Original Article

Factors Determining Regional Tax Revenue: Case Study of Districts and Cities in West Nusa Tenggara 2019–2023

Lesi Anaputri *, **M. Irwan**, **Eka Agustiani**

Program Studi Ilmu Ekonomi Studi Pembangunan, Fakultas Ekonomi dan Bisnis, Universitas Mataram, **Indonesia**

*Correspondence Author: Lesi Anaputri
Jl. Majapahit No.62, Gomong, Kec. Selaparang, Kota Mataram, Nusa Tenggara Barat, Indonesia 83115.
✉ lesiaputri2405@gmail.com

This article contributes to:

Abstract. This study aims to analyze the factors that influence District/City Regional Taxes in NTB in 2019-2023. This research method is quantitative research with an associative approach. This study uses secondary data obtained from the website of the Directorate General of Fiscal Balance (DJPK) of the Ministry of Finance and the Central Statistics Agency (BPS) of West Nusa Tenggara Province. The variables used in this study are Population, Per Capita Income and GRDP. To determine the regression model, three approaches are used, namely the Common Effect Model, Fixed Effect Model and Random Effect Model. The selection of the best model is carried out through three tests, namely the Chow Test (likelihood test), the Hausman Test and the Lagrange Multiplier Test. For the calculation using the Classical Assumption Test consisting of the Multicollinearity Test and the Heteroscedasticity Test. And Hypothesis Test with Partial Test (t test), Simultaneous Test (f test) and Coefficient of Determination (R2). The results of the study indicate that the population variable has a negative and insignificant effect. The per capita income variable has a negative and significant effect, and the GRDP variable has a positive and significant effect on regional taxes in regencies/cities in NTB. Simultaneous calculations provide results that the population, per capita income and GRDP variables have a positive and significant effect on regional taxes with a large effect of 84.89 percent, and the remaining 15.11 percent is influenced by other variables not examined in this study or other variables outside the model.

Keywords: Regional Taxes, Population, Per Capita Income, GRDP.

1. Introduction

The implementation of regional government has undergone very fundamental changes since the enactment of Law Number 22 of 1999 which has now been replaced by Law Number 32 of 2004 and most recently replaced by Law Number 23 of 2014 concerning Regional Government. The principle used in this law is the principle of the broadest possible autonomy in the sense that regions are given the authority to manage and regulate all government affairs outside of those that are the affairs of the central government [1]. In the implementation of regional autonomy, each autonomous region is given power and authority by the government in running their respective households by exploring the resources owned by the region in order to generate regional income. Which will be useful in regional development. Regional income consists of Regional Original Income (PAD), Balancing Funds, and Other Legitimate Regional Income [2].

Regional Original Income (PAD) According to Law Number 25 of 1999, regional original income is income obtained from sources within its own region which is collected based on regional regulations in accordance with applicable laws and regulations [3]. PAD is income derived from the utilization of potential owned by a region. In regional autonomy, a region is required to find ways that can be utilized properly to increase PAD

[4]. West Nusa Tenggara Province is one of the provinces in Indonesia consisting of Lombok and Sumbawa Islands, has 10 regencies/cities with an area of 20,153.20 km^2.

NTB has great potential to increase PAD from various sectors. Several mainstay sectors of the region, such as tourism and mining, could be the main source of increasing PAD. Hotel, restaurant, entertainment, and other tourist attraction taxes originating from the tourism sector can contribute significantly to regional original income. The agricultural sector, especially from commodities such as tobacco and coffee, has the potential to increase PAD through product taxes. The vast coastline of NTB makes the fisheries and marine tourism sectors the main contributors to Regional Original Income, especially through fisheries taxes and tourist visits. The mining sector also has the potential to contribute PAD from land and building taxes, corporate income tax (PPh Badan) from mining companies, production taxes, and production profit sharing. Fisheries, handicrafts, and agricultural product processing are prospective sectors in the industrial sector of West Nusa Tenggara [5].

