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Do Village Funds Promote Rural Development and Alleviate Poverty in Indonesia? Implications for Village Funds Policies

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ABSTRACT

The rural-urban poverty gap in Indonesia remains a significant concern. The government implemented village funds as part of fiscal decentralisation, but their impact on rural development and poverty reduction has shown mixed results. Additionally, no study has yet examined the effect of external shocks on the funds. This study integrates the Village Development Index and village real income as indicators of rural development, offering a comprehensive analysis of the impacts of village funds before and during a global crisis. By utilising panel data and analysis from 435 regencies/cities to analyse the effect of village funds from 2018 to 2022, the study findings reveal that, prior to the pandemic, village funds significantly enhanced rural development, especially in non-Java regions. However, during the pandemic, the funds could not alleviate poverty, highlighting the importance of implementing adaptive measures that prioritise crisis response while sustaining rural development efforts. The results provide critical insights for policymakers to refine fiscal decentralisation strategies and ensure resilient rural development.

Keywords: Indonesia, policy, poverty, rural development, village funds

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INTRODUCTION

As the fourth most populous country in the world, Indonesia is expected to actively support and contribute to the Sustainable Development Goals (SDGs) agenda, with the primary objective of achieving 'no poverty' by 2030 (Nugroho et al., 2021). However, alleviating poverty in Indonesia presents its own challenges, as the disparity

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in development between rural and urban areas has resulted in a higher number of poor people living in villages compared to cities (Muhtar et al., 2023). According to the Badan Pusat Statistik (BPS-Statistics Indonesia, 2024), the average poverty rate in urban regions was 7.1 per cent in March 2024, compared to 11.8 per cent in rural areas. This significant inequality necessitates focused government efforts on rural development to reduce the poverty rate.

The development of rural areas is essential for achieving the SDGs, especially in poverty eradication (Gunaratne et al., 2023; Hu et al., 2022; Sarjiyanto et al., 2023). Prioritising a development approach centred on rural areas is highly strategic, as it is expected to produce positive and far-reaching effects. Such an approach actively accelerates poverty alleviation initiatives and reduces inequality in rural areas (Handoyo et al., 2021; Santoso et al., 2019).

Implementing a fiscal decentralisation program is one of the government's efforts to accelerate rural development and alleviate poverty (Subiyantoro, 2010). Fiscal decentralisation involves delegating financial authority and responsibilities to regional governments from the national down to the local levels, following specific rules and regulations to guide and control financial expenditures (Aslim & Neyapti, 2017). This approach enhances democratic governance practices and contributes to increased economic efficiency (Meesook et al., 2020). It enables local governments to play a more significant role in the regional economic system and advocates for environmentally sustainable economic development (Wang et al., 2022).

The Village Funds Programmes is a decentralisation program focused on rural development, allowing villages to receive direct funding from the central government for infrastructure and community empowerment (Amin & Widaninggar, 2019). This program provides greater flexibility and autonomy for villages to develop their local potential compared to other decentralisation programmes typically managed at the regional or central government level. First implemented in 2015, the funds underwent refinement in 2017, aimed at enhancing the targeting of fund allocation and improving their effectiveness in promoting rural development and reducing poverty (Permatasari et al., 2021). Supported by Article 25 PMK (Peraturan Menteri Keuangan) Number 247, village funds prioritise development and empowerment, emphasising self-management using local resources and raw materials (Sunarsi et al., 2021). The expectation is that villages can achieve self-sufficiency by maximising their potential and enhancing the quality of life within the community through active participation in their development (Udjianto et al., 2021).

Government Regulation Number 60/2014 states that village funds are used for governance, development, community empowerment, and societal needs (Watts et al., 2019). Village funds are prioritised for four purposes: Village Development (such as meeting basic needs, developing facilities and infrastructure, promoting local economic potential, and utilising natural resources and areas sustainably), Local Community Empowerment, Village Governance, and Community Empowerment (Susilowati et al., 2018). Since its implementation, village funds have primarily been allocated for infrastructure development, including bridges, water channels, and irrigation systems, with the aim of improving rural community accessibility and mobility, thereby enhancing the village economy (Hilmawan et al., 2023). While the overarching goal of rural development is to alleviate poverty, infrastructure development is essential for poverty reduction as it ensures community access to markets and contributes to overall village advancement (Sutiyo & Maharjan, 2017; Wiratama et al., 2023).

To assess the success of the Village Funds Programme, the government has introduced the Village Development Index (Indeks Desa Membangun, IDM), which incorporates indicators such as essential services, infrastructure, transportation, public services, and village governance administration (Tarlani & Sirajuddin, 2020). Villages are categorised into levels based on this index: very underdeveloped, underdeveloped, developing, developed, and independent (Prasetyo & Sonny, 2020). Evaluating the poverty rate serves as a measure of the program's effectiveness, as a lower poverty rate indicates the efficient use of village funds, leading to increased income and improved quality of life for the community (Andari & Fitria, 2023; Rambe et al., 2022).

