Original Article

Flypaper Effect in the Allocation of Regional Expenditure in Regency/City in West Sumatra Province

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Abstract

This study aims to analyze the effect of fiscal transfers (DAU, DAK, DBH) on local government expenditure in West Sumatra Province, focusing on the Flypaper Effect phenomenon, where local expenditure is more influenced by transfer funds from the central government than by Regional Original Revenue (PAD). The data used in this study includes information on local expenditure, PAD, as well as various types of transfer funds such as the General Allocation Fund (DAU), Special Allocation Fund (DAK), and Revenue Sharing Fund (DBH) for districts / cities in West Sumatra Province in the period 2019-2022. The method used in this study is panel data regression analysis to examine the relationship between fiscal transfer variables and regional expenditure. The results showed that regional expenditure in West Sumatra Province was more influenced by fiscal transfers than by PAD. This confirms the Flypaper Effect phenomenon, where grants from the central government are more likely to be spent than locally generated revenues. The implications of these findings suggest the need for policies to increase PAD and reduce dependence on fiscal transfers in order to create regional fiscal independence.

Keywords: Flypaper Effect, Regional Expenditure, Fiscal Transfer, Fiscal Dependency, Regional Fiscal Policy.

1. Introduction

In the study of public finance, the Flypaper Effect phenomenon has been a topic of interest to many researchers. The term describes the tendency for government expenditure to increase more when receiving intergovernmental grants compared to an equivalent increase in revenue from local resources (Wahyuningrum & Juliprijanto, 2022). This phenomenon is often summarized by the expression "money sticks where it hits", which suggests that funds received from external sources, such as grants, are more likely to be spent than funds generated locally through taxes or other sources (Becker et al., 2020). Theoretically, the Flypaper Effect can arise due to various factors, including the nature of government financing and the behavioral responses of policy makers. It is often attributed to local governments' high fiscal dependence on external grants, which can lead to overspending, especially when the funds are perceived as "free money" (Dahlby & Ferede, 2016).

The existence of the Flypaper Effect is not only related to regional spending, but also has implications for fiscal policy and regional development. Empirical research shows that this effect can be more significant in regions that have a high dependence on fiscal transfers, such as the General Allocation Fund (DAU) and Special Allocation Fund (DAK) in Indonesia. For example, research conducted in Brazil shows that intergovernmental transfers have a greater impact on local government spending than local tax revenues (Mattos & França, 2011). Similarly, a study in Indonesia revealed that intergovernmental transfers strongly influence

local spending, more so than the effect of increased local tax revenues (Tasri, 2018; Fachruzzaman et al., 2015). This research underscores the importance of understanding how fiscal transfers can influence local spending policies and the implications for long-term fiscal sustainability and equity between regions.

The province of West Sumatra, which has unique local financial characteristics, provides an interesting setting for this study. Despite progress in transparency and accountability in budget management, the province still faces challenges related to reliance on fiscal transfers and local fiscal sustainability. A study conducted by Agustin and Arza (2020) showed that over the past few years, there has been a significant increase in the number of regional financial reports that received an unqualified opinion from the Supreme Audit Agency (BPK). This suggests that local governments in West Sumatra are increasingly complying with applicable government accounting standards and managing their budgets better. However, constraints remain, especially in smaller districts that have limited capacity in budget management. In addition, transfer funds such as DAK and DAU have a very important role in the financial health of local governments in West Sumatra, but high dependence on these funds has the potential to create inefficiencies and suboptimal resource allocation (Rahula & Bowo, 2021).

The Flypaper Effect phenomenon in West Sumatra Province should be analyzed in more depth, especially in relation to its effect on local expenditure management and long-term fiscal sustainability. Local governments often prioritize grant-seeking over strengthening their ability to generate sustainable local revenues. Reliance on grants can lead to fiscal imbalances that impact on the capacity of regions to meet community needs when the grants are reduced or fluctuate. On the other hand, the Flypaper Effect is also closely related to the concept of fiscal illusion, where the complexity of revenue sources causes people to underestimate the true cost of public goods and services provided by local governments (Amusa et al., 2008). This can lead to an oversupply of public goods financed with external grants, as the public is not fully aware of the tax burden hidden by the influx of grants (Diniz, 2016).

