The Effect of Central Government Transfer Funds on Poverty Levels in Maluku Province

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Abstract

The primary objective of this research is to analyze the effectiveness of central government fiscal transfers in alleviating poverty within Ma-luku Province, specifically positioning economic growth as a mediating factor. While fiscal transfers have consistently increased, poverty remains a persistent issue in this archipelagic region. By applying the Three-Stage Least Squares (3SLS) method to panel data spanning 11 regencies and cities from 2015 to 2024, this study reveals a critical insight: although transfer funds significantly boost regional economic growth, they fail to directly reduce poverty rates. Economic growth functions as the main transmission channel; however, its impact is not sufficiently inclusive to benefit low-income households. A notable anomaly is observed where Village Funds (DD) exhibit a negative corre-lation with growth, signaling potential institutional bottlenecks. The study concludes that the success of fiscal decentraliza-tion depends more on allocation mechanisms and spending quality rather than transfer volume alone. We recommend a strategic reorien-tation of funds toward productive sectors and strengthening local institutional capacity to achieve meaningful poverty reduction in island-based economies.

Keywords: *Fiscal Decentralization; Archipelagic Economy; Poverty Alleviation; Village Funds; 3SLS.*

1. Introduction

Poverty remains a multifaceted global challenge that extends far beyond mere financial insufficiency. Contemporary academic discourse, notably the World Bank's Poverty, Prosperity, and Planet Report (2024), emphasizes that poverty in the post-pandemic era is driven by "poly-crises," including economic stagnation and climate fragility, which severely impact isolated regions. Being poor implies a systemic deprivation of essential capabilities, such as limited access to education, healthcare, and basic infrastructure (Xiao et al., 2022; Alkire et al., 2022). In the Global South, the distribution of welfare is markedly uneven, with rural and archipelagic territories frequently shouldering the heaviest economic burdens (Fosu, 2019; Agrawal et al., 2024). Addressing these disparities requires sophisticated policy frameworks that target the structural roots of inequality rather than merely mitigating its immediate symptoms (Lakner et al., 2022).

In the specific context of Indonesia, the poverty landscape is characterized by a stark spatial disparity between the Western and Eastern regions. While the West has experienced rapid industrial advancement, provinces in Eastern Indonesia continue to grapple with chronic structural poverty (Suryahadi & Izzati, 2018). Although national data indicates impressive progress—with extreme poverty rates declining significantly from 19% in 2002 to approximately 1.5% by 2022 (BPS, 2024)—the "final mile" of poverty eradication remains arduous. Recent studies by Dougherty et al. (2024) highlight that poverty reduction rates have stagnated in remote regions compared to national trends, largely due to connectivity issues and high logistical costs.

Fiscal decentralization, primarily executed through intergovernmental transfers, has emerged as a cornerstone strategy to bridge these social divides and stimulate regional economies (Lago, Lago-Peñas, & Martinez-Vazquez, 2024). Indonesia's fiscal architecture utilizes several key instruments: the General Allocation Fund (DAU), Special Allocation Fund (DAK), Revenue Sharing Fund (DBH), and Village Funds (DD). These mechanisms are designed to empower local governments, upgrade public amenities, and catalyze pro-poor economic growth. However, modern fiscal federalism theory warns that the mere availability of funds is insufficient; the "quality of spending" and local governance capacity are the true determinants of success (Boadway & Shah, 2024).

Maluku Province offers a unique and critical analytical setting for these fiscal policies. As an expansive archipelago composed of hundreds of islands separated by vast seas, Maluku faces inherent development barriers, including exorbitant logistics costs and fragmented infra-structure networks (Martinez-Bravo et al., 2022). Despite a consistent increase in the volume of central government transfers, the province's poverty rate remains stubbornly high. As illustrated in Figure 1, a persistent gap exists: while the national poverty average hovered around 9.54% in 2023, Maluku's rate remained significantly higher at 16.23%. This stagnation necessitates a rigorous investigation into why fiscal injections have failed to translate into substantial poverty alleviation in island-based economies (Tselios & Rodriguez-Pose, 2022).