Despite these efforts, the impact of village funds on rural development and poverty reduction has shown mixed results, which will be further discussed later. Additionally, no study has yet examined the effect of external shocks, such as the COVID-19 pandemic, on the impacts of village funds, and this study aims to fill this gap. Thus, the objectives of this study are twofold: first, to analyse the impact of the village funds program on rural development and poverty alleviation in Indonesia. Specifically, it investigates the effects of these funds on the Village Development Index and village real income across all recipient regencies from 2018 to 2022. Second, it examines the influence of the COVID-19 pandemic on the program's effectiveness, considering its substantial impact on global and local economies. The findings provide insights into the significance of adaptive measures prioritising crisis response while sustaining long-term rural development and poverty reduction efforts.

LITERATURE REVIEW

Theoretical Review

The theoretical foundation underpinning fiscal decentralisation programmes is the theory of fiscal decentralisation efficiency, originally proposed by Wallace E. Oates in 1972. This theory establishes the central government's crucial role in macroeconomic stabilisation, while local governments are expected to focus on providing public goods with limited consumption, primarily for their constituents (Jain & Singh, 2022; Oates, 1999). Oates' (1972) theory of fiscal decentralisation emphasises the efficiency of local governance under stable economic conditions. However, recent developments in fiscal federalism theory suggest that the success of decentralisation hinges on the local government's ability to adapt to crises (Eichenbaum et al., 2021). This study seeks to determine whether Indonesia's decentralised village funds program requires greater flexibility during the COVID-19 pandemic, indicating that decentralisation models in Indonesia must incorporate adaptive governance mechanisms to withstand economic shocks.

Fiscal decentralisation involves delegating financial authority and responsibilities to regional governments from the national down to the local levels, following specific rules and regulations to guide and control financial expenditures (Aslim & Neyapti, 2017; Meesook et al., 2020). It is argued that this approach improves democratic governance practices and enhances economic efficiency (Meesook et al., 2020). Centralised fiscal systems are viewed as potentially enabling exploitative actions by the central government (Ding et al., 2019). In contrast, decentralised arrangements promote competition among local governments, limiting the power of a monopolistic central government, fostering local economic growth, ensuring accountability, and yielding improved outcomes for the community (Hanif et al., 2020). In many countries, fiscal decentralisation has been adopted to enhance the effectiveness of government services and stimulate economic growth (Martinez-Vazquez et al., 2017). Certain nations have embraced decentralisation in response to dissatisfaction with previously unsuccessful central planning methods, particularly observed in former Soviet countries (Siegel, 2022). Decentralisation has also been utilised as a strategy to address conflicts and preserve territorial unity in specific instances (Sutiyo & Maharjan, 2017).

Fiscal decentralisation theory highlights the significance of flexible local governance in addressing local economic challenges and meeting diverse regional needs (Martinez-Vazquez et al., 2017; Rao et al., 2023). The varying impacts observed between Java and non-Java regions underscore this principle, as the theory suggests that the effectiveness of funding can differ based on local governance capacities and socioeconomic conditions (Hilmawan et al., 2023). In non-Java regions, where issues related to infrastructure and poverty are more severe (Mardalena et al., 2023), fund allocation tends to align with theoretical predictions of positive outcomes, owing to targeted local interventions that respond to regional disparities. Nevertheless, several questions remain unclear: How has Indonesia’s village funds programme influenced poverty and inequality in underdeveloped villages, particularly during external shocks? Which regions have gained the most benefits?

Empirical Review

The literature on the influence of village funds on rural development and poverty reduction in Indonesia yields varied and inconsistent findings. As such, the impact of these funds on poverty reduction remains a subject of ongoing analysis. Saragi (2021) argues that the Village Fund Program is a crucial instrument for the Central Government in promoting economic development and addressing inequality and poverty in Indonesian villages. Indraningsih et al. (2021) suggest that village funds positively affect farmers' yield and revenue, as improvements in farming infrastructure and facilities lead to more efficient conveyance of equipment and harvests.

Handayani and Badrudin (2019) find that allocating village funds significantly contributes to economic growth in both potential and underdeveloped areas. Similarly, Amin and Widaninggar (2019) reveal that the efficient utilisation of village funds has a notable impact on capital growth and the fostering of self-sufficiency in Bondowoso Regency in East Java. Hilmawan et al. (2023) demonstrate that village funds have a positive and substantial impact on rural advancement, as measured by the Village Development Index and village income.

However, other studies present a more critical perspective. For instance, Aslan and Wijaya (2019) imply that the role of village fund allocations in Mahakam Ulu Regency falls short of expectations, as these expenditures are considered ineffective in directly reducing poverty due to an excessive focus on infrastructure development. Kalontong et al. (2019) similarly argue that village funds do not contribute to regional development in Katingan, as the allocated funds are often misdirected, leading to uneven development and limited community empowerment opportunities.