In general, Landiyanto (2005:19) in his research Usman Et al. [6] states that "the higher the contribution given by PAD, the higher the ability of the region to finance the implementation of government and regional development, so that it will show positive regional financial performance. The sources of PAD for NTB Province include regional taxes, regional levies, results of management of separated regional assets and other legitimate PAD. The data on the realization of PAD revenue for NTB Province in 2019-2023 are as follows:

Table 1. Realization of PAD for NTB Province in 2019-2023

PAD Source	2019	2020	2021	2022	2023
Local Original Income (IDR-Million)	1.807.480	1.815.690	1.888.460	2.292.070	2.790.070
Local Taxes (IDR-Million)	1.404.960	1.328.310	1.418.220	1.706.130	1.880.840
Local Retributions (IDR-Million)	21.480	16.470	10.450	14.460	12.470
Separated Regional Assets (IDR-Million)	54.170	61.120	46.260	50.620	68.190
Other Legitimate PAD (IDR-Million)	326.860	409.790	413.520	520.860	828.570

Based on the realization data of the Regional Original Income above, it can be seen that regional taxes are the main source of Regional Original Income. Regional taxes make a significant contribution to PAD. This is used to support the implementation of regional government and development. However, in the table above, it can be seen that regional tax revenues in NTB Province have fluctuated, namely in 2020 there was a decline. High regional tax revenues can of course be influenced by several factors [7].

The ability of local governments to collect local taxes is one of the benchmarks in the implementation of regional autonomy. Local governments need to be able to maximize existing potential, especially potential that will be subject to local taxes [8]. Based on Musgrave's (1989) taxation theory in research Rozi et al. [9], High local tax revenues can certainly be influenced by several factors such as population and per capita income. Theoretically, population and per capita income are said to be able to influence tax revenues. Another factor that also influences tax revenues is PDRB. These factors always fluctuate every year and can be used as a projection of local tax revenues. The number of residents who are tax subjects is a requirement for collecting taxes where residents are those who enjoy public services provided by the government [10]. The following is a graph of the population of West Nusa Tenggara Province in 2019-2023.
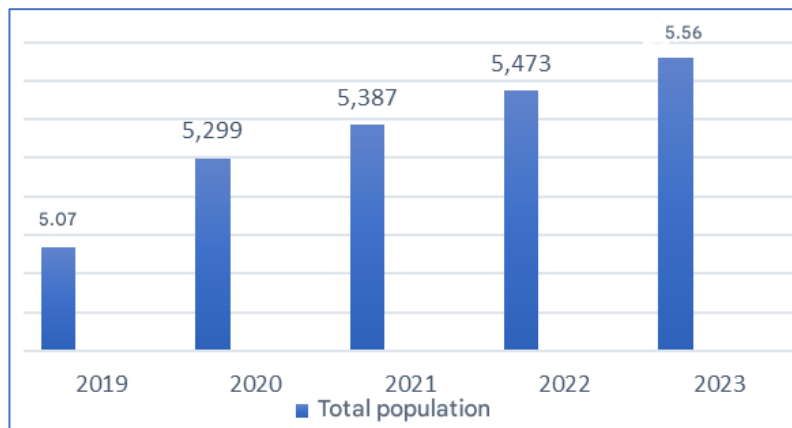
In the graph above, the population of West Nusa Tenggara Province has increased every year over a period of five years. According to the Central Statistics Agency, the population of West Nusa Tenggara Province in 2019 was 5,070,385 people. In 2020 it increased to 5,299,870 people, then in 2021 it became 5,387,148 people. In 2022 it increased to 5,473,970 people and in 2023 it increased to 5,560,287 people (Source: BPS NTB). When the population increases, the demand for public goods will increase so that the government will continue to optimize the provision of these public goods but with reciprocal services from the community in the form of compulsory tax collection [11].

With the increasing population from year to year, taxpayers or tax subjects will increase and if accompanied by high per capita income of a person, the ability to pay taxes will also increase so that regional tax revenues will also increase. In addition to the population and per capita income that can affect regional tax revenues, another factor that also affects is PDRB [12]. Gross Regional Domestic Product (GRDP) is one of the indicators used to see the development of economic growth in a region, with the increase in GRDP it will directly result in an increase in the sectors forming GRDP, which means that when these sectors increase, there will be an increase in regional tax revenues. One important factor in knowing the economic conditions in a particular region in a certain period can be shown by the regional GRDP data. If the GRDP value increases, it will have a positive effect on increasing regional revenues. The higher a person's income, the higher the person's ability to pay various levies set by the government, so that the community's ability to pay Regional Taxes which are used to finance routine expenditures and government development expenditures is also higher [13].

The following table shows the development of Gross Regional Domestic Product (GRDP) in NTB Province in 2019-2023.

