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The Influence of Population and Gross Regional Domestic Product on Regional Original Income in Central Sulawesi

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Abstract: The study aims to analyze the influence of Population Number and GRDP variables, partially and simultaneously, on ROI variables in 13 Regencies/Cities in Central Sulawesi Province in 2018-2023. The data type used is secondary data with data sources from the Central Bureau of Statistics. The secondary data used is panel data from cross-sectional results of 13 districts/cities in Central Sulawesi Province and a time series from 2018 to 2023. The data analysis used is panel data regression. Based on the panel data regression analysis, the results and findings of the study showed that partially, the Population Number variable has a positive and significant effect on ROI. In contrast, the GRDP variable partially has a positive but insignificant impact on the ROI variable in districts/cities in Central Sulawesi Province in 2018-2023. The implication is that the Palu City government needs to optimize the collection of population-based regional taxes and levies, increase the efficiency of local economic management, and develop new sources of income to strengthen fiscal independence and support sustainable regional development.
Keywords: population; GRDP; ROI
JEL Classification: J11; R11; H27

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Introduction

The granting of the highest possible autonomy to the regions aims to accelerate the realization of community welfare through improving services, empowerment, and community participation. The transfer of regional financial resources, which has many forms such as regional taxes, regional levies, and balancing funds, is a consequence of the transfer of government affairs to the regions, which are organized based on the principle of autonomy (Law No. 1 of, 2022).

In order to carry out government affairs under its authority, the region must have financial resources so that the region can provide services and welfare to the people in its region. One of the sources of regional budgetary is Regional Original Income (ROI). The amount of regional revenue from ROI is determined by the availability of regional tax objects and regional levy objects. Furthermore, the availability of tax objects and levy objects is determined by the existence of a basis for tax objects and levies. Based on theoretical studies, the basis for tax objects and levies is the population and the economic capacity of the region as measured in Gross Regional Domestic Product (GRDP). In an effort to increase regional

financial capacity: Policy formulation needs to pay attention to the ability of the region to generate regional revenues sourced from regional taxes and levies. The measure of the ability of the region to create regional revenues sourced from ROI is based on the functional relationship between Population, GRDP, and ROI. Therefore, the results of the estimated relationship pattern of the three variables are needed, where ROI is a variable whose value is determined (dependent variable). At the same time, Population and GRDP are the determining variables (independent variables).

One of the main problems often faced by regional governments in implementing governance and development is the limited sources of development financing originating from Regional Originating Income (ROI), so the dependence of regional governments on financial assistance from the central government is very high (Nasir, 2019). The economic capacity of the regions among the 12 (twelve) regencies and 1 (one) city in Central Sulawesi Province is very diverse. This diversity aligns with the economic conditions, population, and characteristics of the regions between regencies/cities in Central Sulawesi. In 2022, the highest regional revenue from ROI was generated by Morowali Regency, which was 358.81 billion IDR, while the lowest was generated by Banggai Laut Regency, which was 25.23 billion IDR. The largest population among the 13 (thirteen) regencies/cities in Central Sulawesi in 2022 was in Palu City, which was 381.57 thousand people, while the smallest population was in Banggai Laut Regency, which was 71.35 thousand people. The district/city in Central Sulawesi Province that generated the highest GRDP based on current prices in 2022 was Morowali Regency, which was 146,599.32 billion IDR, while the lowest was Banggai Laut Regency, which was 2,803.56 billion IDR (Central Bureau of Statistics, 2023).

Central Sulawesi Province was chosen because it reflects a fiscal dualism; some regencies, such as Morowali Regency, contribute significantly to regional revenue through the mining sector, while others, such as Banggai Laut Regency, still rely heavily on central government transfers. This unique contrast makes the province a representative case study examining the relationship between population, GRDP, and local revenue capacity in Eastern Indonesia.

These variables, Population, GRDP, and ROI, are crucial in Central Sulawesi Province, where the contrast between high GRDP regions (Morowali Regency) and low population regions (Banggai Laut Regency) highlights the fiscal challenges of translating economic activity and demographic potential into sustainable regional revenue. Observing the Population, GRDP, and ROI data in 2022 shows a positive relationship between the Population and GRDP variables (as determining variables) with the ROI variable (as determined). Research on Indonesia's Regional Original Income (ROI) determinants shows mixed results. Hikmahyanti & Soelistyo (2021) in West Nusa Tenggara and Kolompoy et al. (2022) in South Minahasa found that population significantly influenced ROI, reinforcing the argument that demographic size directly expands the local levies and services tax base. Conversely, a study in Aceh Province revealed that population and GRDP were not individually significant, but jointly had a positive effect, highlighting the role of institutional capacity in mediating fiscal outcomes (Imansyah & Sambodo, 2024). Research conducted by Asmuruf et al (2015) in Sorong City showed that the GRDP variable

