



The Paradox Of Government Spending And Demographics On Central Java's Economic Growth

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ABSTRACT

This study analyzes the paradoxical relationship between government spending, population, and Gross Regional Domestic Product (GRDP) across 35 districts/cities in Central Java from 2019 to 2023. Using panel data regression and selecting the Fixed Effect Model (FEM) based on the Chow and Hausman tests, this study examines the influence of government spending (PM), life expectancy (UHH), school enrollment rate (APS), and total population (JP). The results indicate that government spending and total population have a negative and significant effect on GRDP, contradicting conventional economic theory. Conversely, life expectancy shows a positive and significant impact, while the school enrollment rate does not demonstrate a statistically significant influence. This paradox highlights the inefficiency of local fiscal allocation and the challenges of demographic management in Central Java. The findings suggest that accelerating regional economic growth requires improving the efficiency of government spending, enhancing the quality of human capital through better health outcomes, and managing population growth in conjunction with labor market expansion.

INTRODUCTION

Gross Regional Domestic Product (GRDP) is a fundamental indicator in evaluating the success of a region's economic development (Utami, 2020). As the main proxy for economic growth, GRDP reflects the total added value of final goods and services produced by all economic units in a region (Hasibuan et al., 2022). The ability of a region to manage resources and create added value sustainably is the main determinant of high GRDP achievement (Bintang & Woyanti, 2018). On the other hand, labor absorption and the level of community welfare are highly dependent on how much economic output a region is able to produce (Primasari & Suharsih, 2024).

Central Java Province faces unique challenges in driving its GRDP growth (Amar & Arkum, 2024). The varying economic dynamics between districts/cities demand a more precise fiscal

policy based on regional data (Sari & Novianti, 2024). The importance of maintaining regional spending efficiency through local fiscal stability is a key pillar, as studies Setyaputri et al., (2025) highlight the need for control over capital expenditure allocations to maintain public service standards and economic infrastructure (Hartono et al., 2018). Furthermore, high economic growth without the support of adequate human resource quality will only create false growth (Setiawan & Ariani, 2022).

Investment in the health and education sectors is a driving force for productivity that ultimately increases regional economic output (Aini & Islamy, 2021). Research Siswati & Hermawati, (2018) states that high GRDP is negatively correlated with unemployment rates, because increased economic output ideally creates new jobs (Ramadanisa & Triwahyuningtyas, 2022). However, labor market dynamics also indicate that under certain conditions, increased GRDP must be accompanied by stable employment policies to avoid anomalies in the open unemployment rate (Styawan & Harsono, 2021). External demographic factors also deserve attention; a large population without a corresponding expansion of employment opportunities can reduce labor absorption capacity, which directly threatens per capita GRDP growth (Juniansyah, 2021). Conversely, failure to encourage inclusive economic growth will exacerbate chronic social problems (Christono & Putri, 2021). Furthermore, the quality of growth appears to matter more than the rate of growth, as improvements in life expectancy and GRDP significantly influence human development outcomes (Rahayu & Barika, 2024).

The novelty and contribution of this research can be seen from several aspects (Anantika & Sasana, 2021). First, from a theoretical perspective (theoretical gap), the relationship between government spending, human resource quality, and population size on economic growth is generally assumed to be linear (Setyaputri et al., 2025; Setiawan & Ariani, 2022). However, in practice, this relationship does not always align with theoretical predictions, particularly in the context of fiscal decentralization and regional heterogeneity, necessitating more contextual re-examination (Hartono et al., 2018; Siswati & Hermawati, 2018; Styawan & Harsono, 2021). Second, from a methodological perspective (methodological gap), most previous studies still use separate cross-section or time series approaches, thus not being able to capture spatial and temporal dynamics simultaneously (Christono & Putri, 2021; Fahrika et al., 2020). The panel data approach used in this study allows for more accurate control of inter-regional heterogeneity and changes over time (Christono & Putri, 2021; Giovannis, 2018). Third, from an empirical perspective (empirical gap), previous research findings show inconsistent results, both related to the influence of government spending which is not always effective (Setyaputri et al., 2025; Hartono et al., 2018; Suci et al., 2023), the role of education which is not yet significant in the short term (Nandita et al., 2019; Desmawan et al., 2023), and the dualistic nature of population as both a driver and a burden of development (Siswati & Hermawati, 2018; Ramadanisa & Triwahyuningtyas, 2022; Ningsih & Pahlevi, 2024). Therefore, this study integrates fiscal, health, education, and demographic variables in one analytical framework using a panel data approach at the district/city level in Central Java Province for the period 2019–2023 (Hasibuan et al., 2022; Aini & Islamy, 2021). This is expected to provide a more comprehensive understanding of the determinants of GRDP and its implications for the formulation of regional development policies, especially in addressing the challenges of the fiscal and demographic paradox (Setyaputri et al., 2025; Siswati & Hermawati, 2018; Christono & Putri, 2021).