Table 2. Gross Regional Domestic Product (GRDP) at Constant Prices of NTB Province 2019-2023

Year	PDRB
2019	93,872,440,000,000
2020	93,288,870,000,000
2021	95,437,860,000,000
2022	102,073,660,000,000
2023	103,906,220,000,000

Judging from the table above, the development of the Gross Regional Domestic Product (GRDP) of NTB Province in 2020 decreased, from 93,872,440,000,000 to 93,288,870,000,000. In 2021 it increased to 95,437,860,000,000. In 2022 it increased to 102,073,660,000. And in 2023 it became 103,906,220,000,000. The increase in GRDP cannot be separated from the impact of increasing economic activity. Along with the increasing standard of living of the community, the high-income group of people will also increase, so that this can cause an increase in regional tax revenues. This is because the regional tax sectors are in the GRDP [14].

Several studies have shown the influence of population, per capita income and GRDP on regional tax revenues. The results of the study conducted by Wang et al. [15] is, the number of residents has a positive and significant effect on regional tax revenues. Another study conducted by Ullah et al. [16] that per capita income has a positive and significant effect on regional tax revenues. And the results of research conducted by Batubara et al. [17] is, PDRB has a positive and significant effect on regional tax revenues. However, in the study Koppl and Schratzenstaller [18] shows that the number of residents has a positive but not significant effect on regional tax revenues. The results of research by Xia et al. [19] is, per capita income has a positive but not significant effect on regional tax revenues. And the results of other research conducted by Balasoiu et al. [20] is, GRDP has a positive but not significant effect on regional tax revenues. Based on the background description above, where regional tax revenues in NTB Province in the last 5 years have still fluctuated. However, several factors that influence regional tax revenues in NTB Province in the last 5 years have always increased. And some differences in the results of previous studies and theories, therefore researchers are interested in conducting research with the aim of analyzing the factors that influence regional taxes in districts/cities in NTB in 2019-2023.

2. Method
2.1 Types of Research

This type of research is research with a quantitative approach because the data in this research is in the form of numbers and uses statistical analysis [21]. The method used in this research is the associative method. According to Aldrup et al. [22] associative method is a method that is intended to ask about the relationship between two or more variables. Namely between the independent variable and the dependent variable. The variables in this study consist of the dependent variable (y), namely Regional Tax and the independent variable (x), namely the population, per capita income and PDRB.

2.2 Location and Time of Research

The location/place or area in this study is all regencies/cities in NTB Province, namely West Lombok Regency, Central Lombok Regency, East Lombok Regency, Sumbawa Regency, Dompu Regency, Bima Regency, West Sumbawa Regency, North Lombok Regency, Mataram City, and Bima City. The research period in this study has a period of 5 years starting from the period 2019-2023.

2.3 Data collection technique

The data used in this study are secondary data. Secondary data is data obtained indirectly from the first source, either through intermediaries or through written documents. This study uses panel data covering all districts/cities in West Nusa Tenggara Province (NTB) during the period 2019 to 2023. The data sources in this study come from the Central Statistics Agency of West Nusa Tenggara Province (BPS NTB) and the Directorate General of Fiscal Balance (DJPK), Ministry of Finance of the Republic of Indonesia. The total number of data observed in this study was 50 observations.

2.4 Data Analysis Procedure

The data analysis used in this study is by using a panel data regression model. According to Khodjaev et al. [23] Panel data is a combination of time series data and cross section data. According to Backer et al. [24], the use of panel data in an observation has several advantages. First, panel data which is a combination of two time series and cross section data is able to provide more data so that it will produce a greater degree of

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freedom. Second, combining information from time series and cross section data can overcome problems that arise when there is a problem of omitted variables [25].

2.5 Research Model

The regression model in this study can be written as follows:

$$PD_{it} = \alpha + B_1 JP_{it} + B_2 PP_{it} + B_3 PDRB_{it} + e \qquad (1)$$

Description:
i   : district/city sample
t   : sample year
α   : constant
$\beta_1 - \beta_3$: regression coefficient
PD   : local tax
JP   : total population
PP   : per capita income
PDRB   : PDRB
E   : error term

2.6 Regression Model Approach

In this study, panel data regression models were analyzed using three main approaches, namely the Common Effect Model (CEM) which combines cross-section and time series data without considering individual or time differences, the Fixed Effect Model (FEM) which captures differences between individuals through intercepts using dummy variables, and the Random Effect Model (REM) which accommodates intercept variations through error terms and uses the Generalized Least Square (GLS) technique. Model selection is carried out through the Chow Test (comparing CEM and FEM), the Hausman Test (comparing FEM and REM), and the Lagrange Multiplier Test (comparing CEM and REM). After the best model is selected, a classical assumption test is carried out which includes a normality test (using Jarque-Berra), an autocorrelation test (with Lagrange Multiplier), a multicollinearity test (with correlation between variables), and a heteroscedasticity test (using the Glejser test). Next, statistical tests are carried out, namely a partial test (t-test) to see the influence of each independent variable on the dependent, a simultaneous test (F-test) to see the influence of all variables together, and a measurement of the coefficient of determination (R^2) to determine how much the independent variable explains the variation in the dependent variable.