had no effect on the ROI variable, while the Population variable positively impacted ROI. Research conducted by Murib (2018) in Mimika Regency showed that the Population variable had a negative effect on the ROI variable, while the GRDP variable had no impact on the ROI variable. Strengthened by Saldi et al (2021); Juwita & Widia (2022); Nashiruddin & Witono (2024), the GRDP variable significantly affects ROI, and the population has an insignificant impact on ROI. Priyono & Handayani (2021) also found the same pattern, that GRDP and population have a positive and significant effect on ROI. Khoirunnisa & Sofilda (2023), focusing on North Sumatra, emphasized that fiscal independence is driven by GRDP size and local governments' institutional quality in effectively mobilizing taxes. Studies in Java by Ariyani et al. (2018) ; Harmain & Tarmidi (2023) and in Bali by Praningrum & Khoirudin (2019) ; Octavyanthi & Basuki (2022) further confirmed that ROI performance varies significantly across regions due to differences in economic structure, fiscal decentralization policies, and administrative governance.

From a broader perspective, international scholars also support this inconsistency. Bahl (2007) argued that property tax, often regarded as the backbone of local government revenue, highly depends on accurate valuation, reliable data, and strong enforcement capacity. Norregaard (2013) from the IMF also stressed that economic growth measured by GRDP may not automatically lead to higher local revenue without effective fiscal institutions. The World Bank (2020) likewise noted that administrative weaknesses in developing countries limit the translation of macroeconomic growth into stronger local fiscal capacity.

These findings provide a comparative basis for interpreting the results in Central Sulawesi Province. The significance of population in determining ROI aligns with studies that highlight demographic-driven fiscal capacity. Meanwhile, the non-significance of GRDP underscores that economic growth, particularly in extractive sectors like mining, does not necessarily strengthen local fiscal independence unless supported by institutional reforms and adaptive tax policies.

The relationship pattern between the Population, GRDP, and ROI variables is inconsistent between theoretical and empirical studies, and even between empirical studies, there are differences. This study attempts to empirically examine the relationship pattern between the three variables by increasing the number of observations with the title "Analysis of the Influence of Population and GRDP on Local Original Income in 13 Regencies/Cities in Central Sulawesi in 2018-2022". The study aimed to determine and analyze the influence of the Population and GRDP variables, both partially and simultaneously, on the ROI variable in 13 Regencies/Cities in Central Sulawesi Province in 2018-2022.

The novelty of this research lies in the empirical analysis of the relationship between population, GRDP, and ROI in 13 districts/cities in Central Sulawesi using a panel data regression approach, showing that population has a significant effect on ROI, while GRDP does not. This finding differs from previous studies, stating that GRDP significantly impacts ROI, thus confirming the importance of population-based fiscal policy in increasing regional financial independence.

This research shows that population significantly affects ROI, which is the main component in the Palu City RREB. The implication is that the Palu City government needs to optimize the collection of population-based regional taxes and levies, increase the efficiency of local economic management, and develop new sources of income to strengthen fiscal independence and support sustainable regional development.

Research Method

This type of research is quantitative research, a method in which the data is represented in numbers. The data analysis used is inferential statistics to test the hypothesis (Subagyo, 2019). The research location was conducted in 13 (thirteen) regencies/cities in Central Sulawesi Province, namely: Donggala Regency, Parigi Moutong Regency, Poso Regency, Tojo Una-Una Regency, Banggai Regency, Banggai Regency Sea, Banggai Regency Archipelago, Buol Regency, Tolitoli Regency, Sigi Regency, Morowali Regency, Morowali Regency North, and Palu City. The data type used is secondary data with data sources from the Central Bureau of Statistics. The secondary data used is panel data from cross-sectional results of 13 (thirteen) districts/ cities in Central Sulawesi Province and a time series data from 2018 to 2023. The data analysis used is panel data regression. The selection model regression data panel determines the most appropriate model for estimating the regression data panel. The first test is the Chow Test, which chooses between the model Common Effect or Fixed Effect. Second, the Lagrange Multiplier (LM) test selects the model between the Common and Random Effect. Third, we used the Hausman test to choose a model between Fixed Effect models and Random Effect (Widarjono, 2005). As for the equation model regression data panel in this research:

$$Log\gamma it = \alpha + \beta 1 LogX1it + \beta 2 LogX2it + \varepsilon it$$

Information: Y is Regional Original Income (ROI) calculated in IDR; X_1 is population calculated in people; X_2 is Gross Regional Domestic Product (GRDP) calculated in IDR; i is cross-section unit; t is time series unit; α is Constant; β is coefficient; ε is Residual.

