



FACTORS AFFECTING THE LOCAL TAXES REVENUE BY PROVINCIAL GOVERNMENTS IN INDONESIA

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Abstract

This study aims to investigate the influence of regional gross domestic product (GDP), population size, and the poverty rate on the local tax revenues of Indonesian provincial governments. Secondary data from the publications of the Central Statistics Agency (Badan Pusat Statistik) covering a 5-year period from 2016 to 2020 were utilized for this research. The study focuses on 34 provinces in Indonesia. The research employs panel data regression with the panel-generalized least squares model. The findings indicate that regional GDP has a positive and significant impact on the local tax revenues of provincial governments. An increase in the population size also positively and significantly affects the local tax revenues. Conversely, a rise in the percentage of the population living in poverty has a negative and significant effect on local tax revenues of provincial governments. The simultaneous influence of regional GDP, population size, and the poverty rate on local tax revenues is also significant. To promote higher local tax revenues, the government should encourage economic growth in the regions and invest in enhancing the quality of human resources. This approach would lead to increased regional GDP and population, thereby boosting local tax revenues. Furthermore, efforts to reduce poverty levels would raise consumption and income among the population, ultimately contributing to increased local tax revenues.

Keywords: Local tax revenues, Population size, Poverty, Regional GDP

INTRODUCTION

Taxes are one of the financing methods used by the central government to carry out governmental activities and serve the public interest. With the implementation of regional autonomy laws regulated in *Undang-undang Nomor 23 Tahun 2014* concerning Regional Governance, regional governments are granted autonomy to manage their governance. Similar to the central government, regional governments also require funding to run their administration and address other public interests. Besides intergovernmental transfers, as a means of achieving autonomy and exercising their independence, regional governments also strive to generate revenue through local revenue sources (locally known as *Pendapatan Asli Daerah* or PAD).

Table 1: Revenue of Provincial Governments Across Indonesia

Type of Revenue	Realization of Revenue for All Provincial Governments in Indonesia by Type of Revenue (Billion Rupiah)		
	2021	2020	2019
REGIONAL REVENUE	364,561	333,020	357,560
Local Own-source Revenue	178,319	148,711	169,993
Local Taxes	149,873	124,904	144,039
Local Levies	2,111	1,347	1,773
Revenue from Regional-Owned Enterprises & Management	4,850	3,944	4,266
Other Legitimate Local Own-source Revenues	21,485	18,516	19,915
Intergovernmental Transfers	167,851	157,505	159,263
Share of Tax Revenues	23,796	23,862	19,351
Share of Non-Tax Revenues/Natural Resources	8,648	12,356	14,976
General Allocation Fund	60,669	53,314	58,692
Special Allocation Fund	74,738	67,974	66,244
Other Legitimate Revenues	18,391	26,804	28,303



REGIONAL FINANCING	41,976	38,725	38,496
TOTAL	406,537	371,745	396,056

Source : Central Bureau of Statistics

Based on data from the Central Statistics Agency (2023), the revenue of provincial governments across Indonesia can be observed in Table 1. Provincial government revenue has shown a relative increase over the years. However, there was a decrease in 2020, which was attributed to the Covid-19 pandemic. Nevertheless, it rebounded in 2021. In 2021, local own-source revenue (PAD) contributed 48.9% of the total provincial government revenue. The majority of PAD is dominated by local tax revenue. Thus, local taxes are crucial in ensuring the continuity of regional government affairs.

Due to the importance of the role played by local tax revenue for provincial governments, it is essential to conduct an analysis of the factors influencing local tax revenue for provincial governments. Additionally, given the inconsistency in results from existing research with varying independent variables and the limited research available on the local tax revenue of provincial governments in Indonesia, the author is interested in exploring the variables that influence local tax revenue for provincial governments in Indonesia. Based on the background mentioned above and the lack of research on the factors affecting local tax revenue for provincial governments in Indonesia, the author intends to conduct a study with the title 'Analysis of Factors Affecting Local Tax Revenue for Provincial Governments in Indonesia.

