2.362312	-0.105634	0.9160
X1_PAD	0.141348	0.067648	2.089454	0.0380
X2_DT	0.858313	0.108906	7.881200	0.0000
VK_PDRB	-0.026608	0.049379	-0.538855	0.5906
VK_POP	-0.020899	0.047650	-0.438603	0.6614

Source: EViews software output, processed by the author.

The results show that PAD has a coefficient of 0.141348 with a probability of 0.0380 (< 0.05), indicating a positive and significant effect on capital expenditure; H1 is therefore accepted. Transfer funds show a substantially larger coefficient of 0.858313 with a probability of 0.0000 (< 0.05), indicating a positive and significant effect on capital expenditure; H2 is therefore accepted. The control variables, GRDP and population, are not statistically significant in this model ($p = 0.5906$ and $p = 0.6614$, respectively).

Table 4 presents the corresponding results for Model II, in which routine/operational expenditure (Y2) is the dependent variable.

Table 4. Partial Test Results (t-test) – Model II (Routine Expenditure)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.014471	1.113285	1.809483	0.0719
X1_PAD	0.221571	0.029700	7.460311	0.0000
X2_DT	0.670410	0.051333	13.06003	0.0000
VK_PDRB	0.049885	0.024335	2.049933	0.0417
VK_POP	-0.016966	0.026175	-0.648160	0.5177

Source: EViews software output, processed by the author.

In Model II, PAD has a coefficient of 0.221571 with a probability of 0.0000 (< 0.05), confirming a positive and significant effect on routine expenditure; H3 is therefore accepted. Transfer funds again show a larger coefficient, 0.670410, also significant at $p = 0.0000$, confirming H4. Among the control variables, GRDP is positive and significant ($p = 0.0417$), while population is not significant ($p = 0.5177$).

C. Goodness of Fit

The simultaneous F-test confirms that both models are jointly significant overall ($p = 0.000000$ in each case). The Adjusted R^2 for Model I is 0.4118, indicating that PAD, transfer funds, and the control variables jointly explain approximately 41.2 percent of the variation in capital expenditure. For Model II, the Adjusted R^2 is considerably higher at 0.8177, indicating that the same set of variables explains approximately 81.8 percent of the variation in routine expenditure. This contrast suggests that routine expenditure is substantially more predictable from regional revenue structure than capital expenditure, which is more likely to be shaped by discretionary, project-specific budgeting decisions.

D. The Flypaper Effect

Comparing the magnitude of the coefficients across both models provides the key test of H5. In Model I, the coefficient of transfer funds on capital expenditure (0.858) is more than six times larger than that of PAD (0.141). In Model II, the coefficient of transfer funds on routine expenditure (0.670) is roughly three times larger than that of PAD (0.222). In both expenditure categories, regional expenditure is therefore substantially more responsive to transfer funds than to own-source revenue, providing clear empirical support for H5: a flypaper effect is present among regency and city governments in North Sumatra Province. This pattern is consistent with fiscal illusion theory: because transfer funds are not directly tied to local tax burdens, regional governments appear more willing to expand expenditure when transfers increase than when PAD increases by an equivalent amount. It also indicates that, despite improvements in own-source revenue, North Sumatra's regional governments remain heavily reliant on central transfers to finance both development-oriented capital spending and routine operational needs, suggesting that fiscal decentralization in the province has not yet translated into genuine fiscal independence.

These findings are broadly consistent with prior Indonesian studies reporting that transfer funds dominate PAD in shaping regional expenditure (Kristanti et al., 2025; Solicha & Hanifa, 2024), and with evidence that transfers are directed disproportionately toward routine rather than capital spending (Sidhi & Dewi, 2023; Kurniati & Devi, 2022). At the same time, the significant positive effect of PAD on capital expenditure found here diverges from studies reporting no significant PAD–capital expenditure relationship (Hermawan et al., 2021; Lovyana & Nursiam, 2026), suggesting that the strength of this relationship may be sensitive to regional context and the time period examined.

CONCLUSION

This study examined the influence of Own-Source Revenue (PAD) and transfer funds on capital expenditure and routine expenditure, and tested for the presence of a flypaper effect, among 33 regency and city governments in North Sumatra Province over the 2019–2024 period. The panel regression results show that both PAD and transfer funds exert a positive and significant effect on capital expenditure (H1 and H2 accepted) and on routine expenditure (H3 and H4 accepted). In both models, however, the coefficient of transfer funds substantially exceeds that of PAD, confirming the presence of a flypaper effect (H5 accepted): regional expenditure in North Sumatra is more responsive to central government transfers than to locally generated revenue. These findings indicate that, despite ongoing fiscal decentralization, regency and city governments in North Sumatra Province continue to exhibit a relatively high degree of fiscal dependency on the central government, and that local revenue mobilization has not yet been optimized to the point of supporting genuine fiscal autonomy. Strengthening local tax and levy administration, improving the management of regional assets, and developing local economic potential remain important priorities for reducing this dependency over time. From a policy perspective, central government transfer design could also be reviewed to ensure that intergovernmental transfers not only equalize fiscal capacity across regions but also create incentives for regional governments to expand their own revenue base, while regional governments themselves should aim to direct a larger share of incremental transfer revenue toward productive capital investment rather than routine operational spending.

This study is subject to several limitations. First, the analysis is confined to North Sumatra Province, so the findings may not generalize to other Indonesian regions with different fiscal characteristics. Second, the observation period, while covering six years of panel data, reflects fiscal conditions specific to that period and may not capture the effects of subsequent policy changes. Third, the flypaper effect is identified only through a comparison of regression coefficients, without a deeper assessment of transfer-fund effectiveness or its welfare implications. Finally, capital expenditure is treated as a single aggregate category, even though its components, such as infrastructure, office assets, and building construction, may respond differently to PAD and transfer funds. Future research could extend this work by incorporating additional explanatory variables (e.g., economic growth, poverty levels, and the unspent budget surplus, SiLPA), broadening the geographic scope to other provinces or to Indonesia as a whole, extending the observation period, and combining quantitative and qualitative approaches to better understand the bureaucratic and political-economy drivers of the flypaper effect.

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