We must test the classical assumption after the election model regression data panel. Equality, obtained from an estimate, can operate so that statistics fulfill the classical assumption free from multicollinearity, heteroscedasticity, autocorrelation, and distributed in a normal condition (Ghozali, 2016). After fulfilling the assumption classic, so to be continued, do testing hypothesis, which consists of Simultaneously (F-test) and Significance Parameter Individual tests (t-test).

Result and Discussion

Descriptive Characteristics of the Variables

This study uses three main variables: Population, Gross Regional Domestic Product (GRDP), and Regional Original Income (ROI), analyzed in 13 districts/cities in Central

Sulawesi Province during the 2018–2023 period. These three variables reflect the regions' demographic conditions, economic capacity, and fiscal independence. In general, the data shows quite sharp variations between regions: Morowali Regency has the highest average GRDP and PAD due to the dominance of the mining sector, while Banggai Laut Regency recorded the lowest values in terms of population and ROI revenue. As the provincial capital, Palu City shows a relatively large population with a reasonably high ROI. Still, its contribution remains different from that of natural resource-based districts. This difference confirms that the economic characteristics of regions in Central Sulawesi Province are not homogeneous, so it is crucial to analyze how population and GRDP affect ROI variations between districts/cities. A summary of descriptive statistics for each variable is presented in the Table 1.

Table 1 Descriptive Statistics

Regency/City	Variable		
	Population	**GRDP**	**ROI**
Banggai Kepulauan	120.97 (2.31)	2,736.90 (161.24)	30,087.83 (4,048.41)
Banggai	364.27 (7.39)	19,321.89 (914.43)	181,509.67 (30,802.38)
Morowali	163.02 (10.72)	52,828.80 (21,838.54)	331,735.17 (141,738.80)
Poso	246.02 (6.00)	6,516.67 (339.69)	113,715.00 (16,424.39)
Donggala	301.93 (4.72)	8,594.48 (432.67)	79,390.17 (19,612.07)
Tolitoli	226.40 (3.41)	5,781.87 (274.74)	104,176.00 (22,474.40)
Buol	146.20 (2.90)	4,034.44 (186.97)	63,482.83 (5,723.97)
Parigi Moutong	442.79 (7.19)	11,722.30 (480.58)	144,176.33 (29,590.04)
Tojo Una-Una	164.68 (4.44)	3,878.26 (179.04)	80,306.67 (12,125.92)
Sigi	259.07 (7.38)	6,395.09 (351.38)	70,395.17 (15,633.51)
Banggai Laut	70.69 (1.50)	1,689.51 (78.25)	21,491.33 (3,281.24)
North Morowali	121.57 (3.21)	9,986.74 (2,942.18)	66,070.33 (24,875.75)
Palu City	375.75 (8.00)	16,396.33 (995.95)	297,533.00 (46,054.30)

Based on descriptive statistics, the highest average ROI is found in Morowali Regency (approximately 331.7 billion IDR) with a relatively large standard deviation, indicating fluctuations in regional revenue due to dependence on the mining sector. Conversely, the lowest average ROI is found in Banggai Laut Regency (approximately 21.8 billion IDR), consistent with the relatively small economic base of the island region. In terms of population, Parigi Moutong Regency has the largest average population (approximately

443 thousand people). In comparison, Banggai Laut Regency again has the smallest population (approximately 71 thousand people). Meanwhile, GRDP shows a vast gap, with Morowali Regency having an average GRDP of roughly 52.8 trillion IDR.
In contrast, Banggai Laut Regency only has around 1.7 trillion IDR. This pattern demonstrates the dualism of economic development in Central Sulawesi Province, where some regions are highly developed due to the extractive industry sector. In contrast, others still rely on traditional sectors and central fiscal assistance. These findings emphasize the need for further analysis of the extent to which population and GRDP can contribute to increasing ROI.

Estimation Results

The regression model estimation method using panel data can be done using the Common Effect Model, Fixed Effect Model, and Random Effect Model.

Common Effect Model
Common effect estimation results *are* shown in the Table 2.