LITERATURE REVIEW

Although the literature on the determinants of regional economic growth has developed quite extensively, several limitations remain, indicating research gaps that require further study. Most previous studies tend to analyze the influence of government spending, education, health, or demographics in parts, without considering the simultaneous relationship between these variables within a comprehensive analytical framework (Bintang & Woyanti, 2018; Setyaputri et

al., 2025; Aini & Islamy, 2021). However, in the context of regional development, the interaction between fiscal policy, human resource quality, and demographic dynamics is complex and mutually influencing (Amar & Arkum, 2024; Fahrika et al., 2020). This complexity is further evidenced by the strong relationship between extreme poverty and economic inequality, where regions with high inequality tend to experience slower poverty reduction (Lestari et al., 2023).

On the other hand, empirical results related to the influence of government spending on economic growth also show inconsistencies. Theoretically, public spending, especially capital spending, is expected to have a positive impact on GRDP by increasing production capacity (Styawan & Harsono, 2021; Juniansyah, 2021). However, several studies have found that regional spending does not always have a significant impact, and even tends to be inefficient when dominated by consumptive operational spending (Primasari & Suharsih, 2024; Anantika & Sasana, 2021). Research in East Java Province also confirms that regional spending does not have a significant effect on community welfare, both in the short and long term (Ahadiyah & Setyadharma, 2023). This condition indicates that the relationship between government spending and economic growth is not always linear, thus requiring further testing in different regional contexts (Ramadanisa & Triwahyuningtyas, 2022; Christono & Putri, 2021).

Similar limitations are also found in education and health variables as proxies for human capital. Although conceptually both are major determinants of economic productivity, empirical findings indicate that the influence of education, particularly as measured by the school enrollment rate (APS), is not always significant on macroeconomic indicators (Giovannis, 2018; Suci et al., 2023). Revealed that while life expectancy and GRDP significantly influence the Human Development Index, educational infrastructure has a significant influence on HDI, but education function expenditures do not, indicating that infrastructure quality matters more than expenditure quantity (Rahayu & Barika, 2024). Research in Java and Yogyakarta has shown that APS does not necessarily have a significant effect on poverty in the short term (Hartono et al., 2018; Giovannis, 2018). This raises questions about the effectiveness of the indicators used and the possibility of other factors, such as education quality and relevance to labor market needs, that have not been fully accommodated in previous empirical models (Bintang & Woyanti, 2018; Ningsih & Pahlevi, 2024). Interestingly, while educational infrastructure significantly influences human development, education function expenditures alone do not, suggesting that infrastructure quality matters more than expenditure quantity (Rahayu & Barika, 2024). In contrast, health variables proxied by life expectancy (UHH) consistently show a positive effect on economic well-being (Bintang & Woyanti, 2018; Amar & Arkum, 2024; Fahrika et al., 2020).

