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PERFORMANCE-BASED BUDGETING AS A TRANSMISSION MECHANISM IN INDONESIA'S DECENTRALIZATION: A DYNAMIC PANEL ANALYSIS OF REGIONAL DISPARITIES

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ABSTRACT : This study examines how the quality of performance-based budgeting (PBB) shapes the relationship between fiscal decentralization and social welfare in Indonesia. Since the implementation of decentralization in 2001, intergovernmental transfers have expanded by more than 145%. However, improvements in Human Development Index (HDI) remain uneven across regions which suggest that larger fiscal resources do not automatically translate into better social welfare outcomes. Using panel data from 420 districts and municipalities over the period of 2013 - 2022, this research estimates both the direct effects of key fiscal instruments, including General Allocation Grants, Special Allocation Grants, local taxes, local levies, and economic expenditure, and their indirect effects operating through the quality of PBB, proxied by the Welfare State Ratio (WSR). This paper combined fixed-effects panel regression, mediation analysis, and dynamic generalized method of moments (GMM) estimation. The results show that fiscal decentralization has a statistically significant effect on social welfare, but the magnitude and direction depend strongly on the quality of PBB implementation. Economic expenditure appears as the most consistent and effective fiscal tool in supporting welfare outcomes. In contrast, Special Allocation Grants have a negative mediating effect, indicating that conditional transfers may limit institutional flexibility. Regional differences are also evident, with local governments in western Indonesia tend to benefit more from PBB mechanisms than those in eastern regions, in which institutional capacity is restricted. Overall. these findings suggest that the efficiency of fiscal decentralization is determined less by the scale of fiscal resources and more by the institutional capacity to turn fiscal inputs into measurable human development outputs. These findings underscore the need for reforms to more asymmetric transfer systems, combined with targeted capacity-building activities, to ensure equitable and sustainable development throughout Indonesia.

KEYWORDS - *Fiscal decentralization; Human Development Index; Indonesia; Performance-based budgeting; Social welfare*.

I. INTRODUCTION

Fiscal decentralization has become one of the most prominent governance reforms implemented in many developing countries, including Indonesia. Decentralizing fiscal authority to subnational governments is projected to improve allocative efficiency and the responsiveness of public services to local requirements (Mardiasmo, 2018). Indonesia fully implemented fiscal decentralization in 2001, establishing an intergovernmental fiscal equalization framework. This system provides significant resources to local governments through General Allocation Grants (*Dana Alokasi Umum*, DAU), Special Allocation Grants (*Dana Alokasi Khusus*, DAK), Revenue-Sharing Funds (*Dana Bagi Hasil*, DBH), and Local Own-Source Revenue (*Pendapatan Asli Daerah*, PAD), which are derived from local taxes and local levies.

Despite more than 20 years of implementation and a 145% rise in intergovernmental transfers since 2001, welfare outcomes have not improved equally across regions. Persistent disparities in the Human Development Index (HDI) of 20 to 25 points, as well as substantial variation in Gini coefficients (0.26 to 0.44), suggest a structural gap between fiscal expansion and welfare outcomes (BPK, 2020). This contradiction raises a question: "Why has increased fiscal capacity failed to generate commensurate improvements in human development?"

Empirical evidence suggests a mixed explanation for this occurrence. According to research from Pakistan and other developing countries, fiscal decentralization can improve welfare when subnational governments have sufficient autonomy and administrative responsiveness (Ahmed et al., 2022; Delgado et al., 2022). In contrast, research on eastern Indonesia demonstrates that decentralization could worsen regional inequality in circumstances of weak institutional capacity (Farida et al., 2021). Similarly, Bahl (2020) and Ivanyna and Shah (as cited in Dupre, 2018) argued that decentralization without adequate institutional readiness

risks exacerbating rather than reducing inequality. These differences point to an unresolved analytical gap concerning the methods by which decentralization affects welfare, particularly in Indonesia.

Recent research has increasingly identified performance-based budgeting (PBB) as a potential mediating factor. PBB, which is based on the New Public Management paradigm (Hood, 1991), relates public expenditure to measurable outputs and outcomes in order to improve accountability, efficiency and policy relevance. In Indonesia, however, implementation is inconsistent. Approximately 70% of local governments have formally implemented PBB systems (Miranda-Lescano et al., 2024), whereas less than 60% possess have acceptable accountability frameworks (Alawia et al., 2021). The Fiscal Independence Index reflects institutional variation, with values ranging from 0.71 in Jakarta to 0.04 in West Papua (BPK, 2020). To date, no longitudinal study has comprehensively investigated PBB quality as a mediation mechanism in the decentralization-welfare relationship amongst Indonesian local governments. The current study was motivated primarily by the lack of empirical evidence in this field.

To solve this gap, this analysis proposes four innovations that are interconnected. First, this empirical study creates a novel Performance-Based Fiscal Policy Framework by combining fiscal federalism theory (Oates, 1972), PBB theory (Behn, 2003), public policy implementation theory (Bird, 1998), and the capability approach (Sen, 1999). This synthesis goes beyond the traditional efficiency-equity dichotomy by including institutional performance into a human development framework. Second, it proposes a mediation model in which the quality of PBB implementation, as operationalized by the WSR, serves as the transmission mechanism connecting fiscal instruments to HDI outcomes. Unlike previous research that used PBB as an outcome or control variable, this approach allows for a more precise assessment of budgetary governance as a causative pathway. Third, the study employs a ten-year panel dataset (2013-2022) that includes 420 regency and municipal governments in Indonesia, allowing for the observation of dynamic interactions across time. Fourth, it conducts a thorough regional comparison between western and eastern Indonesia, capturing contextual heterogeneity in institutional capacity and fiscal performance.

The conceptual framework for this study incorporates four complementary theoretical foundations. According to Oates' (1972) fiscal federalism theory, local governments' informational advantage should allow for more effective allocation of public resources, resulting in higher welfare outcomes. PBB theory (Behn, 2003) builds on this reasoning by emphasizing the alignment of inputs, outputs, and outcomes using quantitative performance indicators, hence promoting results-oriented governance. Public policy implementation theory (Bird, 1998) emphasizes the importance of administrative competence, information systems, and accountability in influencing policy effectiveness, which is especially relevant in Indonesia's diverse institutional environment. Finally, Sen's (1999) "Development as Freedom" redefines fiscal policy as expanding human capabilities rather than just economic growth. This multidimensional view of welfare provides normative foundation for using HDI as the primary outcome measure. Overall, these approaches contribute to the Performance-Based Fiscal Policy Framework, which accommodates institutional complexity, bridges efficiency and equality concerns, and prioritizes human development as the normative purpose of decentralization. This paradigm provides a context-sensitive perspective for assessing Indonesia's decentralization experience.

