



# INDONESIAN TREASURY REVIEW

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### ANALYSIS OF THE FLYPAPER EFFECT ON PERSONNEL EXPENDITURE: EVIDENCE FROM INDONESIAN LOCAL GOVERNMENTS

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#### ABSTRACT

**Research Originality** — Studies on the flypaper effect phenomenon in Indonesia has often focused primarily on total local government expenditure. Even when studies have examined specific expenditure types, they tended to analyze expenditure by function, areas that are often more heavily controlled by the central government. This study attempts to contribute to the literature by exploring the flypaper effect in specific expenditure categories in Indonesia, particularly those with unique characteristics such as personnel expenditure.

**Research Objectives** — This study investigates the presence of the flypaper effect in Indonesia and contributes to the literature by exploring it within specific expenditure categories in Indonesia, particularly personnel expenditure, which has unique characteristics.

**Research Methods** — This study uses balanced panel data from 480 district and municipal governments in Indonesia for 2015–2022 and applies a fixed-effects panel regression to identify the flypaper effect, with interaction terms capturing the COVID-19 period.

**Empirical Results** — The findings confirm the presence of the flypaper effect in total local government expenditure, particularly in personnel expenditure. Furthermore, the COVID-19 pandemic reduced the impact of transfer funds, especially unconditional grants, on total local government expenditure and personnel expenditure.

**Implications** — The rationalization of spending, not only on total local government expenditure but also on personnel expenditure, played a role in enhancing local governments' efficiency in managing transfer funds.

**Keywords:** Flypaper Effect; Unconditional Grant; Personnel Expenditure

**JEL Classification:** H72, H77, R11

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#### INTRODUCTION

Indonesia has long pursued fiscal decentralization, leading to significant shifts in the relationship between the central and local governments. Historically, the central government exercised extensive control over local government finances, leaving limited room for local governments to shape their own fiscal policies. Additionally, centralized development strategies also often overlooked other regions, particularly those far from the capital (Hill & Vidyattama, 2016; Maharjan & Vidyattama, 2024). However, with the expansion of fiscal decentralization, especially following the 'big-bang' decentralization of 2001, local governments gradually gained greater autonomy (Siburian, 2019). As part of this transition, functional arrangements were established across different levels of government. The central government scaled back its authority, limiting its control to macroeconomic and national-level policies, while local governments assumed responsibility for managing fundamental services such as education, healthcare, transportation, and other public services (Aritenang & Sonn, 2018).

Greater authority required local governments to improve their understanding of public goods and community needs. They demonstrate this understanding by identifying essential public services and allocating the necessary budget (Chygryn et al., 2018). This shift drove changes in local government financial behavior, particularly in revenue generation and expenditure patterns. On the expenditure side, local governments strive to optimize resource allocation to meet community needs, sometimes leading to inter-regional fiscal competition (Talitha et al., 2020). However, on the revenue side, increasing regional spending was not always matched by adequate fiscal capacity (Wati et al., 2022; Badrudin & Rimawan, 2022).

To address disparities in fiscal capacity between local governments, central government intervention is necessary. Broadway & Shah (2007) show that one key approach was the provision transfer funds, which helped stabilize local governments financial conditions. The provision of transfer funds could also mitigate conflicts of interest between national and local governments while enhancing overall financial stability. However, the allocation of transfer funds needed careful attention, as their impact could vary across regions depending on each regions's historical, cultural, political, and geographical characteristics (Broadway & Shah, 2007).

The existence of the flypaper effect suggests that transfer funds influence changes in local government spending behavior. This phenomenon basically explains that transfers from the central government increased local government spending more than an equivalent increase in local community income. Some researchers described this phenomenon as an anomaly because empirical findings contradicted conventional economic theory on the impact of central government transfers on local government expenditures (Yüksel, 2021).

Over time, research on the flypaper effect expanded, with scholars increasingly examining its occurrence in specific categories of local government spending. For example, Köthenbürger & Loumeau (2023) observed that the likelihood of this effect varies across different types of regional expenditures, depending on their characteristics. The differences in the characteristics of local government spending are determined by the characteristics of the goods or services that the government will provide to the community (Ohsawa & Yang, 2022).