Furthermore, the role of population in driving economic growth also still shows dualism in research results. On the one hand, a large population is seen as a potential market and workforce that can drive economic expansion (Nandita et al., 2019; Desmawan et al., 2023). Research in the Special Region of Yogyakarta found that population size has a positive and significant effect on GRDP (Nandita et al., 2019). However, on the other hand, population growth that is not accompanied by an increase in the quality of human resources and employment opportunities has the potential to cause pressure on the economy, such as increasing unemployment and dependency burdens (Setyaputri et al., 2025; Setiawan & Ariani, 2022; Ningsih & Pahlevi, 2024). This is consistent with findings that regions with high extreme poverty rates tend to have slower economic growth, as population growth without adequate employment opportunities exacerbates poverty and inequality (Lestari et al., 2023). Research in South Kalimantan and Central Java confirmed that population size has a significant effect on increasing unemployment (Setyaputri et al., 2025; Ningsih & Pahlevi, 2024). These different

findings indicate that the relationship between demographic variables and economic growth is not yet fully conclusive (Hartono et al., 2018; Fahrurrozi et al., 2023).

Furthermore, most previous studies have focused more on aggregate analysis or used a cross-sectional approach, thus being less able to capture temporal dynamics and inter-regional heterogeneity in depth (Siswati & Hermawati, 2018; Ramadanisa & Triwahyuningtyas, 2022). In fact, the economic characteristics of districts/cities in Central Java Province show quite high variations, both in terms of economic structure, fiscal capacity, and human resource quality (Bintang & Woyanti, 2018; Primasari & Suharsih, 2024). Forecasting GRDP using trend analysis methods also shows that sustainable economic growth is highly dependent on the region's ability to transform its leading sectors (Oktaviana & Amalia, 2018). Therefore, a panel data approach is relevant to provide a more comprehensive picture of the determinants of GRDP in a spatial and temporal context (Aini & Islamy, 2021; Ramadanisa & Triwahyuningtyas, 2022; Falah & Rahmawati, 2024).

Based on these various limitations, an analysis is needed that not only tests the influence of each variable separately, but also considers the possibility of relationships that are not in line with the predictions of conventional economic theory (Primasari & Suharsih, 2024; Setyaputri et al., 2025). Thus, this study attempts to fill this gap through empirical testing that integrates fiscal, health, education, and demographic aspects in one comprehensive analysis model at the district/city level in Central Java Province (Utami, 2020; Hasibuan et al., 2022; Sari & Novianti, 2024).].

METHODS

This study uses a quantitative approach with a panel data regression analysis method. The data used is a combination of time series data for the 2019-2023 period and cross-sectional data covering 35 districts/cities in Central Java Province. The panel data approach was chosen because of its ability to capture the dynamics of regional change in greater depth and accommodate inter-district heterogeneity, which is often the main trigger for development disparities (Ramadanisa & Triwahyuningtyas, 2022). This methodological approach has been widely employed in regional economic studies to effectively capture both spatial and temporal dynamics simultaneously (Wulandari & Rambe, 2024; Rahayu & Barika, 2024).

The dependent variable in this study is Gross Regional Domestic Product (GRDP), which reflects the performance of the regional economy (Utami, 2020). Meanwhile, the independent variables are focused on the dimensions of fiscal policy, health, education, and demographics, namely Government Expenditure (PM), Life Expectancy (UHH), School Participation Rate (APS), and Population (JP). The determination of these variables is based on the importance of accelerating the health and education components and the effectiveness of government spending in driving regional economic growth (Primasari & Suharsih, 2024).

All data are sourced from official publications of the Central Statistics Agency (BPS) of Central Java Province. To maintain statistical consistency and minimize extreme data fluctuations, the GRDP and Population variables were transformed into natural logarithmic forms (LOG_PDRB and LOG_JP), in line with technical procedures carried out by previous research (Nandita et al., 2019). The panel data regression model in this study is formulated as follows:

$$\log (PDRB_{it}) = \beta_0 + \beta_1 PM_{it} + \beta_2 UHH_{it} + \beta_3 APS_{it} + \beta_4 \log \log (JP_{it}) + \varepsilon_{it}$$

Where Y is the natural logarithm of Gross Regional Domestic Product (LOG_PDRB); X1 is Government Expenditure (PM); X2 is Life Expectancy (UHH); X3 is School Participation Rate (APS); X4 is the natural logarithm of Population (LOG_JP); i is Regency/City; t is Year; and e is the error term.