Based on this framework, the study has four distinct objectives. First, the study examines the direct effects of fiscal decentralization instruments, including DAU, DAK, local taxes, local levies, and economic expenditure, on HDI. Second, it assesses the impact of different fiscal measures on the quality of PBB implementation. Third, it determines the impact of PBB quality on welfare outcomes while accounting for fiscal variables. Fourth, it evaluates PBB quality's role as a mediator in the relationship between fiscal decentralization and social welfare. A regional comparison of western and eastern Indonesia is used to identify spatial disparities in policy efficacy and institutional performance. The results are expected to provide an empirical foundation for improving subnational fiscal governance, altering intergovernmental transfer design, and strengthening PBB implementation frameworks. Finally, the investigation aims to contribute to more equitable and sustainable human development across Indonesia.

II. LITERATURE REVIEW

2.1 Fiscal Decentralization and Social Welfare: Direct Linkages

The relationship between fiscal decentralization and social welfare has been extensively studied, although empirical findings remain context-dependent. The fiscal federalism theory by Oates (1972) provides the primary theoretical basis for a positive connection, arguing that decentralization increases allocative efficiency by leveraging subnational governments' informational advantages over central authorities. When local governments can better understand local preferences, public resources can be channeled more effectively to welfare-enhancing sectors such as health, education, and infrastructure.

Empirical studies provide some evidence for this proposition. Ahmad et al. (2022) showed that in Pakistan, fiscal decentralization improves welfare outcomes by strengthening local responsiveness and service accessibility. Similarly, cross-country evidence from Delgado et al. (2022) and Alberto et al. (2022) identified a

positive relationship between decentralization and many welfare dimensions, including public service provision and community participation. However, past studies yielded mixed results. According to Farida et al. (2021), decentralization in eastern Indonesia promotes economic growth but does not eliminate interregional inequalities. Bahl (2020) and Ivanyna and Shah (as cited in Dupre, 2018) argued that decentralization without proper institutional capacity can exacerbate inequality and misallocation rather than create convergence. Evidence from Indonesia further confirms this condition. Akita et al. (2021) demonstrated that welfare effects are dependent on local governments' capacity to interpret and respond to citizen needs, whereas Suratman (2018, as cited in Simanjuntak et al., 2021) and Melayanti and Indrajaya (2021) showed that decentralization-driven growth does not always result in proportional improvements in the HDI. In conclusion, the literature suggests that fiscal transfers alone are insufficient to yield welfare increases. The dominant focus on fiscal magnitude ignores the institutional processes that convert resources into human development outcomes. As a result, this study turns the focus away from direct fiscal-welfare links and toward the mediating role of budgetary control, which is operationalized through the quality of PBB.

2.2 PBB: Theory, Implementation, and Welfare Implications

PBB arose from Hood (1991)'s New Public Management paradigm as a means of connecting public expenditure to measurable outputs and outcomes. Behn (2003) defined PBB as a causal chain connecting inputs, processes, outputs, and consequences within the budget cycle. Rather than assessing performance solely on spending levels, PBB evaluates whether expenditures achieve policy objectives. This logic aligns with Sen's (1999) capability approach, which prioritizes human development outcomes over financial aggregates.

Further, empirical evidence highlights a continuing gap between PBB theory and practice. Mirzamani et al. (2022) and Li et al. (2024) identified political commitment and multi-stakeholder active engagement as important predictors of effective PBB implementation, whereas Alsharari (2022) and Ho et al. (2023) demonstrated that political and economic shocks frequently disrupt PBB. In Indonesia, Karlina and Novianty (2023) discovered that the Money Follow Program approach improves allocative efficiency, although implementation remains uneven. Alawia et al. (2021), Azam and Bouckaert (2024), and Prayoga and Ananda (2023) found that low administrative capacity limits PBB effectiveness, particularly in eastern regions.

The welfare implications of PBB quality are increasingly documented. Aminah et al. (2021) and Armawaddin et al. (2022) showed that effective PBB improves resource efficiency and social service delivery. Miranda-Lescano et al. (2024) discovered that results-oriented expenditure in education and health enhances HDI outcomes. Similar findings from Imantria and Kurnia (2024), Lantion et al. (2023), and Karpi et al. (2022) confirmed that subnational expenditure management using PBB contributes to HDI. Putra (2021) further linked inceased budgetary efficiency to economic growth and capability expansion.

Despite these findings, PBB has rarely been investigated as a mediator between fiscal decentralization and welfare in Indonesia. Most studies have examined it either as a dependent or as an explanatory variable. This present study addresses this gap by identifying PBB quality as the institutional channel through which fiscal resources affect social welfare.

2.3 Intergovernmental Transfers and Fiscal Instruments: Heterogeneous Effects

An increasing body of research breaks down fiscal decentralization into various instruments and reveals that the welfare effects vary. Alam and Simanjuntak (2023) showed that intergovernmental transfers improve welfare indicators, whereas Azis et al. (2023) in eastern Indonesia found that central government spending reduces regional differences when linked with local demands. These findings suggest that transfer design is more important than aggregate fiscal volume in determining outcomes.

General-purpose transfers, such as the DAU, are linked to higher service capacity and HDI performance (Imantria & Kurnia, 2024; Khoirunisa & Sulaeman, 2022). The evidence for conditional transfers, notably the DAK, is more varied. Ramadanti et al. (2023) claimed that inflexible conditional grants limit adaptability to diverse regional conditions. Ferryono et al. (2022) showed that accountability systems enhance welfare outcomes, highlighting the significance of governance quality. Furthermore, PAD also complicates the problem. Although local taxes are theoretically connected to accountability and autonomy (Oates, 1999), Indonesian evidence suggests that local levies may have a crowding-out effect and limit access to public services in weaker economies. Khoirunisa and Sulaeman (2022) identified a reciprocal relationship between fiscal independence and welfare, implying dynamic feedback rather than unidirectional causality.

Building on this literature, this present study examines how fiscal instruments, such as DAU, DAK, local taxes, local levies, and economic expenditure, affect HDI indirectly through PBB quality, thereby defining the transmission mechanisms underlying decentralization outcomes.

2.4 Regional Heterogeneity and Institutional Capacity

Regional heterogeneity and institutional capacity are significant factors influencing decentralization outcomes, particularly in Indonesia's highly diverse administrative landscape. Akita et al. (2021) showed that local institutional capacity accounts for much of the variation in decentralization effectiveness. According to

Armawaddin et al. (2022), only 45% of local governments meet fiscal performance targets, with the Fiscal Independence Index ranging from 0.71 in Jakarta to 0.04 in West Papua.