The purpose of this study is to identify and analyze the Flypaper Effect phenomenon in local government expenditure in regencies/cities in West Sumatra Province. In the existing literature, there are various studies that support the existence of the Flypaper Effect, for example, research by Hapsoro and Yoduke (2019) in Indonesia found that the Flypaper Effect is associated with fiscal dependence and creates fiscal illusions that worsen the management of local expenditure. Thus, this study is expected to contribute to understanding the dynamics of public finance at the regional level, especially in West Sumatra Province, and provide policy recommendations to improve fiscal resilience and sustainability of regional financial management.

2. Methods

This study uses secondary data where local government expenditure is the dependent variable, while PAD and fiscal transfers (DAU, DAK, DBH) are the independent variables. The data comes from the realization of the Regency / City APBD in West Sumatra Province which is recapitulated through the DJPK website of the Ministry of Finance of the Republic of Indonesia in the Regency / City in West Sumatra Province for the period 2019 - 2022. The method used is panel data regression with the following equation:

$$PP_{it} = a + \beta_1 PAD_{it} + \beta_2 DAU_{it} + \beta_3 DAK_{it} + \beta_3 DBH_{it} + e$$

Description:

PP   = Government Expenditure per Regency / City in West Sumatra Province
PAD   = Regional Original Revenue per Regency / City in West Sumatra Province
DAU   = General Allocation Fund per Regency / City in West Sumatra Province
DAK   = Special Allocation Fund per Regency / City in West Sumatra Province
DBH   = Revenue Sharing Fund per Regency / City in West Sumatra Province
a   = Constant
$\beta_{1,2,3}$ = Regression Coefficient
i   = Year
t   = Regency / City

In this panel data regression, there are three testing models, namely Pooled OLS / Common Effect, Fixed Effect and Random Effect using the Chow test, Hausman test, and Lagrange Multiplier test. This is done to choose which model is best before estimation (Widarjono, 2013).

Furthermore, the classical assumption test is carried out which consists of autocorrelation, multicollinearity and heteroscedascity tests. The t-test and F-test are statistical tests and to assess how well the independent variable explains the dependent variable, it can be seen from the coefficient of determination R^2. The t-test aims to identify the statistical significance of regression coefficients individually, while the F-test is used to evaluate the statistical significance of regression coefficients jointly.

3. Results and Discussion

3.1. Descriptive Statistical Analysis

Table 1. Descriptive Statistical Analysis Result

Variable		Mean	Std. Dev.	Min	Max	Observations	
Government Expenditure	overall	1.05e+12	4.17e+11	5.08e+11	2.35e+12	N =	76
	between		4.23e+11	5.61e+11	2.23e+12	n =	19
	within		4.94e+10	9.58e+11	1.18e+12	T =	4
PAD	overall	1.13e+11	1.09e+11	3.16e+10	6.13e+11	N =	76
	between		1.10e+11	3.59e+10	5.49e+11	n =	19
	within		1.30e+10	6.37e+10	1.77e+11	T =	4
DAU	overall	5.79e+11	1.87e+11	3.41e+11	1.18e+12	N =	76
	between		1.88e+11	3.55e+11	1.08e+12	n =	19
	within		3.03e+10	5.42e+11	6.73e+11	T =	4
DAK	overall	1.87e+11	9.22e+10	5.00e+10	3.88e+11	N =	76
	between		9.06e+10	5.29e+10	3.36e+11	n =	19
	within		2.48e+10	1.34e+11	2.46e+11	T =	4
DBH	overall	2.32e+10	1.82e+10	8.36e+09	1.03e+11	N =	76
	between		1.55e+10	1.24e+10	7.87e+10	n =	19
	within		1.01e+10	-8.21e+09	5.78e+10	T =	4

Source: Stata 14 Output

The statistical description results show that the overall average expenditure (PP) is 1.05e+12 with the largest variation coming from between units (4.23e+11) rather than within units (4.94e+10). The *variable PAD (Local Revenue) has an* average of 1.13e+11, with inter-unit variation (1.10e+11) more dominant than within-unit (1.30e+10). Meanwhile, the average DAU (General Allocation Fund) is 5.79e+11, with variation between units (1.88e+11) greater than within units (3.03e+10). The DAK (Special Allocation Fund) variable has an average of 1.87e+11, and the variation is relatively even between units (9.06e+10) and within units (2.48e+10). Lastly, the DBH (Revenue Sharing Fund) variable shows the smallest average of 2.32e+10, with greater variation between units (1.55e+10) than within units (1.01e+10). Overall, inter-unit variation tends to be more significant than within-unit variation for almost all variables, with a total number of observations of 76, covering 19 units over 4 time periods.

