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Do Village Funds and Tobacco Excise Revenue Sharing Improve Human Development?

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ABSTRACT

Research Originality: This study contributes to the literature by examining the effects of Village Funds and Tobacco Excise Revenue Sharing Funds on human development in Central Java and underscores the lack of studies that assess these effects using individual HDI indicators as robustness measures.

Research Objectives: This study aims to analyze whether fiscal transfers significantly improve HDI in Central Java.

Research Methods: This study uses panel data from 35 districts/cities in Central Java during 2016-2023 and employs a Fixed Effects Model. Robustness tests use life expectancy, mean years of schooling, and per capita income.

Empirical Results: Village Funds and Tobacco Excise Revenue Sharing improve human development in Central Java. However, impacts vary by HDI dimension. These fiscal transfer instruments mainly improve life expectancy and income, whereas mean years of schooling show no statistically significant results. This suggests stronger contributions for health and income than for education.

Implications: These findings suggest that fiscal transfer policies should improve targeting and effectiveness to support long-term human development and reduce regional disparities, especially in education outcomes.

Keywords:
village funds; tobacco excise revenue sharing; welfare outcomes; intergovernmental fiscal transfers; human development

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INTRODUCTION

Human development remains a key challenge in sustainable economic development, as it reflects the quality of human capital and individuals' ability to participate productively in economic activities (Jie & Lan, 2024). Although economic theory emphasizes that improvements in human resources, particularly higher labor quality and productivity, are essential drivers of long-term economic growth, disparities in human development persist across regions (Bekele et al., 2024). In development economics, investment in education and health is considered a fundamental mechanism for improving welfare, reducing poverty, and strengthening socioeconomic resilience, especially in developing countries (Sultana et al., 2022). These issues highlight that improvements in income alone are insufficient if human development outcomes remain uneven.

The importance of this issue is reflected in the Human Development Index (HDI), which is widely used as a multidimensional measure capturing achievements in health, education, and income, providing a broader alternative to GDP-based indicators (Zhang & Danish, 2019; Lescano et al., 2024; Susilo et al., 2026). HDI not only measures development outcomes but also reflects the effectiveness of public policy in improving living standards and access to basic services (Hilwa et al., 2026). Regions with higher HDI generally demonstrate stronger human capital formation and better economic opportunities, which contribute to higher productivity and lower vulnerability (Asadullah & Savoia, 2018). However, despite continuous economic progress in many developing countries, persistent regional disparities in human development indicate that development gains are not evenly distributed and require more inclusive policy interventions (Lian et al., 2023).

In Java, despite being the center of Indonesia's economy and government, disparities in economic welfare remain a major development challenge, underscoring the importance of regional-level analysis to better understand uneven development outcomes across districts and cities (Black et al., 2025). Regencies and municipalities in Central Java Province exhibit a diverse economic structure, combining agricultural, industrial, and service sectors, which contributes to differences in fiscal capacity and development outcomes across regions. Statistics Indonesia (BPS) reports that Central Java's Human Development Index (HDI) increased steadily from 69.98 in 2016 to 73.39 in 2023, indicating continuous improvement over time; however, it remains below the national average, suggesting structural constraints in improving welfare outcomes. This improvement is nevertheless accompanied by persistent disparities in HDI across districts and municipalities in the province, reflecting uneven human development performance due to differences in local governments' ability to translate fiscal resources into human development outcomes, making Central Java Province a relevant empirical case for examining human development performance under fiscal decentralization (Sjaf et al., 2025). However, empirical evidence on districts/cities in Central Java remains relatively limited.

Fiscal decentralization has been widely recognized as a policy instrument aimed at improving the efficiency of public service delivery and enhancing regional development performance by allocating resources to subnational governments, while also stimulating regional economic activity and strengthening human development outcomes (Bacarreza et

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al., 2020; Jin & Jakovljevic, 2023). In practice, however, regional fiscal disparities remain significant, as many districts and cities still face limited capacity to generate own-source revenue, making it difficult to finance development expenditures independently (Yimenu, 2023). This condition creates a dependency on intergovernmental fiscal transfers as a strategic mechanism to equalize fiscal capacity and reduce inequality in public service delivery. Several studies argue that fiscal transfers can improve welfare by encouraging local governments to expand spending on education and healthcare, particularly in less developed regions (Hung & Thanh, 2022). In Indonesia, fiscal transfers are essential components of decentralized governance that aim to reduce fiscal disparities and strengthen local government capacity across varying regional revenue conditions, as evidenced by the uneven spatial distribution of fiscal revenues and the need to modify transfer allocation formulas to improve equity (Akita et al., 2021).

