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The Impact of Land and Building Tax on the Regional Economy (Regencies and Municipalities) in Indonesia using Panel Data Regression

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Abstract

Land and Building Tax (PBB-P2) is a major source of Regional Original Revenue (PAD) in the era of fiscal decentralization. As a tax imposed on the ownership or use of land and buildings, PBB-P2 has significant potential to support sustainable regional development financing. However, excessively high tax burdens or poor tax governance can discourage investors from investing in a region. This study aims to analyze the effect of PBB-P2 on the economic growth of districts/cities in Indonesia by including regional investment, the number of productive workers, and local government capital expenditure as additional explanatory variables. A quantitative approach was used using a panel data regression model, along with simultaneous and partial tests for each independent variable. The results show that simultaneously, PBB-P2, regional investment, productive workers, and government capital expenditure have a significant effect on regional economic growth. However, partially, only investment has a positive and significant effect on economic growth. PBB-P2 has a positive but insignificant effect, indicating that its role is more as a source of basic fiscal revenue than as a direct instrument for driving growth. This finding underscores the importance of improving human resource quality, capital expenditure effectiveness, and strengthening regional fiscal governance so that tax revenues, including PBB-P2, can be optimized as an instrument of inclusive and sustainable economic development. This research provides policy implications that increasing regional economic growth is not sufficient by simply increasing tax revenues, it also requires more productive and efficient investment, labor, and public spending management strategies.

KEYWORDS

PBB-P2, regional economic growth, investment, productive labor, capital expenditure, fiscal decentralization.

Introduction

Economic growth is one of the main indicators of regional development success, as it reflects increased production capacity, job creation, income growth, and overall societal welfare. In the context of regional development, local governments are not only required to provide high-quality public services but also to manage their own revenue sources to ensure sustainable development. One of the strategic fiscal instruments for local governments is the Rural and Urban Land and Building Tax (PBB-P2). This tax, imposed on the ownership or utilization of land and buildings, has a broad and relatively stable base, making it an essential source of local own-source revenue (PAD) to finance development programs, public services, and basic infrastructure (Rosdiana & Irianto, 2012).

Since the enactment of Law Number 28 of 2009 concerning Regional Taxes and Levies, the management of PBB-P2 has been transferred from the central government to local governments, giving regions greater flexibility to set their own tax policies, improve collection efficiency, and adjust rates according to local conditions (Windi Nolarita & Winarso, 2025). Recent studies have reinforced the importance of PBB-P2 as a fiscal

resource, both in terms of PAD contribution and its ability to support local government expenditures (Wibhawa, 2023; Subagia et al., 2025; Apriliani et al., 2022). In addition, other research demonstrates that the effectiveness of PBB-P2 collection significantly affects local tax performance, highlighting PBB-P2 as a key funding source for regional governments (Havi et al., 2024; Irianti & Niswah, 2021).

Beyond its contribution to PAD, PBB-P2 is also expected to influence regional economic dynamics. Theoretically, property tax revenue can finance infrastructure development, improve public services, and create employment opportunities—all of which are critical drivers of regional economic activity (Chapman, 2008; Kuncoro, 2010). Previous studies have examined the growth and contribution of PBB-P2 to regional fiscal capacity (Hafsah, 2024; Kurmasyah et al., 2025) yet most focus on tax administration and revenue performance rather than the direct impact on economic growth. Effective utilization of PBB-P2 revenue can create a multiplier effect on the local economy: funds can improve infrastructure, expand public services, encourage private investment, and increase public purchasing power. Conversely, excessive tax burdens may suppress economic activity, particularly in the property sector (Lewis, 2003).

Other factors, including investment, the number of productive workers, and local government spending, also significantly affect regional economic growth. Investment is vital for expanding production capacity, stimulating business activities, and fostering innovation. Recent empirical studies in Indonesia consistently show that investment has a positive and significant effect on economic growth, both directly by increasing output and indirectly through sectoral development and job creation (Fazaalloh, 2024; Feriyanto, 2016; Khaliq & Noy, 2007).

The number of productive workers is another important determinant of economic growth. A larger workforce increases potential output and production capacity. Empirical studies indicate that a growing labor force positively affects economic growth at regional and national levels, particularly when supported by skills development and productivity-enhancing policies (Awode & Oduola, 2025; Sairmaly, 2023). Furthermore, labor distribution across regions helps explain disparities in economic growth, making this variable critical in regional economic analysis.

Local government spending also plays a central role in influencing economic growth. Public expenditure, particularly on infrastructure, education, health, and other public services, can enhance productivity, facilitate the circulation of goods and services, and stimulate aggregate demand (Badan Pusat Statistik, 2023). Panel data studies in ASEAN-5 countries, including Indonesia, Malaysia, Thailand, Singapore, and the Philippines, demonstrate that government expenditure significantly and positively affects economic growth, underscoring the importance of effective fiscal policy in regional economic performance (Feriyanto, 2016; Nordin et al., 2025; Tan et al., 2020; YIEN, 2018).