The final stage of analysis was carried out by selecting the best estimation model through the Chow Test and the Hausman Test to determine the choice between the Common Effect Model, Fixed Effect Model, or Random Effect Model (Aini & Islamy, 2021). This study also applied classical assumption tests (multicollinearity and heteroscedasticity) to ensure valid and unbiased results (Setyaputri et al., 2025). All statistical data processing was executed using EViews 12 software.

RESULTS

Table 1. Estimation Results of *Common Effect, Fixed Effect, and Random Effect Models*

Dependent Variable: LOG_PDRB	Common Effect	Fixed Effect	Random Effect
Constant (C)	-2,623,305	-7,109,055	-1,328,731
Probability	0.7913	0.4775	0.4916
PM	-0.062002***	-0.061939***	-0.062457***
Probability	0.0000	0.0000	0.0000
UHH	0.082856***	0.080930***	0.235140***
Probability	0.0000	0.0000	0.0000
APS	0.089408	0.136334	-0.024236
Probability	0.3510	0.1609	0.0605
LOG(JP)	-0.095715*	-0.099208**	-0.196917***
Probability	0.0503	0.0427	0.0126
R-squared	0.509304	0.523505	0.643620
Prob (F-Stat)	0.000000	0.000000	0.000000

Source : Eviews 12 Processing data

Note:

*) significant at the 10% level

**) significant at the 5% level

***) significant at the 1% level

The Chow test was conducted to select between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). Based on the test results, the Cross-section F statistic value was obtained at 1.046763 with degrees of freedom (4.166) and a probability value of 0.3848. Because the probability value is greater than the significance level of $\alpha = 0.05$, H_0 is accepted, which indicates that the CEM model is better than the FEM in the initial stage of testing. Next, the Hausman Test was conducted to determine the best model between the Fixed Effect Model (FEM) and the Random Effect Model (REM). The test results showed a Chi-Square statistic value of 70.650498 with a degree of freedom of 4 and a probability value of 0.0000. Because the probability value is smaller than $\alpha = 0.05$, H_0 is rejected, which indicates that the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM). By following the testing hierarchy where the Hausman Test is the final determinant between FEM and REM, the model used in this analysis is the Fixed Effect Model.

Table 2. Results of the *Fixed Effect Model T-Test*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7,109,055	9,984,879	-0.711982	0.4775
PM	-0.061939	0.010457	-5,923,393	0.0000
UHH	0.080930	0.018777	4,310,113	0.0000
APS	0.136334	0.096812	1,408,233	0.1609
LOG(JP)	-0.099208	0.048581	-2,042,111	0.0427

Source : Eviews 12 Processing data

DISCUSSION

The literature on the determinants of regional economic growth has developed rapidly, but still leaves conceptual and empirical issues that have not been fully answered adequately (Utami, 2020; Hasibuan et al., 2022; Bintang & Woyanti, 2018). From a theoretical perspective, most development economics studies start from the assumption that government spending, improving the quality of human resources, and population growth have a linear and positive relationship with economic growth (Primasari & Suharsih, 2024; Amar & Arkum, 2024; Sari & Novianti, 2024). Within this framework, public spending is positioned as the main instrument to stimulate economic activity by increasing aggregate demand and providing infrastructure (Styawan & Harsono, 2021; Juniansyah, 2021), while education and health are understood as investments in human capital that increase labor productivity (Bintang & Woyanti, 2018; Fahrika et al., 2020). On the other hand, population is assumed to be a source of labor and a potential market that expands the scale of the economy (Nandita et al., 2019; Desmawan et al., 2023). However, this theoretical framework tends to simplify a much more complex reality, especially in the context of fiscal decentralization and heterogeneity of regional characteristics (Setyaputri et al., 2025; Hartono et al., 2018). In practice, the relationship between these variables does not always run in the direction predicted by theory, even in some cases showing contradictory patterns (Primasari & Suharsih, 2024; Setyaputri et al., 2025). This conventional linear assumption has been challenged by evidence showing that regions with high poverty and inequality do not necessarily experience high economic growth (Lestari et al., 2023). Similarly, economic growth does not automatically reduce poverty and can even worsen it if not accompanied by equitable distribution (Wulandari & Rambe, 2024). This indicates that conventional theoretical approaches have not been fully able to explain the dynamics of interactions between fiscal policy, human resource quality, and demographic factors in diverse regional economic contexts (Setiawan & Ariani, 2022; Aini & Islamy, 2021). Furthermore, economic growth alone appears insufficient for human development, as it does not always have a significant influence on the Human Development Index (Rahayu & Barika, 2024).

