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THE IMPACT OF VILLAGE FUNDS ON HORIZONTAL FISCAL INEQUALITY IN SOUTH SUMATRA PROVINCE

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ABSTRACT

Research Originality — This study provides novel evidence on the impact of Village Fund transfers on horizontal fiscal inequality in Indonesia. Using a difference-in-differences approach and the Theil entropy index for South Sumatra Province, this research extends existing literature by directly evaluating interregional fiscal inequality over a longer pre- and post-policy period.

Research Objectives — This study aims to examine whether village funds contribute to reducing horizontal fiscal inequality in South Sumatera Province.

Research Methods — This study employs a quantitative difference-in-differences (DiD) approach using secondary data on village funds, area size, human development index, gross regional domestic product growth, poverty rate, local own-source revenue, and intergovernmental transfers, with horizontal fiscal inequality measured by the Theil entropy index. The analysis covers 14 regencies and cities receiving village funds and three regencies and cities not receiving village funds in South Sumatra Province over the 2010–2019 period, distinguishing between pre- and post-village fund implementation.

Empirical Results — The results indicate no significant difference in pre-treatment trends, confirming that the parallel trends assumption in the DiD method is met. The findings of this research suggest that village funds play a crucial role in diminishing horizontal fiscal inequality. Specifically, they contribute towards a reduction in horizontal fiscal inequality in regencies and cities that receive village funds in South Sumatra Province.

Implications — The findings indicate that village funds support the objective of reducing horizontal fiscal inequality, thereby strengthening the role of fiscal decentralization in promoting equitable development across regions.

Keywords: Difference-In-Differences; Horizontal Fiscal Inequality; Theil Entropy Index; Village Fund

JEL Classification: H77, O18, R11

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INTRODUCTION

Policy on transfer to regions is a fiscal instrument that aims to reduce inequality between the central and regional governments, as well as to address inequality among various regions in Indonesia. Transfers to regions are important to support equitable development and national welfare. To support the implementation of the policy on transfer to regions, the central government began distributing village funds in 2015. The allocation of village funds is increasing every year. In 2023, the allocation of village funds reached IDR 67 trillion, allocated to 74,960 villages in Indonesia. According to the Law of the Republic of Indonesia Number 1 of 2022 about Financial Relations between the Central Government and Regional Governments, village funds are part of transfers to the regions, particularly for villages, to support funding for government administration, development, and community empowerment (Pemerintah Republik Indonesia, 2022). Thus, the achievement of this goal is expected to narrow the development gap between urban and rural areas, while strengthening economic independence at the village level.

The realization of the absorption of village funds in South Sumatra Province shows a relatively consistent and continuous increase since it was first distributed in 2015 (Figure 1). This increase indicates better efforts in the management of village funds in each village. Until 2022, South Sumatra Province had the largest number of villages, with 2,853 villages spread across the province. Since the beginning of the distribution of village funds in Indonesia, the total amount of village funds that have been allocated by the

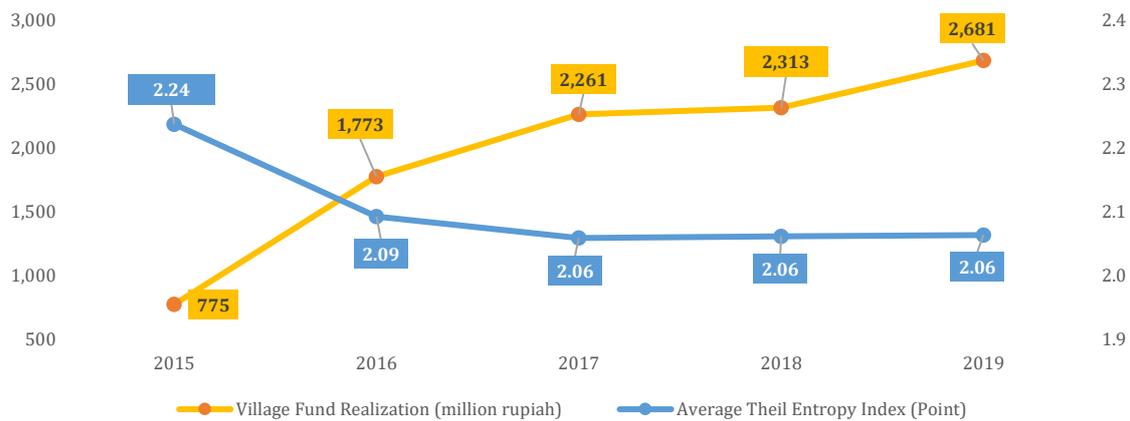
central government for South Sumatra Province has reached around IDR 17.72 trillion, providing relatively large support for development in the region. The large number of villages and the increase in the distribution of village funds in South Sumatra Province make this province a crucial and relevant location of this research.