Köthenbürger & Loumeau (2023) found that central government transfers increased local government spending in Switzerland. Their research indicated that the impact of fund transfers on various types of local government expenditures depends on their specific characteristics. For example, education and social service expenditures showed low responsiveness to transfers. This is largely because these categories received greater intervention from the central government, which significantly limits local governments' ability to manage them. As a result, the impact of transfer funds on those expenditures remained relatively muted.

In addition to analyzing how transfers influence various categories of local expenditures, Köthenbürger & Loumeau (2023) also explored other effects of central government transfers on local authorities. One notable finding was an increase in civil servant recruitment by local governments. Their findings indicated that central government fund transfers influenced civil servant recruitment across various fields. Köthenbürger & Loumeau (2023) concluded that providing central government transfers contributed to higher local civil servant employment, provided that local tax rates remained unchanged.

Exploring the flypaper effect phenomenon in personnel expenditures, as examined by Köthenbürger & Loumeau (2023), provides a compelling perspective for understanding financial management in Indonesia. The enactment of Law No. 1 of 2022, which governs the fiscal relationship between central and local governments, introduced a notable provision limiting local government personnel expenditures to a maximum of 30% of total APBD. To date, personnel expenditures have consistently dominated local government expenditure (DJPK Ministry of Finance, 2022). This dominance is regarded as a key factor contributing to inefficiency in the use of transfer funds because local governments could have allocated unconditional grants toward more productive local expenditures.

The government's efforts to improve the efficiency of personnel expenditures face significant challenges. While the government recognizes that uncontrolled personnel spending can disturb the fiscal balance (Sachs et al., 2024), reducing these expenditures substantially is difficult due to its essential role in delivering public services to society (Sachs, 2021; Sachs et al., 2023; Sachs et al., 2024). The difficulty in enhancing the efficiency of personnel expenditure has fueled concerns about the flypaper effect linked to these costs. However, the situation becomes more complex when the government finds itself in challenging economic circumstances, as it did during the COVID-19 pandemic. While some argue that a pandemic will not reduce the excessive use of transfer funds, others contend that it could improve local government spending efficiency (Wati et al., 2022; Rahmasari et al., 2024).

#### APPLICATIONS FOR PRACTICE

- The flypaper effect is observed in total local government expenditures, particularly in personnel expenditures.
- The flypaper effect occurred less frequently during the COVID-19 pandemic compared to the pre-pandemic period.
- The frequency of the flypaper effect decreased due to a reduction in overall local government and personnel spending during the pandemic.
- While rationalizing personnel expenditures could reduce the flypaper effect and improve the efficiency of transfer funds, it must be approached with caution, as it may affect the recruitment of local civil servants.

Given that the flypaper effect phenomenon can be observed not only in total local government expenditure but also in more specific expenditure categories, this study investigates its presence in both total local government expenditure and local government personnel expenditure in Indonesia. Previous research on the existence of the flypaper effect phenomenon in Indonesia has often focused primarily on total local government expenditure. Even when studies have examined specific expenditure types, they tended to analyze expenditure by function (such as education and health), areas that are often more heavily controlled by the central government (Köthenbürger & Loumeau, 2023). This study attempts to contribute to the literature by exploring the flypaper effect in specific expenditure categories in Indonesia, particularly those with unique characteristics such as personnel expenditure. The government's strategy regarding personnel expenditure, particularly regarding civil servant salaries, will determine the quality of public services delivered to the community (Alam & Kijima, 2020; Issenova, et al., 2024).

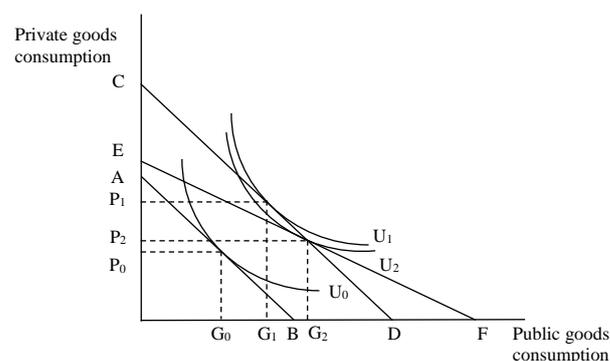
## LITERATURE REVIEW

Typically, funds transferred from the central government are categorized into two primary groups: unconditional grants and conditional grants. Unconditional grants are financial assistance from the central government with fewer restrictions on their use. These grants aim to support local government finances and reduce inter-regional inequality. Because the funds are not tied to specific activities, local governments have considerable discretion in allocating them. In contrast, conditional grants are provided to fund specific activities or programs, with limited flexibility for local governments to utilize them as they see fit, as their intended use is determined by the central government (Broadway & Shah, 2007).