3.2. Regression Model Selection

3.2.1. Chow Test

The Chow test is used to determine whether the Fixed Effect (FE) model is more appropriate than the Pooled OLS model in panel data analysis.

Table 2. Chow Test Result

Chow Test	
F test that all u_i=0: $F(18, 53) = 4.82$	Prob > F = 0.0000

Source: Stata 14 Output

The Chow test results show an F-statistic value of 4.82 with a p-value of 0.0000, which means that the null hypothesis is rejected at the 5% significance level. This indicates that there are significant differences between units in the panel data, making the Fixed Effects model more suitable than the OLS model. Therefore, the Fixed Effects model is recommended to be used in this analysis as it can capture the variation between units better.

3.2.2. Hausman Test

The Hausman test is a statistical test used to select a more appropriate model between Fixed Effects (FE) and Random Effects (RE) in panel data analysis. This test checks whether the difference between the parameter estimates of the two models is statistically significant.

Table 3. Hausman Test Result

Hausman Test
Test: Ho: difference in coefficients not systematic
Prob>chi2 = 0.0000

Source: Stata 14 Output

The Hausman test results show the Prob> chi² value = 0.0000, which means that the null hypothesis is rejected at the 5% significance level. Therefore, the Fixed Effects (FE) model is more appropriate than the Random Effects (RE) model for this panel data analysis.

3.3. Classical Assumption Test

3.3.1. Multicollinearity Test

Multicollinearity occurs when there is a very strong or almost perfect linear relationship between two or more independent variables in the regression model. This can cause the coefficient estimates to be unstable and make it difficult to determine the effect of each independent variable on the dependent variable. The multicollinearity test is analyzed by looking at the value of the variance inflating factor (VIF). VIF measures the extent to which the variance of a regression coefficient increases due to multicollinearity.

Table 4. Multicollinearity Test Result

Variable	VIF	1/VIF
dau	8.23	0.121483
pad	5.38	0.185900
dak	4.58	0.218262
dbh	2.53	0.395244

Source: Stata 14 Output

The Variance Inflation Factor (VIF) test results show that there is no serious multicollinearity problem in the regression model. All independent variables, namely dau (VIF = 8.23), pad (VIF = 5.38), dak (VIF = 4.58), and dbh (VIF = 2.53), have VIF values smaller than 10, which means that the correlation between variables is not high enough to cause problematic multicollinearity. The 1/VIF (tolerance) values greater than 0.1 for each variable also confirm that multicollinearity is not a significant issue. Thus, this regression model can be considered free from serious multicollinearity, and the coefficient estimates can be interpreted properly.

3.3.2. Heteroscedasticity Test

Heteroscedasticity refers to a situation where the variance of the errors (residuals) in the regression model is not constant across the range of values of the independent variables. That is, the error is larger or smaller depending on the value of the independent variable, which contradicts the classical assumption of regression which states that the error variance should be constant (homoscedasticity).

Table 5. Heteroscedasticity Test Result

Variables	fitted values of belanja
chi2(1)	= 3.71
Prob > chi2	= 0.0539

Source: Stata 14 Output

The heteroscedasticity test results show a chi-square value = 3.71 with a p-value = 0.0539. Since the p-value is slightly greater than 0.05, we fail to reject the null hypothesis that there is no heteroscedasticity, or in other words, the error variance is constant (homoscedasticity). This means that there is insufficient evidence to suggest that there is a heteroscedasticity problem in this model, so the assumption of constant error variance can be accepted.

3.3.3. Autocorrelation Test

Autocorrelation occurs when the errors (residuals) in a regression model are not independent of each other, meaning that errors at a certain time (or observation) are related to errors at other times.