Although prior studies have established the importance of PBB-P2 in strengthening regional own-source revenue (PAD), and have shown that investment, labor force participation, and government expenditure significantly influence regional economic growth, empirical evidence examining the direct relationship between PBB-P2 and economic growth remains limited, particularly in developing and decentralized fiscal systems. Existing international and national studies generally analyze local taxation, public expenditure, or investment separately, with limited integration of these variables within a unified regional growth framework (Putra & Mahiswara, 2024; Wibhawa, 2023). Moreover, previous panel-data studies have largely focused on partial determinants of growth without adequately capturing the interaction between local property taxation capacity, fiscal spending, and regional economic dynamics across heterogeneous regions. Therefore, this study seeks to advance the literature by integrating PBB-P2, investment, labor, and government expenditure within a comprehensive panel regression framework covering all regencies and cities in Indonesia. By doing so, the study contributes not only to the empirical understanding of regional growth determinants in decentralized economies, but also to the methodological application of panel-data analysis in explaining variations in regional economic performance across time and regions.

This study aims to provide a comprehensive analysis of how local tax policies, particularly PBB-P2, interact with other economic factors to drive regional growth. The findings are expected to enrich the academic literature on local taxation and economic development while providing empirical evidence to guide policymakers in designing more effective and sustainable fiscal strategies at the regency and city levels.

Methods

This study uses a quantitative approach to measure the relationship between dependent and independent variables, following the methodological conventions of panel data analysis in regional economic research (Baltagi, 2008; Wooldridge, 2010). The dependent variable is economic growth, typically measured by changes in Gross Regional Domestic Product (GRDP) at the regency/city level, consistent with prior studies investigating growth determinants across subnational units (Muzzakar et al., 2023). The independent variables in this study are land and building tax (PBB-P2), regional investment, workforce, and government spending — variables that are commonly used in regional growth models to capture fiscal, labor, and investment effects on economic performance (Hellen, et al., 2017; Putra & Mahiswara, 2024; SELLY, 2023; Wibhawa, 2023).

The data used in this study are quantitative data from 453 regencies/cities in Indonesia, covering the period from 2020 to 2023. Thus, the unit of analysis in the regression model is the regency/city, resulting in a panel dataset that combines cross-sectional variation across 453 local governments and time-series variation over four years. These regencies/cities are administratively distributed across 33 provinces; however, provinces are not the primary unit of observation in the analysis. Instead, the provincial classification serves only to indicate the geographical distribution of the sampled regencies/cities. The use of panel regression is appropriate because it captures both cross-sectional and temporal variations while controlling for unobserved heterogeneity among local governments (Greene, 2011; Hsiao, 2022). Panel data methods are appropriate for this research because they improve estimation efficiency and help control for unobserved heterogeneity across regions, as demonstrated in earlier empirical studies on regional tax-growth relationships (Nolarita & Winarso, 2025).

The data were obtained from government institutions, including the Central Statistics Agency (BPS), the Investment Coordinating Board (BKPM), and the Ministry of Finance (Directorate General of Taxes and Directorate General of Fiscal Balance). Secondary data from open publications of these agencies are used, following practices in fiscal and economic growth research where public administrative data are the primary sources. Furthermore, for data that are not publicly available, the author collected internal datasets from relevant agencies while maintaining data confidentiality, in line with ethical standards for the use of secondary data in quantitative research (Saunders et al., 2019).

Table 1. Number of Districts/Cities

Number	Province	Number of Districts/Cities
1	Aceh	20
2	Bali	9
3	Banten	8
4	Bengkulu	10
5	Daerah Istimewa Yogyakarta	5
6	Gorontalo	2
7	Jambi	11
8	Jawa Barat	27
9	Jawa Tengah	35
10	Jawa Timur	38
11	Kalimantan Barat	14
12	Kalimantan Selatan	13
13	Kalimantan Tengah	14
14	Kalimantan Timur	10
15	Kalimantan Utara	5
16	Kepulauan Bangka Belitung	7
17	Kepulauan Riau	7
18	Lampung	15
19	Maluku	4
20	Maluku Utara	10
21	Nusa Tenggara Barat	10
22	Nusa Tenggara Timur	21
23	Papua	12
24	Papua Barat	9
25	Riau	12
26	Sulawesi Barat	3
27	Sulawesi Selatan	22
28	Sulawesi Tengah	13
29	Sulawesi Tenggara	8
30	Sulawesi Utara	13
31	Sumatera Barat	19
32	Sumatera Selatan	17
33	Sumatera Utara	30
Total		**453**

Source: processed by the author

Data obtained from various official sources, including:

1. Statistics Indonesia (BPS): Gross Regional Domestic Product (GRDP) data as an indicator of regional economic growth.
2. Directorate General of Fiscal Balance (DJPK): Land and Building Tax (PBB) revenue data.
3. Ministry of Finance and Regional Governments: Regional Budget (APBD) data, specifically related to regional government capital expenditures.
4. BKPM (Investment Coordinating Board): Regional investment data (domestic investment and foreign investment).
5. Ministry of Manpower: Data on productive labor in the regions.