Among Indonesia's fiscal transfer instruments, Village Funds are among the most important mechanisms for promoting inclusive development. Empirical evidence suggests that Village Funds can contribute to rural development, employment creation, and welfare improvement by expanding access to economic opportunities and public facilities (Arifin et al., 2020). As a result, Village Funds are expected to improve human development outcomes, particularly in regions where development challenges remain concentrated in rural areas. Another important fiscal instrument is the Tobacco Excise Revenue Sharing Fund (DBHCHT). This scheme allocates a portion of tobacco excise revenues to local governments to finance healthcare programs, law enforcement activities, social welfare initiatives, and other development-related expenditures (Yandri et al., 2020). The rationale underlying DBHCHT is that fiscal resources generated from tobacco consumption should help mitigate its social and health consequences while supporting broader welfare objectives. Therefore, DBHCHT is also expected to contribute positively to human development, particularly by improving health outcomes and public service provision.

Empirical research on Village Funds and human development has produced mixed findings. Some studies find a positive effect (Pandiangan et al., 2021); others find no effect (Hilmawan et al., 2023). The relationship between DBHCHT and human development is also debated: some studies find no effect, others report outcomes that reduce or enhance human development (Mgammal, 2024; Saputra & Doddy, 2026). These findings suggest that earlier studies have not fully considered the combined effects of Village Funds and DBHCHT, nor how these fiscal transfer instruments interact to influence human development outcomes.

Human development is influenced not only by fiscal transfers but also by regional economic and fiscal conditions, with stronger fiscal capacity and higher income improving performance, and higher unemployment reducing it. However, the evidence is inconclusive, and different studies report varying effects of HDI on regional conditions and structural characteristics (Hung & Thanh, 2022; Stijepic, 2021; Saputra & Doddy, 2026). Therefore, controlling for these factors is necessary to understand the fiscal determinants of HDI better, as earlier studies have not fully considered the effects of fiscal instruments and macroeconomic factors on disparities in human development across regions.

This study aims to address empirical gaps by examining the impact of fiscal transfer instruments on human development in Indonesia, focusing on Village Funds and DBHCHT across districts/cities in Central Java. Existing studies have analyzed fiscal transfers at the aggregate level or through a single transfer scheme, thereby limiting understanding of how different types of transfers influence human development outcomes at the subnational level. Most empirical evidence relies on national or cross-country analyses, while district-level heterogeneity within provinces remains underexplored.

The study's main novelty lies in three aspects. Firstly, it integrates Village Funds and DBHCHT within a unified analytical framework, enabling a more comprehensive assessment of their combined effects on human development. Secondly, it enhances empirical robustness by incorporating disaggregated HDI components to capture multidimensional effects of fiscal transfers. Thirdly, it provides a district-level empirical analysis of fiscal transfers and human development using panel data from 35 districts and municipalities in Central Java, allowing for a more detailed examination of regional variations in development outcomes. Based on these motivations, this study aims to analyze the effects of Village Funds and DBHCHT on human development across districts/cities in Central Java during the period 2016-2023. Using panel data analysis, this study seeks to provide new empirical evidence on how fiscal transfer instruments influence human development outcomes and to contribute to the ongoing debate on the effectiveness of fiscal transfers in reducing regional disparities in developing countries.

METHODS

This study uses panel data regression analysis with fixed- and random-effects models. The model is chosen using formal specification tests. The dataset covers the period 2016-2023 and comprises 280 observations from 35 districts in Central Java Province. The observation period was selected based on the availability and consistency of district-level data. Central Java was selected as the unit of analysis because it receives substantial allocations of both Village Funds and DBHCHT, and has several tobacco-producing regions and tobacco-related industries. Despite these significant fiscal transfers, disparities in HDI achievement across districts and municipalities remain, suggesting that improvements in human development outcomes are not evenly distributed. This raises questions about the effectiveness of fiscal transfers in enhancing human welfare. Furthermore, the availability of complete and consistent district-level panel data enables a robust empirical assessment of temporal and regional variations. These characteristics justify Central Java as a relevant unit of analysis.