The objectives of this study are as follows: (1) To determine the extent of the influence of regional gross domestic product (GDRP) on the local tax revenue of provincial governments in Indonesia; (2) To assess the extent of the influence of the population size on the local tax revenue of provincial governments in Indonesia; (3) To measure the extent of the influence of the percentage of the population living in poverty on the local tax revenue of provincial governments in Indonesia; and (4) To determine whether regional GDRP, population size, and the percentage of the population living in poverty collectively influence the local tax revenue of provincial governments in Indonesia.

LITERATURE REVIEW

Taxes can be described as compulsory contributions by citizens to the state without receiving direct benefits, and their collection can be enforced to meet the needs of the state (Caroko et al., 2015). The functions of tax collection can be divided into two parts, namely the budgetary function and the regulatory function. The budgetary function is the primary purpose of taxes, aiming to collect funds from the public for government financing. Meanwhile, the regulatory function serves to regulate the distribution of wealth among economic actors and the income of the population.

Based on *Undang-undang Nomor 1 Tahun 2022* regarding Financial Relations between the Central Government and Regional Governments, local taxes are regulated in Article 4. Local taxes can be divided into provincial and district/city government local taxes. The local taxes collected by provincial governments consist of:

1. Motor Vehicle Tax (PKB)
2. Motor Vehicle Ownership Transfer Fee (BBNKB)
3. Heavy Equipment Tax (PAB)
4. Motor Vehicle Fuel Tax (PBBKB)
5. Surface Water Tax (PAP)
6. Cigarette Tax
7. Non-Metallic Minerals and Rocks Tax (MBLB)

Meanwhile, the local taxes collected by city/district governments include:



1. Land and Building Tax for Rural and Urban Areas (PBB-P2)
2. Acquisition of Rights over Land and Building Tax (BPHTB)
3. Specific Goods and Services Tax (PBJT)
4. Advertising Tax
5. Groundwater Tax (PAT)
6. Non-Metallic Minerals and Rocks Tax (MBLB)
7. Swallow's Nest Tax
8. Motor Vehicle Tax Collection (PKB) and Motor Vehicle Ownership Transfer Fee Collection (BBNKB) Operations"

Gross Domestic Product (GDP) is the total value of final output of goods and services produced within a country's borders, including by residents and non-residents, without consideration of the origin, whether from within or outside the country (Todaro & Smith, 2009). GDP can also be understood as the overall value added generated by all units of business within a country, or the total value of final goods and services produced by all economic units (Central Bureau of Statistics, 2023). GDP calculations can be done using current prices to analyze economic shifts and structures or using constant prices to assess year-to-year economic growth. Meanwhile, Gross Regional Domestic Product (GRDP) represents the total gross value of all goods and services produced within the domestic territory of a country, regardless of whether the production is carried out by residents or non-residents (Suharto, 2021). GDP can be constructed using production, expenditure, and income approaches, and it can be computed at constant or current prices. In this study, the GRDP method used is based on expenditure in the province.

Population refers to all individuals residing in the geographical territory of Indonesia for 6 months or more, or less than 6 months with the intention of settling (Central Bureau of Statistics, 2023). Based on SP2020, the residency requirement has been raised to 1 year or less than one year with the intention to settle.

The Central Bureau of Statistics (2023) defines poverty as the economic inability of a person to meet their basic needs, including both food and non-food needs, as measured by expenditure. Mahsunah (2013) also states that poverty is the inability of an individual to meet their needs, such as food, housing, clothing, education, health, and other essential necessities. (Todaro & Smith, 2009) note that impoverished communities tend to reside in rural areas and rely primarily on agriculture as their main source of income.

Previous Research

Several previous studies that used local tax revenue as the dependent variable and independent variables including gross regional domestic product (GRDP), population, and poverty are as follows:

In the study about The Influence of Population, Gross Regional Domestic Product, and Inflation on Local Tax Revenue in Regencies and Cities in Central Java (Sania et al., 2018), it was found that the population has a negative influence on local tax revenue. Additionally, in this study, GRDP was found to have a positive influence on local tax revenue in Central Java.

Another study, 'The Influence of Population and Revenue Sharing Funds on Local Taxes in Malang City' (Asy'ari et al., 2020), revealed that the population has a positive influence on local tax revenue, while the revenue sharing funds (DBH) had a negative influence on local tax revenue.