Taken together, this methodological framework for quantitative analysis with panel data provides a robust basis for examining how fiscal variables such as PBB-P2, investment, labor force, and government spending correlate with, and potentially influence, economic growth across Indonesian regencies and cities.

Data analysis used panel data regression to assess the influence of PBB and other variables on regional economic growth. The regression model used is:

$$EG_{it} = \beta_0 + \beta_1 Ln(GE_{it}) + \beta_2 Ln(PBB_{it}) + \beta_3 Ln(Work_{it}) + \beta_4 Ln(Invest_{it}) + \varepsilon_{it}$$

Where EG_{it} is economic growth, $\mathrm{GE_{it}}$ is government expenditure, $\mathrm{PBB_{it}}$ is Land and Building Tax (PBB-P2) revenue, $Work_{\mathrm{it}}$ is number of productive workers, $\mathrm{Invest_{it}}$ is investment, $\varepsilon_{\mathrm{it}}$ is Error term, (i = 1,2,...,453) denotes regencies/cities, and (t = 2020,...,2023) denotes the time period. This specification represents a log-linear panel data model used to estimate elasticity relationships between fiscal variables and economic growth.

Given the data structure and research design, this study employs panel data regression analysis. To identify the most appropriate model specification, Lagrange Multiplier (LM) tests and Hausman tests were conducted. After collecting secondary data, the dataset was analyzed using panel-data regression techniques in Stata to examine whether the evidence supported the hypotheses formulated in this study. The analysis utilizes data from 453 districts/cities in Indonesia, covering the period 2020 to 2023. The detailed composition of the regencies and cities included in the study is presented in Table 1.

The dataset consists of 453 regencies/cities in Indonesia observed over the period 2020 to 2023. These regencies/cities are administratively located within 33 provinces, which provide the geographical coverage of the study. Although Indonesia comprises 38 provinces as of 2025, four newly established provinces, created in 2022, are excluded from the analysis. These provinces include Central Papua, Highland Papua, and South Papua, which were separated from Papua Province, as well as Southwest Papua, which was formed from West Papua Province. The exclusion is necessary because the administrative and statistical data for these new provinces are limited or not fully standardized, making them unsuitable for panel analysis over the 2020–2023 period.

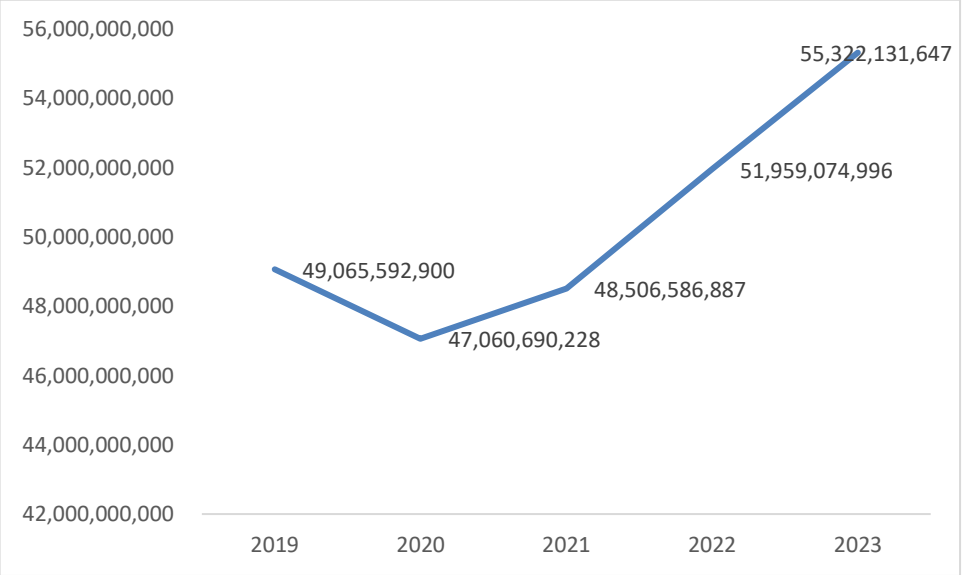
In addition, the Special Capital Region of Jakarta (DKI Jakarta) is also excluded from the dataset. Jakarta has unique regional tax management regulations and fiscal structures that differ significantly from those of other provinces in Indonesia. Including Jakarta could introduce heterogeneity that may bias the analysis, particularly when examining the relationships among regional taxes, government spending, investment, the workforce, and economic growth.