This study uses five key variables. The dependent variable is the Human Development Index (HDI). For robustness analysis, the HDI is disaggregated into Life Expectancy (AHH), Mean Years of Schooling (RRLS), and Per Capita Income (PPP). The main independent variables are Village Funds and Tobacco Excise Revenue Sharing Funds (DBHCHT). Control variables include Regional Original Revenue (PAD), Gross Regional Domestic Product per capita (GRDP per capita), and the Open Unemployment Rate (TPT). All data are obtained from official sources, namely the Central Statistics Agency

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(BPS) and the Directorate General of Fiscal Balance (DJPK), ensuring reliability and consistency. The equation model in this study is as follows:

$$\mathrm{IPM}_{it} = \beta_0 + \beta_1\mathrm{LDD}_{it} + \beta_2\mathrm{LDBHCHT}_{it} + \beta_3\mathrm{LPAD}_{it} + \beta_4\ \mathrm{LPDRB}_{it} - \beta_5\mathrm{TPT}_{it} + \varepsilon_{it} \quad (1)$$

$$\mathrm{AHH}_{it} = \beta_0 + \beta_1\mathrm{LDD}_{it} + \beta_2\mathrm{LDBHCHT}_{it} + \beta_3\mathrm{LPAD}_{it} + \beta_4\ \mathrm{LPDRB}_{it} - \beta_5\mathrm{TPT}_{it} + \varepsilon_{it} \quad (2)$$

$$\mathrm{RRLS}_{it} = \beta_0 + \beta_1\mathrm{LDD}_{it} + \beta_2\mathrm{LDBHCHT}_{it} + \beta_3\mathrm{LPAD}_{it} + \beta_4\ \mathrm{LPDRB}_{it} - \beta_5\mathrm{TPT}_{i} + \varepsilon_{it} \quad (3)$$

$$\mathrm{LPPP}_{it} = \beta_0 + \beta_1\mathrm{LDD}_{it} + \beta_2\mathrm{LDBHCHT}_{it} + \beta_3\mathrm{LPAD}_{it} + \beta_4\ \mathrm{LPDRB}_{it} - \beta_5\mathrm{TPT}_{it} + \varepsilon_{it} \quad (4)$$

Where IPM_{it} is the Human Development Index in districts/cities I in period t. AHH_{it} is the Life Expectancy Rate, RRLS_{it} is the Mean Years of Schooling, LPPP_{it} is the logarithm of Per Capita Income, LDD_{it} is the logarithm of the Village Fund, $\mathrm{LDBHCHT}_{it}$ is the logarithm of the Tobacco Excise Revenue Sharing Fund, LPAD_{it} is the logarithm of Regional Original Revenue, LPDRB_{it} is the logarithm of Gross Regional Domestic Product per Capita, and TPT_{it} is the Open Unemployment Rate. β_0 is a constant, whereas β_1- β_5 are coefficients; Index I shows district/city (1,2, …, 35) and t indicates a time period (2016-2023). ε_{it} is an error term.

This study uses a fixed-effects model to control for time-invariant characteristics across districts/cities, reducing potential endogeneity arising from omitted-variable bias and unobserved regional heterogeneity. Data were cleaned, missing-value checks were conducted, outliers were treated, and logarithmic transformation was applied. Descriptive statistics were used to summarise the data. A panel data estimation model was employed with fixed- and random-effects; selection was based on Chow and Hausman tests. Robust standard errors clustered at the district/city level were applied to ensure reliable inference, and multicollinearity was assessed using a correlation matrix, with coefficients below 0.80 indicating no serious multicollinearity. Statistical significance was evaluated at the 5% level.

RESULTS AND DISCUSSION

The study's findings show that Village Funds and DBHCHT improve human development in Central Java. Panel data estimation shows that both instruments have a positive effect on the HDI, suggesting that higher transfers lead to better development outcomes. The results also reveal that the control variables, namely regional original revenue, gross regional domestic product per capita, and open unemployment rate, are significantly associated with HDI. Robustness tests using life expectancy, mean years of schooling, and per capita expenditure provide further evidence that the effects of fiscal transfers extend across multiple dimensions of human development. The detailed results are presented below.

Table 1 presents the descriptive statistics. The dataset consists of 35 districts/cities over the 2016-2023 period. HDI is an index, while the rest are measured in their units. There are disparities in the values of several variables across districts/cities. These variations suggest differences in human development, fiscal conditions, economic performance, and labor market characteristics across the regions (see Table 1).

Table 1. Descriptive Statistics

Variables	Obs	Mean	Std. Dev	Min	Max
IPM	280	72.467	4.478	63.980	84.990
AHH	280	74.872	1.870	68.410	77.930
RRLS	280	7.815	1.296	2.080	11.240
LPPP	280	13.797	0.252	13.327	14.688
LDD	280	15.979	7.288	0.000	20.021
LDBHCHT	280	16.199	0.665	15.548	19.289
LPAD	280	19.687	0.441	18.726	21.765
LPDRB	280	3.207	0.503	2.482	4.558
TPT	280	5.077	1.852	1.76	9.97

Source: The author's calculations (2026)

Table 2 presents the results of the model selection process. A series of specification tests was conducted to determine the most suitable model among the Common Effects Model, the Fixed Effects Model, and the Random Effects Model. The results suggest that the Fixed Effects Model is the most appropriate. Accordingly, it has been adopted in this study.