The utilization of unconditional grants is often used as a guide for local government spending behavior. Since these grants are not earmarked for specific programs or activities, local governments have the flexibility to use the funds for general public spending or to provide tax incentives to local communities. This flexibility means that the price of public and private goods remains relatively unaffected. As a result, unconditional grant has an equal impact on both public and private goods consumption, which means that it mainly results in an income effect on local budgets (Broadway & Shah, 2007).

The influence of unconditional grants on local government expenditure can be elucidated more effectively through the median voter approach. This model assumes that local governments make decisions through a majority voting process. To effectively represent the demands of the broader community, local governments should focus on the preferences of the median voter, whose vote is highly sought after by politicians to determine election results (Bochsler & Hanni, 2017). Given that local governments base their decisions on the preferences of the average voter, it follows that local spending by these entities reflects the desires of the community (Dautovic, 2018).

Figure 1 Flypaper Effect Conditions



Source: Artati & Wahyuni (2016)

The phenomenon of the flypaper effect demonstrates that the allocation of transfer funds has a more significant influence on local expenditure than on boosting local communities' income. Transfer funds, particularly unconditional grants, are predominantly directed toward public goods expenditure rather than providing tax relief to the community. As a result, the ability of local communities to consume private goods is not proportional to their ability to consume public goods. The local community's budget for consuming private and public goods shifts along the CD line to the EF line (Figure 1). As a result, the social utility (or welfare) function under flypaper effect conditions only reaches  $u_2$ , which is lower than the social welfare function in the absence of the phenomenon ( $u_1$ ). This inefficiency results in the allocation of unconditional grants failing to maximize social welfare (Broadway & Shah, 2007).

Since the emergence of the flypaper effect, numerous theories have been developed to explain its occurrence. Goeminne et al., (2017) mention the causes of the flypaper effect, including fiscal illusion, measurement issues, and bureaucratic behavior. However, the bureaucratic behavior and the fiscal illusion stand out as the most frequently referenced and widely used frameworks for understanding the flypaper effect.

The fiscal illusion model argues that the flypaper effect arises from the illusion created during the provision of transfer funds. Local residents believe that their government can deliver public goods and services at a lower cost than other governments. The central government's provision of lump-sum transfer funds influences the average cost of local government public expenditures through income and substitution effects. These effects lower the average price of local government services, which in turn encourages local governments to increase their overall public expenditure (Prado & da Silva, 2020).

The bureaucratic behavior model states that the flypaper effect occurs because bureaucrats are motivated to optimize their budgets. This motivation stems not from a desire to provide the best services to the public but rather from the goal of increasing the distribution of funds from the central government, thereby eliminating the need to explore alternative local revenue sources. The public grants bureaucrat's full authority over budget and fiscal policy decisions because they believe that bureaucrats have a better understanding of the costs associated with providing public goods and services. Bureaucrats exploit this condition to optimize public spending, often disregarding the actual needs of the public for those goods and services (Rios, Hortas-Rico, & Pascual, 2022).

## METHODS

This study employs secondary data as balanced panel data from a sample of 480 district and municipal governments in Indonesia. The data used in this paper include local government budget realization (APBD), sourced from the DJPK Ministry of Finance. The required revenue data include the realization of local taxes, the General Allocation Fund (DAU), and the Revenue Sharing Fund (DBH). Meanwhile, the data extracted from the local government expenditure account include total local spending and personnel expenditure. Additional data, such as Gross Regional Domestic Product (GRDP), population, and the number of local civil servants, were obtained from the Statistics Indonesia (BPS).