Therefore, the final dataset consists of 453 regencies and cities distributed across 33 provinces in Indonesia, providing a reliable and consistent basis for assessing the impact of land and building tax (PBB-P2), investment, workforce, and government spending on regional economic growth. This selection ensures that the analysis captures representative variations across Indonesian provinces while maintaining methodological rigor and comparability across regions.

Result and Discussion

PBB-P2 has long served as an important source of PAD for district and city governments in Indonesia, particularly since its management was fully devolved to regional authorities following decentralization reforms. Empirical studies consistently find that PBB-P2 contributes significantly to local revenue streams, with its role becoming increasingly pronounced in many regions over time (Putra & Mahiswara, 2024; Subagia et al., 2025). For example, research across multiple regencies demonstrates that PBB-P2 revenues have grown in both effectiveness and contribution to PAD, reflecting their importance in supporting regional fiscal autonomy and development financing (Ester et al., 2022; Subagia et al., 2025). In some cases, PBB-P2 has even been identified as a leading contributor to PAD, highlighting the strategic role of property taxation in local government finance.

Importantly, PBB-P2 appears to be one of the more stable and sustainable sources of regional revenue compared to other local taxes, maintaining its contribution levels even during periods of economic stress such as the COVID-19 pandemic (Pratama et al., 2025). Despite temporary declines in other PAD components during the pandemic, PBB-P2 revenues in many



Graph 1. Average PBB-P2 Revenue Across Districts/Cities in Indonesia, 2019-2023
Source: DJPK processed by the author

Table 2. Largest PBB-P2 Revenues in Indonesia in 2023

Number	Name of Districts/Cities	Total PBB-P2 Revenue (Rp)
1	DKI Jakarta Province	9,048,682,494,705
2	Surabaya City	1,395,441,035,500
3	Semarang City	633,305,126,896
4	Medan City	632,837,656,755
5	Bogor District	610,491,233,234
6	Tangerang District	600,728,836,523
7	Bekasi District	586,630,303,541
8	Bandung City	541,994,659,671
9	Tangerang City	541,695,007,750
10	Karawang District	482,475,613,080

Source: DJPK processed by the author

regions remained resilient, partly due to underlying land value dynamics and ongoing urban development pressures.

Based on Graph 1, from 2019 to 2020, average PBB-P2 revenue decreased by IDR 2.00 billion (-4.1%). This decrease was likely influenced by the initial impact of the COVID-19 pandemic, which suppressed economic activity and taxpayers' payment capacity. Then, in 2021, a recovery began, with an increase of IDR 1.45 trillion (+3.1%). Meanwhile, in 2022, growth strengthened significantly to IDR 3.45 trillion (+7.1%), in line with the economic recovery and the increased effectiveness of regional collection. In 2023, growth was the highest during this period, increasing to IDR 3.36 trillion (+6.5%). This indicates an expansion of the tax base and increased compliance. The pandemic did have a negative impact in 2020, but recovery was quite rapid the following year. The positive growth trend continues, demonstrating improved quality of regional tax administration and rising property values. The 2023 PBB-P2 revenue performance was the best, surpassing pre-pandemic levels and reflecting stronger access to regional revenue. This data aligns with studies from Medan Baru District and Cirebon City that report ongoing growth in PBB-P2 effectiveness and revenue despite challenging economic conditions, suggesting that property-based taxes can play a countercyclical role in subnational fiscal systems (Purnamawati & Arifin, 2024). These patterns underscore both the fiscal significance and the relative stability of PBB-P2 as a regional tax instrument within Indonesia's decentralized fiscal architecture.

According to Table 2, Jakarta Province had the largest PBB-P2 revenue in 2023, amounting to IDR 9 trillion. Meanwhile, Surabaya City came in second with IDR 1.4 trillion. The author used this figure to exclude Jakarta from the data. Maybrat Regency in West Papua had the smallest PBB-P2 revenue in 2023, amounting to IDR 2,652,922. This disparity in PBB-P2 revenue occurs because large urban areas (Jakarta, Surabaya, Bandung, Medan, Semarang) have much higher land prices than rural or underdeveloped areas.

Furthermore, commercial and industrial development activities in cities trigger a significant increase in the NJOP (Value-Based Property Tax). In many other areas, property remains traditional, and land values are not growing rapidly. Furthermore, cities with high urbanization have a very large tax base (apartments, shophouses, malls, industrial estates). Meanwhile, rural areas typically have a wide distribution of assets but small values, resulting in low tax revenues. The disparity in PBB-P2 revenue reflects the economic, infrastructure, property market, and administrative capacity disparities across regions in Indonesia.