Table 2 Common Effect Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.220243	0.444204	4.998255	0.0000
LOGX1	0.429049	0.084599	5.071564	0.0000
LOGX2	0.653896	0.050365	12.98325	0.0000
R-squared	0.840124	Mean dependent variable		10.95784
Adjusted R-squared	0.835861	SD dependent var		0.340491
SE of regression	0.137947	Akaike information criterion		-1.086190
Sum of squared residual	1.427206	Black criterion		-0.995548
Log likelihood	45.36142	Hannan-Quinn critter.		-1.049904
F-statistic	197.0567	Durbin-Watson stat		0.439836
Prob(F-statistic)	0.000000			

The results of the panel data regression show that the coefficient of determination (*R-squared*) value from the common effect model estimation results is 0.840124, meaning that the population and GRDP variables can provide a change of 84.01 percent to the ROI variable. The remaining 19.99 percent is explained by variables not used in the model.

Fixed Effect Model

Fixed effect estimation results *are* shown in the Table 3.

Table 3 Fixed Effect Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12.88753	4.845068	-2.659928	0.0099
LOGX1	3.660554	1.229831	2.976468	0.0041
LOGX2	0.446202	0.233360	1.912078	0.0604
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.965688	Mean dependent variable		10.95784
Adjusted R-squared	0.958063	SD dependent var		0.340491
SE of regression	0.069728	Akaike information criterion		-2.317399
Sum of squared residual	0.306302	Black criterion		-1.864186
Log likelihood	105.3786	Hannan-Quinn critter.		-2.135969
F-statistic	126.6491	Durbin-Watson stat		2.052821
Prob(F-statistic)	0.000000			

The results of panel data regression show that the coefficient of determination (*R-squared*) value from the fixed effect model estimation results is 0.965688, meaning that the population and GRDP variables can provide a change of 96.57 percent to the ROI variable. The remaining 3.43 percent is explained by variables not used in the model. These results indicate the influence of variables from *cross-sectional data* (district/city) on the constants of the research model.

Random Effect Model

The results of the panel data regression show that the coefficient of determination (*R-squared*) value from the random effect model estimation results is 0.595637, meaning that the population and GRDP variables can provide a change of 59.56 percent to the ROI variable. The remaining 40.44 percent is explained by variables not used in the model.

The selection of the most appropriate test model used in panel data includes several tests that are carried out. First, the Chow Test determines the fixed or common effect model used in the estimation. Second is the Hausman Test, which determines the fixed effect or random effect model used. Third is the Lagrange Multiplier (LM) Test, which chooses between the common and random effect models (Widarjono, 2005).

Random effect estimation results *are* shown in the Table 4.

Table 4 Random Effect Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.240520	0.938609	1.321659	0.1903
LOGX1	0.437115	0.193356	2.260676	0.0267
LOGX2	0.748741	0.096331	7.772613	0.0000
Effects Specification				
			SD	Rho
Random cross-section			0.130117	0.7769
Idiosyncratic random			0.069728	0.2231
Weighted Statistics				
R-squared	0.595637	Mean dependent variable		2.341891
Adjusted R-squared	0.584854	SD dependent var		0.113871
SE of regression	0.073369	Sum of squared residual		0.403728
F-statistic	55.23857	Durbin-Watson stat		1.552408
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.828370	Mean dependent variable		10.95784
Sum of squared residual	1.532135	Durbin-Watson stat		0.409070

Chow Test (Likelihood Ratio Test)

The Chow test is a test to determine the most appropriate fixed effect model or common effect model to use in estimating panel data (Widarjono, 2005). The Chow test hypothesis is:

H0: Common Effect Model
H1: Fixed Effect Model

If the Cross-section Chi-Square Probability > 0.05, H_0 is accepted and H_1 is rejected; if the Cross-section Chi-Square Probability < 0.05, then the Null Hypothesis is rejected and H_1 is accepted. The results of the panel data testing model selection test using the Chow test are as follows:

Table 5 Chow Test Results

Redundant Fixed Effects Tests			
Equation: Untitled			
Cross-section fixed effects test			
Effects Test	Statistics	df	Prob.
Cross-section F	19.212197	(12.63)	0.0000
Cross-section Chi-square	120.034269	12	0.0000

The probability values of Cross Section F and Cross Section Chi-Square are respectively 0.0000 and 0.0000 smaller than alpha 0.05, thus rejecting the null hypothesis. Based on the Chow test, the best panel data testing model uses the fixed effect model compared to the common effect model.