These theoretical limitations are exacerbated by weaknesses in the methodological approaches used in many previous studies Bintang & Woyanti, (2018); Ramadanisa & Triwahyuningtyas, (2022). Most studies still rely on separate cross-section or time series analyses, which are fundamentally inadequate to capture the complexity of relationships between variables in both spatial and temporal dimensions simultaneously (Aini & Islamy, 2021; Christono & Putri, 2021). Cross-section approaches tend to ignore temporal dynamics, while time series often ignore inter-regional heterogeneity (Ramadanisa & Triwahyuningtyas, 2022; Oktaviana & Amalia, 2018). Consequently, the resulting estimates are potentially biased and less able to represent actual empirical conditions, especially when applied to units of analysis with high variation in characteristics such as districts/cities (Bintang & Woyanti, 2018; Primasari &

Suharsih, 2024). In the context of regional development, differences in fiscal capacity, economic structure, level of industrialization, and quality of human resources are factors that greatly determine economic performance (Amar & Arkum, 2024; Anantika & Sasana, 2021). Therefore, the panel data approach is relevant because it is able to integrate spatial and temporal dimensions simultaneously, while accommodating region-specific heterogeneity, which is often a major source of variation in regional economic growth (Aini & Islamy, 2021; Ramadanisa & Triwahyuningtyas, 2022; Falah & Rahmawati, 2024). Spatial analysis techniques such as Klassen Typology have also been effectively employed to capture spatial variations across provinces, complementing the panel data approach with spatial distribution analysis (Lestari et al., 2023).

In addition, from an empirical perspective, previous research results show significant inconsistencies (Setyaputri et al., 2025; Giovannis, 2018; Ningsih & Pahlevi, 2024). Government spending, which is theoretically expected to be the main driver of economic growth, does not always have a significant positive impact on GRDP (Primasari & Suharsih, 2024; Juniansyah, 2021). The effectiveness of government spending appears limited, as it only affects poverty at a relatively low significance level (Wulandari & Rambe, 2024). Moreover, the effectiveness of government spending varies by sector, with health function expenditures significantly influencing human development while education function expenditures do not (Rahayu & Barika, 2024). Research in the 8 provinces with the highest GRDP in Indonesia found that capital expenditure and goods/services expenditure do not always have a significant impact, and even tend to be inefficient if dominated by consumptive operational spending (Primasari & Suharsih, 2024). Similar findings were also shown by research in East Java Province, where regional spending does not have a significant effect on public welfare (Ahadiyah & Setyadharma, 2023). In some cases, a negative relationship was even found between government spending and economic growth (Styawan & Harsono, 2021). This phenomenon indicates a fundamental problem in the structure and quality of public spending, where the dominance of consumptive operational spending reduces the effectiveness of spending in increasing regional production capacity (Anantika & Sasana, 2021). Packing up, the main problem does not lie in the amount of spending, but in the composition and efficiency of its use (Hartono et al., 2018; Juniansyah, 2021). This condition indicates that assumptions regarding the expansionary role of fiscal policy need to be reviewed, especially in the context of regions with varying institutional capacities (Ramadanisa & Triwahyuningtyas, 2022; Christono & Putri, 2021).