In contrast, a study by Mongdong et al. (2018) titled 'Analysis of the Influence of GRDP, Population, and Infrastructure on Local Tax Revenue in Tomohon City' found different results. In this research, both GRDP and population did not have a significant influence on local tax revenue.



In the study titled 'Analysis of Factors Affecting Local Tax Revenue in North Sulawesi Provincial Government' (Lumy et al., 2018), it was found that the population has a positive influence on local tax revenue. However, GRDP did not have a significant influence on local tax revenue.

In the study by Putra & Anis (2021) titled 'The Influence of Population, Per Capita GRDP, and Hotels on Local Tax Revenue in Regencies/Cities in West Sumatra,' both the population and GRDP were found to have a positive influence on local tax revenue in West Sumatra.

Sarjono et al. (2018) conducted a study titled 'Analysis of the Influence of Economic Growth on Local Tax Revenue with Poverty Rate as a Moderating Variable in Districts/Cities in West Java.' This study found that poverty has a negative influence on local tax revenue in districts/cities in West Java. Although the title mentions poverty as a moderating variable, it serves as a moderator and an independent variable in this study.

The last comparative study is titled 'The Influence of Poverty Level and Per Capita Income on Local Tax Revenue, and Audit Opinion with Public Trust Level as an Intervening Variable on Local Tax Revenue in Provincial Governments throughout Indonesia' (Alwi et al., 2021). This research found that poverty has a negative influence on local tax revenue in provincial governments across Indonesia."

METHODS

The research model used in this study employs a quantitative approach. The quantitative approach is based on the philosophy of positivism, which utilizes specific samples and populations, typically collected randomly and in a quantitative manner. The research aims to test the applied hypotheses (Sugiyono, 2015).

The data utilized in this study are derived from publications by the Central Bureau of Statistics, specifically from publications on Population, GRDP, and poverty (Central Bureau of Statistics, 2023). Furthermore, the dependent variable, provincial local tax revenue, was obtained from Central Bureau of Statistics publications titled 'Financial Statistics of Provincial Governments 2016-2019' and 'Financial Statistics of Provincial Governments 2018-2021.' The choice of writing about provinces throughout Indonesia is to provide a general overview of local tax revenue in Indonesia using consumption theory. The data used in this study spans from 2016 to 2020. The dependent and independent variables used in the study can be seen in Table 2.

Tabel 2 Operational Definitions of Variables

Dependent Variable	Unit	Scale
Local Tax Revenue	Rupiah	Ratio
Independent Variables	Unit	Scale
Gross Regional Domestic Product	Rupiah	Ratio
Population	Person	Ratio
Poverty Rate	Percentage	Ratio

Source: Central Bureau of Statistics, 2023

The provinces used in this study are the 34 provinces in Indonesia.

In this study, we examine several key variables to understand their relationships. The dependent variable, "Local Tax Revenue," represents the revenue generated from local taxes in each province of Indonesia, measured in Indonesian Rupiah. Meanwhile, the independent variable "Gross Regional Domestic Product (GRDP)" refers to the Gross Regional Domestic Product, reflecting the total gross value of all goods and services produced within the domestic



territory of each province, also measured in Indonesian Rupiah. Another crucial independent variable is the "Population," which includes all individuals residing within a specific geographical area at a given time or those intending to settle there, measured in the number of people. Additionally, the variable "Poverty Rate" represents the percentage of the population facing economic incapacity in meeting their basic needs. To ensure uniformity in measurement, logarithms (natural logs) are applied to standardize the units of analysis for these variables. This study employs a quantitative approach, and data analysis involves regression techniques to explore the relationships between these variables and gain insights into the dynamics of local tax revenue across the provinces of Indonesia.

The selection of the regression model was made among fixed-effect, common/pooled, and random effect models, following prior testing (Baltagi, 2005). The choice of the panel data regression model aimed to determine the best modeling approach that informs the relationships among the variables. Subsequently, classical assumption tests were conducted. These tests aimed to observe the impact of the relationships between variables in the chosen model and to forecast the dependent variable's values using the known values of the independent and moderating variables (Gujarati, 2003).