Fig. 1: Comparison of Maluku Poverty Levels and National 2015-2023.

The empirical literature regarding the nexus between fiscal transfers, economic growth, and poverty reduction offers mixed results. While some scholars observe a robust positive correlation where transfers successfully trigger development (Liu & Martinez-Vazquez, 2022), others identify a "decentralization trap," where fiscal flows fail to generate meaningful welfare gains due to inefficiencies (Bird & Smart, 2020). These inconsistencies suggest that the success of decentralization is contingent upon local institutional quality and specific regional characteristics (Smoke, 2023). Furthermore, principal-agent dilemmas and the political economy of local budgeting often dictate the final outcome of decentralization (Boadway & Shah, 2024). In archipelagic regions, these challenges are amplified by the difficulty of achieving "inclusive growth"—economic expansion that genuinely benefits the lowest income deciles (ADB, 2022).

This research seeks to evaluate the impact of various central transfer funds on poverty in Maluku, specifically focusing on the mediating role of economic growth. The study pursues three primary objectives: (1) to quantify the direct and indirect influence of DAU, DAK, DBH, and DD on poverty levels; (2) to identify the geographical and institutional hurdles that dampen the efficacy of these funds; and (3) to propose a refined fiscal strategy tailored for archipelagic development. This paper provides several novel contributions. First, it addresses the often-overlooked archipelagic dimension of fiscal decentralization. Second, it utilizes a Three-Stage Least Squares (3SLS) simultaneous equations approach to resolve endogeneity issues between fiscal variables and economic outcomes. Third, by deconstructing the effects of specific fund types, this study provides a granular understanding of which fiscal tools are most potent in isolated island contexts.

2. Literature Review

2.1. Fiscal decentralization theory

The theoretical landscape of fiscal decentralization has evolved significantly. While early models (Oates, 1972) focused on allocative efficiency, recent scholarship emphasizes the complex "second-generation" effects involving political economy and institutional constraints. A comprehensive survey by Lago, Lago-Peñas, and Martinez-Vazquez (2024) highlights that the impact of intergovernmental grants is rarely neutral; it heavily depends on the design of the grant (conditional vs. unconditional) and the fiscal capacity of the recipient region.

In the context of developing economies, transfers are intended to correct vertical fiscal imbalances and equalize service provision. However, Dougherty et al. (2024) argue that without robust local governance, these transfers can unintentionally soften budget constraints or lead to inefficient spending. This is particularly relevant for archipelagic regions where monitoring costs are high. Modern fiscal federalism thus suggests that the success of decentralization is contingent upon the "quality of spending" rather than just the volume of funds transferred (Boadway & Shah, 2024).

2.2. Perspectives on economic growth

The nexus between fiscal transfers and economic growth remains a subject of intense empirical debate. Endogenous growth theories suggest that productive government spending on infrastructure and human capital should boost long-term growth. However, recent empirical evidence is mixed. Sofyana et al. (2025), in their analysis of Indonesian village funds, found that while decentralized funds can stimulate economic activity, the impact is often "modest" and constrained by infrastructure disparities in remote areas. This aligns with the findings of Agrawal et al. (2024), who note that local policy choices in decentralized settings often face trade-offs between tax competition and public service quality. Consequently, growth outcomes in regions like Maluku are likely influenced more by how funds are allocated across sectors (expenditure composition) than by the aggregate transfer amount alone.