Conversely, Prastyanti et al. (2018) and Ramly et al. (2018) highlight that when the majority of village funds are allocated to infrastructure development, the goal of alleviating poverty is inadequately addressed. They contend that this emphasis on basic amenities projects or enhancing physical capabilities does not effectively contribute to poverty reduction.

Furthermore, the success of village funds in improving social welfare appears to vary by region (Anam et al., 2023). Saragi (2021) finds that increasing allocations of village funds significantly improves the IDM status, with Java contributing more to advancing village status compared to regions like Papua, which consists mostly of the least developed villages. Putra et al. (2023) indicate that village funds reduce the percentage of the poor population in Banjarnegara Regency, while Arham and Hatu (2020) demonstrate that village fund transfers significantly impact poverty rates.

These mixed results emphasise the need to reevaluate the impacts of village funds from a different perspective. Therefore, this study seeks to introduce an additional indicator to measure the success of village development by analysing the village's actual income. The Indonesian Ministry of Finance defines village real income as revenue generated through the exercise of the village's authority, including income from village enterprises, asset proceeds, voluntary contributions, and mutual assistance. This consideration aligns with Hilmawan et al. (2023) findings suggest that higher village real income corresponds to more advanced development, making it a reliable indicator of a village's developmental level. Hanif et al. (2020) and Sanogo (2019) also support this notion, asserting that an increase in local revenue positively impacts public service accessibility, poverty reduction, and economic growth.

In addition, the study aims to compare the pre-COVID-19 period (2018 to 2020) and the pandemic period (2021 to 2022) in terms of their impact on both Java Island and non-Java Island. Previous research has indicated that before the pandemic, the allocation of village funds effectively contributed to rural development and poverty reduction, particularly in regions outside of Java (Badrudin et al., 2021; Imawan & Purwanto, 2020). However, the COVID-19 pandemic has led to a significant increase in global poverty levels due to the implementation of various government policies to curb the spread of the virus (Rambe et al., 2022). According to Eichenbaum et al. (2021), while these policies effectively save lives, they also exacerbate the severity of the economic recession. Nevertheless, the impact of village funds on rural development and poverty reduction in Java and non-Java Islands during the pandemic remains unclear and warrants further study.

METHOD

Data

This study examines the impact of fiscal decentralisation through the village funds program on rural development (as measured by the village development index and village real income) and poverty in all regencies/cities in Indonesia. The analysis is based on panel data from 2018 to 2022, covering 435 regencies/cities that received village funds. The selection of the regencies/cities was based on complete data availability for the entire study period. No specific exclusion criteria were applied, ensuring a comprehensive analysis that includes the entire country. The variables utilised in this study are summarised in Table 1.

The data used in this study were sourced from reliable government databases, including the Department of Village, the Department of Finance and BPS Indonesia. These institutions are recognised for maintaining high standards in data collection

Table 1
Data source and description of variables

Variable	Description	Source
Dependent Variable		
Village funds	Funds originating from the national government budget provided directly to village accounts for village development and empowerment	Department of Village

Table 1 *(continue)*

Variable	**Description**	**Source**
Independent Variables		
Village Development Index	An index was created to measure the level of village self-reliance by combining the community resilience index, financial resilience index, and rural environmental resilience index.	Department of Village
Village real income	The revenue obtained from the village's efforts in implementing its authority, including revenue from village business, asset yields, self-help participation, and mutual assistance	Department of Finance
Poverty rate	The percentage of individuals in each regency/city living below the poverty line	BPS-Statistics Indonesia
Gross Domestic Regional Product (GDRP)	The total value of all goods and services produced within a region's borders over a specific period	BPS-Statistics Indonesia
Number of villages	The number of villages within the regency/city	Department of Village

and reporting. To ensure data accuracy, various robustness checks, including the Breusch-Pagan test and outlier analyses, were conducted to identify anomalies and ensure that exceptional data points did not unduly influence the findings.

Empirical Strategy

This study employs panel data analysis to assess the impact of the village funds program on village development and poverty levels. The analysis is divided into two periods: before COVID-19 (2018 to 2020) and during COVID-19 (2021 to 2022). This division is justified by the significant economic disruptions caused by the COVID-19 pandemic, which are likely to have influenced the effectiveness of the village funds program. The years 2018 to 2020 represent a stable period before the pandemic, while 2021 to 2022 capture the ongoing effects of the pandemic on the program.

We developed three estimation models to assess the impact of the village fund program on village development and poverty levels, using individual and time variables for our panel data (represented as *i* and *t*).

Model 1 measures the impact of village funds on rural development. Measured by the village development index, this model includes control variables such as GDRP and the number of villages to account for economic activity and administrative size, which can influence development outcomes. Model 2 measures the impact of village funds on rural development measured by village real income. Village real income indicates economic health and development within the villages, and control variables help isolate the effect of village funds.