The data analysis technique employed in this research is multiple linear regression with panel data, aiming to determine the influence of agriculture and per capita income on tax revenue in Sub-Saharan African countries, with regulatory quality as the moderating variable. Data analysis was facilitated using the Stata application. Significance tests and regression analysis were conducted to test hypotheses in the study, utilizing one dependent variable (dependent variable) and three independent variables (independent variables). The dependent variable in this study is local tax revenue (Y), while the independent variables are Gross Regional Domestic Product (GRDP) (X_1), Population (X_2), and Percentage of the Population Living in Poverty (X_3). The multiple linear regression formula employed in this study is as follows:

$$PD = f(LnGRDP, LnPopulation, Povert)$$

The regression equation model in this study is as follows:

$$Y_{it} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Description:

Y_{it} = Ln Local Tax Revenue

α = The Constant Term

β_1 = The regression coefficient for Ln Gross Regional Domestic Product (GRDP)

X_1 = Ln Gross Regional Domestic Product (GRDP)

β_2 = The regression coefficient for Ln Population

X_2 = Ln Population

β_3 = The regression coefficient for the Percentage of Poverty

X_3 = the Percentage of Poverty

ε = Residual

The initial hypotheses in this study are as follows:

H₁ : GRDP has a positive effect on local tax revenue.

H₂ : Population has a positive effect on local tax revenue.

H₃ : Poverty has a negative effect on local tax revenue.

H₄ : GRDP, population, and poverty collectively influence local tax revenue.

RESULTS AND DISCUSSION

Regression testing was conducted using StataMP 17 software with various units of measurement. Local tax revenue and GRDP were measured in Indonesian Rupiah, while the Population variable was measured in the number of people, and poverty was measured in



percentage. Before the analysis, data for Local Tax Revenue, GRDP, and Population were subjected to natural logarithm transformations. The purpose of descriptive statistical analysis was to provide an overview of the data under study by presenting frequency distributions that show the mean values, standard deviations, minimum, and maximum values. This analysis was conducted using the descriptive statistical feature in StataMP 17.

Based on Table 3, the descriptive statistical analysis indicates that almost all variables have a mean greater than the standard deviation. This information suggests that the data to be tested already has a relatively narrow and homogenous distribution.

Table 3 Descriptive Statistics

Variabel	Obs	Mean	Std. dev.	Min	Max
Ln Local Tax Revenue	170	21,197	1,022	19,145	24,420
Ln GRDP	170	18,830	1,144	16,882	21,331
Ln Population	170	8,368	1,015	6,488	10,811
Poverty	170	10,903	5,776	3,47	28,54

Source: Processed by the Author

The panel regression model was selected using the Crow Test, Lagrange Multiplier test, and Hausman Test. The results of the panel data model testing can be seen in Table 4:

Table 4: Results of Panel Data Regression Model Testing

Model Comparison	Testing Method	Prob	Selected Model
PLS and FE	Chow Test	0,0000	FE
PLS and RE	<i>Lagrange Multiplier test</i>	0,0000	RE
FE and RE	Housman Test	0,0169	FE

Source: Processed by the Author

Table 4 is used to conduct tests to choose the appropriate regression model for processing panel data. The tests include the Chou Test, Langrange Multiplier (LM) Test, and Hausman Test. First, the Chou Test is used to choose between two regression models, namely Partial Least Square (PLS) and Fixed-effect (FE). The test results indicate that the more suitable regression model is Fixed-effect (FE). Next, the Langrange Multiplier (LM) Test is performed to choose between the Partial Least Square (PLS) and Random effect (RE) regression models. The test results show that the selected regression model is Random effect (RE). Finally, the Hausman Test is conducted to choose between the Fixed-effect (FE) and Random effect (RE) regression models. Based on the final test results, the chosen regression model is Fixed-effect (FE).

The next data testing is the testing of classical assumptions or Gauss-Markov theory. The types of tests conducted include Normality, Multicollinearity, Heteroskedasticity, and Autocorrelation tests. The results of the testing can be seen in the following table:

Table 5: Results of Normality Testing

Gauss-Markov theory	Testing Method	Prob
Normality	Skewness and Kurtosis Tests	0,0000

Source: Processed by the Author

Based on the testing results in Table 5, the Skewness and Kurtosis test for normality with Prob>chi2 result of 0.0000 or smaller than the alpha value of 5% ($\alpha=5\%$; reject H_0), it can be concluded that the data did not pass the normality test. However, (Kwak & Kim, 2017) state that if the sample size is 30 or more, then a deep sampling in the study has a distribution close to the standard normal distribution, so the assumption about the population distribution can be disregarded because the sampling distribution is considered normal, in accordance with the Central Limit Theorem. Since the sample in this study is 170, the Central Limit Theorem is satisfied.