Hausman test

The Hausman test is a test that determines the use of the method between a random effect and a fixed effect (Widarjono, 2005). The hypothesis of the Hausman test is:

H0: Random Effect Model
H1: Fixed Effect Model

If the Random Cross-section Probability> 0.05, H0 is accepted and H1 is rejected; if the Random Cross-section Probability< 0.05, H0 is rejected and H1 is accepted. The results of the panel data testing model selection test using the Hausman test are as follows:

Table 6 Hausman Test Results

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Cross-section random effects test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.
Random cross-section	10.038334	2	0.0066

The probability value of the random cross-section is 0.0066 smaller than alpha 0.05, so it rejects the null hypothesis. So, the fixed effect model is the most appropriate for panel data testing. From the two model selection tests above, it can be concluded that the fixed effect model is better than the random effect model in this study.

Lagrange Multiplier (LM) Test

The Langrange Multiplier test is a test that determines the use of the method between a random effect and a common effect (Widarjono, 2005). The hypothesis of the Lagrange Multiplier test is:

H0: Common Effect Model
H1: Random Effect Model

If Breusch-Pagan Probability > 0.05, H0 is accepted and H1 is rejected; if Breusch-Pagan Probability < 0.05, H0 is rejected and H1 is accepted. The results of the panel data testing model selection test using the Lagrange Multiplier test are as follows:

Table 7 Lagrange Multiplier Test Results

Test	Statistics	df	Prob.
Breusch Pagan LM	154.3407	78	0.0000
LM scaled message	6.112147		0.0000
CD Order	3.569972		0.0004

The Breusch-Pagan probability value is 0.0000 smaller than alpha 0.05, so it rejects the null hypothesis. So, the most appropriate model to use for panel data testing is the random effect model. Based on the three model selection tests above, it can be concluded that in this study, the Fixed Effect Model is better than the Random Effect Model and the Common Effect Model. This study conducted an estimation using the Fixed Effect Model method with the following estimation results:

Table 8 Fixed Effect Model Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12.88753	4.845068	-2.659928	0.0099
LOGX1	3.660554	1.229831	2.976468	0.0041
LOGX2	0.446202	0.233360	1.912078	0.0604
R-squared	0.965688			
F-statistic	126.6491			
Prob(F-statistic)	0.000000			

The equation of the Fixed Effect Model estimation results for ROI based on the population and GRDP variables in 13 districts/cities in Sulawesi Province, namely:

$$\mathrm{LogY_{it}} = -12.88753 + 3.660554\ \mathrm{LogX_{1it}} + 0.446202\ \mathrm{LogX_{2it}}$$

Multicollinearity Test

A good regression model is a model that does not have a correlation between its independent variables. Based on the Fixed Effect Model, the results of the multicollinearity test using the EViews 8 program are as follows.

Table 9 Multicollinearity Test Results

	LOGX1	LOGX2
LOGX1	1,000,000	0.564327
LOGX2	0.564327	1,000,000

The correlation coefficient value between independent variables is below 0.85; thus, the data in this study does not have multicollinearity problems. The Fixed Effect Model (Generalized Least Squares method) is used, so there is no need for heteroscedasticity and autocorrelation tests, because violations of these assumptions in the GLS method have been anticipated.

Autocorrelation Test

The Normality Test aims to test whether the regression model has a normal distribution or is not normally distributed. Based on the Fixed Effect Model using the Jarque-Bera Test, the normality test results are as follows.

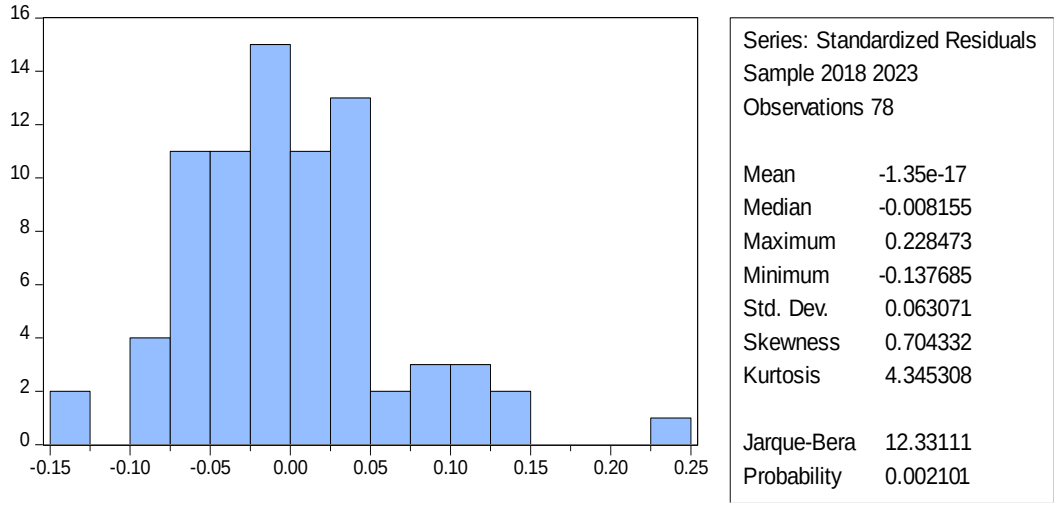

Figure 1 ***Normality Test Results***

Based on the results of the normality test in Figure 1, the number of observations is 78, and using α = 5%, the Jarque Bera Probability is obtained as 0.002101. It can be concluded that the data is normally distributed because the Jarque-Bera probability value is smaller than the value of α = 0.05.