Finally, Model 3 measures the impact of village funds on poverty.

$$Village\ Development\ Index_{i,t} = \beta_0 + \beta_1 Village\ Funds_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad [1]$$

$$Village\ Real\ Income_{i,t} = \beta_0 + \beta_1 Village\ Funds_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad [2]$$

$$Poverty_{i,t} = \beta_0 + \beta_1 Village\ Funds_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad [3]$$

Hypotheses and Regional Analysis

We hypothesise that differences in the characteristics of Java and non-Java Island result in varying responses to government programmes. According to Widiastuti (2020), 57 per cent of the population of Indonesia lived in Java in 2017, with the remaining 43 per cent residing outside the island. Java Island also accounts for 56.4 per cent of the country's GDRP, while the rest is contributed by non-Java areas (Kohardinata et al., 2024). On average, economic activities in Java Island surpass those in other regions (Yudhistira & Sofiyandi, 2018). Hence, we examine the influence of village funds on rural development and poverty in Java and non-Java islands before and during the COVID-19 pandemic, as we believe the differences in characteristics between these areas will impact the management of village funds.

Multicollinearity and Robustness Check

We used the Pearson correlation matrix and the Variance Inflation Factor (VIF) test to assess multicollinearity. The Pearson correlation matrix results (Table 2) indicate positive and negative relationships between variables. The low correlations with the dependent variables suggest that multicollinearity may not be a significant concern. The VIF values offer further insight into multicollinearity. VIF values approaching 1 suggest minimal multicollinearity, while values between 1 and 5 indicate moderate multicollinearity. VIF values exceeding 10 indicate significant multicollinearity. As demonstrated in Table

Table 2
Correlation matrix

	Village Funds	Village Dev. Index	Village real income	Poverty rate	GDRP	No. of villages
Village funds	1					
Village Dev. Index	-0.22	1				
Village real income	0.40	0.09	1			
Poverty rate	0.72	-0.14	0.63	1		
GDRP	0.40	0.06	0.85	0.59	1	
Number of villages	0.92	-0.19	0.35	0.63	0.35	1
VIF	7.26				6.97	1.20

3, the VIF test results for village funds and GDRP fall between 5 and 10, indicating a moderate level of multicollinearity for these variables. In contrast, the number of villages has a VIF value of 1.20, indicating a low level of multicollinearity.

Despite the moderate VIF values for village funds and GDRP, the overall assessment suggests that multicollinearity is not a critical concern in this study. However, we acknowledge that the observed moderate multicollinearity may impact the regression estimates. We ensured robustness by employing alternative model specifications and checking for consistency across different subsamples to address this.

Robustness and Sensitivity Analysis

We conducted several robustness checks and sensitivity analyses to validate our findings' robustness. These included alternative model specifications and analyses of subsamples from different regions (Java vs. non-Java) and periods (pre-COVID-19 vs. during COVID-19). The results remained consistent across these checks, which reinforces the reliability and validity of our findings. In addition to the aforementioned checks, panel data analysis employing a random effects model was utilised. This model was chosen based on the results of the Chow test, Hausman test, and Breusch-Pagan Lagrange Multiplier (BPLM) test, all of which indicated the superiority of the random effects model in mitigating the inherent omitted variable problem associated with the fixed effects model.

Furthermore, to enhance the accuracy of the results, a natural logarithm transformation was applied to all variables except for the Village Development Index. This transformation serves the purpose of normalising the data and improving the precision of the regression estimates. Moreover, additional robustness checks were conducted to address potential issues such as outliers and heteroskedasticity. The presence of heteroskedasticity was examined using the Breusch-Pagan test, and in light of the results, the standard errors were adjusted accordingly. An outlier analysis was also carried out to ensure that extreme values did not exert undue influence on the findings. Overall, the results of these robustness checks and sensitivity analyses consistently confirmed the reliability and validity of our findings, thereby providing confidence in our conclusions regarding the impact of village funds on rural development and poverty alleviation in Indonesia.

RESULTS

Descriptive Statistics

The summary statistical outcomes (Table 3) reveal that the average village funds received by each regency/city in Indonesia amount to 156,928 million rupiahs. The lowest amount, 1.06 million rupiahs, was received by the Prambulih Regency in the South Sumatra province in 2022. On the other hand, the North Aceh Regency in Aceh Province gained the highest village funds in 2019.

The average Village Development Index stands at 5.93, suggesting that, on average, regencies/cities are still considered underdeveloped. The lowest value, 2,306,

Table 3
Statistic summary

Variables	Obs	Mean	SD	Min	Max
Village Funds (‘000,000 rupiahs)	2,170	156,928	99,878	11,064	627,307
Dependent Variable					
Village Dev. Index	2,170	5.93	1.80	2.31	9.22
Village real income (‘000,000 rupiahs)	2,170	196,618	347,241	1,270	4,835,190
Poverty (‘000)	2,170	5,331	5,851	134	49,124
GDRP (in million rupiah)	2,170	15,257,004	23,805,356	133,354	265,130,821
Number of village(unit)	2,170	170.90	114.60	7.00	852.00

belongs to the Fak Fak Regency in the West Papua Province in 2018, while the highest value belongs to Denpasar City in the Bali Province in 2022.