Table 6: Results of Multicollinearity Testing

Gauss-Markov theory	Testing Method	Prob
Multicollinearity	Variance Inflation Factor	3,68 (Mean VIF)

Source: Processed by the Author

Pada tabel 6 didapatkan, untuk hasil pengujian Multikolinieritas lulus pengujian karena nilai VIF atau *Variance Inflation Factor* kurang dari 10. Uji Multikolinieritas digunakan untuk menunjukkan keberadaan hubungan linier di antara beberapa atau semua variabel independen yang menyusun model regresi sebagai (Sihombing, 2021). Sehingga dengan lulus uji Multikolinieritas maka disimpulkan bahwa tidak ada hubungan linier antara beberapa atau semua variabel independen

Table 7: Results of Heteroskedasticity Testing

Gauss-Markov theory	Testing Method	Prob
Heteroskedasticity	Breusch–Pagan/Cook–Weisberg Test	0,0000

Source: Processed by the Author

In Table 6, it is found that the Multicollinearity test results passed because the VIF (Variance Inflation Factor) values are less than 10. The Multicollinearity test is used to indicate the presence of linear relationships among some or all of the independent variables that make up the regression model (Sihombing, 2021). Therefore, by passing the Multicollinearity test, it can be concluded that there is no linear relationship among some or all of the independent variables.

Table 8: Results of Autocorrelation Testing

Gauss-Markov theory	Testing Method	Prob
Autocorrelation	Wooldridge Test	0,2151

Source: Processed by the Author

he final test is the autocorrelation test using the Wooldridge Test, which yields a Prob value of 0.2151, indicating that the autocorrelation test in Table 8 has passed. Passing this test indicates that there is no relationship between residuals in one observation and another (Sihombing, 2021). This relationship can occur between different time points for time series data and different locations for spatial data.

With the ability to disregard the non-fulfillment of normality testing using the Central Limit Theorem and the overcoming of heteroskedasticity testing issues using the panel regression model-generalized least squares (GLS), the data can be subjected to regression analysis. The results of the panel regression test with the GLS model can be seen in Table 9:

Table 9 Results of Panel Regression-Generalized Least Squares

Variable	Coefficient	Z	Prob> z
LnGRDP	0,6798	15,81	0,000
LnPopulation	0,3821	8,19	0,000
Poverty	-0,0281	-6,86	0,000
Cons	5,5064	10,63	0,000
R-square		-	
Prob > chi2		0,0000	

Source: Processed by the Author

The results of Table 9 indicate the results of Panel-Generalized Least Squares regression. With Prob>chi2 results smaller than the alpha level ($\alpha=5\%$), this explains that based on the regression results, all independent variables have partial effects on the dependent variable, or regional tax revenue. Based on the Prob > chi2 values, the independent variables have a simultaneous influence on regional tax revenue. The R-square value cannot be determined because the regression model uses Panel-Generalized Least Squares. Based on the



Prob>|z| values with alpha less than alpha ($\alpha=5\%$) for independent variables, it indicates a significant impact on the percentage of tax revenue. Variables such as Regional Gross Domestic Product (RGDP) and population have a positive effect on regional tax revenue, while poverty has a negative effect on regional tax revenue.

Based on the results of the Panel-Generalized Least Squares regression model equation, the equation for the percentage of tax revenue is as follows:

$$Y_{it} = 5,5064 + 0,6798X_1 + 0,3821X_2 - 0,0281X_3 + \varepsilon$$

Description:

Y_{it} = Ln Local Tax Revenue

X_1 = Ln Gross Regional Domestic Product (GRDP)

X_2 = Ln Population

X_3 = the Percentage of Poverty

ε = Residual

From the Panel-Generalized Least Squares regression equation, it is found that each independent variable has an impact on regional tax revenue. Regional Gross Domestic Product (PDRB) has a significant positive effect on regional tax revenue. A one percent increase in Regional Gross Domestic Product (PDRB) will increase regional tax revenue by 0.6798%. Similarly, the population has a significant positive effect on regional tax revenue. Therefore, every one percent increase in the population will increase regional tax revenue by 0.4821%. In contrast, other independent variables show a different pattern. Each percentage point increase in the poverty rate has a significant negative effect on regional tax revenue, reducing it by 2.81%.