Table 2. Chow and Hausman Test Results

	Probability			
Effect Test	**Model I (IPM)**	**Model II (AHH)**	**Model III (RRLS)**	**Model IV (LPPP)**
Chow	0.0000	0.0000	0.0000	0.0000
Hausman	0.0000	0.0000	0.0005	0.0000
Conclusion	FEM	FEM	FEM	FEM

Source: The author's calculations (2026)

Table 3. Multicollinearity Test Results: Pairwise Correlations

Variables	LDD	LDBHCHT	LPAD	LPDRB	TPT
LDD	1	0.23	-0.10	-0.63	-0.27
LDBHCHT	0.23	1	0.05	0.19	-0.29
LPAD	-0.10	0.05	1	0.41	0.24
LPDRB	-0.63	0.19	0.41	1	0.14
TPT	-0.27	-0.29	0.24	0.14	1

Source: The author's calculations (2026)

The results in Table 3 show that the independent variables are not highly correlated. This means the panel data regression model is not affected by multicollinearity. All

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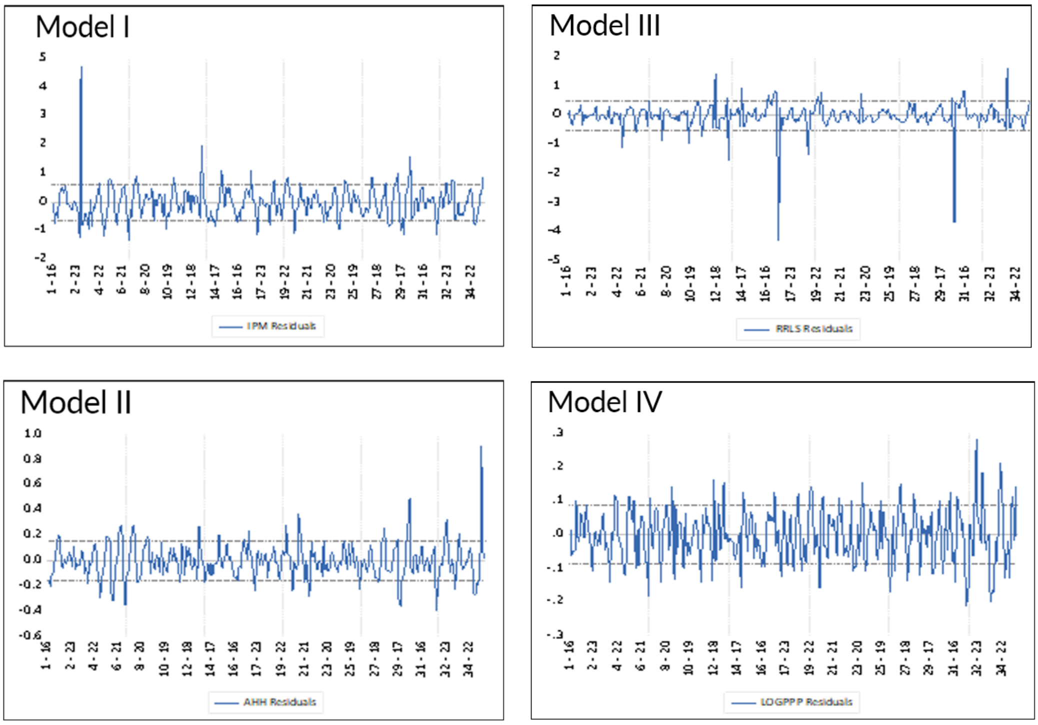
estimation models use the same independent variables, so the correlation structure and test results are the same for all model specifications.

As shown in Figure 1, the residual plots for Models I, II, III, and IV show that the errors are randomly scattered around zero. This means the variance of the errors does not change across observations. This indicates that the homoscedasticity assumption is satisfied, meaning the models are reliable for further analysis.

Figure 1. Residual Graph Heteroscedasticity Test



Source: The author's calculations (2026)

Based on Table 4, the F-test results suggest that all estimated models are jointly significant. This implies that the independent variables collectively influence the dependent variables. The t-test results further show that all explanatory variables significantly affect HDI. Furthermore, robustness analysis using life expectancy, mean years of schooling, and per capita income confirms the consistency of the main findings. Therefore, fiscal transfers constitute an important instrument for improving human development outcomes, particularly in the health and income dimensions.