Furthermore, the average village real income earned by all regencies/cities in Indonesia is 196,618 million rupiahs. The Deiyai Regency in the Papua Province recorded the lowest value of 1,270 million rupiahs in 2018, whereas the Badung Regency in the Bali Province recorded the highest value of 4,835,190 million rupiahs in 2019.

Moreover, the mean poverty headcount in each regency/city in Indonesia is 5,331 people. The Tana Tidung Regency in the North Kalimantan province recorded the lowest number, with 134 thousand people in 2018, while the Bogor Regency in Jawa Barat Province recorded the highest number in 2021.

The average GDRP for Indonesia is 15,257,004 million rupiahs. The Pegunungan Arfak Regency in the West Papua Province had the lowest GDRP value of 133,354 million rupiahs in 2018, while the Bekasi Regency in the West Java Province recorded the highest GDRP value of 265,130,821 million rupiahs in 2022.

Overall Impact of Village Funds

The baseline regression results, as shown in Table 4, indicate a significant positive influence of village funds on rural development, as measured by the Village Development Index and Village Real Income, at a significance level of 1 per cent. This implies that higher levels of village funds contribute to the enhancement of rural development in different regencies and cities across Indonesia. However, it is important to note that while village funds have a positive impact on these development indicators, they do not significantly alleviate poverty.

The control variable, GDRP, demonstrates a significant positive effect on both rural development and poverty. This suggests that higher levels of GDRP are associated with increased rural development but also correspond to higher poverty levels. This finding, which may seem counterintuitive, highlights that economic growth alone may not be sufficient to reduce poverty (Aslan & Wijaya, 2019). It implies

Table 4
Effect of village funds on rural development and poverty (baseline regression)

	Rural Development		**Poverty**
	Village Dev. Index	**Village Real Income**	**Poverty Rate**
Village Funds	1.48 (9.42)***	0.27 (5.38)***	0.04 (3.68)***
GDRP	0.39 (5.59)***	0.79 (35.33)***	0.07 (4.93)***
No.r of villages	-1.99 (-11.62)***	-0.15 (-2.72)***	0.80 (18.47)***
_cons	-33.74 (-9.21)***	-4.38 (-3.72)***	7.47 (14.50)***
N	2,170	2,168	2,170
N_g	434	434	434
R^2	0.0114	0.7705	0.4733

Note. T-statistic parentheses. **p*<0.1; ***p*<0.05; ****p*<0.01

the need for targeted poverty alleviation strategies (Chakrabarti & Dhar, 2013). Conversely, a greater number of villages within a regency may hinder development efforts due to the complexity and resources required to manage multiple villages (Ariyanto & Nugraha, 2024). Additionally, a higher number of villages may indicate a larger population, which could contribute to increased levels of poverty.

Considering the onset of the COVID-19 pandemic during the research period, we conducted an analysis to assess whether the impact of village funds on rural development and poverty differed before and during the pandemic. This analysis provides valuable insights into how external shocks such as the pandemic may influence the effectiveness of fiscal decentralisation programmes.

Pre-COVID-19 Period (2018-2020) vs. COVID-19 Period (2021-2022)

Before the COVID-19 pandemic, it was observed that village funds had a significantly positive impact on rural development and a significantly negative impact on the poverty rate, both with a 1 per cent level of significance (Table 5). This implies that the provision of village funds succeeded in enhancing rural development and diminishing poverty during this particular period. Furthermore, the GDRP demonstrated a significant positive relationship with both rural development and poverty, indicating that higher economic output contributes to improved development outcomes, although it does not necessarily reduce poverty.

The number of villages exhibited a significant adverse effect on rural development while simultaneously displaying a significant positive effect on poverty. This suggests that an increased number of villages within a regency or city may dilute the impact of development initiatives and be associated with higher levels of poverty (Ariyanto & Nugraha, 2024).

During the COVID-19 pandemic, the impact of village funds on the Village Development Index was significantly negative, with a 1 per cent level of

Table 5
Effect of village funds on rural development and poverty (before and during COVID-19)

	Before COVID-19			During COVID-19		
	Rural Development		Poverty	Rural Development		Poverty
	Village Dev. Index	Village Real Income	Poverty Rate	Village Dev. Index	Village Real Income	Poverty Rate
Village funds	2.27 (10.83)***	0.23 (4.45)***	-0.09 (-7.35)***	-1.19 (-8.69)***	0.19 (2.56)**	0.18 (9.49)***
GDRP	0.15 (2.07)**	0.77 (32.69)***	0.20 (8.64)***	0.29 (4.31)***	0.83 (34.13)***	0.17 (6.43)***
No. of villages	-2.43 (-11.90)***	-0.10 (-1.81)*	0.85 (18.78)***	0.23(1.41)	-0.11(-1.55)	0.63 (12.04)***
_cons	-45.15 (-9.71)***	-2.99 (-2.48)**	7.14 (11.44)***	26.88 (7.75)***	-3.83 (-2.29)**	2.14 (2.31)***
N	1,302	1,302	1,302	868	866	868
N_g	434	434	434	434	434	434
R^2	0.0015	0.7536	0.5172	0.1246	0.7727	0.5535