2.3. The nexus between economic growth and poverty

Poverty is increasingly understood as a multidimensional phenomenon. The World Bank's Poverty, Prosperity, and Planet Report (2024) emphasizes that post-pandemic poverty reduction has stalled due to "poly-crises"—including slow growth and climate fragility—which disproportionately affect isolated regions. The concept of "inclusive growth" posits that economic expansion effectively reduces poverty only if it broadens access to opportunities for the bottom 40% of the population. However, the transmission mechanism from growth to poverty reduction is often weak in resource-dependent or island economies. Lago et al. (2024) suggest that intergovernmental grants can help bridge this gap, but only if they are effectively targeted toward services that build the capabilities of the poor, such as health and education, rather than merely subsidizing local administration. A significant barrier to this progress is the "poverty trap," where households remain stuck in a low-productivity equilibrium due to credit market failures and lack of assets (Azariadis & Stachurski, 2005). As shown in the threshold model (Figure 2), households starting below a certain asset level are often unable to escape poverty without external intervention. Well-designed fiscal transfers can act as a catalyst to break these traps by providing the necessary resources for households to invest in productive assets and human capital.
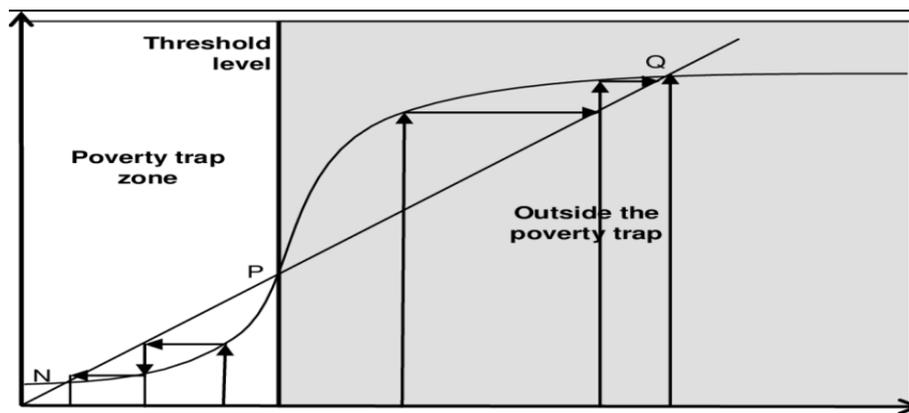
Fig. 2: Threshold Model of Poverty Persistence.

2.4. Synthesis of empirical evidence

Recent empirical studies offer a nuanced view of how fiscal decentralization impacts poverty. In Indonesia, Liu and Martinez-Vazquez (2022) found that decentralization supports poverty reduction primarily through improved service delivery. Similarly, Priambodo and Noor (2021) demonstrated that rule-based transfers in the Philippines led to long-term income gains and poverty decline, particularly in underdeveloped municipalities. Conversely, Canare (2022) and Tselios & Rodriguez-Pose (2022) emphasize that the success of these policies is contingent upon regional institutional capacity and economic conditions. In archipelagic and geographically fragmented regions, however, the literature is notably sparse. Kis-Katos and Sjahrir (2017) noted significant regional heterogeneity in how decentralization affects infrastructure spending in Indonesia. Given the unique hurdles of high logistical costs and spatial isolation in Maluku Province, this study addresses a critical gap by examining how fiscal transfers operate in a maritime context where geography and potential elite capture (Martinez-Bravo et al., 2022) may impede the effectiveness of poverty-reduction strategies.

3. Methodology

3.1. Data and sample

This study utilizes panel data from 11 regencies and cities in Maluku Province for the 2015-2024 period, resulting in 110 observations. The data are obtained from multiple sources: poverty data and regional economic indicators from the Central Statistics Agency (BPS) of Maluku Province, fiscal transfer data from the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance, and human development data from UNDP and BPS publications.