After checking the classical regression assumptions and fitting a Generalized Least Squares (GLS) model, the best panel regression model is selected. There are three types of panel regression models: the Common Effects Model (CEM), the Fixed Effects Model (FEM), and the Random Effects Model (REM). Testing to select the best model is carried out as follows:

Breusch and Pagan Lagrangian Test (REM and CEM)

The Breusch and Pagan Lagrangian Multiplier (LM) test is used to determine whether the Random Effects Model (REM) is more appropriate than the Common Effects Model (CEM).
The hypotheses are specified as follows:
H0: The Common Effects Model (CEM) is appropriate (no panel effect; pooled OLS is sufficient)
H1: The Random Effects Model (REM) is appropriate

Based on the test results shown in Figure 1, the p-value is 0.0000, which is less than the 0.05 significance level.

Therefore, H0 is rejected and H1 is accepted. This indicates that the Random Effects Model (REM) is more appropriate than the Common Effects Model (CEM) for the dataset used in this study.

Hausman Test for FEM and REM

A Hausman test was conducted to determine the appropriate model between the Fixed Effects Model (FEM)

Figure 1. Breusch and Pagan Lagrangian Test.

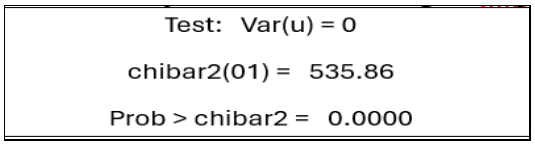


Figure 2. Hausman Test

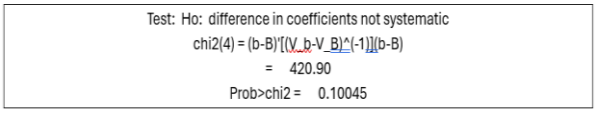
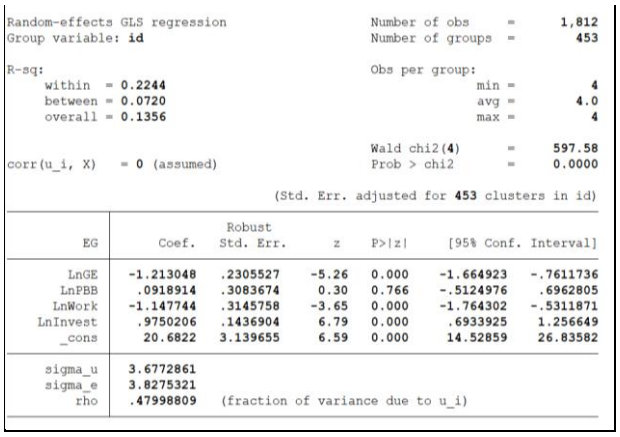


Figure 3. Panel Data Regression using REM



Random-effects GLS regression — Number of obs = 1,812
Group variable: id — Number of groups = 453

R-sq:
within = 0.2244
between = 0.0720
overall = 0.1356

Obs per group:
min = 4
avg = 4.0
max = 4

Wald chi2(4) = 597.58
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

(Std. Err. adjusted for 453 clusters in id)

EG	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
LnGE	-1.213048	.2305527	-5.26	0.000	-1.664923	-.7611736
LnPBB	.0918914	.3083674	0.30	0.766	-.5124976	.6962805
LnWork	-1.147744	.3145758	-3.65	0.000	-1.764302	-.5311871
LnInvest	.9750206	.1436904	6.79	0.000	.6933925	1.256649
_cons	20.6822	3.139655	6.59	0.000	14.52859	26.83582
sigma_u	3.6772861					
sigma_e	3.8275321					
rho	.47998809	(fraction of variance due to u_i)				

and the Random Effects Model (REM). The hypotheses are stated as follows:

H0: The Random Effects Model (REM) is appropriate

H1: The Fixed Effects Model (FEM) is appropriate

The Hausman test results show a probability value of 0.10045, which is greater than 0.05. Therefore, we fail to reject H0, indicating that the Random Effects Model (REM) is statistically more appropriate than the Fixed Effects Model (FEM) (see Figure 2).

Based on this result, the REM is selected as the preferred model over FEM. In addition, model selection among CEM, FEM, and REM indicates that REM provides a more efficient specification under the given data structure. However, because the classical assumption test results showed heteroscedasticity, the robust REM model was used. The results of the robust REM panel regression are as follows:

Based on Figure 3, the number of observations is 1812, comprising 33 provinces and 453 districts/cities over 4 years (2020 to 2023). The model is statistically significant with a p-value of 0.000, less than alpha 0.05. However, the R-square is quite low, around 13%, so there is room for further research to identify the best model with additional variables that can increase it. The model built is as follows:

$$EG = 20.68 - 1.213\text{LnGE} + 0.918\text{LnPBB} - 1.15\text{LnWork} + 0{,}975\text{LnInvest}$$