Empirical inconsistencies are also seen in education and health variables as proxies for human capital (Giovannis, 2018; Suci et al., 2023). Although conceptually both are major determinants of economic productivity, empirical findings show that education indicators, particularly those measured by school enrollment rates (APS), do not always have a significant effect on economic growth in the short term (Hartono et al., 2018; Giovannis, 2018). Research in Java has shown that APS does not necessarily have a significant effect on poverty levels (Giovannis, 2018), and similar findings were also found in Yogyakarta Special Region (Suci et al., 2023). This indicates that increasing the quantity of educational participation is not necessarily followed by an increase in the quality of human resources relevant to labor market needs (Bintang & Woyanti, 2018; Hartono et al., 2018). Problems such as a mismatch between educational curriculum and industrial needs, low quality graduates, and limited access to quality education are factors that can explain the weak relationship between education and economic performance (Ningsih & Pahlevi, 2024; Fahrurrozi et al., 2023). In contrast, health indicators such as life expectancy (UHH) tend to show a more consistent relationship with economic growth (Bintang & Woyanti, 2018; Amar & Arkum, 2024; Fahrika et al., 2020). The importance of health outcomes for economic development is reinforced by evidence that life expectancy has a

significant positive influence on human development (Rahayu & Barika, 2024). and that the Human Development Index has a negative and significant effect on poverty (Wulandari & Rambe, 2024). Research in Central Java proves that UHH has a negative and significant effect on poverty (Bintang & Woyanti, 2018), while research in South Sulawesi confirms that investment in health is the most effective strategy in poverty alleviation (Fahrika et al., 2020), which strengthens the argument that health is the basic foundation of labor productivity.

Meanwhile, demographic variables, particularly population size, also exhibit an ambivalent relationship (Setyaputri et al., 2025; Setiawan & Ariani, 2022; Ningsih & Pahlevi, 2024). In the classical perspective, population growth is viewed as a potential driver of economic expansion through increased workforce and market expansion (Nandita et al., 2019; Desmawan et al., 2023). Research in the Special Region of Yogyakarta (DIY) found that population size has a positive and significant impact on GRDP (Nandita et al., 2019). However, in empirical reality, population growth that is not accompanied by improvements in the quality of human resources and job creation has the potential to put pressure on the economy (Setyaputri et al., 2025; Ningsih & Pahlevi, 2024). Regions with high population density but limited employment opportunities tend to have higher extreme poverty rates, as population growth without adequate economic expansion creates pressure on resources (Lestari et al., 2023). Research in South Kalimantan shows that population size significantly impacts unemployment (Ningsih & Pahlevi, 2024), and similar findings were confirmed in Central Java (Setyaputri et al., 2025). This phenomenon is reflected in the increasing unemployment rate, high dependency burden, and limited employment in the formal sector (Hartono et al., 2018; Fahrurrozi et al., 2023). Thus, population size not only functions as a factor of production, but also as a variable that can worsen economic performance if not managed effectively (Setiawan & Ariani, 2022; Desmawan et al., 2023). This condition indicates that the relationship between demographics and economic growth is contextual and highly dependent on the quality of the institutions and policies that govern it (Aini & Islamy, 2021; Anantika & Sasana, 2021; Oktaviana & Amalia, 2018).

These gaps emphasize the need for a more integrative approach to analyzing the determinants of regional economic growth (Utami, 2020; Hasibuan et al., 2022; Sari & Novianti, 2024). Therefore, this study simultaneously examines the influence of government spending, life expectancy, school enrollment rates, and population on GRDP using a panel data approach at the district/city level in Central Java Province for the 2019–2023 period (Primasari & Suharsih, 2024; Setyaputri et al., 2025; Falah & Rahmawati, 2024). This approach not only allows for a more comprehensive analysis of interactions between variables but also captures regional heterogeneity and temporal dynamics more accurately (Aini & Islamy, 2021; Ramadanisa & Triwahyuningtyas, 2022). The results of this study confirm the existence of a government spending paradox and a demographic paradox, where government spending and population actually show a negative influence on GRDP (Primasari & Suharsih, 2024; Setyaputri et al., 2025). These findings strengthen the argument that the effectiveness of public spending and the quality of demographic management are key factors determining the success of regional economic development (Anantika & Sasana, 2021). These findings align with previous research showing that productive spending, particularly investment, has a negative and significant effect on poverty (Wulandari & Rambe, 2024). Similarly, health function expenditures significantly influence human development, supporting the importance of health sector spending (Rahayu & Barika, 2024). Moreover, economic growth without inequality reduction does not effectively reduce extreme poverty, supporting the need for more equitable development policies (Lestari et al., 2023). Thus, this study is expected to provide a more contextual empirical contribution in explaining the dynamics of regional economic growth, while also providing a stronger basis for