3.2. Variable definition and measurement

This study employs three types of variables: dependent variables (poverty and economic growth), independent variables (four types of transfer funds), and control variables (human development index and regional expenditure composition).
Poverty is measured as the percentage of population living below the official poverty line, as defined by BPS. Economic growth is measured as the annual percentage change in regional gross domestic product (RGDP) at constant prices. The four types of central government transfer funds are: (1) General Allocation Fund (DAU), an unconditional block grant allocated based on fiscal gap and fiscal capacity formula; (2) Special Allocation Fund (DAK), a conditional grant for specific sectoral programs; (3) Revenue Sharing Fund (DBH), sharing of natural resource revenues and national taxes; and (4) Village Fund (DD), direct transfers to village governments for village development. All transfer fund variables are measured in per capita terms (thousand rupiah per capita) to account for population size differences across regions.
The Human Development Index (HDI) is used as a control variable representing regional human capital quality, encompassing health, education, and income dimensions. This variable is important because higher human development can enhance the effectiveness of transfer funds in reducing poverty by improving the productive capacity of the population.

3.3. Econometric model specification

Given the potential reciprocal relationships among transfer funds, economic growth, and poverty, this study employs a simultaneous equations model estimated using Three Stage Least Squares (3SLS). The 3SLS estimator is more efficient than equation-by-equation two-stage least squares when the equation errors are correlated, which is likely in this context where unobserved factors may simultaneously affect growth and poverty.
The simultaneous equations system is specified as follows:
Economic Growth Equation:

$$GROWTH_{it} = \alpha_0 + \alpha_1 DAU_{it} + \alpha_2 DAK_{it} + \alpha_3 DBH_{it} + \alpha_4 DD_{it} + \alpha_5 HDI_{it} + \varepsilon_{1it}$$

Poverty Equation:

$$POVERTY_{it} = \beta_0 + \beta_1 GROWTH_{it} + \beta_2 DAU_{it} + \beta_3 DAK_{it} + \beta_4 DBH_{it} + \beta_5 DD_{it} + \beta_6 HDI_{it} + \varepsilon_{2it}$$

Where i denotes regency/city, t denotes year, and ε_{1it} and ε_{2it} are error terms. The subscripts indicate that variables vary across both regions and time.

The key identifying assumption is that transfer funds affect poverty both directly and indirectly through economic growth, while poverty does not have contemporaneous feedback effects on transfer fund allocations (which are determined by central government formulas based on lagged fiscal and demographic data). The 3SLS estimation procedure instruments the endogenous economic growth variable in the poverty equation using all exogenous variables in the system, thereby providing consistent and efficient parameter estimates.

3.4. Estimation procedure

The estimation procedure follows three stages: First, all reduced-form equations are estimated using Ordinary Least Squares (OLS) to obtain fitted values for endogenous variables. Second, each structural equation is estimated using Two-Stage Least Squares (2SLS) using fitted values from stage 1 as explanatory variables. Third, the complete system is estimated using 3SLS which accounts for correlation of errors across equations. Model diagnostics include tests for normality of residuals (Shapiro-Wilk/Jarque-Bera), heteroscedasticity (Breusch-Pagan/White test), multicollinearity (VIF), model identification, and instrument validity.

4. Results of Conceptual Analysis

4.1. Descriptive statistics

The composition of central government transfer funds to regencies/cities in Maluku is dominated by General Allocation Fund (DAU) with a portion of 59.6%, followed by Special Allocation Fund (DAK) 21.6%, Village Fund (DD) 14.3%, and Revenue Sharing Fund (DBH) only 4.5%. The dominance of DAU reaching almost 60% indicates a high level of fiscal dependence on the central government and suggests that Regional Own-Source Revenue (PAD) capacity is still low.

Table 1.1: Types of Transfer Funds by Regency/City 2015-2024

No	Regency / City	Total Transfer (Trillion Rp)	Avg. per Year (Billion Rp)	DAU (%)	DAK (%)	DBH (%)	DD (%)	Total (%)
1	Southeast Maluku	18.87	2,096.55	22.9	9.3	0.8	67.0	100
2	Central Maluku	13.43	1,492.41	63.5	24.1	1.9	10.5	100
3	West Southwest Maluku	9.67	1,074.34	51.5	18.7	20.8	9.0	100
4	West Seram	8.37	929.89	63.5	22.6	4.5	9.4	100
5	East Seram	8.36	929.24	55.5	22.8	5.3	16.4	100
6	Ambon City	8.27	918.41	72.4	20.1	4.1	3.4	100
7	Aru Islands	7.81	867.92	66.0	21.4	2.2	10.4	100
8	Tanimbar Islands	7.66	850.86	65.1	23.8	2.6	8.5	100
9	Buru	7.29	809.53	61.1	27.1	2.8	9.0	100
10	South Buru	6.08	675.10	61.7	24.0	3.6	10.7	100
11	Tual City	5.05	560.69	68.4	24.4	2.2	5.0	100
---	Average / Total	10.01	817.71	59.2	21.7	4.6	14.5	100