The research period spans from 2015 to 2022. This period was chosen because it aligns with the implementation of Law Number 28 of 2009, which governed the local tax regime, and Law Number 5 of 2014, which regulated civil servant management from the scope of central and local agencies. The final year of the study, 2022, was chosen as it marks the last year before new restrictions on personnel expenditure allocation were applied, as mandated by Law Number 1 of 2022. These legal changes, taking effect in subsequent years, could potentially alter local government budgeting and spending behavior, especially personnel expenditure.

This study examines total local government expenditure per capita (G) as the dependent variable to assess the existence of the flypaper effect in overall expenditure. This variable is calculated as the ratio of total local government expenditure to the population of a region (million Rp/person). The second dependent variable, personnel expenditure per capita (PG), is used to address the study's second research question. It is calculated as the ratio of personnel expenditure to the population (million Rp/person).

Two primary equations are used to identify the flypaper effect in total local government expenditure and on personnel expenditure, namely:

$$\ln G_{it} = \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Tr_{it} + \alpha_3 \ln POP_{it} + \alpha_4 TE_{it} + \alpha_5 COVID19_{it} + \alpha_6 COVID19 * \ln Y_{it} + \alpha_7 COVID19 * \ln Tr_{it} + \alpha_8 COVID19 * \ln POP_{it} + \alpha_9 COVID19 * TE_{it} + \varepsilon_{it} \dots (1)$$

$$\ln PG_{it} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Tr_{it} + \beta_3 \ln POP_{it} + \beta_4 TE_{it} + \beta_5 \ln ASN_{it} + \beta_6 GS_{it} + \beta_7 COVID19_{it} + \beta_8 COVID19 * \ln Y_{it} + \beta_9 COVID19 * \ln Tr_{it} + \beta_{10} COVID19 * \ln POP_{it} + \beta_{11} COVID19 * TE_{it} + \beta_{12} COVID19 * \ln ASN_{it} + \beta_{13} COVID19 * GS_{it} + \varepsilon_{it} \dots (2)$$

Equation (1) is used to identify the existence of the flypaper effect in total local government expenditure, while equation (2) examines its presence in personnel expenditure.

The first independent variable is local community income per capita (Y). This variable is calculated as a total GRDP divided by the total population of a region (million IDR/person), following the approach of research conducted by Leduc & Wilson (2017) and Prado & da Silva (2020).

The second independent variable is central government transfers per capita (Tr). This variable represents unconditional grants from the central government, calculated as the sum of DAU and DBH divided by the population of a region (million IDR/person). These transfers are not bound by specific rules of use. In Indonesia's fiscal structure, the general transfer fund, which includes DAU and DBH, is classified under unconditional assistance in accordance with the provisions of the APBN Law. This proxy is consistent

with the methodology used in the research conducted by Artati & Wahyuni (2016), Leduc & Wilson (2017), and Prado & Silva (2020).

Other independent variables in the empirical model include population (POP), tax effort (TE), and the COVID-19 dummy variable (COVID19). The population variable (POP) represents the total population of a region (in millions). According to Goeminne et al., (2017) and Prado & Silva (2020), local government spending policies are formulated in response to community needs, meaning that population size directly influences the local government expenditure.

According to Rios et al. (2022), tax effort (TE) is defined as efforts to collect taxes efficiently, reflecting the high income of people who are willing to pay taxes. In this study, it is calculated as the percentage of total local taxes divided by total GRDP. The higher the tax effort, the lower the chance of the flypaper effect occurring because it reduces local governments' dependence on transfer funds.

The COVID-19 pandemic between 2020 and 2022 is also considered in the empirical model, as it significantly impacted all government sectors, including regional financial management. To account for possible effects on the economy, a COVID-19 dummy variable is included in the model. The COVID-19 pandemic may affect all aspects of the economy. Additionally, this study interacts the COVID-19 dummy variable with all independent variables to analyze potential shifts in local government spending behavior during the pandemic.