Based on the model, without the variables Government Expenditure (GE), Land and Building Tax (PBB-P2), Number of Workers (Work), and Investment (Invest), economic growth (EG) increased by 20.68%. The effect of Government Expenditure (LnGE) has a coefficient of -1.213 (significant), meaning that a 1% increase in Government Expenditure leads to a 1.21% decrease in regional economic growth (EG). This observed negative coefficient may reflect inefficiencies in public spending, implementation time lags, or possible misallocation of budget resources, rather than directly implying that all government expenditure is unproductive. In the context of fiscal multiplier and public expenditure efficiency literature, the economic impact of government spending may vary depending on the quality of expenditure allocation, institutional capacity, and the time required for development projects to generate measurable economic returns.

Furthermore, the effect of PBB-P2 has a coefficient of 0.092, but it is statistically insignificant, indicating that the contribution of PBB-P2 to regional economic growth is not empirically strong within the observed period. This finding may suggest that PBB-P2 primarily functions as a source of regional fiscal revenue (PAD) rather than directly stimulating economic activity. However, in the context of fiscal decentralization theory, the effectiveness of local taxes such as PBB-P2 in promoting economic growth may depend on several conditional factors, including governance quality, expenditure allocation efficiency, institutional capacity, and the fiscal multiplier effects of locally generated revenue. Consequently, the role of PBB-P2 may differ across regions depending on how effectively local governments manage and allocate tax revenues toward productive economic sectors and public services.

In addition, the effect of Productive Labor has a coefficient of -1.148 (significant), meaning that a 1% increase in the productive-age population increases the economic burden, resulting in a 1.15% decrease in economic growth. In this case, the quality of human resources is not optimal, indicating that the workforce is not yet productive or is still largely employed in low-skilled sectors. Finally, the influence of investment has a coefficient of 0.975 (significant). This means that a 1% increase in investment has a positive effect on the economic growth of 0.98%. Investment is the largest economic driver in this model.

The Random Effects model estimates indicate that investment, government expenditure, and the number of productive workers significantly influence economic growth across regencies and cities in Indonesia. At the same time, land and building tax (PBB-P2) does not exhibit a statistically significant effect. Investment demonstrates a positive and significant effect, confirming its role as the primary driver of regional economic growth, consistent with neoclassical and endogenous growth theories, which emphasize capital accumulation and investment in physical and human capital as key determinants of output expansion (Romer, 1994).

Conversely, both government expenditure and the size of the productive labor force negatively affect economic growth, suggesting potential inefficiencies in public spending and weaknesses in human resources in certain regions. This finding aligns with prior research indicating that ineffective government spending and low labor productivity can constrain regional growth despite the availability of fiscal resources (Barro, 1990). The model's statistical reliability is confirmed by a Prob > Chi² of 0.0000, indicating that the overall regression is significant and the results are robust for policy inference. These findings underscore the importance of not only mobilizing fiscal resources and labor but also ensuring their productive allocation to foster sustainable regional economic growth.

The estimation results show a negative and significant coefficient for government expenditure (LnGE). This finding indicates that the current increase in local government capital spending has not had a direct impact on regional economic growth. In theory, government expenditure should have a multiplier effect on output and increase regional productivity through basic infrastructure development (Todaro & Smith, 2009). However, these negative results can be explained by several factors: long lag times in infrastructure utilization, numerous non-productive development projects (fiscal misallocation), low-quality and poorly targeted projects, and corruption and spending inefficiency (Mauro, 1995). These results align with research by Silitonga et al. (2021), which states that increases in regional capital spending in Indonesia often do not directly correlate with increases in GRDP due to

low project implementation effectiveness. This means that regional fiscal policy in the form of capital spending has not fully driven economic growth.

In addition, the LnWork coefficient is negative and significant, indicating that improvements in human resource quality have not accompanied increases in the workforce. According to Solow and Human Capital theory, human capital is a crucial component of economic growth. However, when the informal sector remains dominant, skills mismatches with industry needs, and disguised unemployment are widespread, additional labor becomes a burden on the economy rather than a driver of growth (Todaro, 1969). Indonesia is experiencing a demographic bonus, but its benefits have not been optimal due to low labor productivity.

Furthermore, the LnInvest coefficient is positive and significant, indicating that investment is a major driver of regional economic growth. The Harrod-Domar theory and the AK Model state that investment is a crucial factor in increasing production capacity and economic output. Investment increases the capital stock, creates jobs, and encourages technology transfer. These results are consistent with Simamora (2025) findings that increased FDI/PMDN plays a significant role in increasing regional GRDP, particularly in the manufacturing and modern services sectors. This means that the higher the investment flow, the stronger the regional economic growth.