The second reason for choosing this province as the location of this study is that one of the indicators of inequality in South Sumatra Province, namely the Theil entropy index of regencies or cities that receive village funds does not show a significant decrease (Figure 1). The Theil entropy index (Statistics Indonesia South Sumatra Province, 2023) is an important measure to determine the level of horizontal fiscal inequality between regions, which reflects the distribution of income or resources. The smaller the level of the Theil entropy index, the smaller the level of horizontal fiscal inequality that occurs in the area. The decline in the Theil entropy index in this region also functions as a proxy or an indicator of a reduction in horizontal fiscal inequality at the global and national levels.

APPLICATIONS FOR PRACTICE

- Village funds have a significant impact on reducing horizontal fiscal inequality in South Sumatra Province. This decline can be attributed to the allocation of village funds that are representative of the condition of the village and the on-target use of village funds.
- To increase the positive impact of village funds, it is worth considering a reformulation of village funds with an emphasis on poverty reduction. This is based on the evidence that poverty is reduced, and this encourages horizontal fiscal inequality reduction.
- The reformulation scheme can be carried out by increasing the weight of the formula allocation and reducing the weight of the basic allocation in the calculation of the village fund allocation.

Figure 1 Realization of Village Funds and Theil Entropy Index of Regencies or Cities Receiving Village Funds in South Sumatra Province



Source: Statistics Indonesia and The Ministry of Finance

As shown in Figure 1, the realization of village funds increased gradually from 2015 to 2019 in South Sumatra Province, but the level of horizontal fiscal inequality in regencies or cities that receive village funds did not decrease significantly. This suggests that although the realization of village funds is increasing, its impact on reducing fiscal inequality has not been fully achieved, even though one of the main objectives of the village fund policy is to increase fiscal capacity in rural areas. The increase in fiscal capacity is expected to reduce inequality between rich and poor regions, as well as improve welfare.

The significance of this research lies in the following three key points. First, this research is expected to provide important information for the government in formulating more effective strategies and policies to accelerate the reduction of horizontal fiscal inequality in South Sumatra Province. Second, it is hoped that the government can identify more appropriate approaches in maximizing the positive impact of the distribution of village funds. Third, this study is also expected to make a major contribution to research on public policy in Indonesia, as well as to provide new insights that can be used by other researchers and policy makers to improve equitable development in Indonesia.

This research is urgent, considering that the high allocation of village funds that continues to increase every year is not always in line with the achievement of the expected strategic goals, especially in reducing horizontal fiscal inequality. In the case of South Sumatra Province, despite the large amount of village funds received, inequality between regions remains. This shows the need for an in-depth evaluation of the

mechanism and effectiveness of village fund distribution, especially to create fiscal equality between regions.

Several studies on village funds have been conducted, and some have examined the impact of village funds on various aspects of economic and social development. For example, research by Rimawan & Aryani (2019) found that village funds in Bima Regency from 2015 to 2018 had a negative and insignificant impact on the poverty rate. However, village funds have a significant positive influence on the human development index (HDI). Furthermore, a study conducted by Pandiangan et al. (2021) showed that village funds in 32 provinces in Indonesia from 2015 to 2019 had a significant and negative effect on HDI and gini ratios. Similar findings were also shown by Purwaningsih et al. (2022), who studied village funds in 29 regencies in Central Java from 2015 to 2020. The results of their research revealed that village funds have a significant and negative influence on poverty rates but have a significant and positive effect on the Gini ratio. Meanwhile, research conducted by Wasudewa & Iskandar (2023) found that village funds in all provinces in Indonesia in 2014 and 2019 had a significant positive influence on the economic growth and development index, with an increase of 0.036% compared to the counterfactual conditions. In addition, the benefits of village funds in South Sumatra Province can also be seen from the increase in the developing village index (IDM). Greater values of IDM are associated with better village conditions in terms of economy, social, and ecology (Saggaf et al., 2018). This is also supported by other studies that show that village funds have a significant positive effect on IDM (Alhaqi, 2022; Arina et al., 2021). These findings show that although village funds have a diverse impact across different regions and economic indicators, they still have an important role to play in regional development.