The results reveal a positive association between Village Funds and human development. This occurs because Village Funds allow villages to improve infrastructure, healthcare services, and community empowerment programs, directly improving welfare. Improved access to economic opportunities and basic services is achieved through better village roads, sanitation facilities, and public services, contributing to higher human development outcomes. This is consistent with the findings of Sijabat (2024) and Permatasari et al. (2021) in Indonesia, and with those of Akita et al. (2021), who found that Village Funds improve welfare through infrastructure expansion, poverty reduction, and sustainable rural development. Akita et al. (2021) also highlight the importance of intergovernmental fiscal transfers in reducing regional disparities and supporting local development outcomes. Collectively, these studies suggest that fiscal transfers play an important role in expanding access to public services and improving community welfare. The present study shows that Village Funds' contributions are more apparent in the health and income dimensions than in educational attainment, indicating that the benefits of Village Funds are not distributed evenly across all aspects of human development.

Table 4. Panel Regression Estimation Results

Variables	Model I (IPM)	Model II (AHH)	Model III (RRLS)	Model IV (LPPP)
C	-21.35***	56.58***	-9.53***	1.71***
	(4.488)	(1.105)	(3.657)	(0.625)
LDD	2.17***	0.43***	0.28	0.27***
	(0.323)	(0.079)	(0.263)	(0.045)
LDBHCHT	1.93***	0.50***	0.14	0.21***
	(0.195)	(0.048)	(0.159)	(0.027)
LPAD	0.57**	0.11*	0.20	0.08***
	(0.271)	(0.066)	(0.221)	(0.037)
LPDRB	4.87***	0.17	1.89***	0.75***
	(0.865)	(0.213)	(0.705)	(0.120)
TPT	0.16***	0.05***	0.04	0.02***
	(0.040)	(0.010)	(0.033)	(0.005)
Adj R-squared	0.980489	0.993218	0.845324	0.845324
Prob F-Stat	0.000000	0.000000	0.000000	0.000000

Note: *** significant at 1%, ** significant at 5%, * significant at 10%
Source: The author's calculations (2026)

Meanwhile, the results reveal that DBHCHT also has a positive effect on human development. This condition may occur because DBHCHT is designed to support health services, labor welfare programs, social protection initiatives, and other public service activities. Through these programs, local governments can improve healthcare access, strengthen social assistance mechanisms, and enhance community welfare. This is consistent with Mgammal (2024), who showed that tobacco-related tax revenues can support human development by improving public health and providing public resources for social and economic development. Similar conclusions were reported by Ahsan et al. (2024), who highlighted the importance of DBHCHT as a fiscal instrument for financing development programs that improve community welfare and support socio-economic development in local regions.

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These findings suggest that tobacco excise revenue-sharing funds strengthen local government capacity in providing welfare-oriented programs. Nevertheless, previous studies generally focus on the overall welfare effects of DBHCHT and provide limited evidence of its contribution to specific dimensions of human development. This study shows that DBHCHT's primary positive contribution is in health and income, while its effect on educational attainment remains limited. This suggests that DBHCHT effectiveness varies across the development dimensions examined.

The control variables are positively correlated with human development. PAD and GRDP per capita positively affect HDI, indicating that stronger fiscal capacity and economic activity are associated with better welfare outcomes. This may be because high revenue generation allows for greater investment in public services, infrastructure, education, and healthcare. These findings are consistent with Jin & Jakovljevic (2023), who argue that fiscal autonomy strengthens regional development through greater expenditure flexibility. Similarly, Hung & Thanh (2022) also found that stronger economic performance leads to better human development outcomes. This is also consistent with the broader literature on the positive correlation between fiscal capacity and economic growth and human development. However, while previous studies have primarily emphasized the role of fiscal capacity and economic growth in promoting human development, this study shows that these factors complement the effects of fiscal transfer instruments. This finding highlights the importance of considering both transfer-based fiscal resources when examining human development outcomes.

The Open Unemployment Rate (TPT) shows a positive relationship with human development, defying conventional expectations in development theory. Usually, high unemployment is expected to reduce welfare because fewer people are employed. However, this is consistent with Stijepic (2021), who found that improvements in educational attainment do not automatically reduce unemployment when labor market conditions constrain the effective use of human capital. This suggests that higher human development may coexist with relatively high unemployment during periods of labor market adjustment. In Central Java, this is understandable because improvements in education may precede the expansion of formal employment. This pattern is commonly observed during structural transformation, when economic modernization generates transitional unemployment. Unemployment is positively associated with HDI in the study period because it may reflect labor market adjustment rather than worsening welfare conditions.