The test results of the Fixed Effect Model obtained an F-statistic value of 126.6491 and a probability value of F-statistic of 0.000000 <α = 0.05, so that the population and GRDP variables together have a significant effect on the ROI variable in districts/cities in Central Sulawesi Province in 2018-2023.

The Fixed Effect Model test results are obtained by comparing the probability t-statistic value with α = 0.05. If the probability t-statistic value < α = 0.05, it means that the independent variable has a significant effect on the dependent variable. Conversely, if the probability t-statistic value > α = 0.05, the independent variable has no significant impact on the dependent variable.

Table 9 Statistical Test Results t

Variable	t-Statistic	Prob.	Information
LOGX1	2.976468	0.0041	Significant Positive
LOGX2	1.912078	0.0604	Positive Not Significant

The conclusion is that the population variable has a probability value of 0.0041 <α=0.05 at the 95 percent level, meaning that the population variable significantly affects the ROI

variable in districts/cities in Central Sulawesi Province in 2018-2023. While the population variable has a probability value of 0.0041 <α=0.05 at the 95 percent level, meaning that the GDRP variable has no significant effect on the ROI variable in districts/cities in Central Sulawesi Province in 2018-2023.

Fixed Effect Model test obtained an *R-squared value* of 0.965688, which means that the population and GRDP variables can explain changes in ROI by 96.57 percent. In comparison, the remaining 3.43 percent is explained by other variables outside the model.

Discussion

Effect of Population on GDRP

The regression coefficient of the population variable is 3.660554 with a positive direction, indicating that under *ceteris paribus conditions*, if the population increases by 1 percent, the ROI variable will increase significantly by 3.66 percent on average.

Based on the results of the FEM test and the t-statistic test in this study, it was found that the population has a significant effect on ROI. This is explained theoretically that the population affects the potential for regional taxes. The more residents, the greater the tax base that can be collected from personal and business taxes. In addition, with a larger population, there is the potential for additional revenue from public service levies. A growing population often leads to greater economic development, including the growth of local businesses and industries. This can increase the contribution of taxes and levies received by the region.

This study is also in line with research conducted by Shapira and Tiara (2023) partially, the population variable affects the ROI of North Sumatra Province in 2019-2022; Hikmahyanti & Soelistyo (2021) and Kolompoy et al. (2022) the population has a positive and significant effect on regional original income in West Nusa Tenggara Province from 2014 to 2018; Anam & Kusuma (2021) the research findings show that there is a unidirectional relationship between Population and Regional Original Income (ROI). Sudirman & Susilawati (2021) show a positive influence between the population variable and the regional income variable in Jambi Province.

The Influence of GRDP on ROI

The regression coefficient of the GRDP variable is 0.446202 with a positive direction, indicating that under *ceteris paribus conditions*, if the GRDP increases by 1 percent, then the ROI variable, on average, increases insignificantly by 0.45 percent.

GRDP is a measure of economic activity in a region. The higher the GRDP, the greater the tax base that can be collected. High GRDP reflects the strength of the regional economy. Regions with high GRDP generally have a greater ability to collect taxes and levies. They are better able to attract investment that increases ROI. Overall, the relationship between

GRDP and ROI reflects how economic activity in 13 districts/cities in Central Sulawesi Province affects its capacity to collect revenue from various sources. Higher GRDP indicates greater ROI potential, but the effectiveness of PAD collection is also determined by regional fiscal and administrative policies.

The research findings show that the GRDP variable has no significant effect on the ROI variable in districts/cities in Central Sulawesi Province in 2018-2023. This may be caused by the tax and levy policies implemented, which may be ineffective or less than optimal in utilizing the potential of GRDP, or poor tax management (leakage) in the tax system can reduce the positive impact of increasing GRDP on ROI. Limitations in infrastructure and administrative capacity can also limit the ability of regions to collect and manage ROI effectively, as well as high dependence on other sources of income, such as transfer funds from the central government or foreign aid, which can dominate ROI so that the influence of GRDP becomes less significant. This study's results align with research by Prasetyo (2023), which found that the GRDP variable does not significantly affect ROI in the short or long term.