Note. T-statistic parentheses. *p<0.1; **p<0.05; ***p<0.01

significance, indicating that the effectiveness of these funds in promoting rural development was diminished during this crisis period (Table 5). However, village funds still managed to increase village real income, as evidenced by their significant positive impact at a 5 per cent level of significance. On the other hand, village funds could not alleviate poverty during the pandemic. This suggests that the economic disruptions caused by the pandemic overshadowed the potential benefits of the village funds program (Rambe et al., 2022).

GDRP demonstrated a significantly positive relationship with rural development and the poverty rate at the 1 per cent significance level. Additionally, the number of villages exhibited a positive effect on the Village Development Index and poverty rate while simultaneously having a negative impact on village real income.

These results highlight the differential impacts of village funds before and during the pandemic. The effectiveness of village funds in promoting rural development and reducing poverty was significantly hindered during the COVID-19 crisis, highlighting the need for adaptive and resilient fiscal policies in times of economic disruptions (Rao et al., 2023).

Regional Differences: Java vs. non-Java

The analysis revealed significant regional differences in the impact of village funds prior to the pandemic (Table 6). Both Java and non-Java islands experienced a significant positive impact on rural development as a result of village funds. However, only non-Java regions saw a significant reduction in poverty due to the utilisation of these funds. This could be attributed to the higher number of villages

Table 6
Effect of village funds on rural development and poverty in Java and non-Java

	Java					
	Before COVID-19			During COVID-19		
	Rural Development		Poverty	Rural Development		Poverty
	Village Dev. Index	Village Real Income	Poverty Rate	Village Dev. Index	Village Real Income	Poverty Rate
Village Funds	2.05 (13.80)***	0.30 (5.93)***	0.05 (1.39)	-0.09 (-0.33)	-0.13 (-0.87)	0.16 (1.79)
GDRP	-1.16 (-3.19)***	0.68 (14.71)***	0.04 (0.74)	1.97 (-3.26)***	0.72 (14.56)***	-0.11 (-1.72)
No. of Village	-2.64 (-4.90)***	-0.25 (-3.50)***	0.70 (8.58)***	-2.70 (-3.78)***	0.12(0.83)	0.67 (5.32)***
_cons	1.83 (0.20)	-1.08 (-0.71)	9.72 (6.06)***	-37.9 (-3.26)***	7.48 (2.24)	11.88 (-1.72)
N	258	258	258	172	172	172
N_g	86	86	86	86	86	86
R^2	0.1221	0.7744	0.5816	0.0004	0.7713	0.4920
	Non-Java					
	Village Dev. Index	Village Real Income	Poverty Rate	Village Dev. Index	Village Real Income	Poverty Rate
Village Funds	1.02 (4.78)***	0.17 (2.75)***	-0.11 (-8.92)***	-1.15 (-8.46)***	0.05 (0.70)	0.15 (8.95)***
GDRP	0.47 (-5.84)***	0.68 (24.68)***	0.12 (4.94)***	0.46 (9.06)***	0.74 (26.18)***	0.07 (2.79)***
No. of Village	-1.18 (-6.33)***	-0.11 (-1.85)*	0.68 (13.79)***	0.40 (3.05)***	-0.08 (-1.07)	0.46 (8.87)***
_cons	-28.47 (-5.84)***	1.03 (0.68)	10.65 (16.13)***	20.04 (6.06)***	2.05 (1.02)	6.07 (5.99)***
N	1,044	1,044	1,044	696	694	696
N_g	348	348	348	348	348	348
R^2	0.0638	0.6344	0.3251	0.2613	0.6745	0.3644

Note. T-statistic parentheses. $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

and greater poverty levels outside Java (Mardalena et al., 2023), which led to more targeted and effective use of village funds.

On Java Island, before the pandemic, GDRP had a significant negative impact on the Village Development Index while displaying a significant positive effect on village real income. However, it did not have any impact on poverty. Furthermore, the number of villages had a significant negative influence on rural development and a significant positive influence on poverty.

During the pandemic, village funds were unable to stimulate rural development or alleviate poverty in either region. The magnitude of the crisis caused by the pandemic exceeded the capabilities of village funds, thereby underscoring the necessity for adaptive fiscal policies that can effectively respond to such disruptions (Rao et al., 2023).

DISCUSSION

From the findings, we can infer that village funds have significantly impacted rural development in all regencies/cities in Indonesia from 2018 to 2022. This suggests that village funds have successfully contributed to increasing rural development in Indonesia. This is consistent with the findings of Hartojo et al. (2022) and Iskandar and Aritenang (2020), who observed that village funds have strengthened the local economy by harnessing its economic potential. Consequently, this has led to increased income levels, higher employment rates, and reduced transportation costs, collectively benefiting both rural communities and the overall development of these regions.