Gross Regional Domestic Product (GRDP) on regional tax revenue

Based on the regression results, it is found that Gross Regional Domestic Product (GRDP) has a negative and significant effect on regional tax revenue. This result is in line with the studies by Sania et al. (2018) and Putra & Anis (2021). According to Sania et al. (2018), when the economy improves, the income and welfare of the population also increase. With an improvement in both welfare and income, people are more likely to have the capacity to pay taxes. Additionally, Putra & Anis (2021) also explains why this phenomenon occurs. Individuals with higher incomes are more likely to pay taxes.

Population on regional tax revenue

Based on the regression results, it is found that the population has a positive and significant effect on regional tax revenue. This result is in line with the studies by Lumy et al. (2018) and Asy'ari et al. (2020). The results of the study by Lumy et al. (2018) align with Hansen's theory of Stagnation. It is further explained that an increase in the population creates or enlarges aggregate demand. The population can generate and absorb production, so population growth can increase income. Ultimately, this can increase the number of taxpayers contributing to regional tax revenue. Similarly, Asy'ari et al. (2020) explain in their research that an increase in the population can lead to increased revenue from each tax sector, ultimately boosting regional tax revenue (in the case of Kota Malang).

Poverty on regional tax revenue

Based on the regression results, it was found that an increase in the percentage of the population living in poverty has a negative and significant effect on regional tax revenue. This result is consistent with the findings of Alwi et al. (2021) and Sarjono et al. (2018). A higher poverty rate indicates a weaker purchasing power of the population and ultimately has an impact on regional tax revenue (Alwi et al., 2021). The influence of economic growth on tax revenue can be enhanced by a low poverty rate, and vice versa (Sarjono et al., 2018).

Furthermore, each independent variable has a significant influence on the dependent variable, both simultaneously and partially.



CONCLUSION

Based on the results of the research on the Analysis of the Influence of GRDP, population, and poverty on local tax revenue in Indonesia for the years 2016-2020, several conclusions can be drawn. Gross Regional Domestic Product (GRDP) has a positive and significant impact on local tax revenue. An increase in GRDP leads to improved living standards and increased aggregate income for the population, ultimately resulting in higher local tax revenue. Poverty has a negative and significant impact on local tax revenue. A higher poverty rate indicates weaker purchasing power among the population. This reduced purchasing power, in turn, affects local tax revenue negatively. The population has a positive and significant impact on local tax revenue. With an increase in the population, income and absorption of production output rise, ultimately leading to more taxpayers contributing to local tax revenue. In conclusion, GRDP, population, and poverty all have a significant influence on local tax revenue. These variables impact local tax revenue both individually and collectively.

Suggestions from all parties are needed to increase local tax revenue, especially the government, particularly local governments. The government needs to focus on efforts to boost regional economic growth to enhance local tax revenue. The development of productive and competitive economic sectors should be prioritized to drive sustainable economic growth. Additionally, the increase in the population should be accompanied by an improvement in the quality of human resources so that a growing population can have a positive impact on the economy and, ultimately, on tax revenue. Lastly, efforts to reduce the poverty rate should continue. By reducing poverty, it is hoped that consumer spending will increase, leading to a positive impact on tax revenue.

Local tax revenue is not only influenced by GRDP, population, and poverty. Based on existing research, there are still many factors that affect local tax revenue, such as other macroeconomic variables like inflation, as well as more specific variables related to local taxation, such as the number of hotels or vehicles. Therefore, for future research, additional independent variables, mediation, or moderation factors can be included to gain a deeper understanding of the factors affecting local tax revenue. Furthermore, this study only provides a general overview of local tax revenue in Indonesia, and different cities/counties may have varying influences of different variables. This research also had a relatively short time frame (5 years) due to data limitations, so further studies are needed, which may involve adding more variables, examining different regions, or extending the time frame.

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