Previous studies on Village Funds in Indonesia have predominantly examined their impacts on poverty reduction, income inequality, human development, and economic growth, with mixed empirical results (Rimawan & Aryani, 2019; Pandiangan et al., 2021; Purwaningsih et al., 2022; Wasudewa & Iskandar, 2023). However, these studies largely overlook the role of Village Funds in addressing horizontal fiscal inequality across regions, particularly at the regency or city level, and are generally limited to shorter observation periods or aggregate national analyses. This study fills this research gap by explicitly analyzing the impact of Village Fund transfers on horizontal fiscal inequality using the Theil entropy index as a fiscal inequality measure. Employing a difference-in-differences approach over a longer pre- and post-policy period (2010–2019) and comparing recipient and non-recipient regencies or cities in South Sumatra Province, this research aims to provide robust empirical evidence on whether Village Funds effectively reduce interregional fiscal inequality and to contribute to evidence-based improvements in intergovernmental fiscal transfer policies in Indonesia.

LITERATURE REVIEW

Fiscal decentralization is the dominant instrument in the management of public finances in many countries. Bojanic & Collins (2021) find that the effects of fiscal decentralization on income inequality are heterogeneous across countries. In developed economies, fiscal decentralization tends to reduce income inequality, supported by stronger institutional capacity and effective redistributive mechanisms. In contrast, in developing countries, fiscal decentralization may increase inequality when regional fiscal capacities are uneven, and intergovernmental transfer systems are insufficient. Pietrovito et al. (2023) shows that fiscal decentralization has mixed effects on intra-regional income redistribution. While decentralization can enhance efficiency and policy responsiveness at the local level, it may also weaken redistributive capacity when subnational governments face unequal tax bases and when equalization transfers are inadequate.

Filippetti & Sacchi (2016) find that the relationship between fiscal decentralization and economic growth is not automatic and depends critically on the degree of regional authority. Their results show that decentralization contributes positively to economic growth only when subnational governments possess meaningful political and administrative authority, rather than merely managing delegated expenditures. In cases where decentralization is limited to fiscal responsibilities without sufficient decision-making autonomy, its growth-enhancing effects are weak or absent. The study emphasizes that institutional quality and the allocation of real policy authority are key mediating factors in determining whether decentralization improves economic performance. Consequently, decentralization reforms that expand spending responsibilities without strengthening regional governance capacity may fail to deliver the expected economic benefits. This finding suggests that transfer-based decentralization policies, such as Village Funds, are more likely to reduce inequality and support development when accompanied by sufficient local authority and institutional capacity, rather than fiscal transfers alone.

Since 2015, village funds have become one of the main tools of government fiscal decentralization to accelerate equitable development and drive the reduction of inequality in various regions. Based on the Law of the Republic of Indonesia Number 1 of 2022 about Financial Relations between the Central

Government and Regional Governments, village funds are a component of TKD in supporting funding for government, development, community empowerment, and social activities.

According to the Minister of Finance Regulation Number 201/PMK.07/2022 about Village Fund Management, the distribution of village funds is calculated based on four allocations, namely basic allocation (AD), affirmation allocation (AA), performance allocation (AK), and formula allocation (AF). The basic allocation for village funds is calculated from the number of people in each village. On the other hand, the affirmation allocation is only allocated to villages that are classified as underdeveloped and highly disadvantaged. Some of the indicators that must be met for the allocation include village financial management, village fund management, and the achievement of outputs. The outputs focus on the success of the implementation and equitable distribution of development. In addition, the allocation formula places greater emphasis on the conditions of poverty and villages with geographical disadvantages (Ministry of Finance, 2022). Considering these types of allocations, the distribution of village funds can help address economic conditions and promote village development to ensure equitable distribution of development in the region.

The Theil entropy index is an important measure to determine the level of horizontal fiscal inequality between regions. This index measures the distribution of income or resources. The smaller the Theil entropy index, the smaller the horizontal fiscal inequality that occurs in the area. Theil entropy index calculation formula is as follows:

$$IT = \sum \left(\frac{Y_i}{Y} \cdot \log \left[\frac{Y_i/n_i}{Y/n} \right] \right) \quad (1)$$

where IT is Theil entropy index, Y_i is GDP per capita in regencies/cities i , Y is GDP per capita in the province, n_i is number of inhabitants of regencies/cities i , n is number of provincial populations, the logs used are natural logarithms (ln).

The Theil entropy index is widely used in empirical inequality research because it allows perfect decomposition into within-region and between-region components, which enables researchers to distinguish the contribution of intra-regional inequality from inter-regional inequality. Decomposing total inequality into within-region and between-region components can identify which part contributes more to overall inequality. This property has been applied in studies of human development and regional inequality in Indonesia and beyond (Ginanjari et al., 2024).

Studies on the influence of village funds have been conducted with various methods and variables both at the regional and national levels. At the regional level, a number of studies on the influence of village funds on various specific variables related to inequality have found inconsistent results. Village funds in Bima Regency from 2015 to 2018 had a negative impact that was not significant on the poverty level, but they had a significant positive impact on the HDI (Rimawan & Aryani, 2019). Village funds in 29 regencies in Central Java from 2015 to 2020 had a significant and negative effect on poverty levels, but they showed a significant and positive influence on the Gini ratio (Purwaningsih et al., 2022).