Governance-related studies provide further additional insight. Aminah et al. (2021) demonstrated that transparency, accountability and participatory decision making moderate the welfare impact of public expenditure, indicating that institutional capacity serves as an enabler rather than a contextual background variable. Miranda-Lescano et al. (2024) supported the idea that strong governance increases the developmental effects of social spending, while Ferryono et al. (2022) highlighted financial accountability as a driver of welfare improvement.

Furthermore, Indonesia's decentralization experience is characterized by a persisting west-east division. While eastern regions, such as Papua, Maluku, and Nusa Tenggara, face limited autonomy, weaker administration, geographic constraints, and less invested human capital (Farida et al., 2021; Azis et al., 2023), western regions, mainly Java, Sumatra, and Kalimantan, display stronger fiscal capacity and institutional infrastructure, as well as a more favorable HDI trajectory. These structural differences imply that the decentralization-PBB-welfare pathway functions differently in different places, a claim that has been recognized but not yet thoroughly investigated.

By directly comparing the mediation effects between western and eastern Indonesia, the analysis carries out in this paper expands on previous research and moves from descriptive explanations to empirical modeling of regional divergence.

2.5 Research Gaps

Although significant connections between fiscal decentralization, PBB, and welfare are established by the literature review above, critical mechanisms have not been properly explained. There are three gaps identified. First, the majority of research ignores institutional transmission pathways in favor of direct fiscal effects. Second, PBB's role as a mediating variable in Indonesia's fiscal-welfare relationship has not been experimentally modeled. Third, despite the widespread recognition of regional variability, its consequences for decentralization paths have not yet been thoroughly investigated using longitudinal data. This study fills in these gaps by examining PBB quality as a mediator between fiscal instruments and welfare outcomes. It uses a panel dataset that spans 10 years and includes regional disaggregation to provide both temporal and spatial evidence on decentralization dynamics. By combining fiscal federalism, PBB theory, public policy implementation, and the capability approach, the study provides a comprehensive framework for understanding how institutional capacity influences the developmental impact of fiscal decentralization in Indonesia and other developing countries.

III. METHODOLOGY

3.1 Data

This research utilized a balanced panel dataset spanning the period of 2013-2022. Data on fiscal variables, including DAU, DAK, local taxes, local levies, and economic expenditure, were collected from the Directorate General of Fiscal Balance, Ministry of Finance of the Republic of Indonesia, which provides audited subnational fiscal realization data. Meanwhile, data on social welfare outcomes were obtained from Statistics Indonesia, which publishes annual district- and municipal-level HDI estimates based on the United Nations Development Programme (UNDP) framework for health, education, and living standards; and were measured using the HDI.

Furthermore, performance targets for economic growth, poverty reduction, and unemployment were obtained from the National Development Planning Agency (*Badan Perencanaan Pembangunan Nasional*, Bappenas) through the National Medium-Term Development Plan (*Rencana Pembangunan Jangka Menengah Nasional*, RPJMN). Integrating these sources enables cross-validation of important indicators and a comprehensive assessment of the mechanisms linking fiscal instruments to welfare outcomes across Indonesia's diverse regions.

The WSR is calculated as the arithmetic mean of three ratios: (1) realized regional economic growth in relation to the national RPJMN growth target, (2) the inverse ratio of realized regional poverty rates to the national poverty target, and (3) the inverse ratio of realized regional unemployment rates to the national unemployment target. These composite indicators represent the extent to which local governments convert fiscal resources into welfare-related results that are measured against national objectives. This method is conceptually congruent with welfare state and public finance theories emphasizing realized socio-economic performance rather than just expenditure levels (Esping-Andersen, 1990; Musgrave, 1959; Stiglitz, Sen, & Fitoussi, 2009). However, this operationalization is limited. Considering that the WSR is based on centrally specified RPJMN criteria, it partly reflects the ambition of national benchmarks; regions with less challenging targets may appear to do better without necessarily demonstrating more institutional capacity.

The research population consisted of 514 district and municipal governments in Indonesia. To ensure longitudinal consistency, inclusion criteria were used, with each region was required to have: (1) maintained

stable administrative status since 2013, (2) complete and internally consistent data across the ten-year period, and (3) no significant changes in administrative classification. Meanwhile, newly created regions undergoing significant territorial transformation, and those with missing data were eliminated. These criteria resulted in a final sample of 420 districts and municipalities, which comprised a balanced panel of 4,200 observations. The resulting sample exceeds the recommended minimum sizes for panel regression analysis (Field, 2013) and provides sufficient statistical power to identify minor associations between variables (Cohen, 1988). Its extensive geographic coverage would ensure that the analysis could capture Indonesia's wide variation in fiscal capacity and institutional conditions.

3.2 Data Analysis

The data was evaluated in four stages, each addressing a different research objective and gradually progressing toward a full mediation model. The analysis began with descriptive statistics, which summarize the distribution, central tendency, and dispersion of all variables across regions and over time. This step provided an empirical context by documenting patterns in fiscal allocation, welfare outcomes, and the PBB in western and eastern Indonesia.

The fundamental empirical analysis used panel data regression, which combined cross-sectional and time-series dimensions to extract the full informational content of the dataset (Baltagi, 2021). Three model specifications were considered: the Common Effect Model, which assumes a homogeneous intercept across units; the Fixed Effect Model, which uses unit-specific intercepts to capture time-invariant unobserved heterogeneity; and the Random Effect Model, which treats unit effects as randomly distributed. Model selection was accomplished by a series of tests. The Chow test was first applied to differentiate between the Common Effect and Fixed Effect models, followed by the Hausman test to distinguish between Fixed Effect and Random Effect models. When these tests produced conflicting results, the Lagrange Multiplier test was used as a tie-breaker. Prior to hypothesis testing, extensive diagnostic checks were performed to ensure that the regression estimates were robust, including the Jarque-Bera test for residual normality, variance inflation factors for multicollinearity, and the Durbin-Watson statistic for serial correlation. Given the high sample size, the central limit theorem provides asymptotic justification for statistical inference, even with minor violations of classical assumptions.

Four sequential models were estimated in line with Elaborate H1-H4 in the hypothesis development section after literature review. Model 1 examines the direct effects of fiscal instruments on the HDI. Model 2 assesses the effects of fiscal instruments on the WSR as a proxy for PBB quality. Model 3 evaluates the effect of WSR on HDI while accounting for fiscal instruments. Model 4 tests the mediating role of WSR in the fiscal-welfare relationship using the Baron and Kenny (1986) framework adapted to panel data.

Furthermore, the mediation path was evaluated in two stages. First, the effect of each fiscal instrument on the mediator (WSR) was calculated (Path *a*). Second, the joint effects of the mediator and fiscal instruments on HDI were estimated simultaneously (Path *b* and Path *c'*). The indirect effect was calculated as the product of the coefficients for Paths *a* and *b*, and the total effect was divided into direct and indirect components. Full mediation was inferred when the direct effect became statistically insignificant after accounting for the mediator; partial mediation was inferred when the direct effect remained significant but declined in magnitude.