Source: Processed.

4.2. TKDD data

The very small portion of DBH (average 4.62%) reflects a weak local economic base and underutilized natural resource potential. There is a considerable gap in transfer distribution among regions, with differences between the highest recipient (Maluku Tenggara with Rp 2,096.55 billion per year) and the lowest (Tual with Rp 560.69 billion per year) reaching 3.7 times.

Poverty rates in Maluku Province show a declining trend from 2015 to 2024, although they remain higher than the national average. Economic growth rates fluctuate between 3-6% annually, showing sensitivity to external shocks and limited diversification of the regional economy. The Human Development Index shows consistent improvement, reflecting progress in education, health, and living standards, although gaps persist between urban and rural areas as well as between island and mainland regions.

Table 1.2: Trend of Central Government Transfer Funds 2015-2024

Year	Total Transfer (Trillion Rp)	Avg. per Region (Billion Rp)	DAU (%)	DAK (%)	DBH (%)	DD (%)	Dominant Characteristic
2015	9.79	890.23	66.61	20.93	1.56	10.90	DAU Dominant
2016	20.74	1,885.29	30.00	9.20	2.40	58.30	DD Dominant
2017	10.92	992.52	56.50	22.60	12.10	8.80	DAU Dominant
2018	9.75	886.45	64.50	23.70	2.00	9.80	DAU Dominant
2019	10.24	930.62	63.70	23.60	1.80	11.00	DAU Dominant
2020	9.23	838.93	64.40	20.90	2.00	12.60	DAU Dominant (COVID-19)
2021	9.67	878.70	60.70	25.50	2.70	11.20	DAU Dominant (Recovery)
2022	9.60	872.40	61.20	25.10	3.30	10.50	DAU Dominant
2023	10.92	992.52	56.50	22.60	12.10	8.80	DAU Dominant
2024	9.79	890.23	66.60	20.90	1.60	10.90	DAU Dominant

Source: Processed TKDD Data.

Transfer funds during 2015-2024 show significant fluctuations, ranging from Rp 9.23 trillion to Rp 20.74 trillion annually. The year 2016 represents a unique outlier with Village Funds dominating at 58.3% due to massive village development acceleration, before returning to normal patterns. DAU consistently dominates (averaging 59.2%), reflecting high fiscal dependence on central government and low Regional Own-Source Revenue capacity. DAK shows an increasing trend from 9.2% (2016) to 25.5% (2021), indicating infrastructure investment priorities and post-pandemic recovery strategies. DBH is highly volatile (1.6%-12.1%), dependent on commodity prices, with

spikes in 2017 and 2023 during commodity booms. The low average DBH (4.1%) suggests weak local economic base and underutilized natural resources. COVID-19 impact in 2020 resulted in the lowest total transfers (Rp 9.23 trillion), yet Village Funds increased (12.6%) to strengthen social safety nets. The combined DAU-DAK share of 80-90% underscores critical need for enhancing regional fiscal capacity through PAD optimization and local economic development to reduce vulnerability to central policy changes.

4.3. Estimation results

Results from the Economic Growth equation reveal several important findings. The DAU variable has a positive coefficient of 1.057 with a p-value of 0.070, indicating that DAU has a positive effect on economic growth significant at the 90% confidence level but not significant at 95%. This positive coefficient suggests that a 1% increase in DAU will increase economic growth by approximately 1.057%, indicating that DAU as a block grant provides flexibility to regional governments to allocate funds according to local development priorities, thereby stimulating economic activity through development spending on infrastructure, improvement of public services, and fiscal stimulus.