In addition, research at the national level also shows that village funds have different influences on economic variables related to inequality. The results of a study on village funds in 32 provinces in Indonesia from 2015 to 2019 show that village funds have a significant and negative effect on HDI and Gini ratio (Pandiangan et al., 2021). Village funds in all Indonesian provinces in 2014 and 2019 had a positive and significant effect on the economic growth and development index, with an increase of 0.036% compared to the counterfactual conditions (Wasudewa & Iskandar, 2023). Village funds have a significant and positive effect on the gross domestic product (GDP) of regencies in Indonesia between 2015 and 2018 (Prasetyo & Dinarjito, 2021). Village funds have a significant negative effect on poverty in regencies or cities in Indonesia (Sigit & Kosasih, 2020). The village fund allocation formula can be refined to enhance its effectiveness in improving economic conditions in the region (Khoirunurrofik et al., 2021; Paellorisky & Solikin, 2019).

The results of research at the international level show that revenue decentralization and fiscal independence have a weak relationship with a reduction in income inequality, while expenditure decentralization has no significant relationship with income inequality (Canare et al., 2019). Fiscal decentralization has different effects on income inequality depending on the type of fiscal authority applied. If local governments have full authority in taxation and expenditure (self-rule), income inequality tends to increase. If local governments share fiscal decisions with the central government (shared rule), income inequality tends to decrease (Digdowiseiso et al., 2022).

Other studies at the international level show different results. There is an indication of a weak relationship in the reduction of inequality between decentralization and income inequality as measured by the Gini coefficient (Stossberg et al., 2016). The decentralization of the power of management and

distribution of collective assets in village organizations exacerbates income inequality among villagers by weakening distribution mechanisms based on informal rules (Wong et al., 2021).

The results of other studies indicate that village funds have contributed to regional economic performance and poverty reduction, particularly during the 2015–2019 period. Specifically, village funds have been shown to support regency or city GDP growth and reduce poverty levels, with stronger effects observed in the later period of 2018–2019 compared to the earlier implementation phase of 2015–2017. In addition, simulation results of alternative village fund allocation formulas suggest that a smaller proportion allocated through the allocation base (AD) and a greater weighting of population size and the number of poor households in the formula allocation (AF) are associated with improved equity outcomes. The role of AK or AA in equal distribution is not significant. An increase in AK and AA appears to worsen the equitable distribution per poor population and per capita. The impact of AK equity is smaller than the impact of AA for both equity indicators (Handra et al., 2022)

This study examines whether the distribution of village funds has a significant impact on the reduction of horizontal fiscal inequality in South Sumatra Province, by comparing changes in inequality before and after the implementation of village funds between recipient and non-recipient areas of village funds. However, as shown in Figure 1, the realization of village funds increased gradually from 2015 to 2019 in South Sumatra Province, but the level of horizontal fiscal inequality in regencies or cities that received village funds in the region did not show a significant decrease. The gap between Oates' theory and empirical reality became the basis for the study to examine the impact of village funds on horizontal fiscal inequality using the difference-in-differences (DiD) method. This is done by comparing changes in inequality before and after policy implementation between recipient and non-recipient areas of village funds. Thus, the hypothesis of this research is as follows:

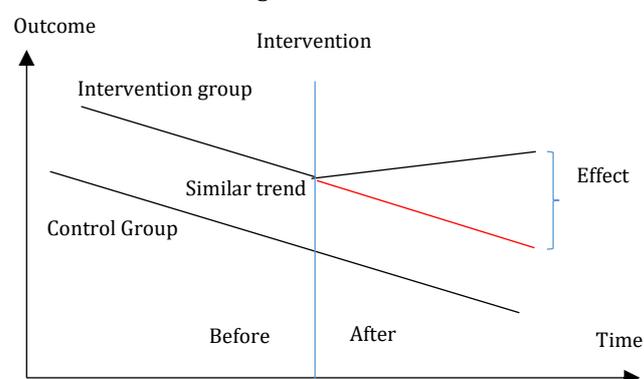
H1: The distribution of village funds has a significant impact on horizontal fiscal inequality reduction in recipient and non-recipient areas before and after the policy is implemented.

This hypothesis was proposed because village funds, which are designed to increase fiscal capacity in rural areas, are expected to be able to reduce fiscal inequality between regions. The hypothesis about the impact of village fund distribution was formulated to bridge the literature gap with a focus on horizontal fiscal inequality in South Sumatra Province over a longer period from 2010 to 2019. This variable has not been a major concern in previous studies. Using a quantitative approach (DiD), this study provides more specific empirical evidence on the relationship between village funds and the reduction of horizontal fiscal inequality.