Theoretically, these findings contribute to the debate on fiscal capacity determinants by showing that population-based revenue instruments play a stronger role than output-based measures such as GRDP in resource-dependent regions. Policy-wise, the results suggest that local governments in Central Sulawesi Province need to strengthen population-based taxation, improve administrative efficiency, and reduce revenue leakages from the mining sector. This dual contribution highlights the necessity of adaptive fiscal policies tailored to demographic realities rather than assuming proportional returns from economic growth.

Central Sulawesi Province was selected as the locus of analysis because it represents a unique case of fiscal dualism in Eastern Indonesia. On the one hand, regencies such as Morowali Regency contribute substantially to local revenues through the mining sector; on the other hand, regions such as Banggai Laut Regency remain highly dependent on central government transfers due to their small economic base and population size. The availability of comprehensive data for all 13 regencies/cities during 2018–2023 further supports this choice, while the findings are highly relevant in the context of the new fiscal decentralization framework under Law No. 1/2022. Therefore, focusing on Central Sulawesi Province reflects empirical relevance and provides theoretical and policy contributions for regions with heterogeneous fiscal capacities.

Conclusion

The population variable significantly positively affects ROI in regencies/cities in Central Sulawesi. The GRDP variable has a positive but insignificant effect on ROI in regencies/cities in Central Sulawesi. The suggestions submitted are: 1) The local government must continue to strive to optimize ROI revenues, especially in terms of local taxes, considering the increasing population, so that there is a possibility that many residents do not fulfill their obligations to pay local taxes or local levies as a source of local

revenue in Central Sulawesi Province. 2) The local government needs to explore and empower all the potential in Central Sulawesi Province so that the GRDP can be increased each year based on what has been realized. 3) Further researchers are expected to add other variables so that they can be more detailed in contributing to ROI. This study's limitation lies in using only two independent variables (population and GRDP) to predict ROI. In contrast, other factors such as fiscal policy, tax compliance level, investment, and infrastructure also play a role. In addition, this study is limited to the period 2018-2023 in Central Sulawesi, so the results cannot necessarily be generalized to other regions with different economic characteristics

References

Anam, F., & Kusuma, H. (2021). Determinan kapasitas pendapatan asli daerah (PAD) di kabupaten/kota Provinsi Kalimantan Timur tahun 2015–2019. *Jurnal Ilmu Ekonomi (JIE), 5*(4), 618–631. https://doi.org/10.22219/jie.v5i04.18734

Ariyani, A., Yetti, F., & Lastiningsih, N. (2018). Pengaruh Produk Domestik Regional Bruto (PDRB), Jumlah Penduduk dan Pajak Hotel Terhadap Pendapatan Asli Daerah (PAD). *Jurnal Wahana Akuntansi, 13*(1), 58–69. https://doi.org/10.21009/wahana.13.015

Asmuruf, M. F., Rumate, V. A., & Kawung, G. M. V. (2015). Pengaruh pendapatan dan jumlah penduduk terhadap pendapatan asli daerah (PAD) di Kota Sorong. *Jurnal Berkala Ilmiah Efisiensi*, *15*(5), 727–738. https://ejournal.unsrat.ac.id/v3/index.php/jbie/article/view/10446.

Bahl, R. (2007). *Property tax reform in developing and transition countries* [Working paper]. Lincoln Institute of Land Policy.

Central Bureau of Statistics. (2023). *Central Sulawesi in figures, 2018–2024*. BPS Central Sulawesi.

Ghozali, I. (2016). *Aplikasi analisis multivariat dengan program IBM SPSS 23*. Semarang: Badan Penerbit Universitas Diponegoro.

Harmain, I., & Tarmidi, D. (2024). Analisis Pendapatan Asli Daerah Kota & Kabupaten di Jawa Barat. *Media Akuntansi Perpajakan, 8*(2), 35–42. https://doi.org/10.52447/map.v8i2.7297

Hikmahyanti, N., & Soelistyo, aris. (2021). Faktor-Faktor Yang Mempengaruhi Pendapatan Asli Daerah (PAD) per Kabupaten di Provinsi Nusa Tenggara Barat Tahun 2014-2018. *Jurnal Ilmu Ekonomi JIE*, *5*(4), 665–677. https://doi.org/10.22219/jie.v5i04.17823

Imansyah, H., & Sambodo, B. (2024). Pengaruh Produk Domestik Regional Bruto, Jumlah Penduduk, Dan Jumlah Wisatawan Nusantara Terhadap Pendapatan Asli Daerah. *ULIL ALBAB : Jurnal Ilmiah Multidisiplin, 3*(9), 196–204. https://doi.org/10.56799/jim.v3i9.4917