Table 6. Autocorrelation Test Result

H0: no first-order autocorrelation
F(1, 18) = 0.859
Prob > F = 0.3663

Source: Stata 14 Output

The autocorrelation test results for the first order show an F value of 0.859 with a p-value of 0.3663. Since the p-value is greater than 0.05, the null hypothesis that there is no first-order autocorrelation is not rejected.

3.4. Hypothesis Testing

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Fixed-effects (within) regression          Number of obs    =         76
Group variable: id                         Number of groups =         19

R-sq:                                      Obs per group:
    within  = 0.7322                                      min =          4
    between = 0.9829                                      avg =        4.0
    overall = 0.9783                                      max =          4

                                           F(4,53)          =      36.23
corr(u_i, Xb)  = 0.8708                    Prob > F         =     0.0000

-------------------------------------------------------------------------
     belanja |      Coef.   Std. Err.      t    P>|t|    [95% Conf. Interval]
-------------+-----------------------------------------------------------
         pad | -.0110275   .3089789    -0.04   0.972    -.6307607    .6087057
         dau |  1.355375   .1405335     9.64   0.000      1.0735   1.637249
         dak |  .6665063    .148784     4.48   0.000    .3680834   .9649292
         dbh |  .9224295   .4502856     2.05   0.045    .0192709   1.825588
       _cons |  1.20e+11   8.98e+10     1.34   0.185    -5.96e+10   3.01e+11
-------------+-----------------------------------------------------------
     sigma_u |  1.159e+11
     sigma_e |  3.039e+10
         rho |  .93571958   (fraction of variance due to u_i)
-------------------------------------------------------------------------
F test that all u_i=0: F(18, 53) = 4.82            Prob > F = 0.0000
```
Figure 1. Hypothesis Testing Result
Source: Stata 14 Output

3.4.1. Coefficient of Determination Test (R2 Test)

The results of the coefficient of determination (R^2) test in fixed-effects regression show important information about the extent to which the model can explain variation in the dependent variable (expenditure) based on the independent variables used. The table above shows that overall, the model explains 97.83% of the variation in expenditure, both in between-group and within-group differences. This suggests the regression model is very good at explaining the total variation in expenditure data.

3.4.2. F Test/Simultaneous Test

The table above shows that the Prob > F value = 0.0000: The very small p (probability) value (0.0000) indicates that the null hypothesis (H0), which states that there is no significant effect of the independent variable on the dependent variable, can be rejected very strongly. In other words, there is very strong evidence to suggest that at least one of the independent variables (pad, dau, dak, dbh) has a significant effect on spending.

3.4.3. T-test

The t test is used to test the significance of the regression coefficient of each independent variable in the regression model. The t test aims to determine whether each independent variable significantly affects the dependent variable (expenditure), by testing the null hypothesis that the variable coefficient is equal to zero (no effect).

Based on the results of the t test, it can be concluded that the variables dau, dak, and dbh have a significant effect on expenditure, because the p values for all three are smaller than 0.05 (0.000 and 0.045 respectively). In contrast, the pad variable has no significant effect on expenditure, as its p value is greater than 0.05 (0.972). Therefore, only dau, dak, and dbh have a significant contribution in explaining variations in expenditure in this regression model.

3.5. Interpretation of T-test Results

Based on the results of the t test, it is found that not all variables in the regression model have a significant effect on spending. The following is the interpretation of these findings:

a. PAD variable is not significant to expenditure. This shows that the relationship between pad and expenditure is not strong enough to draw statistical conclusions. This means that pad does not contribute significantly to changes in expenditure, so it can be suggested to evaluate other variables or improve the model if pad is to be retained.

b. The DAU variable is positively significant to expenditure. The positive coefficient (1.355375) and very small p value (0.000) indicate that dau has a significant influence on expenditure. Every one unit increase in dau will increase spending by 1.355375. This suggests that dau is a very important factor in explaining variation in spending.

c. The DAK variable has a positive significance on expenditure. The coefficient for dak (0.6665063) indicates that each one unit increase in dak will cause an increase in expenditure of 0.6665063. The very small p value (0.000) also supports this finding, indicating that DAK contributes significantly to changes in expenditure.

d. DBH variable is positively significant to expenditure. The positive coefficient for dbh (0.9224295) means that an increase in dbh will lead to an increase in expenditure. Although the standard error is relatively high, the p-value (0.045) shows that this relationship is significant at the 5% significance level, indicating that dbh has an influence on expenditure, although the effect is not as great as dau or dak.