METHODS

This study applied a quantitative approach and used secondary data, including area, HDI, GDP growth, poverty rate, regional original income (PAD), and transfer to region for all regencies or cities in South Sumatra Province. The data was obtained from the Directorate General of Fiscal Balance of the Ministry of Finance, the Regional Office of the Directorate General of Treasury of South Sumatra, and the Statistics Indonesia South Sumatra Province. The analysis period was from 2010 to 2014 (before the village fund policy) and from 2015 to 2019 (after the village fund policy). Data from the 2020–2022 period was not used because the period was during the COVID-19 pandemic. Using data from this period may cause a shock effect on the variables analyzed, which could disrupt the results of the estimates made.

Figure 2 Basic of DiD



Source: Processed by the Author

The quantitative approach used the DiD method to analyze the impact of a particular policy that has been implemented by comparing the before-after time with the treatment-control group (Fredriksson &

Oliveira, 2019). The DiD method compares a group that receives a treatment to a group that does not (Schwerdt & Woessmann, 2020). Roth et al. (2023) synthesize recent advances in the Difference-in-Differences literature and reaffirm the canonical DiD framework used in policy evaluation. They emphasize that a valid DiD design requires four core elements: a clear time dimension distinguishing pre- and post-treatment periods, the presence of treated and untreated (control) groups, the parallel trends assumption stating that both groups would have followed similar outcome trends in the absence of treatment, and the absence of anticipatory effects prior to policy implementation. Together, these elements enable credible identification of the average treatment effect on the treatment in observational settings. Sasabuchi (2021) illustrates the parallel trends graphical representation used to assess the key assumption of DiD, showing schematic plots of treatment and control trends before and after intervention, as shown in Figure 2.

Research Model

The research model is developed based on the theoretical framework presented by Sasabuchi (2021), which covers four main elements in the DiD analysis. The model that underpins this study is as follows:

$$y_{it} = \beta_0 + \beta_1 \text{time point}_t + \beta_2 \text{intervention}_i + \beta_3 (\text{time point}_t * \text{intervention}_i) \quad (2)$$

where Y is the outcome of interest, intervention is a dummy variable for group assignment (intervention group = 1, control group = 0), and time point is a dummy variable for the time point (post-intervention = 1, pre-intervention = 0). Based on this theory and literature, we identified the variables required in the model. Furthermore, variables relevant to the research objectives were determined. Thus, the research model is as follows:

$$y_{it} = \beta_0 + \delta_1 \text{TIME POINT}_t + \delta_2 \text{INTERVENTION}_i + \delta_3 (\text{TIME POINT}_t * \text{INTERVENTION}_i) + \beta_1 \text{WILAYAH}_{it} + \beta_2 \text{IPM}_{it} + \beta_3 \text{GROWTH}_{it} + \beta_4 \text{KEMISKINAN}_{it} + \beta_5 \text{PAD}_{it} + \beta_6 \text{TKDD}_{it} + \varepsilon_{it} \quad (3)$$

where y_{it} is horizontal fiscal inequality (Theil entropy index in regencies or cities i and period t), TIME POINT_t is dummy variable time of distribution of village funds (0= before the provision of village funds; 1= after the provision of village funds), INTERVENTION_i is dummy variable of regencies or cities that receive village fund treatment (0= regencies or cities that do not receive village funds; 1= regencies or cities that receive village funds), $\text{TIME POINT}_t * \text{INTERVENTION}_i$ is interaction between dummy TIME_t and INTERVENTION_i , WILAYAH_{it} is size of regency or city i in period t (thousands of km²), IPM_{it} is human development index of regencies or cities i in period t (points), GROWTH_{it} is growth of regency or city GDP i in the t period (%), KEMISKINAN_{it} is the level of poverty of regencies or cities i in the period t (%), PAD_{it} is original revenue of regencies or cities i in period t (billion rupiah), TKDD_{it} is transfer to a regency or a city area i in period t (billion rupiah), β_0 is Constant, β_1 to β_6 is coefficient of control variables, δ_1 and δ_2 is dummy variable coefficient, ε_{it} is error term.

This research model includes both dependent and independent variables. The dependent variable is horizontal fiscal inequality, measured by the Theil entropy index. The independent variables comprise dummy variables and control variables. The dummy variables include an intervention indicator that distinguishes 14 regencies or cities receiving village funds from three non-recipient regencies or cities, a time point indicator that differentiates the period before the implementation of village funds (2010–2014) from the period after their implementation (2015–2019), and an interaction term between the intervention and time point variables to capture the difference-in-differences effect. In addition, the model incorporates control variables covering regional characteristics, macroeconomic indicators, and fiscal conditions, including the size of a regency or city, the Human Development Index (HDI), GDP growth, poverty rate, original revenue of regency or city (PAD), and intergovernmental transfers (TKDD).