the formulation of effective, adaptive, and evidence-based regional development policies (Amar & Arkum, 2024; Utami, 2020; Oktaviana & Amalia, 2018)..

CONCLUSION

This study confirms that the relationship between fiscal policy, human resource quality, and demographic dynamics on regional economic growth does not always align with conventional theory predictions, so that development effectiveness is determined more by the quality of management than simply the size of resources. The quality and equity of growth appear to matter more than the rate of growth, as extreme poverty has a strong relationship with economic inequality and economic growth alone does not significantly impact poverty reduction (Lestari et al., 2023). This finding indicates the need to reposition development policies, which are currently oriented towards budget expansion, towards improving the quality of spending, particularly through strengthening productive capital expenditures and efficient fiscal allocation. Productive spending through investment and human capital development has been shown to have negative and significant effects on poverty, while economic growth alone can have a positive effect on poverty, reinforcing the need for productive spending and human capital investment rather than relying solely on economic growth (Wulandari & Rambe, 2024). On the other hand, human development policies need to focus on improving the quality and relevance of education and strengthening the health sector as a foundation for productivity, while demographic management must be integrated with employment policies that can optimally absorb the workforce. Comprehensive human development policies that address both health and education quality are essential, as life expectancy, GRDP, educational infrastructure, and health function expenditures significantly influence human development outcomes (Rahayu & Barika, 2024). Future research should further examine the quality of government spending, expand human capital indicators, and develop methodological approaches that can capture spatial and temporal dynamics more comprehensively, thus producing more precise policy recommendations to support sustainable regional economic growth.

LIMITATION

This study has several limitations that need to be acknowledged. First, in terms of variables, the study only uses four independent variables (PM, UHH, APS, JP) so that there is still approximately 49.95% of the variation in GRDP explained by other variables outside the model (Primasari & Suharsih, 2024; Setyaputri et al., 2025). Consequently, conclusions regarding the paradox of government spending and demographics need to be interpreted with caution because it does not consider factors such as private investment, inflation, or the quality of regional institutions (Ramadanisa & Triwahyuningtyas, 2022; Christono & Putri, 2021). Second, in terms of indicators, this study uses the School Participation Rate (APS) as the only proxy for education, so the insignificance of APS in the model does not necessarily mean that education is unimportant for economic growth, but may be caused by the inaccuracy of the indicators in measuring the quality of education (Bintang & Woyanti, 2018; Hartono et al., 2018; Giovannis, 2018). The quality and accessibility of educational facilities appear to be more important than the amount of expenditure, as evidenced by findings that educational infrastructure significantly influences human development while education function expenditures do not (Rahayu & Barika, 2024). Third, in terms of time period, the study only covers 2019–2023, which is the period of the COVID-19 pandemic and initial recovery. Consequently, the government spending paradox identified may be influenced by short-term emergency fiscal policies, making the results of this study more relevant to describing the dynamics of the crisis (Primasari & Suharsih, 2024;

Setyaputri et al., 2025; Ahadiyah & Setyadharma, 2023). However, these limitations do not diminish the significance of the study's main findings, namely the paradox of government spending and demographics in Central Java, as well as the crucial role of health (UHH) in driving GRDP. These findings nevertheless provide valuable empirical contributions to the formulation of more effective and evidence-based regional fiscal policies (Amar & Arkum, 2024; Anantika & Sasana, 2021).

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