Table 1.3: Three-Stage Least Squares (3SLS) Estimation Results

Dependent Variable / Regressor	Coefficient	Std. Error	z-statistic	p-value	Signif.
Equation 1: Economic Growth (lnpe)					
DAU (lndau)	1.0567	0.5829	1.81	0.070	*
DAK (lndak)	0.5168	0.3092	1.67	0.095	*
DBH (lndbh)	0.2934	0.1404	2.09	0.037	**
DD (lndd)	-1.1451	0.2491	-4.60	0.000	***
Human Development Index (lnipm)	-4.5956	1.7955	-2.56	0.010	**
Constant	15.3447	6.8913	2.23	0.026	**
Model Statistics					
R²	0.1476				
Prob > χ²	0.0002				
Equation 2: Poverty (ln Kemiskinan)					
Economic Growth (lnpe)	-0.1436	0.0530	-2.71	0.007	***
Unemployment Rate (lntpt)	-0.0198	0.0492	-0.40	0.687	–
Human Development Index (lnipm)	-4.9081	0.4074	-12.05	0.000	***
Constant	23.8771	1.6967	14.07	0.000	***
Model Statistics					
R²	0.5486				
Prob > χ²	0.0000				

Note: *** significant at 1%, ** significant at 5%, * significant at 10%.
Source: Processed data using Stata 17.

The DAK variable has a positive coefficient of 0.516 with a p-value of 0.095, indicating that DAK has a positive effect on economic growth significant at the 90% confidence level. The DBH variable has a positive coefficient of 0.293 with a p-value of 0.037, indicating that DBH has a positive and significant effect on economic growth at the 95% confidence level. This shows that revenue sharing provides fiscal incentives for regional governments to increase local economic productivity and sustainable natural resource management. An interesting and profound finding is that the Village Fund (DD) variable has a negative coefficient of -1.145 with a p-value of 0.000, indicating that DD has a very significant negative effect on economic growth at over 99.99% confidence level. This counter-intuitive finding may occur due to several complex reasons. First, there are problems with institutional and managerial capacity of village governments in Maluku Province which are still limited in planning and implementing productive and growth-oriented development programs. Village Funds are more widely used for consumptive activities or simple physical infrastructure development that does not directly contribute to productive economic activities that drive growth.

Second, geographic challenges in archipelagic regions cause very high logistical costs and constraints in village-level project implementation, so that Village Funds become less efficient and less productive. Third, there may be a crowding-out effect where Village Funds replace or reduce private investment and productive economic activities at the village level, or a substitution effect where Village Funds replace PAD that was previously allocated for productive programs.

Results from the Poverty equation show that Economic Growth (PE) has a negative coefficient of -0.007 with a p-value of 0.035, significant at the 5% level. This indicates that economic growth has a negative effect on poverty, meaning increased economic activity successfully reduces poverty levels. However, the relatively small coefficient magnitude (0.007) suggests that the transmission of economic growth to poverty reduction is not very strong, possibly because growth is not fully inclusive and has not effectively reached poor households.

The Human Development Index (IPM) has a very strong negative and significant effect on poverty with a coefficient of -1.244, standard error 0.118, t-statistic of -10.59, and p-value 0.000. This indicates that HDI improvement consistently and significantly reduces poverty levels in regencies/cities of Maluku Province. This finding reinforces the argument that investment in human capital through education and health is very important in poverty reduction efforts.

Model quality can be assessed from several important statistics. For the Economic Growth equation, the R-squared value of 0.148 or 14.8% indicates that independent variables in the model can explain 14.8% of economic growth variation, while the remaining 85.2% is explained by other factors not included in the model. This relatively low R-squared indicates that economic growth in regencies/cities of Maluku Province is influenced by many complex factors beyond fiscal decentralization and human development.