To achieve clarity of concept and accurate measurements, each variable used in the research model needs to be explained operationally. The operational definition of variables provides a systematic understanding of how each variable in this study is measured and analyzed. This will facilitate understanding of the relationship between variables and how the influence of village funds on horizontal fiscal inequality in South Sumatra Province can be empirically estimated.

Horizontal fiscal inequality is a disparity in fiscal ability or financial potential with financial needs between one region and another (Suyanto, 2017). In the horizontal fiscal inequality variable, the data used is the Theil entropy index, which is the direct sum of the intra-region Theil entropy index and the inter-region Theil entropy index (Saggaf et al., 2018). The intra-regional entropy index describes economic inequality within a region by taking into account the ratio of GDP per capita in each city or regencies to GDP per capita in all provinces. Population factors are also incorporated in the formula. Meanwhile, the inter-region entropy index measures inequality in different regions by considering the difference between the GDPs per capita in each city or regencies and the GDP per capita of the province, by including the value of the calculation based on the GDP per capita and the number of people in each region. The two components

are then combined to obtain the final value of the Theil entropy index. In this study, the Theil entropy index was given the symbol THEIL.

Village funds are a source of funding from the state budget, which is used to support local governance, community development and empowerment, as well as village development (Hasan & Tanesab, 2021). In this study, village funds are a dummy variable in the form of recipients of village funds with the symbol INTERVENTION. Code one is for 14 recipient regencies or cities, and code zero is for three regencies or cities that are not recipients of village funds. In addition, the symbol TIME POINT also refers to the recipients of village funds. Code zero is for the period before the distribution of village funds (in 2010-2014), and code one is for the period after the distribution of village funds (2015-2019). In the dummy variable of this study, there was also an interaction between INTERVENTION and TIME POINT.

Regional characteristics indicate the geographical characteristics and physical dimensions of an area. The characteristics of a region have a great influence on the creation of economic development patterns (Hadju et al., 2021). Size of an area has no effect on economic growth (Pamukti & Bawono, 2022). Regional characteristics are one of the control variables in this study in the form of a regency or a city area. It is an important parameter that affects the potential of natural resources, population density, economic structure, and infrastructure of an area. The unit used for the area of the regency or city is thousands of km² with the symbol WILAYAH.

Macroeconomic indicators refer to statistics and numerical data to measure the health, growth, and economic performance of a region. Income inequality is influenced by many factors, including macroeconomic indicators (Adhitya et al., 2020). Macroeconomic indicators are one of the control variables in this study using the indicators of HDI, GDP growth (gross regional domestic product), and poverty rate. Three key dimensions of HDI are longevity and healthy living (with an indicator of life expectancy at birth), being knowledgeable (with an indicator of length of schooling and the average length of school), and a decent standard of living (with an indicator of gross national income per capita) (Statistics Indonesia, 2024a). The HDI in this study uses a symbol of the IPM. It provides a comprehensive picture of the well-being of a population by taking into account key aspects related to life expectancy, education, and income with unit points. Meanwhile, based on the expenditure approach, GDP is all components of final demand consisting of household consumption expenditure, consumption expenditure of nonprofit institutions serving households, government consumption, gross domestic fixed capital formation, inventory changes, and exports minus imports (Statistics Indonesia, 2024b). GDP growth in this study uses the symbol GROWTH, which gives an overview of the rates of economic growth (GDP) of a region. Poverty is the inability to meet basic needs (both food and non-food) as measured by poverty lines (Statistics Indonesia, 2021). The poverty level in this study uses a KEMISKINAN symbol, which gives information about the proportion of the population below the relative poverty line compared to the total population in an area in percentage units.

The fiscal condition of a region is important to assess the region's financial independence, budget balance, and the ability of the region to fund public service and development programs. The fiscal condition in this study became a control variable using PAD and TKD. PAD is regional revenue which comes from regional taxes, regional levies, the results of management of segregated regional wealth, and other legitimate local revenue in accordance with laws and regulations (Pemerintah Republik Indonesia, 2022). PAD uses the PAD symbol expressed in units of billion rupiah. On the other hand, TKD, which uses the symbol TKDD, is a fund sourced from the state budget and is part of the state's expenditure. TKD is allocated and distributed to regions to be managed by the regions to fund the implementation of government affairs that fall under the authority of those regions (Pemerintah Republik Indonesia, 2022). This variable is expressed in units of billion rupiah.