The robustness analysis provides more evidence on the channels through which fiscal transfers affect human development. Village Funds and DBHCHT remain key factors in explaining differences in life expectancy and per capita expenditure. This is because fiscal transfers are often used to fund healthcare services, sanitation facilities, social protection programs, and local economic development, all of which directly impact health and household welfare. This finding aligns with Suhyanto et al. (2021), who stressed the role of fiscal transfers in strengthening local public service delivery, particularly in healthcare. Similar findings were reported by Wirandana & Khoirunnofik (2022), who found that fiscal transfers boost welfare by stimulating local economic activity and strengthening regional economic resilience. While previous studies generally evaluate welfare outcomes using aggregate indicators, the present study uses a more detailed approach by examining individual dimensions of human development. The findings suggest that fiscal transfers have a stronger effect on health and income outcomes than on educational attainment, indicating that their benefits are transmitted through distinct channels and are not uniform across all dimensions of human development.

However, the impact of both Village Funds and DBHCHT on years of schooling is not significant. This is because improvements require greater investment of time and resources. The educational outcomes are contingent upon several factors, including the level of funding allocated to the educational sector, the quality of teaching staff, the infrastructure available at educational institutions, and the socio-economic characteristics of households.

This result is similar with Yubilianto's (2020) argument that education requires continuous investment. In contrast to the more immediate impact of health and income, the process of education is characterized by a more gradual progression. This phenomenon supports the notion that fiscal transfers, while exerting a substantial influence on health and income outcomes, do not invariably translate into immediate impacts on educational attainment.

The findings support fiscal decentralization theory, as previous studies have shown that intergovernmental fiscal transfers positively impact welfare and regional development. Guerrero et al. (2022) reported similar evidence, emphasizing that vertical intergovernmental transfers are essential for supporting subnational development by enabling more effective resource allocation and financing development priorities. This suggests that fiscal transfers can contribute to better development outcomes when they are aligned with regional needs and policy objectives.

However, unlike most previous studies that rely primarily on HDI as a composite indicator, this study examines the specific dimensions of human development through robustness analysis. Results show that fiscal transfers have heterogeneous effects across welfare dimensions. Village Funds and DBHCHT are stronger contributors to health and income but have a limited effect on education. This extends the existing literature by demonstrating that the effectiveness of fiscal transfers depends on the type of transfer instrument and the development channel, thereby affecting human development regionally.

CONCLUSION

The empirical results of this study show that fiscal transfers play a significant role in improving human development in Central Java. In particular, Village Funds and DBHCHT have a positive and statistically significant effect on the HDI, indicating that intergovernmental fiscal transfers effectively contribute to human development outcomes at the district and city levels. In addition, PAD and GRDP per capita positively influence HDI. At the same time, TPT shows a positive association with HDI, reflecting structural labor-market conditions in which improvements in human capital are not immediately

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matched by employment absorption. The robustness results further show that fiscal transfers have heterogeneous effects across dimensions of human development. Village Funds and DBHCHT significantly improve life expectancy and per capita income, but do not significantly affect mean years of schooling. These findings indicate that fiscal transfers are more effective at improving health and income outcomes than at improving education outcomes, which tend to require longer-term structural investment.

This study provides several policy recommendations for the government. First, both central and local governments need to strengthen the effectiveness of the Village Funds and the DBHCHT by ensuring more targeted allocation to health services and income-generating programs where the impacts are most evident. Second, education-oriented development should be strengthened through more structured and long-term fiscal interventions, including performance-based transfer mechanisms to improve educational attainment across regions. Third, improvements in governance, transparency, and monitoring systems are necessary to ensure that fiscal transfers translate into measurable development outcomes across Central Java's districts and cities. Several limitations should also be acknowledged. This study focuses solely on HDI and its constituent indicators as proxies for human development. Future research is encouraged to incorporate broader multidimensional welfare indicators and additional institutional and socioeconomic variables to provide a more comprehensive understanding of the effectiveness of fiscal transfers in regional development.

REFERENCES

Ahsan, A., Wiyono, N. H., Amalia, N., Rusdjijati, R., Veruswati, M., Martini, S., Prabandari, Y. S., & Yuniar, A. M. (2024). Early Assessment of Tobacco Excise Sharing Fund as Policy for Farmers' Viable Alternatives in Indonesia: Case Study of Four Municipalities in Indonesia. *Humanities and Social Sciences Communications*, *11*, 89. https://doi.org/10.1057/s41599-023-02585-y.