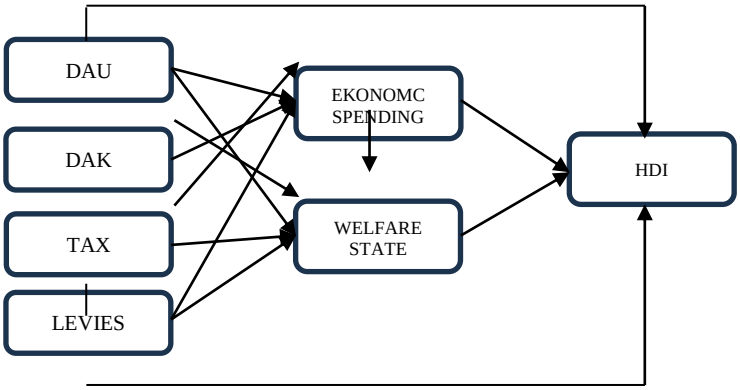
Considering that the conventional Sobel test is based on the normality assumption of the indirect effect's sampling distribution, which might be violated in finite samples, the Sobel statistic was complemented with bootstrapped standard errors based on 5,000 replications, as per Preacher and Hayes (2008). A 95% bootstrap confidence interval that excluded 0 was considered as evidence of significant mediation. To confirm that mediation results were not influenced by model specification, the major findings were cross-validated using structural equation modeling (SEM), which estimates all mediation paths simultaneously and offers overall goodness-of-fit statistics. Convergence between SEM and the Baron-Kenny-Sobel results increased confidence in the mediation conclusions, while any differences were fully stated in terms of the assumptions underlying each approach.

To address potential endogeneity, where welfare outcomes may influence fiscal allocations, and to account for the dynamic persistence of HDI over time, the study further employed the Generalized Method of Moments (GMM) estimator developed by Arellano and Bond (1991). This estimator uses lagged dependent and independent variable values in first-differenced equations to instrument endogenous regressors, reducing time-invariant unobserved heterogeneity and decreasing simultaneity bias. The estimated dynamic panel model is specified as follows:

$$\mathrm{HDI}_{it} = \alpha_1 \mathrm{HDI}_{it-1} + \alpha_2 \mathrm{HDI}_{it-2} + \beta_1 \mathrm{DAU}_{it} + \beta_2 \mathrm{DAK}_{it} + \beta_3 \mathrm{TAX}_{it} + \beta_4 \mathrm{LEVY}_{it} + \beta_5 \mathrm{ECON}_{it} + \beta_6 \mathrm{WSR}_{it} + \mu_i + \varepsilon_{it}$$

where HDI_{it} denotes the HDI for district/city i in period t; HDI_{it-1} and HDI_{it-2} are the first and second lags; DAU_{it}, DAK_{it}, TAX_{it}, LEVY_{it}, dan ECON_{it} represent five fiscal instruments; WSR_{it} is the Welfare State

Ratio; μ_i denotes time-invariant unit-specific effects eliminated through first differencing; and ε_{it} is the idiosyncratic error term. All fiscal instruments and WSR enter the dynamic model simultaneously, as specified in the static models, ensuring coherence between short-run dynamics in the GMM framework and the long-run relationships estimated in Models 1-3. The GMM estimates' validity was assessed using the Arellano-Bond test for second-order serial correlation in the first-differenced residuals and the Hansen test of overidentifying limitations. *p*-values greater than 0.05 in both tests are considered as evidence that the model was accurately stated and the instruments were exogenous.



Pic. 1. Empirical Model

IV. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

4.1.1 Distribution Patterns of Fiscal Policy Instruments

Evidence from this study suggest that the DAU is highly concentrated in Java (IDR 796.077 billion), exceeding the national average (IDR 633.048 billion) and allocations to eastern regions such as Papua (IDR 553.417 billion), Sulawesi-Maluku (IDR 547.768 billion), and Nusa Tenggara-Bali (IDR 590.539 billion). This pattern reflects the DAU formula's demographic weighting and indicates a low sensitivity to higher service-delivery costs in remote and archipelagic areas. Meanwhile, the DAK has a more targeted distribution pattern, but Java remains the largest beneficiary (IDR 189.899 billion), while Papua receives the smallest allocation (IDR 145.726 billion), despite significant infrastructure and basic needs shortfalls. This anomaly highlights absorptive capacity restrictions and implementation issues in geographically extreme regions, revealing a conflict between conditional transfer design and execution.

4.1.2 PAD Heterogeneity

The data imply that the local tax revenue mirrors regional economic disparities. Java has the highest value (IDR 80.291 billion), nearly twice the national average (IDR 48.935 billion), followed by Nusa Tenggara-Bali (IDR 54.034 billion). The eastern regions have small tax bases, with Papua (IDR 33.204 billion) and Sulawesi-Maluku (IDR 35.088 billion) at the bottom, reflecting the prevalence of informal economic activity. Local levies, on the other hand, provide more evenly distributed revenues. Java (IDR 19.246 billion) and Nusa Tenggara-Bali (IDR 18.107 billion) show similar levels, while Papua performs relatively well (IDR 17.504 billion). These values exclude Regional Public Service Agency (*Badan Layanan Umum Daerah*, BLUD) revenues, implying that actual local levies potential may be understated.

4.1.3 The Paradox of Economic Expenditure and WSR

The evidence reveals that the economic expenditure follows an inverse pattern, with Papua having the highest allocation (IDR 11.009 billion) and Java having the lowest (IDR 7.377 billion). This suggests compensatory spending in structurally weaker regions and efficient allocation in more mature economies. On the other hand, this study shows that the WSR varies significantly. Sulawesi-Maluku (92.309) and Kalimantan (89.002) rank highest, while Java (84.964) and Nusa Tenggara-Bali (83.327) record lower scores. These results challenge the assumption that stronger fiscal capacity necessarily implies better institutional performance, indicating that governance quality may evolve independently of regional income levels.

4.1.4 HDI Convergence

The analysis in this study shows a moderate interregional variation in HDI. Java has the highest value (70.080), followed by Sumatra (69.547) and Kalimantan (69.187), compared to the national mean of 69.120. Meanwhile, Papua (67.574) and Nusa Tenggara-Bali (66.666) remain the lowest. The narrow range (3.414 points) suggests partial convergence in basic services, although underlying structural inequalities remain.