RESULTS AND DISCUSSION

The data and information that have been gathered are then described to get an overview of these data and information. The description of the data used in quantitative analysis with the DiD method is presented in Table 1. The analysis of quantitative approaches using DiD must meet the assumption of parallel trends, indicating that the dependent variable (Theil entropy index) must move (have a trend) in parallel between the treated group (regency or city that receives village funds) and the control group (regency or city that does not receive village funds). The parallel trend is illustrated in Figure 3.

The results of the parallel trend test show that the F-statistical value is 2.25 and the p-value is 0.1528. Thus, the assumption of parallel trends in the DiD method is met. After the assumption of parallel trends has been met, the DiD analysis is followed by the preparation of the research model. The results of the estimation (attached) of 160 observations show a *p-value* of 0.037 and an estimated R² value of 0.63. The research model is based on the following estimated results:

$$y_{it} = -6.973 + 0.145 \text{ TIME POINT}_t + 0.242 \text{ INTERVENTION}_i - 1.324 (\text{TIME POINT}_t * \text{INTERVENTION}_i) - 0.108 \text{ WILAYAH}_{it} + 0.025 \text{ IPM}_{it} + 0.089 \text{ GROWTH}_{it} + 0.288 \text{ KEMISKINAN}_{it} - 0.002 \text{ PAD}_{it} + 0.004 \text{ TKDD}_{it} + \varepsilon_{it}$$

The results of these estimates show that village funds, as part of fiscal decentralization, have a statistically significant impact (t: 2.10 and sig: 5%) on the decrease in the level of horizontal fiscal inequality in regencies or cities that receive village funds of 1,324 units (on the Theil entropy index scale) from their counterfactual conditions (if there is no village fund policy). Thus, the hypothesis of this study states that the distribution of village funds significantly reduces horizontal fiscal inequality between recipient and non-recipient areas before and after the policy is implemented is accepted.

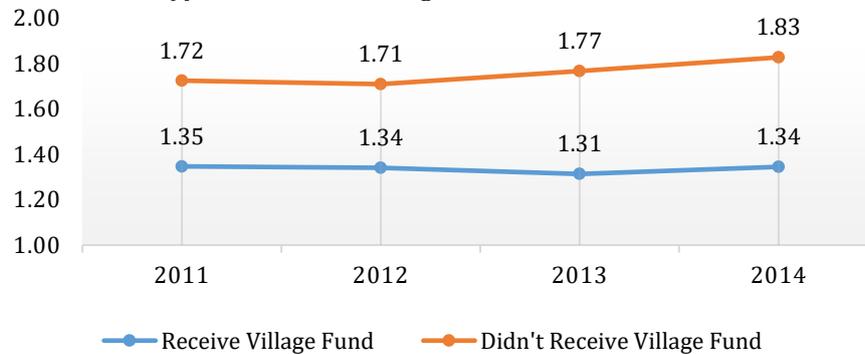
Table 1 Data Description

Variable	2010-2014			
	Min	Max	Average	St. Deviation
Theil Entropy Index	0.35	11.53	2.26	2.69
WILAYAH (Kilometers)	352.51	17,071.33	5,772.87	5,501.09
IPM	58.88	76.02	64.87	4.22
GROWTH (% yoy)	0.85	12.28	5.62	1.83
KEMISKINAN (%)	8.90	20.06	13.65	2.90
PAD (IDR billion)	10.02	734.22	81.91	120.74
TKDD (IDR billion)	383.33	2,932.71	1,002.11	528.36

Variable	2015-2019			
	Min	Max	Average	St. Deviation
Theil Entropy Index	0.41	9.55	2.09	2.07
WILAYAH (Kilometers)	352.51	17,071.33	5,093.71	4,934.41
IPM	60.83	78.44	67.42	3.98
GROWTH (% yoy)	2.14	8.65	4.98	1.22
KEMISKINAN (%)	8.77	20.00	13.50	2.62
PAD (IDR billion)	4.24	1,091.70	155.66	207.38
TKDD (IDR billion)	339.81	3,366.60	1,242.91	548.60

Source: Statistics Indonesia and The Ministry of Finance

Figure 3 Theil Entropy Index Trends in Regencies or Cities in South Sumatra Province



Source: Statistics Indonesia South Sumatra Province (2023)

As shown in Table 2, regencies or cities that did not receive village funds experienced a slight increase in horizontal fiscal inequality of 0.145 units on the Theil entropy index scale. Meanwhile, regencies or cities that received village funds experienced a decrease in horizontal fiscal inequality of -1.178 units on the Theil entropy index scale. This shows that village funds help achieve more equitable fiscal redistribution in recipient areas. This is in line with the principle of equitable distribution of resources, and it reinforces the argument that fiscal decentralization through village funds is an important instrument to reduce the fiscal gap between regions in Indonesia.