Meanwhile, from the Land and Building Tax (PBB) perspective, the LnPBB coefficient indicates a positive but insignificant trend, implying that property tax revenue has not contributed meaningfully to economic growth. This result supports the notion that PBB-P2 primarily serves as a source of local government revenue (PAD) rather than as a direct driver of regional economic activity, in line with the findings of Rosdiana & Irianto (2012). This indicates that the increase in Land and Building Tax (PBB-P2) revenue has not been strong enough to drive regional economic performance.

In theory, PBB-P2 is a tax on the ownership and use of land and buildings, characterized by a stable tax base based on regional potential (Musgrave, 1989). However, PBB is more of a fiscal instrument, not a growth instrument. Furthermore, increases in PBB tend to suppress consumption by asset owners, and currently, local governments are more focused on collection than on developing a productive tax base. Disparities in PBB-P2 potential across regions are also high, as NJOP (Value-Based Property) values and economic activity vary significantly between districts/cities (Nolarita & Winarso, 2025). Based on the 2020–2023 observation period, PBB-P2 has not yet demonstrated a significant role as a catalyst for regional economic development; instead, it appears to function primarily as a source of local revenue (PAD) that does not directly stimulate economic growth. This finding is consistent with several previous domestic studies showing that local property taxes often have a limited short-term impact on growth, particularly when tax revenues are not strongly linked to productive investment or development-oriented expenditure. In addition, international fiscal decentralization literature suggests that the growth effect of property taxation depends heavily on governance quality, administrative efficiency, and the capacity of local governments to allocate revenues toward infrastructure and productive public services. Nevertheless, PBB-P2 still holds substantial long-term potential if supported by policy optimization measures such as digitized tax collection systems (e-PBB), GIS-based NJOP updates, and land consolidation strategies for industrial and commercial development, which may strengthen the relationship between local tax capacity and regional economic activity. Because land value growth is a long-term economic indicator, the Land and Building Tax (PBB) can be a growth-supporting instrument if its tax base is directed toward productive and competitive activities.

Since the enactment of Law No. 28 of 2009, which was later strengthened by Law No. 1 of 2022 concerning Regional Land and Building Tax (HKPD), the authority to collect PBB-P2 has been transferred to regencies and municipal governments. Thus, PBB-P2 has become a stable contributor to Regional Original Revenue (PAD) and supports regional fiscal independence. According to Musgrave (1989) theory, property taxes, like PBB, are characterized by revenue stability, reflect the economic value of land, offer significant contrasts across regions, and serve as indicators of long-term regional development. However, PBB's role in supporting economic growth is indirect, as land rights taxes do not automatically increase production activity.

Empirical findings from the panel data analysis indicate that PBB-P2 is statistically insignificant in contributing to regional economic growth, despite its recognized importance as a source of local revenue (PAD). Several underlying factors may account for this result. First, the characteristics of PBB as a property tax position predominantly position it as a fiscal instrument rather than a direct economic stimulus. Unlike investment or capital expenditure, PBB revenues in many regions are frequently allocated to routine operational costs rather than investments in productive infrastructure or growth-enhancing programs, limiting their capacity to generate multiplier effects in the local economy. This pattern aligns with findings from regional fiscal studies, which show that property taxes often stabilize budgets but do not necessarily stimulate output growth (Bahl & Martinez-Vazquez, 2007).

Second, the PBB's tax base remains constrained. The updating of NJOP (Nilai Jual Objek Pajak /Tax Object Selling Value) has been suboptimal in many jurisdictions, resulting in under-registration of taxable properties and significant gaps between potential and actual tax bases. The incomplete coverage of property registers undermines revenue mobilization and exacerbates inter-regional disparities in PBB collections. Moreover, sharp differences in land values across regions lead to uneven revenue outcomes, thereby limiting the role of PBB in driving uniform economic growth.

Third, social and political resistance to tax increases constrains local governments' ability to raise NJOPs, even when such increases are economically justified. Political economy considerations, including fear of backlash from taxpayers and concerns about local political stability, make authorities reluctant to raise property tax rates or update taxable values, thereby diminishing the growth potential of PBB revenues. Research in local governance underscores that tax policy decisions are often shaped by non-economic factors, including voter preferences and political risk, which can dampen efforts to mobilize property tax revenue (Rodden et al., 2003).

Thus, the correlation between asset ownership and productive capacity is not straightforward. Highland ownership or asset values do not automatically translate into greater productive activity or contributions to economic output. Large landowners may hold undeveloped land as speculative assets rather than as productive capital, meaning that such assets do not contribute to employment, value-added output, or regional growth (Oates & Fischel, 2016). The absence of development on these assets limits the tax's capacity to trigger productive investment or generate significant spillover effects in local economies.