In the second model specifically, two additional independent variables are introduced: the number of regional civil servants (ASN) and government size (GS). Personnel expenditure has distinct characteristics that may differ from other types of local government spending, leading to variations in the amount of personnel expenditure across regions. High personnel expenditure is also influenced by salary levels, which, according to Mitchell et al. (2019), lead to inefficiencies in the delivery of public services. There are two factors to consider when identifying salary levels: the number of civil servants and the size of the government. Therefore, ASN and GS are included in the second model, and their interactions with the COVID-19 dummy variable are analyzed to assess changes during the pandemic.

The inclusion of the COVID-19 dummy variables allows for a comparative analysis of local government spending behavior before and during the pandemic. According to Ekananda (2016), dummy variables can be used to test for instability throughout the observation period, particularly in long-term studies. By interacting the independent variables with dummy variables, where the COVID-19 dummy takes the value 0 for pre-pandemic years and 1 for pandemic years (2020-2022), various equations can be obtained for each observation period. Referring to equation (1) and equation (2):

Equation (1), before the pandemic is specified as:

$$\ln G_{it} = \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Tr_{it} + \alpha_3 \ln POP_{it} + \alpha_4 TE_{it} + \varepsilon_{it} \dots (3),$$

and equation (1) during the pandemic is specified as:

$$\ln G_{it} = (\alpha_0 + \alpha_5) + (\alpha_1 + \alpha_6) \ln Y_{it} + (\alpha_2 + \alpha_7) \ln Tr_{it} + (\alpha_3 + \alpha_8) \ln POP_{it} + (\alpha_4 + \alpha_9) TE_{it} + \varepsilon_{it} \dots (4).$$

Meanwhile, equation (2) before the pandemic is specified as:

$$\ln PG_{it} = \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Tr_{it} + \beta_3 \ln POP_{it} + \beta_4 TE_{it} + \beta_5 \ln ASN_{it} + \beta_6 GS_{it} + \varepsilon_{it} \dots (5),$$

and equation (2) during the pandemic is specified as:

$$\ln PG_{it} = (\beta_0 + \beta_7) + (\beta_1 + \beta_8) \ln Y_{it} + (\beta_2 + \beta_9) \ln Tr_{it} + (\beta_3 + \beta_{10}) \ln POP_{it} + (\beta_4 + \beta_{11}) TE_{it} + (\beta_5 + \beta_{12}) \ln ASN_{it} + (\beta_6 + \beta_{13}) GS_{it} + \varepsilon_{it} \dots (6).$$

## RESULTS AND DISCUSSION

The estimation models used in this study are fixed-effect models for both Model 1 and Model 2, based on the results of the Chow test and Hausman test (Table 1). The estimation results for Model 1, which examines the impact of each independent variable on total local government expenditure in Indonesia, are presented in Table 2. Table 2 demonstrates that unconditional grants have a significantly greater influence on total local government expenditure in Indonesia compared to their effect on local community income. This pattern is observed both before and during the COVID-19 pandemic, indicating that the flypaper effect persisted throughout the study period. These findings support the research findings of Wati et al. (2022), which similarly identified the persistence of this phenomenon in Indonesian local government spending during the pandemic. Moreover, these results show that the management of unconditional grants at the local government level remained inefficient during the pandemic, showing little improvement from the pre-pandemic period.

To assess whether the effects of unconditional grants and local community income on total local government expenditure differed significantly before and during the pandemic, we conducted hypothesis

testing (Table 3). The null hypothesis states that there is no substantial difference between these effects in Indonesia. In the pre-pandemic period, the Prob>F value was less than 0.05, leading to the rejection of the null hypothesis. This indicates a significant difference between the effect of unconditional grants and local community income on local government expenditure in Indonesia before the pandemic. A similar result was observed during the pandemic, with both test results further confirming the presence of the flypaper effect in both research periods. Table 4 presents the estimation results for the flypaper effect, specifically in relation to personnel expenditure in Indonesia.