4.2 Variable Operationalization

Table 1. Operational Definition of Variables

Variable Name / Type	Definition	Indicator	Measurement
Independent Variables			
Transfer Funds	Transfer funds are central government budget allocations to regional governments to support fiscal decentralization, aimed at assisting regional governments in financing development (MOF Regulation 118/PMK.07/2022)	General Allocation Fund (GAF)	Realized GAF receipts (in billion rupiah)
		Special Allocation Fund (SAF)	Realized SAF receipts (in billion rupiah)
Regional Own-Source Revenue	Own-source revenue comprises revenues obtained from regional resources and economic potential (MOF Regulation 118/PMK.07/2022)	Regional Tax	Realized regional tax receipts (in billion rupiah)
		Regional Levy	Realized regional levy receipts (in billion rupiah)
Government Expenditure	Government expenditure encompasses outlays made in the execution of governmental affairs (MOF Regulation 118/PMK.07/2022)	Economic Expenditure	Percentage of economic expenditure (total economic expenditure / total government expenditure × 100)
Mediating Variable			
PBB Implementation Quality	PBB quality is a public sector financial management concept that links resource allocation to expected performance. This approach focuses not only on inputs or the amount of funds allocated, but also on outcomes or the impact generated from the use of those funds (Government Regulation No. 10/2010)	Institutional Capacity (Andrews et al., 2017; Andrews & Moynihan, 2002; Diamond, 2003; Robinson & Last, 2009; Schick, 2014; World Bank, 2012)	$WSR = \frac{R1+R2+R3}{3}$ where: R1 (E): (Regional achievement / National RPJMN target) × 100; R2 (K): (National RPJMN target / Regional achievement) × 100; R3 (P): (National RPJMN target / Regional achievement) × 100
Dependent Variable			
Social Welfare	Social welfare is a condition in which individuals and groups within society can live well and have access to the resources they need (UNDP, 1990, in Clark, 2011)	HDI	HDI Index (UNDP) data from BPS

4.3 Model Specification and Classical Assumption Tests

In this paper, the model selection tests favor the Fixed Effect Model specification. The Chow test produces an F-statistic of 54.087 (p = 0.0000), indicating that the Common Effect Model is unsuitable and that there is substantial heterogeneity between regions. The Hausman test also supported the Fixed Effect Model as the best specification, with a Chi-squared statistic of 206.855 (p = 0.0000), suggesting correlation between

individual effects and explanatory variables. Furthermore, the diagnostic confirms the robustness of the estimating conditions. The Jarque-Bera normality test produces a statistic of 11,465.28 ($p = 0.0000$), indicating non-normal residuals; however, with 4,200 observations, the central limit theorem provides asymptotic support for valid statistical inference. The correlation matrix shows no severe multicollinearity, with all pairwise coefficients less than 0.8 and the strongest correlation observed between DAU and DAK (0.514). The Durbin-Watson value of 1.272 suggests significant positive autocorrelation, yet the estimates remain consistent due to the large sample size and the law of large numbers.

4.4 Results of Hypothesis Testing

4.4.1 Model 1: Fiscal Policy on Social Welfare

Model 1 has high explanatory power for all regional specifications, with adjusted R^2 values ranging from 0.790 to 0.946. Java has the highest explanatory power (0.946), indicating that the fiscal policy variables in the model explain 94.6% of the variation in the HDI in this region. The DAU has a consistently positive and significant effect at the national level (0.004776; $p < 0.01$) and in Sumatra (0.007407; $p < 0.01$), Java (0.005763; $p < 0.01$), and Sulawesi–Maluku (0.003433; $p < 0.01$). However, it is statistically insignificant in Kalimantan and Papua, and is negative in Nusa Tenggara and Bali. This variation shows that the effectiveness of DAU is highly context-dependent and influenced by the absorptive capacity and institutional readiness of recipient governments.

This present study demonstrates that the DAK exhibits the most consistent and significant positive effect across all regional clusters, with the largest coefficients observed in Nusa Tenggara and Bali (0.015142; $p < 0.01$), Papua (0.012680; $p < 0.01$), and Sulawesi-Maluku (0.012294; $p < 0.01$). This finding confirms that targeted fiscal interventions are most successful in regions with the greatest development gaps. In addition, the local tax revenue displays substantial heterogeneity, with the highest coefficient reported in Papua (0.041624; $p < 0.01$), suggesting an extremely high marginal effect associated with the scarcity of the local tax base. On contrary, the local tax revenue is statistically insignificant in Java and Sulawesi-Maluku.

The local levies in Kalimantan (-0.052100; $p < 0.01$) and Nusa Tenggara and Bali (-0.023535; $p < 0.05$) show significant negative coefficients, indicating a potential crowding-out effect on access to public services. This present investigation also shows that the economic expenditure is positive and statistically significant in almost all regional clusters, with the strongest effects observed in Sumatra (0.089341; $p < 0.01$) and Sulawesi-Maluku (0.071111; $p < 0.01$), but not statistically significant in Papua and Nusa Tenggara-Bali.

Table 2. Results of Hypothesis Testing: Model 1 – Fiscal Policy on Social Welfare

Variable	Indonesia	Sumatra	Kalimantan	Java	Sulawesi & Maluku	Papua	Nusa Tenggara & Bali
GAF	0.004776***	0.007407***	-0.000611	0.005763***	0.003433***	0.000942	-0.002485
SAF	0.009271***	0.007787***	0.012301***	0.005767***	0.012294***	0.012680***	0.015142***
Regional Tax	0.002702***	0.005942***	0.008687***	0.001592	0.002369	0.041624***	0.006756***
Regional Levy	0.009308***	-0.010896	-0.052100***	-0.004559	-0.006839	0.025299	-0.023535**
Economic Expenditure	0.061882***	0.089341***	0.046867***	0.073437***	0.071111***	-0.009062	0.019177
Adjusted R^2	0.857	0.796	0.946	0.790	0.935	0.865	0.928

*Note: *** p<0.01; ** p<0.05; * p<0.10*

4.4.2 Model 2: Effects of Fiscal Policy on PBB Implementation Quality

Model 2 exhibits substantially lower explanatory power (adjusted R^2 ranging from 0.235 to 0.405), a finding that is itself theoretically informative: it indicates that PBB implementation quality is determined primarily by factors that lie beyond the fiscal domain, including political will, administrative culture, leadership quality, and inter-organizational coordination variables that are not captured by fiscal instruments alone.