Collectively, these findings suggest that while PBB-P2 (Rural and Urban Land and Building Tax) holds substantial fiscal significance for local governments, its direct impact on regional economic growth remains limited. The ineffectiveness of PBB-P2 as a growth driver can be attributed to several structural and administrative factors, including a narrow tax base, suboptimal valuation of taxable properties (NJOP), and the allocation of revenues predominantly to routine

expenditures rather than productivity-enhancing investments. Despite these limitations, PBB-P2 possesses considerable long-term potential to contribute to regional economic development if strategically managed. Strengthening property tax administration, expanding the taxable base, and aligning revenues with productive public investment could allow PBB-P2 to function not only as a fiscal instrument but also as a tool for regional growth stimulation (Rosdiana & Irianto, 2012).

The long-term potential of PBB-P2 lies in its ability to encourage land optimization and productive land use. Taxes on underutilized or idle land can incentivize owners to develop their properties or lease them for productive purposes, thereby generating economic value. Furthermore, if revenues from PBB-P2 are channeled into infrastructure projects that enhance connectivity, productivity, and the investment climate, they can directly contribute to regional growth by increasing economic output and attracting commercial and property investments. Improved infrastructure also raises land values, which in turn broadens the PBB tax base, creating a positive feedback loop between fiscal capacity and economic development (Putra & Mahiswara, 2024).

Empirical evidence in the Indonesian context supports these conclusions. For example, Norlailah & Nuryadin (2024) found that while PBB-P2 contributes positively to the Gross Regional Domestic Product (GRDP) of Tabalong districts, the effect is statistically significant. Similarly, Putra & Mahiswara, (2024) observed that the impact of PBB on regional economic growth is primarily evident in urban areas with a strong property base. In contrast, Widiyanto (2026) showed that optimizing NJOP increases local revenue (PAD) but does not automatically translate into direct economic growth. These findings collectively underscore that the effectiveness of PBB-P2 as an economic growth driver depends on its integration with broader regional planning, spatial management, and productive investment strategies.

In conclusion, while PBB-P2 demonstrates a positive but currently limited role in promoting economic growth, it holds significant potential if complemented by fiscal reforms and strategic investment of tax revenues. To transform PBB-P2 from a mere asset-maintenance tax into an instrument for sustainable regional development, local governments must adopt comprehensive strategies that improve tax valuation, broaden the tax base, and ensure that revenues are directed toward high-productivity, growth-enhancing projects. Such measures would enable PBB-P2 to evolve into a robust mechanism for both fiscal sustainability and regional economic transformation (Rosdiana & Irianto, 2012).

Conclusion

Based on the analysis and discussion, it can be concluded that, according to simultaneous tests, the Land and Building Tax (PBB-P2), regional investment, the number of productive workers, and government capital expenditures significantly influence the economic growth of districts/cities in Indonesia. This indicates that fiscal variables and regional economic development play complementary roles in influencing economic growth. Thus, development financing, human resource capacity, and investment stimulus can simultaneously explain the dynamics of regional economic growth. Furthermore, the partial regression results show that PBB-P2 has a positive but insignificant influence on economic growth. PBB has not played a direct role in driving economic growth. Then, Regional Investment has a positive and significant influence. Investment is the main driver of regional economic growth. Furthermore, Productive Labor has a negative but significant influence. This indicates that the workforce's quality is not optimal, thereby becoming an economic burden. Finally, the Regional Government Capital Expenditure has a negative but significant influence. Capital expenditure is not yet efficient and has not produced direct economic output. Only investment makes a positive and significant contribution to economic growth. Meanwhile, government expenditure and labor variables show a negative relationship with economic growth, which may reflect inefficiencies in development implementation, time lags in expenditure impacts, or suboptimal labor productivity during the observed period. In addition, PBB-P2 (land and building taxes) does not show a statistically significant effect on economic growth, suggesting that its current role is still primarily associated with generating local fiscal revenue rather than directly stimulating productive economic activity. Based on these findings, this study proposes a forward-looking policy implication that local governments strengthen tax administration capacity through improvements in tax databases and regular updates of the Taxable Object Sales Value (NJOP) using Geographic Information System (GIS)-based digital systems. Although this recommendation is not directly derived from the regression model, improved tax administration may increase the effectiveness of PBB-P2 by enhancing revenue accuracy, expanding the tax base, and enabling local governments to allocate fiscal resources more efficiently toward productive infrastructure and public services that support long-term regional economic growth. Furthermore, PBB revenue should not be used solely for routine spending, but should be directed toward productive spending, such as economic infrastructure development (roads, markets, irrigation, and industrial areas). This way, the PBB's impact on economic growth can be more direct and sustainable.

Author contributions

Nur Farida Liyana contributed to data collection, manuscript writing, and data analysis. Heni Sulastri contributed to data collection and manuscript revision. Khusnaini contributed to manuscript revision. Ida Zuraida contributed to data collection and collaboration authorization. All authors have read and approved the final version of the manuscript.

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