Table 1 Chow Test and Hausman Test Results

	Chow Test Prob > F	Hausman Test Prob > Chi2
Model 1	0.0000	0.0000
Model 2	0.0000	0.0000

Source: Processed by the authors

Table 2 Estimation Results (Total Local Government Expenditure) Using the Fixed-Effect Model

Variable	Model 1	
	Coefficient	Robust standard error
lnY	0.316***	(0.0472)
lnTr	0.600***	(0.0493)
lnPOP	-0.0501	(0.0601)
TE	0.0864***	(0.0145)
COVID19	0.633***	(0.197)
COVID19*lnY	-0.00206	(0.00718)
COVID19*lnTr	-0.107***	(0.0216)
COVID19*lnPOP	-0.0410***	(0.0142)
COVID19*TE	-0.0138*	(0.00766)
Constant	0.488	(0.836)
Observations	3,840	
R-squared	0.541	
Number of id	480	

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Source: Processed by the authors

Table 3 Model 1 Testing Results (Total Local Government Expenditure) Before and During the Pandemic

Period	Prob > F
Before the pandemic	0.0004
During the pandemic	0.0109

Source: Processed by the authors

Table 4 demonstrates that the impact of unconditional grants on total personnel expenditure in Indonesia significantly outweighs the impact of local community income. This pattern existed both before and during the pandemic. These findings suggest that the flypaper effect was also present in local government personnel expenditures during the study period. Furthermore, this indicates that the management of personnel expenditures during the pandemic, particularly at the local government level, remained inefficient, with minimal change compared to pre-pandemic conditions.

We also tested the two variables before and during the pandemic to determine if the effects of unconditional grants and local community income on total personnel expenditure were significantly different (Table 5). The null hypothesis posits that there is no substantial difference between the impact of unconditional grants and the impact of local community income on personnel expenditure in Indonesia. In the pre-pandemic period, the Prob>F value was less than 0.05, leading us to reject the null hypothesis. This indicates a substantial distinction between the effects of unconditional grants and local community income on personnel expenditure in Indonesia before the pandemic. The same condition was observed during the pandemic.

Model 1 shows that local community income has a significant positive coefficient on total local government expenditure in Indonesia. In other words, higher per capita income, as proxied by per capita GRDP, leads to higher per capita expenditure by local governments in Indonesia. Several previous studies, including Artati & Wahyuni (2016), Leduc & Wilson (2017), and Prado & Silva (2020), corroborate this

result. As local people's income increases, the demand for public goods rises, prompting local governments to increase their spending.

Table 4 Estimation Results (Personnel Expenditure) Using Fixed-Effect Model

Variable	Model 2	
	Coefficient	Robust standard error
lnY	0.0102	(0.0367)
lnTr	0.371***	(0.0641)
lnPOP	-0.571***	(0.0691)
TE	0.0542***	(0.0154)
lnASN	0.0886***	(0.0264)
GS	0.00271**	(0.00117)
COVID19	0.974***	(0.205)
COVID19*lnY	0.0197*	(0.0101)
COVID19*lnTr	-0.0971***	(0.0278)
COVID19*lnPOP	-0.0856***	(0.0248)
COVID19*TE	-0.0106	(0.00775)
COVID19*lnASN	0.0176	(0.0265)
COVID19*GS	0.000580*	(0.000323)
Constant	6.468***	(0.902)
Observations	3,840	
R-squared	0.194	
Number of ID	480	

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Processed by the authors

Table 5 Model 2 Testing Results (Personnel Expenditure) Before and During the Pandemic

Period	Prob > F
Before the pandemic	0.0000
During the pandemic	0.0005

Source: Processed by the authors

Unconditional grants provided by the central government also have a substantial positive effect on total local government expenditure in Indonesia. A higher per capita allocation of unconditional grants to local governments is associated with higher per capita government expenditure in Indonesia. This result is consistent with several studies exploring the flypaper effect in Indonesian local government spending, such as those conducted by Wati et al. (2022).

Regarding the effect of population on local government expenditures, our findings show that population size does not significantly affect local government expenditure in Indonesia. This result differs slightly from the findings obtained by Goeminne et al., (2017) and Prado & Silva (2020). The research results may differ because fiscal decentralization in Indonesia targets district and municipality governments, not provincial ones. Additionally, during the current research period, local government expenditures may have been influenced by other factors which could explain the non-significant result.

On the other hand, greater local government efforts to tap into local tax potential, compared to the increase in local community income, lead to higher per capita expenditure by local governments in Indonesia. These results support the findings Rios et al. (2022), which indicate that efforts to increase local tax revenues lead to higher local government spending.