Table 2 Changes in Horizontal Fiscal Inequality

Group	Before	After	Diff (T-C)
Treated (T)	-6.973	-6.828	0.145
Control (C)	-6.731	-7.909	-1.178
Diff (T-C)	0.242	-1.081	-1.324

Source: Processed by the Author

Furthermore, the level of horizontal fiscal inequality is significantly influenced by several control variables. The size of a regency or city (WILAYAH) has a negative effect, indicating that larger areas tend to exhibit lower levels of horizontal fiscal inequality. One possible explanation is that larger areas in South Sumatra Province generally have larger populations, which, assuming similar GDP per capita, may reduce measured inequality. Poverty levels (KEMISKINAN) show a positive relationship with horizontal fiscal inequality, implying that higher poverty is associated with greater inequality, as poverty reflects lower economic output and weaker fiscal capacity at the regional level. Locally generated revenue (PAD) also has a negative effect, suggesting that regions with higher PAD tend to experience lower horizontal fiscal inequality due to stronger fiscal capacity and greater financial autonomy. In contrast, transfers to regions (TKDD) are positively associated with horizontal fiscal inequality, reflecting the relatively uneven distribution of transfers in South Sumatra Province, where higher allocations are concentrated in mining and urban areas that already exhibit relatively higher fiscal inequality.

In addition, two variables exhibit p-values greater than 0.05, indicating that they do not have a statistically significant effect on the level of horizontal fiscal inequality. The Human Development Index (HDI) shows a positive coefficient, suggesting that improvements in human development tend to be associated with higher fiscal inequality; however, this relationship is not statistically significant (p-value = 0.500). This may be because HDI is a broad welfare indicator encompassing education, health, and living standards, which does not necessarily translate directly into more equal fiscal capacity across regions. Similarly, economic growth (GROWTH) also has a positive but statistically insignificant effect on horizontal fiscal inequality (p-value = 0.280). Economic growth often occurs unevenly across regions, with more developed areas growing faster than less developed ones, and its impact on fiscal inequality may be mediated by other factors such as regional fiscal capacity and the effectiveness of village fund allocation.

These results are in accordance with the results of previous research. Digdowiseiso et al. (2022) found that fiscal decentralization can reduce inequality if local governments share fiscal decisions with the central government (shared rule). However, the results of this study are different from those (Stossberg & Blöchliger (2017) suggests decentralization's inequality effects vary across the income distribution, showing that middle and low-income groups may not benefit equally. The difference in the results of the study can occur due to differences in methodology, data coverage, variable control, and fiscal policies in the research observation area.

CONCLUSION

Village funds have a significant impact on reducing horizontal fiscal inequality, specifically it can reduce horizontal fiscal inequality in cities or regencies that receive village funds in South Sumatra Province by 1.324 units in the Theil entropy index from their counterfactual conditions. The decrease is attributed to the allocation of village funds that reflect the condition of the village, where village funds are distributed based on the realization of absorption and output produced, as well as on-target use of village funds.

During the observation period, the average horizontal fiscal inequality in regencies or cities receiving village funds decreased significantly, while regencies or cities that did not receive village funds experienced a slight increase in horizontal fiscal inequality. Although there is a decrease in the area receiving village funds, the level of horizontal fiscal inequality in regencies or cities in South Sumatra Province as a whole remains high and requires more attention. Thus, various efforts are needed to improve village fund policies to further optimize the acceleration of the reduction of horizontal fiscal inequality in this province. A more targeted policy is expected to have a better and significant impact on equity as an effort to reduce inequality between regions in South Sumatra Province.

The results of this study are limited to the analysis conducted in South Sumatra Province with an observation period or data analysis from 2010 to 2019. Therefore, the scope of the results of this study is only specific to this region and this period. Further research can be extended to other provinces or even to a wider area at the national level, with a longer or equal period to find out if there are differences in results or clearer patterns. In addition, future research can add other relevant independent variables to improve the complexity and accuracy of the model or alter dependent variables to explore the influence of other factors that may be related to horizontal fiscal inequality and other public policy issues. The authors convey responsibility for the results of the research, including the possibility of errors.

The significance of this research is highlighted by these three points. First, this research is expected to provide important information for the government in formulating more effective strategies and policies to accelerate the reduction of horizontal fiscal inequality in South Sumatra Province. Second, it is hoped that the government can identify more appropriate approaches to maximize the positive impact of the distribution of village funds. Third, this study is also expected to make a major contribution to research on

public policy in Indonesia, as well as to provide new insights that can be used by other researchers and policymakers to improve equitable development throughout Indonesia.

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