The GAF is positive and significant at the national level (0.035709; $p < 0.01$) and across all regional clusters except Papua, recording its highest coefficient in Nusa Tenggara and Bali (0.080005; $p < 0.01$) a paradox given that this region records the lowest WSR of all clusters. The SAF produces a striking finding: it is negative and significant across nearly all regional clusters, recording its most pronounced negative effects in Nusa Tenggara and Bali (-0.116949; $p < 0.01$), Kalimantan (-0.061908; $p < 0.01$), and Sumatra (-0.049432; $p < 0.01$). This pervasive negative relationship between SAF and WSR challenges the conventional assumption that

earmarked grants enhance institutional capacity and instead suggests that the rigidity inherent in SAF administration may crowd out the organizational flexibility necessary for genuine performance orientation. Economic expenditure emerges as the dominant positive driver of PBB quality, recording the highest positive coefficients across all specifications, with Sumatra (0.643547; $p < 0.01$) and Java (0.524684; $p < 0.01$) leading, confirming its role as the primary fiscal instrument driving institutional performance improvement.

Table 3. Result of Hypothesis Testing: Model 2 — Effects of Fiscal Policy on PBB Implementation Quality

Variable	Indonesia	Sumatra	Kalimantan	Java	Sulawesi & Maluku	Papua	Nusa Tenggara & Bali
GAF	0.035709***	0.046726***	0.063756**	0.030609***	0.020981***	-0.010238	0.080005***
SAF	-0.051661***	-0.049432***	-0.061908***	-0.046070***	-0.039656	-0.046516	-0.116949***
Regional Tax	0.022746***	0.040005***	-0.047082	0.019490**	-0.038307***	-0.046825	0.115651***
Regional Levy	0.080778***	0.118648**	-0.017904	0.053426	0.087011	0.249884**	-0.324203**
Economic Expenditure	0.531129***	0.643547***	0.436990**	0.524684***	1.043165	-0.007169	0.390017
Adjusted R^2	0.351	0.404	0.301	0.362	0.387	0.400	0.235

*Note: *** p<0.01; ** p<0.05; * p<0.10*

4.4.3 Model 3: PBB Quality – Social Welfare

Model 3 has good explanatory power (adjusted $R^2 = 0.692 - 0.944$), but produces a contradictory result. In this model, the WSR is primarily negative and significant across regions. Java shows the strongest negative effect (-0.029138; $p < 0.01$). Only Sumatra and Kalimantan display have positive and significant coefficients when accounting for DAK (Sumatra: 0.029025; Kalimantan: 0.029531; $p < 0.01$).

Table 4. Result of Hypothesis Testing: Model 3 — Effects of PBB Implementation Quality on Social Welfare

WSR Specification	Indonesia	Sumatra	Kalimantan	Java	Sulawesi & Maluku	Papua	Nusa Tenggara & Bali
Controlling GAF	-0.006887***	0.006931**	-0.027052***	0.003760	-0.016881***	-0.019750**	-0.025663***
Controlling SAF	0.008525***	0.029025***	-0.018812***	0.029531***	-0.013015***	-0.004846	-0.012689***
Controlling Tax	-0.002115	0.016113***	-0.025925***	0.016633***	-0.019844***	-0.017532**	-0.028444***
Controlling Levy	-0.001309	0.022391***	-0.027412***	0.016815***	-0.020384***	-0.024698***	-0.025324***
Controlling Econ. Exp.	-3.95E-05	0.025663***	-0.029138***	0.019283***	-0.025134***	-0.011847	-0.025308***
Adjusted R^2 (range)	0.791–0.838	0.694–0.766	0.904–0.944	0.692–0.910	0.893–0.931	0.779–0.856	0.890–0.928

*Note: *** p<0.01; ** p<0.05; * p<0.10*

4.4.4 Model 4: Mediating Role of PBB Implementation Quality

The Sobel test results confirm significant mediation effects of WSR across multiple fiscal instrument-welfare pathways, with the following principal findings. The GAF exerts a significant positive mediated effect at the national level ($t = 9.66 > 1.97$), in Sumatra ($t = 7.26 > 1.98$), and in Java ($t = 6.20 > 1.98$), indicating that GAF improves welfare outcomes partially through its positive effect on PBB implementation quality in these regions. The SAF exhibits a consistent and significant negative mediation effect across nearly all regional clusters Sumatra ($t = -5.29$), Kalimantan ($t = -3.81$), Java ($t = -5.40$), Sulawesi and Maluku ($t = -3.43$), and Nusa Tenggara and Bali ($t = -6.15$) — confirming that SAF depresses welfare outcomes indirectly through its

deteriorating effect on PBB implementation quality. Economic expenditure demonstrates consistently positive and significant mediation effects at the national level (t = 6.13) and across Sumatra (t = 3.91), Kalimantan (t = 2.19), Java (t = 2.71), and Sulawesi and Maluku (t = 4.76), establishing it as the most robust and welfare-enhancing fiscal instrument operating through the PBB quality channel.

Table 5. Hypothesis Test Results: Model 4 — Mediation of PBB Implementation Quality

Pathway	Indonesia	Sumatra	Kalimantan	Java	Sulawesi & Maluku	Papua	Nusa Tenggara & Bali
GAF → WSR → HDI	9.66***	7.26***	-0.41	6.20***	1.17	-0.29	-1.44
SAF → WSR → HDI	-11.34***	-5.29***	-3.81***	-5.40***	-3.43***	-1.66	-6.15***
Tax → WSR → HDI	2.61***	2.05**	-1.07	1.28	-1.26	-0.77	2.63***
Levy → WSR → HDI	2.19**	-1.35	0.10	-0.70	-0.93	1.33	1.71
Econ. Exp. → WSR → HDI	6.13***	3.91***	2.19**	2.71***	4.76***	0.04	0.95

*Note: t-statistic values reported; *** |t| > critical value at p<0.01; ** |t| > critical value at p<0.05*

4.5 Robustness Test: Arellano-Bond Dynamic Panel Estimation

The Arellano-Bond GMM estimation validates the model using two key diagnostic tests. The AR(2) test produces a p-value of 0.0842 (p > 0.05), indicating the absence of second-order serial correlation in the first-differenced residuals. The Hansen test produces a p-value of 0.0987 (p > 0.05), supporting the instrument set is jointly valid. These results indicate that the dynamic GMM model is accurately described and that the instruments meet the exogeneity conditions, giving confidence in the robustness of the dynamic estimates.

The GMM results are consistent with the main findings from the static panel models. The DAU (0.023132; p < 0.01), local tax revenue (0.023403; p < 0.05), and economic expenditure (0.236148; p < 0.01) all have positive and statistically significant effects on the HDI, confirming that these fiscal instruments help boost human development. The DAK (−0.006400; p < 0.05) and local levies (-0.087042; p < 0.01) have negative and significant coefficients, indicating their negative impact on welfare outcomes due to administrative rigidity in DAK and burden effects in local levies.