For the Poverty equation, the R-squared value of 0.549 or 54.9% indicates that independent variables in the model can explain poverty variation quite well, much higher than the Economic Growth equation. This indicates that the Poverty model has a more appropriate specification in capturing determinant factors of poverty, where economic growth, transfer funds, and human development are key factors that theoretically and empirically prove to have very significant effects on poverty levels in a region.

5. Discussion

The estimation results yield several critical insights regarding the effectiveness of fiscal decentralization in archipelagic regions. Primarily, the findings demonstrate that central government transfer funds can effectively stimulate regional economic growth, particularly when administered as unconditional block grants (DAU) or conditional, sector-specific grants (DAK). This aligns with fiscal federalism theory,

which posits that the decentralized provision of public services enhances efficiency when supported by adequate financing (Oates, 1999; Boadway & Shah, 2024). However, the absence of significant direct effects from transfer funds on poverty indicates that economic growth serves as the primary transmission channel. This implies that transfer fund effectiveness is determined not merely by the volume of resources, but by how those resources are utilized to generate inclusive economic expansion. The moderate poverty elasticity of growth (1.32) suggests that the resulting growth has not been fully inclusive, likely due to the dominance of non-productive sectors or limited linkages between high-growth sectors and the livelihoods of poor households (Fosu, 2017; Lakner et al., 2022).

A significant policy challenge identified in this study is the negative effect of Village Funds (DD) on economic growth. While village-level decentralization aims to enhance local participation, implementation in archipelagic regions faces substantial constraints, including limited institutional capacity, high transaction costs, and the risk of elite capture (Martinez-Bravo et al., 2022; Smoke, 2023). This suggests that fiscal transfers alone are insufficient; successful decentralization necessitates parallel investments in local institutional capacity building. Conversely, the strong impact of the Human Development Index (HDI) on both economic growth and poverty reduction confirms that human capital investment must be a priority for transfer fund utilization. In line with endogenous growth theory and the capability approach, regions with superior education and health outcomes can more effectively leverage fiscal transfers to create a virtuous cycle of development (Lucas, 1988; Sen, 1999; Alkire et al., 2022).

For archipelagic regions like Maluku, geographic isolation and high connectivity costs act as barriers that reduce transfer fund effectiveness by inflating implementation costs and limiting economic integration. Consistent with the broader literature (Liu & Martinez-Vazquez, 2022; Canare, 2022), this study confirms that fiscal decentralization can reduce poverty, but its impact is heavily contingent upon local conditions and implementation quality. Notably, this research qualifies the generally positive assessment of village-level transfers seen in other contexts (Priambodo & Noor, 2021) by highlighting that decentralization to the most local levels may be counterproductive without adequate institutional readiness and spatial integration (Kanbur & Venables, 2005, 2007).

6. Conclusion

This study establishes that fiscal decentralization in Maluku Province functions principally as a driver of economic expansion, influencing poverty alleviation only indirectly through growth channels. The empirical evidence confirms that while block grants (DAU) and specific allocations (DAK) stimulate regional output, the Village Fund (DD) presents a structural anomaly with a negative impact on growth, highlighting deep-seated institutional constraints in archipelagic governance. Furthermore, the limited inclusivity of current economic growth underscores the pivotal role of the Human Development Index (HDI), which emerges as the dual engine for boosting productivity and reducing poverty.

To optimize fiscal effectiveness in island-based economies, policy reforms must prioritize three strategic shifts. First, central transfer formulas require refinement to explicitly incorporate geographic weights that compensate for the exorbitant logistical costs of archipelagic connectivity. Second, local spending must be reoriented from administrative overheads toward productive, labor-intensive infrastructure to prevent leakage. Third, given that HDI is the strongest determinant of welfare, enhancing human capital through education and health investments is a prerequisite for maximizing the benefits of fiscal decentralization. Future research should expand this analysis to other archipelagic provinces to validate these patterns across diverse island contexts.

Acknowledgement

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