The COVID-19 pandemic has a significant positive effect on total local government expenditure in Indonesia, suggesting that the difference in local government spending before and during the pandemic is statistically significant. According to research by Wati et al. (2022), local government financial management behavior must account for the existence of a pandemic.

The occurrence of COVID-19 did not significantly alter the impact of local community income per capita on local government expenditure per capita. Over both periods, the effect of local community income on local government expenditure remained relatively unchanged. This result differs slightly from the findings of Wati et al. (2022), who used GRDP as a proxy for local community income—a common practice in research on the flypaper effect in various countries.

However, unconditional grants show different results. The pandemic significantly reduced the impact of unconditional grants on local government expenditure per capita. This finding contrasts with Wati et al. (2022), who observed that the pandemic positively influenced the effect of unconditional grants on local government spending. Wati et al. (2022) conducted their research within a shorter period (2019–2020), which could account for this difference.

The population variable also shows a similar result. Its interaction with the dummy variable has a negative coefficient for total local government expenditure in Indonesia, suggesting that the pandemic reduced the population's influence on local government spending per capita.

The interaction between COVID-19 and local government tax efforts also reveals a significant negative coefficient value for total local government expenditure in Indonesia. This indicates that the pandemic also significantly decreased the effect of local government tax efforts on local government spending per capita.

During the pandemic, the frequency of the flypaper effect on total local government expenditure decreased. The effect of unconditional grants on local government expenditure in Indonesia declined, while the effect of local community income remained relatively stable. This suggests that local governments adjusted their financial management strategies during the pandemic. The central government altered the allocation of various transfer funds, including unconditional grants, while the pandemic's effects on local economic conditions hindered the optimization of other local revenue sources, including local own-source revenue (PAD). As a result, local governments tried to overcome the limitations of local government revenues by rationalizing their spending to align with the central government's guidelines, resulting in more efficient expenditure allocations that prioritized the urgent needs of local communities.

Based on the results in Model 2, local community income per capita does not significantly affect personnel expenditure per capita by local governments in Indonesia. This result is consistent with the findings obtained by Köthenbürger & Loumeau (2023), who found that, in the absence of changes in local tax rates, the effect of local community income on local government expenditure, including personnel expenditure, is not very significant.

Unconditional grants from the central government have a significant positive effect on personnel expenditure per capita in local governments in Indonesia. This means that higher per capita unconditional grants allocated to local governments are associated with higher per capita personnel expenditure. This result aligns with the findings of Köthenbürger & Loumeau (2023).

In contrast to the first model, local government personnel expenditure per capita in Indonesia significantly decreases as the population size increases. This result is in line with the findings of Goeminne et al., (2017) and Prado & Silva (2020), which may be due to the fact that an increase in population does not always correlate with a higher number of civil servants. The recruitment of civil servants must adhere to strict regulations and principles of civil servant management rather than simply responding to population growth within a region. Additionally, the digitization of local public services may have reduced the need for large numbers of civil servants to carry out specific public services, further explaining this condition.

The greater the local government's efforts to exploit local tax potential, compared to the increase in local community income, the higher the per capita personnel expenditure of local governments in Indonesia. This reflects the tendency for more fiscally independent local governments to increase personnel expenditures in order to maintain the quality of local public services. However, increasing local tax efforts can make it harder for the central government to control local government expenditure, including personnel expenditures.

As the number of civil servants increases, local governments' per capita personnel expenditure in Indonesia also increases significantly. Mitchell et al. (2019) state that local government control over the recruitment of local civil servants partly determines variations in personnel expenditures among local governments. The possibility of inefficient personnel expenditures needs to be anticipated, especially when the recruitment of local civil servants is not accompanied by strict qualification selection. Ultimately, excessive recruitment will not support the provision of public services that satisfy the community.

The larger the size of a local government, the higher the per capita personnel expenditure of local governments in Indonesia. According to Mitchell et al. (2019), the size of local government is a key factor in determining variations in personnel expenditure. The larger the local government, the more and better-quality public services it can provide. Ultimately, improvements in the quality and quantity of public services can increase local government personnel expenditure.