Nonetheless, it should be noted that village funds have not shown any impact on poverty reduction. Various studies indicate that when a significant portion of the village fund is targeted at infrastructure enhancement, the primary objective of alleviating poverty is not adequately addressed (KOMPAK, 2017; Prastyanti et al., 2018; Ramly et al., 2018). Consequently, the village fund and its allocation program fail to contribute effectively to poverty reduction, as the funds continue to be predominantly allocated to infrastructure projects or the enhancement of physical capabilities. Nevertheless, advancements in rural development are expected to stimulate economic growth, which in turn will lead to long-term poverty reduction within villages (Amin & Widaninggar, 2019; Handayani & Badrudin, 2019).

The impact of village funds varies significantly between Java and non-Java regions, with non-Java regions benefiting more. This could be attributed to the relatively underdeveloped infrastructure and higher poverty levels in non-Java regions compared to Java (Mardalena et al., 2023). In these areas, village funds may serve as a critical source of development capital, leading to more pronounced effects. The greater success in reducing poverty outside Java highlights the importance of targeted interventions in areas with higher levels of deprivation (Chakrabarti & Dhar, 2013).

Furthermore, the varying impacts of village funds can also be explained by differences in governance and institutional capacity across regions. Non-Java regions, despite having more underdeveloped villages, may benefit from more effective local governance structures that prioritise the efficient use of village funds (Hilmawan et al., 2023). In contrast, in more developed regions like Java, where local governments already have access to greater resources, the marginal effect of additional village funds on development and poverty alleviation is diminished (Saragi, 2021).

The economic structure of the regions also plays a critical role in the varying impacts of village funds. In non-Java regions, which are predominantly agricultural, village funds are often allocated to infrastructure projects that directly support agricultural productivity (Hilmawan et al., 2023). In contrast, Java's economy, being more industrialised, may already have the necessary infrastructure, reducing the relative importance of village funds for poverty reduction (Iskandar & Aritenang, 2020).

The number of villages and population density present contextual challenges in the effective utilisation of village funds. In Java, where population density is high, and there are many villages, resources may be diluted, leading to village funds being spread too thinly across numerous communities, thus diminishing their overall impact (Ariyanto & Nugraha, 2024). In contrast, non-Java regions with fewer but more underdeveloped villages may benefit from more concentrated investments (Mardalena et al., 2023).

Before COVID-19, specifically from 2018 to 2020, village funds successfully enhanced rural development in all districts/cities in Indonesia and significantly reduced poverty. However, during COVID-19, village funds primarily increased real income in the villages but had limited effects on poverty reduction. This shift can be attributed to changes in resource allocation priorities, as the government redirected the allocation of village funds from community development and empowerment to mitigating the immediate effects of COVID-19 and building resilience at the local level (Rambe et al., 2022). Additionally, the village funds program may lack the flexibility needed to adapt quickly to changing circumstances and priorities during a crisis.

The program's rigid procedures and instances of mismanagement may hinder its ability to respond effectively to emerging challenges (Rifai et al., 2024), such as supporting livelihoods, healthcare, and emergency relief efforts. Eichenbaum et al. (2021) imply that while policies aimed at disease suppression may save lives, they can also exacerbate economic downturns, particularly in rural areas. The COVID-19 crisis led to an increase in poverty rates that village funds alone could not address. This suggests that, in the absence of exceptional circumstances such as the pandemic, village funds have the potential to effectively enhance rural development and reduce poverty (Badrudin et al., 2021; Imawan & Purwanto, 2020). However, during crises, more adaptive policies are needed to meet immediate needs while continuing to advance long-term development goals

(Amin & Widaninggar, 2019; Andari & Fitria, 2023; Handayani & Badrudin, 2019; Indraningsih et al., 2021).

During COVID-19, village funds failed to stimulate rural development and alleviate poverty. The inability to enhance rural development and alleviate poverty aligns with our initial suspicion that the pandemic created a crisis beyond the capabilities of village funds to overcome. In light of the significant risks posed by the pandemic to human well-being, the implications for government policy suggest that adapting to the current circumstances is crucial. The government should continue to prioritise crisis response while simultaneously maintaining a balanced approach to rural development and poverty reduction. This necessitates flexibility, long-term planning, consideration of regional disparities, and a commitment to continuous evaluation and adaptation.

CONCLUSION

The government implements village funds to prioritise rural development efforts and alleviate poverty. This study examines the impact of village funds on rural development and poverty reduction in Indonesia using panel data analysis using a random effect model. The findings indicate that village funds have successfully enhanced rural development in Indonesia, particularly before the COVID-19 pandemic. However, the funds were less effective in alleviating poverty, especially during the pandemic, underscoring the need for adaptive and resilient fiscal policies.