3.6. Flypaper Effect

Flypaper Effect refers to a phenomenon in fiscal economics where transfers from the central government (e.g., in the form of General Allocation Fund (DAU), Special Allocation Fund (DAK), or Revenue Sharing Fund (DBH)) tend to be spent more on local government expenditures than on increasing Local Own Revenue (PAD).

This reflects the preference of local governments to spend transfer funds rather than optimize PAD potential. PAD is Not Significant to Expenditure When PAD is not significant in influencing expenditure, it indicates that local governments are underutilizing their local resources to fund expenditure.

In the context of the Flypaper Effect, this strengthens the argument that transfers dominate expenditure allocations more than PAD contributions. Local governments tend to

rely on transfers from the center to fund their activities rather than optimizing the management of own-source revenues.

DAU Significantly Positive on Expenditure DAU has the largest coefficient (1.355375), showing the strongest influence on expenditure compared to other variables. This is a classic manifestation of the Flypaper Effect, where local governments directly spend DAU rather than allocating it effectively or substituting other local revenues. With a highly significant p value (0.000), this transfer is proven to be the main driver of expenditure.

DAK Significantly Positive on Expenditure DAK also has a significant effect on expenditure (coefficient 0.6665063). Although not as large as DAU, this confirms that specific allocations from the center for specific projects still drive significant spending. This reflects that local governments tend to utilize the funds received for appropriate purposes without relying too heavily on own-source revenue.

DBH Significantly Positive to Expenditure With a coefficient of 0.9224295 and a significant p-value (0.045), DBH also contributes significantly to expenditure, although its effect is not as large as DAU or DAK. This remains relevant to the Flypaper Effect as local governments tend to allocate these transfers to direct expenditure without proportionally boosting local revenues.

This result confirms the existence of Flypaper Effect in regency or cities in West Sumatra where transfer funds (DAU, DAK, and DBH) have a significant influence on regional expenditure, while PAD does not contribute significantly. These results are in line with various previous studies, studies conducted by Abdillah and Mursinto (2016) also found that fiscal transfers significantly affect regional expenditure, showing the Flypaper Effect phenomenon which is very relevant in Indonesia.

4. Conclusion

This study provides a clear picture of the influence of fiscal transfers on local expenditure, especially in the context of the Flypaper Effect phenomenon in West Sumatra Province. Based on the descriptive statistical analysis conducted, it was found that local government expenditure in West Sumatra Province was more influenced by transfers from the central government (such as the General Allocation Fund - DAU, Special Allocation Fund - DAK, and Revenue Sharing Fund - DBH) than Regional Original Revenue (PAD). This finding suggests that the Flypaper Effect phenomenon is real, where external funds "stick" more to local expenditure than locally generated revenue. Local governments in West Sumatra Province rely heavily on grants from the central government to finance their expenditures. Although PAD is the main source of revenue derived from taxes and levies, its contribution to local expenditure is still limited when compared to fiscal transfers. This suggests an imbalance in the management of regional fiscal resources.

One important implication of this finding is the need for more aggressive policies to increase Regional Original Revenue (PAD). Local governments need to optimize the potential of taxes and levies to reduce dependence on fiscal transfers. This will not only improve local fiscal independence, but also provide better financial stability in the long run. In addition, improving transparency and efficiency in the management of grant funds from the central government is essential. Reliance on grant funds can lead to imbalances in regional budget management if not properly regulated. Therefore, there needs to be stricter supervision of the use of grant funds so that they can be optimally utilized for regional development.

This study still has several limitations, including the limited regional coverage that only covers West Sumatra Province. Therefore, the suggestion for future research is to expand the

geographical coverage to test the Flypaper Effect phenomenon in other provinces in Indonesia. Further research could also combine qualitative and quantitative approaches to understand more about the factors that influence local spending and how local governments respond to transfer funds.

In addition, future research could highlight fiscal policies that support equal allocation of grants and strengthening regional fiscal capacity to reduce dependence on fiscal transfers that can lead to fiscal instability.

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