The COVID-19 variable exhibits a significant positive coefficient value for Indonesian local governments' personnel expenditure per capita. This result indicates that local government personnel expenditure per capita was notably higher during the three-year COVID-19 pandemic (2020-2022). Throughout this period, actual personnel expenditure by local governments exceeded the realization in the previous period.

The interaction between COVID-19 and local community income has a significant positive coefficient for per capita personnel expenditure of local governments in Indonesia. This suggests that the pandemic substantially influenced the magnitude of the effect of local community income per capita on personnel expenditure per capita. During the pandemic, this effect was significantly stronger than in the previous period.

In contrast to local community income, the interaction between COVID-19 and unconditional grants has a significant negative coefficient for local governments' per capita personnel expenditure. This indicates that a pandemic altered the influence of unconditional grant allocations per capita on personnel expenditure per capita. During the pandemic, the effect of unconditional grants on personnel expenditure was lower than in the pre-pandemic period.

Similar to unconditional grants, the interaction between COVID-19 and population size has a negative coefficient for local governments' per capita personnel expenditure in Indonesia. This suggests that the pandemic significantly altered the impact of population size on personnel expenditure. The occurrence of a pandemic can reduce the population's effect on per capita personnel expenditure.

Meanwhile, the interaction between COVID-19 and local government tax efforts has a negative but statistically insignificant coefficient for per capita personnel expenditure. This indicates that the pandemic did not significantly affect the impact of local government tax efforts on personnel expenditure. In other words, the effect of local government tax efforts on personnel expenditure remained largely unchanged before and during the pandemic.

Additionally, the interaction between COVID-19 and the number of civil servants has a positive but insignificant coefficient for per capita personnel expenditure. This indicates that the pandemic did not significantly affect the relationship between the number of civil servants and personnel expenditure. In other words, there were no significant changes in the magnitude of the effect of the number of civil servants on per capita personnel expenditure between the two periods.

The interaction between COVID-19 and government size has a significant positive coefficient for local governments' per capita personnel expenditure in Indonesia. This suggests that the pandemic influenced the impact of government size on personnel expenditure. During the pandemic, the effect of government size on per capita personnel expenditure is more significant than in the previous period.

In line with the first model, the flypaper effect in personnel expenditure weakened during the pandemic. The influence of unconditional grants on personnel expenditure declined, while the effect of local community income increased significantly. Local governments also adapted their approach to managing personnel expenditures during this period. Given the constraints on local revenue, the relative stability of own-source revenues compared to transfer funds may have contributed to a diminished flypaper effect. Furthermore, local governments may face structural limitations in adjusting the composition and scale of personnel expenditure compared to other types of local government spending.

During the pandemic, the results show no evidence of a reduction in per capita personnel expenditure by local governments or in overall per capita local government spending. The stronger positive effect of the COVID-19 variable on personnel expenditure, compared to total local government expenditure, suggests that personnel expenditures were relatively less flexible. This is likely because, ultimately, local governments remained responsible for ensuring the welfare of civil servants throughout the pandemic. Maintaining the welfare of civil servants was essential for sustaining regional economic growth, especially as the private sector faced significant disruptions.

## CONCLUSION

The test results in this paper demonstrate the presence of the flypaper effect on total local government spending in Indonesia. Specifically, the stronger influence of unconditional grants on local government spending, especially when compared to revenue from local communities, substantiates this finding. This suggests inefficiencies in the utilization of transfer funds through unconditional grants, which should ideally be used to improve local community welfare.

The same pattern is observed with personnel expenditure. The more significant influence of unconditional grants on personnel expenditure, compared to the influence of income from local communities, further supports this conclusion. The flypaper effect on personnel expenditure in Indonesia highlights the inefficient use of transfer funds via unconditional grants, both before and during the pandemic, in promoting local community welfare.

Although the flypaper effect persists during the pandemic, the influence of unconditional grants on increasing local government spending, specifically on personnel expenditure, has decreased. The pandemic has led to a reduction in the frequency of this phenomenon, indicating that local governments have become more efficient in utilizing unconditional grants. One factor contributing to this improved efficiency is the rationalization of all types of local government expenditure, including personnel costs. Therefore, as long as there is still room for expenditure rationalization, local governments can effectively use unconditional grants to enhance local community welfare.

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