Akita, T., Riadi, A. A., & Rizal, A. (2021). Fiscal Disparities in Indonesia in the Decentralization Era: Does General Allocation Fund Equalize Fiscal Revenues? *Regional Science Policy and Practice*, *13*(6), 1842–1865.

Arifin, B., Wicaksono, E., Tenrini, R. H., Wardhana, I. W., Setiawan, H., Damayanty, S. A., Solikin, A., Suhendra, M., Saputra, A. H., Ariutama, G. A., Djunedi, P., Rahman, A. B., & Handoko, R. (2020). Village Fund, Village-Owned Enterprises, and Employment: Evidence from Indonesia. *Journal of Rural Studies*, *79*, 382–394. https://doi.org/10.1016/j.jrurstud.2020.08.052.

Asadullah, M. N., & Savoia, A. (2018). Poverty Reduction During 1990–2013: Did Millennium Development Goals Adoption and State Capacity Matter? *World Development*, *105*, 70–82. https://doi.org/10.1016/j.worlddev.2017.12.010.

Bacarreza, G. C., Vazquez, J. M., & Yedgenov, B. (2020). Identifying and Disentangling the Impact of Fiscal Decentralization on Economic Growth. *World Development*, *127*, 1–15. https://doi.org/10.1016/j.worlddev.2019.104742.

Bekele, M., Sassi, M., Jemal, K., & Ahmed, B. (2024). Human Capital Development and Economic Sustainability Linkage in Sub-Saharan African Countries: Novel Evidence from Augmented Mean Group Approach. *Heliyon*, *10*(2), e24323. https://doi.org/10.1016/j.heliyon.2024.e24323.

Black, J., Connolly, K., Davidson, S. N., & Spowage, M. (2025). The Use and Misuse of Regional Data: Perspectives, Challenges and Policy Implications from Across the UK. *Regional Studies*, *59*(1), 1–16. https://doi.org/10.1080/00343404.2025.2464102.

Guerrero, O. A., Castañeda, G., Trujillo, G., Hackett, L., & Chávez-Juárez, F. (2022). Subnational Sustainable Development: The Role of Vertical Intergovernmental Transfers in Reaching Multidimensional Goals. *Socio-Economic Planning Sciences*, *83*, 101155. https://doi.org/10.1016/j.seps.2021.101155.

Hilmawan, R., Aprianti, Y., Vo, D. T. H., Yudaruddin, R., Bintoro, R. F. A., Fitrianto, Y., & Wahyuningsih, N. (2023). Rural Development from Village Funds, Village-Owned Enterprises, and Village Original Income. *Journal of Open Innovation: Technology, Market, and Complexity*, *9*(4), 100159. https://doi.org/10.1016/j.joitmc.2023.100159.

Hilwa, S., Triandhari, R., & Parianom, R. (2026). Human Development and Income Inequality in D-8 Countries: A Maqashid Sharia Perspective. *Signifikan: Jurnal Ilmu Ekonomi, 15*(1), 311-326. https://doi.org/10.15408/sjie.v15i1.49355.

Hung, N. T., & Thanh, S. D. (2022). Fiscal Decentralization, Economic Growth, and Human Development: Empirical Evidence. *Cogent Economics and Finance*, *10*(1), 1–17. https://doi.org/10.1080/23322039.2022.2109279.

Jie, Y., & Lan, J. (2024). Dynamic Linkages Between Human Capital, Natural Resources, and Economic Growth – Impact on Achieving Sustainable Development Goals. *Heliyon*, *10*(14), e33536. https://doi.org/10.1016/j.heliyon.2024.e33536.

Jin, H., & Jakovljevic, M. (2023). Fiscal Decentralization and the Human Development Index: A Cross-Border Empirical Study. *Sustainability*, *15*(11), 8784. https://doi.org/10.3390/su15118784.

Lescano, R. M., Gallo, L. M., & Sagales, O. R. (2024). Human Development and Inequalities: The Importance of Social Public Spending. *Structural Change and Economic Dynamics*, *69*, 363–377. https://doi.org/10.1016/j.strueco.2023.12.008.

Lian, X., Fu, Z., & Chen, J. (2023). Analysis of Spatial Differences in Global Regional Human Development Index Under Planetary Pressure and Decomposition Study of Driving Factors. *Journal of Environmental Management*, *348*, 119292. https://doi.org/10.1016/j.jenvman.2023.119292.