Further, the WSR coefficient remains negative and statistically significant (-0.067827; p < 0.01), providing dynamic panel evidence in support of the isomorphic mimicry. The study also finds a positive and significant second lag of HDI (0.066008; p < 0.05), confirming the path-dependent nature of human development trajectories and indicating that past welfare achievements can predict current outcomes. This finding is consistent with theoretical perspectives emphasizing persistence in human development and the cumulative nature of capability formation.

Table 5. Results of Arellano-Bond Dynamic Panel Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HDI(-1)	0.070926	0.044656	1.588	0.1130
HDI(-2)	0.066008	0.026080	2.531	0.0117**
GAF	0.023132	0.003856	5.999	0.0000***
SAF	-0.006400	0.002537	-2.523	0.0120**
Regional Tax	0.023403	0.010613	2.205	0.0280**
Regional Levy	-0.087042	0.028489	-3.055	0.0024***
Economic Expenditure	0.236148	0.037134	6.359	0.0000***
Welfare State Ratio	-0.067827	0.011443	-5.927	0.0000***
AR(2) p-value				0.0842
Hansen test p-value				0.0987

*Note: *** p<0.01; ** p<0.05*

The negative association between WSR and HDI, also confirmed by dynamic GMM estimates (-0.067827; p < 0.01; Table 5), contradicts standard PBB theory and aligns with the concept of isomorphic mimicry (Andrews et al., 2017). Isomorphic mimicry is a process in which organizations adopt the outward forms and symbols of effective institutions, such as performance measurement systems, budgeting frameworks,

and accountability mechanisms, but fail to internalize the substantive functional changes these forms are designed to produce. In the context of Indonesian regional governance, this dynamic is manifested in the adoption of PBB frameworks that meet formal compliance requirements and generate favorable performance ratios, thereby increasing WSR, but do not fundamentally reorient budget allocations toward improvements in human development. Local governments that excel at documenting performance targets, producing performance reports, and meeting procedural benchmarks may do so through administrative imitation rather than through genuinely outcome-oriented governance. As a result, high WSR values may reflect technical reporting proficiency rather than significant HDI advancement.

This pattern has been demonstrated to be the strongest in Java, where administrative capacity and reporting compliance are most established. In contrast, the positive association in Sumatra and Kalimantan suggests a threshold effect, whereby PBB improves welfare only after reaching a certain level of functional institutional capacity. A complementary explanation relates to organizational rigidity. The negative interaction between DAK and WSR documented in Model 2 implies that conditional transfers limit flexibility and crowd out adaptive governance. When rigid transfer rules intersect with tightly specified PBB frameworks, local governments may prioritize compliance over service quality. This finding is consistent with those found by Alawia et al. (2021) and Karlina and Novianty (2023).

When viewed together, these findings have significant policy consequences. Strengthening PBB implementation without parallel investments in authentic institutional capacity risks creating governance systems that are legally compliant but substantively ineffective. As a result, the negative association between WSR and HDI should not be interpreted as evidence against PBB, but rather as a warning against using PBB as a compliance exercise instead of as a tool for meaningful governance transformation.

4.6 Synthesis of Cross-Regional Coefficients: DAU, DAK, and Economic Expenditure

Table 6 summarizes the coefficients of DAU, DAK, and economic expenditure across regions for Model 1, Model 2, and Model 4. There have been three patterns identified. First, the DAU has a split profile. It has positive direct and mediated welfare effects in western regions, but minimal or negative effects in eastern regions. This pattern suggests a misalignment between the demographic-based model and absorptive capacity. Second, the DAK exhibits a structural paradox. It has a positive direct effect on HDI, but a negative indirect / mediation effect due to PBB quality. This pattern implies a structural trade-off between targeted fiscal intervention and institutional capacity development. Finally, the economic expenditure has the most consistent profile, with positive direct and mediated effects in most regions. This pattern identifies growth-oriented expenditure as the most effective instrument for simultaneously improving welfare while also strengthening governance quality within Indonesia's decentralized fiscal system.

Table 6. Synthesis of Cross-Regional Coefficients: DAU, DAK, and Economic Expenditure

Fiscal Instrument	Model	Indonesia	Sumatra	Kalimantan	Java	Sulawesi & Maluku	Papua	Nusa Tenggara & Bali
GAF	Direct Effect on HDI (M1)	0.0048***	0.0074***	-0.0006	0.0058***	0.0034***	0.0009	-0.0025
	Effect on WSR (M2)	0.0357***	0.0467***	0.0638**	0.0306***	0.0210***	-0.0102	0.0800***
	Mediated Effect (M4)	9.66***	7.26***	-0.41	6.20***	1.17	-0.29	-1.44
SAF	Direct Effect on HDI (M1)	0.0093***	0.0078***	0.0123***	0.0058***	0.0123***	0.0127***	0.0151***
	Effect on WSR (M2)	-0.0517***	-0.0494***	-0.0619***	-0.0461***	-0.0397	-0.0465	-0.1169***
	Mediated Effect (M4)	-11.34***	-5.29***	-3.81***	-5.40***	-3.43***	-1.66	-6.15***
Economic Expenditure	Direct Effect on HDI (M1)	0.0619***	0.0893***	0.0469***	0.0734***	0.0711***	-0.0091	0.0192
	Effect on WSR (M2)	0.5311***	0.6435***	0.4370**	0.5247***	1.0432	-0.0072	0.3900

Fiscal Instrument	Model	Indonesia	Sumatra	Kalimantan	Java	Sulawesi & Maluku	Papua	Nusa Tenggara & Bali
	Mediated Effect (M4)	6.13***	3.91***	2.19**	2.71***	4.76***	0.04	0.95

*Note: *** p<0.01; ** p<0.05; * p<0.10. M1 = Model 1 coefficients; M2 = Model 2 coefficients; M4 = Sobel t-statistics*

V. CONCLUSIONS

5.1 Summary of Findings

The present research examines whether the quality of PBB mediates the relationship between fiscal decentralization and social welfare in Indonesia. Using a balanced panel of 420 regency and municipal governments from 2013 to 2022, estimated using sequential models and dynamic GMM, the findings both confirm and qualify key theoretical expectations derived from fiscal federalism, PBB theory, and institutional development perspectives.

This empirical study finds that the fiscal decentralization significantly affects social welfare, as measured by the HDI, which is consistent with the allocative efficiency views by Oates **(1972)**. However, this relationship is indirect and heterogeneous. The welfare effects depend critically on the mediating role of PBB quality, proxied by the WSR, and vary between fiscal instruments and regions. Furthermore, the economic expenditure appears as the most consistent driver of welfare improvement, with positive direct effects on HDI and improved PBB quality in most regional clusters. In contrast, the DAU improves welfare in western regions while losing relevance or becoming negative in eastern regions. This finding underscores the limitations of demographic-based allocation procedures in the context of institutional inequality. Moreover, the DAK reveals a major paradox, where although they directly enhance HDI, their indirect effect on PBB quality is systematically negative. This finding indicates a trade-off between targeted fiscal intervention and endogenous institutional capacity creation.