Before the pandemic, village funds significantly improved rural development and reduced poverty rates, particularly in non-Java regions. These regions benefited more due to the higher number of villages and greater poverty levels, which led to more targeted and effective use of village funds. During the pandemic, the effectiveness of village funds in promoting rural development was diminished, and they failed to reduce poverty. This suggests that the economic disruptions caused by the pandemic overshadowed the potential benefits of the village funds program.

Theoretical Implications

The findings of this study indicate the need to integrate adaptability and resilience into fiscal decentralisation theory, particularly in contexts of economic disruption. The findings reveal that stable economic conditions are fundamental for the effective operation of decentralised systems, aligning with Oates' (1972) foundational theory of fiscal decentralisation, which emphasises the role of local governments in the efficient provision of public goods. However, the challenges faced during the COVID-19 pandemic suggest that traditional decentralisation models may fall short under extreme external shocks, such as public health crises, which disrupt economic stability and affect localised poverty alleviation efforts. Consequently, this study advocates for an adaptive decentralisation framework, incorporating crisis response capabilities to enable flexibility during unforeseen events.

The study challenges the assumption that decentralisation inherently leads to poverty reduction. Instead, it supports a more dynamic framework that acknowledges regional disparities and the capacity of local governance structures to address these variances effectively. Observations of the varied impact of village funds across regions, with non-Java areas benefiting more than Java, affirm that decentralisation policies need to incorporate tailored interventions to address spatial inequalities. This regional analysis supports the view that fiscal decentralisation must be context-sensitive, with policy adjustments based on regional capacities and specific economic needs (Martinez-Vazquez et al., 2017; Rao et al., 2023).

The study also calls attention to the limitations of a static model of fiscal decentralisation that does not account for crisis management. It suggests that future theoretical models should integrate resilience-building mechanisms, allowing decentralised systems to manage crises without compromising ongoing development goals. This approach broadens fiscal decentralisation theory and provides a framework for addressing poverty in varying economic contexts and regional conditions.

The observed effectiveness of village funds in alleviating poverty, especially during COVID-19, illustrates that stable economic conditions are crucial for decentralisation to succeed (Arham & Hatu, 2020; Handayani & Badrudin, 2019). This finding aligns with recent theories advocating for resilience and adaptive governance in decentralised frameworks (Wang et al., 2022). Moreover, observed regional differences, with varied impacts between Java and non-Java regions, further support the need for tailored approaches that address spatial inequalities, reinforcing the view that fiscal decentralisation must incorporate targeted interventions to promote equitable regional development.

Policy Implications

The findings of this study suggest several policy implications. First, the village funds programme should integrate mechanisms for rapid fund allocation adjustments in response to crises. Developing a contingency fund within the programme that can be quickly mobilised during emergencies would enhance responsiveness and ensure continued support for vulnerable communities. Second, empowering communities to manage and utilise funds according to their specific needs will lead to more sustainable and inclusive development outcomes. In addition, establishing a monitoring and evaluation framework that includes feedback mechanisms from local communities can help identify areas for improvement and ensure the effective implementation of the village funds program. Continuous evaluation will enable policymakers to make necessary adjustments and improve the program's efficiency (Firdaus et al., 2020). Third, regional development strategies should be designed to ensure the equitable distribution of resources and opportunities, taking into account the specific needs and characteristics of different areas.

Finally, while infrastructure development remains a key focus of these programmes, critics argue that social funds often perpetuate a form of governance that manages poverty rather than addresses its structural causes. Chakrabarti and Dhar (2013) challenge the traditional World Bank approach by emphasising that social funds do not merely serve as instruments of economic assistance; they also contribute to the subjectification of individuals, shaping them into recipients of aid rather than active agents in their development. This perspective highlights the need for a more comprehensive strategy that extends beyond economic alleviation to consider the broader social and political dimensions of poverty management.

Limitations and Recommendations

This study has several limitations. It relies on governmental data, which may be subject to accuracy and completeness issues. Another limitation is the potential issue of endogeneity, where regions that are already improving might receive more village funds or those with better governance might utilise funds more efficiently, thus complicating the causal interpretation of the results. While the random effects model addresses some omitted variable bias, it cannot fully account for reverse causality or other forms of endogeneity inherent in the allocation of village funds. Additionally, the regional variability within Indonesia's diverse landscape means that local factors may not be adequately addressed. The analysis period (2018-2022) encompasses the COVID-19 pandemic, introducing unique factors that may not accurately reflect long-term trends. Structural changes in rural areas often require a longer time frame to manifest, and the results may not fully capture these long-term effects.

Future research could address these limitations in several ways. First, it could explore more detailed data, such as extending the analysis period and considering additional variables that influence rural development and poverty. Second, conducting a comparative study of other countries' rural development programmes could provide valuable insights and enhance the generalizability of the findings. Third, a longitudinal study assessing the long-term outcomes of village funds over 10 years (2015–2024) could offer valuable insights into the sustainability and effectiveness of adaptive policies.

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