Mgammal, M. H. (2024). The Impact of Tobacco Taxes, VAT, and Affordability on the Human Development Index: A Global Perspective on Future Economic Trends. *Cogent Economics and Finance*, *12*(1), 2429771. https://doi.org/10.1080/23322039.2024.2429771.

Pandiangan, A. G., Priyarsono, D. S., & Probokawuryan, M. (2021). Impact of Village Funds on the Gap the Human Development Index in Rural-City Areas in Indonesia. *Jurnal Ekonomi dan Kebijakan Pembangunan*, *10*(2), 134–153. https://doi.org/10.29244/jekp.10.2.2021.134-153.

Permatasari, P., Ilman, A. S., Tilt, C. A., Lestari, D., Islam, S., Tenrini, R. H., Rahman, A. B., Samosir, A. P., & Wardhana, I. W. (2021). The Village Fund Program in Indonesia: Measuring the Effectiveness and Alignment to Sustainable Development Goals. *Sustainability*, *13*(21), 12294. https://doi.org/10.3390/su132112294.

Saputra, D. A., & Doddy, S. (2026). Regional Revenues and Human Development Index: An Empirical Evidence from Indonesia. *Revista Brasileira de Gestão e Desenvolvimento* Regional, *22*(1), 8–29.

Sijabat, R. (2024). Impact of Economic Growth, Village Funds, and Poverty on Human Development in Indonesia: An Analytical Study from 2015 to 2022. *International Journal of Advanced and Applied Sciences*, *11*(3), 250. https://doi.org/10.21833/ijaas.2024.03.023.

Sjaf, S., Malik, A., Sampean, Harits, A., Maulana, S. A. B., Hakim, L., Arsyad, A. A., Gandi, R., Barlan, Z. A., Muhammad, B., Elson, L., & Cakrawinata, F. (2025). Analysis of Spatial Inequality and Rural Development in the Supporting Region for Nusantara Capital City, Indonesia. *Wellbeing, Space and Society*, *9*, 100286. https://doi.org/10.1016/j.wss.2025.100286.

Stijepic, D. (2021). A Cross-Country Study of Skills and Unemployment Flows. *Journal for Labour Market Research*, *55,* 9. https://doi.org/10.1186/s12651-021-00289-x

Suhyanto, O., Juanda, B., Fauzi, A., & Rustiadi, E. (2021). The Effect of Transfer Funds on District/Municipality Development Performance in West Java Province, Indonesia. *International Journal of Economics and Financial Issues*, *11*(3), 22–27. https://doi.org/10.32479/ijefi.9399.

Sultana, T., Dey, S. R., & Tareque, M. (2022). Exploring the Linkage Between Human Capital and Economic Growth: A Look at 141 Developing and Developed Countries. *Economic Systems*, *46*(3), 101017. https://doi.org/10.1016/j.ecosys.2022.101017.

Susilo, S., Prasetyia, F., Wicesa, N. A., & Finuliyah, F. (2026). The Impact of Fiscal Decentralization on Human Development Index Convergence in Indonesia: An Arellano-Bond GMM Dynamic Panel Data Estimation. *Forum for Social Economics*. https://doi.org/10.1080/07360932.2025.2610937.

Wirandana, P. A., & Khoirunnofik, K. (2022). Educational Inequality in Indonesia: Are Intergovernmental Fiscal Transfers Effective in Reducing the Gap? *Educational Studies*, *50*(6), 1424–1443.

Yandri, P., Budi, S., Sujatna, Y., & Masduki, U. (2020). Revenue Sharing Fund of Tobacco Products Excise and Economic Performance in Decentralized Era. *Journal of Governance and Public Policy*, *7*(2), 104-114. https://doi.org/10.18196/jgpp.72126.

Yimenu, B. (2023). Measuring and Explaining Fiscal De/Centralization: Empirical Evidence from Ethiopia, 1995–2020. *Public Administration and Development*, *43*(3), 245–259. https://doi.org/10.1002/pad.2020.

Yubilianto. (2020). Return to Education and Financial Value of Investment in Higher Education in Indonesia. *Journal of Economic Structures*, *9*, 17. https://doi.org/10.1186/s40008-020-00193-6.

Zhang, J., & Danish. (2019). The Dynamic Linkage Between Information and Communication Technology, Human Development Index, and Economic Growth: Evidence from Asian Economies. *Environmental Science and Pollution Research*, *26*(26), 26982–26990. https://doi.org/10.1007/s11356-019-05926-0.

http://journal.uinjkt.ac.id/index.php/signifikan
https://doi.org/10.15408/sjie.v15i2.51263