Juwita, R., & Widia, A. (2022). Pengaruh Produk Domestik Regional Bruto (PDRB) Terhadap Pendapatan Asli Daerah (PAD) di Kabupaten/Kota Provinsi Sumatera Barat. *Land Journal, 3*(1), 69–76. https://doi.org/10.47491/landjournal.v3i1.1750

Khoirunnisa, M., & Sofilda, E. (2023). Determinasi Kemandirian Daerah di Sumatera Utara. *Jurnal Ekonomi Trisakti, 3*(2), 3823–3832. https://doi.org/10.25105/jet.v3i2.18177

Kolompoy, J. J., Masinambow, A. V., & Niode, O. (2022). Pengaruh Produk Domestik Regional Bruto dan Jumlah Penduduk Terhadap Pendapatan Asli Daerah di Kabupaten Minahasa Selatan. *Jurnal Berkala Ilmiah Efisiensi, 22*(4). https://ejournal.unsrat.ac.id/v2/index.php/jbie/article/view/40831

Law Number 1 of 2022. (2022). *Law Number 1 of 2022 concerning the Central Government and Regional Government's Financial Relations*.

Murib, D. (2018). Pengaruh Jumlah Penduduk, Pendapatan Perkapita, PDRB Terhadap PAD di Kabupaten Mimika Provinsi Papua. *Jurnal Berkala Ilmiah Efisiensi*, *18*(1). https://ejournal.unsrat.ac.id/v3/index.php/jbie/article/view/19665

Nashiruddin, A., & Witono, B. (2024). Pengaruh PDRB, investasi, dan jumlah penduduk terhadap pendapatan asli daerah. *COSTING: Journal of Economic, Business and Accounting*, *7*(2), 3374-3385. https://journal.ipm2kpe.or.id/index.php/COSTING/article/view/8629

Nasir, M. S. (2019). Analisis Sumber-Sumber Pendapatan Asli Daerah Setelah Satu Dekadeotonomi Daerah. *Jurnal Dinamika Ekonomi Pembangunan, 2*(1), 30-45. https://doi.org/10.14710/jdep.2.1.30-45

Norregaard, J. (2013). *Taxing immovable property: Revenue potential and Implementation Challenges. IMF Working Paper WP/13/129. Washington, DC.*

Praningrum, A. W. W., & Khoirudin, R. (2019). Determinan Penerimaan Pajak Daerah Kabupaten/Kota Di Provinsi Bali. *Proseding Seminar Nasional Kewirausahaan, 1*(1), 58-64. https://jurnal.umsu.ac.id/index.php/snk/article/view/3580

Prasetyo, J. A. F. (2023). Determinan Pendapatan Asli Daerah Provinsi Jawa Tengah. *Jurnal Jendela Inovasi Daerah*, *6*(1), 70-87. https://doi.org/10.56354/jendelainovasi.v6i1.133

Priyono, D., & Handayani, H. R. (2021). Analisis Pengaruh PDRB, Inflasi, Jumlah Penduduk terhadap Pendapatan Asli Daerah di Kabupaten Eks Karisidenan Pati Tahun 2012 - 2018. *Diponegoro Journal of Economics, 10*(2). https://doi.org/10.14710/djoe.31614

Saldi, H. A., Zulgani, Z., & Nurhayani, N. (2021). Analisis pengaruh PDRB dan jumlah penduduk terhadap pendapatan asli daerah Kabupaten Kerinci. *E-Jurnal Perspektif Ekonomi dan Pembangunan Daerah*, *10*(3), 201–210. https://doi.org/10.22437/pdpd.v10i3.16260

Shapira, B., & Tiara, S. (2023). Determinan Pendapatan Asli Daerah Provinsi Sumatera Utara. *Undergraduate Thesis.* Fakultas Ekonomi, Universitas Muslim Nusantara Al Washliyah.

Subagyo, J. (2015). *Metode penelitian dalam praktik dan teori*. Jakarta: Rineka Cipta.

Sudirman, S., & Susilawati, S. (2021). Effect of Regional Expenditures, Population and PDRB (ADHB) Against the Original Revenue of Jambi Province. *KnE Social Sciences.* https://doi.org/10.18502/kss.v3i26.5361

Widarjono, A. (2005). Ekonometrika: Teori dan aplikasinya. Yogyakarta: Ekonisia.

World Bank. (2020). *Property taxation in developing countries: Challenges and policy options. Washington, DC.*