Interestingly, the most theoretically significant result is a primarily negative association between WSR and HDI, which is supported by dynamic GMM estimates. According to the concept of isomorphic mimicry proposed by Andrews at al.,2017, this finding suggests that many local governments adopt the formal architecture of PBB without internalizing its results-oriented logic. In this context, the performance measures serve as symbols of compliance rather than as tools for substantive budgetary reallocation toward human development. Rather than suggesting the failure of PBB as a paradigm, the negative WSR-HDI relationship highlights the risks of viewing PBB as a procedural need rather than as a transformative governance reform.

5.2 Theoretical Contributions

The findings of this study add three interrelated theoretical contributions to the literature on fiscal decentralization and human development. First, it refines fiscal federalism theory by demonstrating that the informational advantage proposed by Oates (1972) is insufficient for welfare-enhancing decentralization. This advantage requires institutional preconditions that are unevenly distributed across Indonesian regions. These findings imply that institutional capacity should be viewed as an enabling variable rather than as a background assumption in fiscal federalism models. Second, the study advances PBB theory by demonstrating that the relationship between performance measurement quality and development outcomes is non-monotonic and context dependent. The concept of isomorphic mimicry serves as a theoretical bridge between PBB and institutional development literatures, clarifying why PBB reforms in developing countries often fail to deliver their expected advantages. Third, by positioning PBB quality as a mediating variable, rather than an outcome or control, this present research introduces a new analytical construct, the *Performance-Based Fiscal Policy Framework*. This framework combines fiscal federalism, PBB theory, public policy implementation theory, and Sen (1999) capability approach to form a single evaluative architecture. It resolves the long-standing tension between economic efficiency and social value in decentralization research, opening up new avenues for empirical investigation into the institutional mechanisms by which fiscal policy influences human development.

5.3 Policy Implications

The research findings have various practical implications for the design of fiscal decentralization in Indonesia. First, the consistent welfare-enhancing effect of economic expenditure indicates that local governments should be encouraged to prioritize productive economic expenditure above routine and administrative costs. On this basis, transfer formulas should reward outcome-oriented expenditure patterns rather than just following sectoral allocation rules. Second, the paradoxical negative mediation effect of DAK through PBB quality necessitates a thorough redesign of conditional transfers. Instead of rigid sectoral budget allocations that limit local fiscal flexibility, the DAK architecture should allow for greater programming adaptability while still ensuring accountability for development outcomes. This requires a shift from input-based

compliance monitoring and toward results-based performance accountability, which is conceptually similar to PBB but has yet to be implemented in Indonesia's intergovernmental transfer system. Third, documented regional variation contradicts unified national PBB standards. Western regions, particularly Sumatra and Kalimantan, have demonstrated institutional readiness to translate PBB into genuine welfare improvements and are ideal candidates for advanced outcome-oriented budgeting frameworks. Eastern regions, including Papua and Nusa Tenggara, require differentiated policies that prioritize basic institutional capacity building, administrative infrastructure, and governance quality before performance assessment can be used to increase welfare. Imposing standardized PBB compliance in low-capacity contexts risks increasing the isomorphic mimicry and compromising substantive fiscal governance. Finally, the negative effect of the WSR highlights the need to re-evaluate how PBB performance is defined, measured, and encouraged. Evaluation systems that reward documentation quality and target achievement without verifying actual welfare consequences create biased incentives that prioritize administrative compliance over substantive governance. A reformed accountability architecture should include direct welfare indicators, citizen satisfaction metrics, and independent service delivery assessments as core elements of PBB.

5.4 Limitations

This research acknowledges several limitations, most notably the scope and generalizability of the findings. First, the WSR serves as a proxy for PBB implementation quality, using RPJMN planning targets as benchmarks. Regions with less ambitious targets may appear to perform better, not because of superior governance, but because their benchmarks are easier to achieve. Moreover, the WSR reflects aggregate macroeconomic indicators, such as growth, poverty, and unemployment, which are influenced by national conditions, commodity cycles, and demographic dynamics outside of local fiscal control. Shifts in RPJMN priorities over planning cycles may result in structural breaks unrelated to governance quality. Although partial validation is provided through correlations with audit opinions and fiscal independence indices, the WSR should not be used to determine institutional capacity directly. Future research should develop more direct indicators based on administrative process data, spending efficiency metrics, and frontline service delivery assessments.

Second, the ten-year panel (2013 - 2022), while lengthy by Indonesian standards, may be insufficient to capture the long-term effects of PBB, which is a slow-moving institutional reform. The observed negative WSR - HDI relationship may be due to short- to medium-term adjustment dynamics dominated by compliance phases. rather than a long-term institutional transformation. Longer panels covering multiple RPJMN cycles would enable more definitive findings about these patterns.

Third, omitting time-varying confounders may result in biased estimates. Political factors such as electoral cycles, vertical political alignment, and local legislative supervision are known to influence fiscal governance but are not included. Corruption, as both a direct diversion of funds and a distortion of allocation priorities, is likely the most important omitted variable. The lack of accurate time-varying corruption measures at the district level implies that estimated coefficients represent average effects across diverse governance contexts rather than effects within specific institutional environments. Incorporating political economics variables and governance quality metrics would significantly improve the framework.

Lastly, the external validity is limited. Indonesia's decentralization stands out for its scale, pace, geographic fragmentation, and transfer system design. The isomorphic mimicry may be more prevalent in Indonesia due to its strong top-down compliance culture, but it may emerge differently in countries with stronger traditions of local accountability. Similarly, the negative mediation effect of DAK is related to features specific to Indonesia's conditional transfers. As a result, the findings of this investigation can only be applied to other developing countries provided institutional variations are carefully considered. Comparative studies using the suggested *Performance-Based Fiscal Policy Framework* to decentralized systems in Southeast Asia, Sub-Saharan Africa, and Latin America would be useful extensions.

5.5 Directions for Future Research

Based on the results of the analysis, there are several recommendations and directions for future research. First, future studies should use larger panels to examine the long-term dynamics of PBB and human development. Second, studies that develop and test direct measures of PBB implementation using administrative and process-level data would improve empirical precision. Third, explicitly incorporating political economy variables, such as electoral cycles, partisan alignment, and corruption proxies, would result in a more comprehensive understanding of the institutional framework of fiscal decentralization. Finally, cross-country comparative assessments of the *Performance-Based Fiscal Policy Framework* could examine the generalizability of its theoretical and empirical claims and contribute to a broader evidence basis for institutionally differentiated decentralization reforms.

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