3. Results and Discussion

3.1 Model Selection Test Results

The results of the Chow and Hausman Tests in this study can be seen in Table 3.

Table 3. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Chow Test Results			
Cross-section F	15.840875	(9.37)	0.0000
Cross-section Chi-square	78.981767	9	**0.0000**
Hausman Test Results			
Cross-section random	11.021561	3	**0.0116**

The regression results show that the prob. 0.0000 < 0.05 then the selected one is the Fixed Effect Model (FEM). The hausman regression results show that the prob. 0.0116 < 0.05. Based on the results of the chow test and the hausman test, the best model in this study is the Fixed Effect Model (FEM). So there is no need to do the Lagrange Multiplier (LM) test

3.2 Classical Assumption Test Results

The results of the multicollinearity test can be seen in Table 4.

Table 4. Multicollinearity Test Results

	X1	X2	X3
X1	1.000000	-0.426370	0.462420
X2	-0.426370	1.000000	0.524375
X3	0.462420	0.524375	1.000000

The correlation coefficient of X1 and X2 is -0.426370 < 0.80, X1 and X3 0.462420 < 0.80, and X2 and X3 are 0.524375 < 0.80, so it can be concluded that the data is free from multicollinearity. The results of the heteroscedasticity test can be seen in Table 5.

Table 5. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.58E+10	2.34E+10	-1.102197	0.2775
X1	26081.64	45236.51	0.576562	0.5677
X2	-506.6115	657.2632	-0.770789	0.4457
X3	0.003707	0.004060	0.913002	0.3672

The results of the heteroscedasticity test show that prob X1, X2 and X3 > 0.05, meaning that the X1, X2 and X3 models in the data are free from heteroscedasticity.

3.3 Hypothesis Test Results

The results of the hypothesis test can be seen in Table 6.

Table 6. T-test results (partial test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.68E+11	5.47E+10	-3.067439	0.0040
X1	-29535.01	105763.7	-0.279255	0.7816
X2	-4657.964	1536.692	-3.031164	0.0044
X3	0.037899	0.009493	3.992471	0.0003

The probability value of the independent variable Population (X1) is 0.7816 > 0.05 and the coefficient is -29535.01, so HA is rejected and H0 is accepted, which means that the Population variable has a negative and insignificant effect on regional taxes. The probability value of the independent variable Per Capita Income (X2) is 0.0044 < 0.05 and the coefficient is -4657.964, so H0 is rejected and HA is accepted, which means that the Per Capita Income variable has a negative and significant effect on regional taxes. The probability value of the independent variable GRDP (X3) is 0.0003 < 0.05 and the coefficient is 0.037899, so H0 is rejected and HA is accepted, which means that the GRDP variable has a positive and significant effect on regional taxes.

Meanwhile, the results of the F test are presented in Table 7.

Table 7. Results of F Test and Determination Coefficient (simultaneous)

Parameter	Value
R-squared	0.885973
Adjusted R-squared	0.848992
S.E. of regression	1.85E+10
Sum squared resid	1.26E+22
Log likelihood	-1245.409
F-statistic	23.95715
Prob(F-statistic)	0.000000

It can be seen that the probability value of the F-statistic in the table above is smaller than $\alpha = 5\%$, so H0 is rejected and HA is accepted and it can be concluded that the population variables (X1), per capita income (X2), and GRDP (X3) have a significant effect on West Nusa Tenggara Regional Tax (Y) simultaneously. These results illustrate that these three variables play a role in regional taxes in a region which in this study is West Nusa Tenggara Province. Based on the results of the panel data regression analysis,

the table above shows a determination coefficient or Adjusted R-squared of 0.848992. This means that 84.89 percent of West Nusa Tenggara regional taxes in the 2019-2023 period can be explained by the population, per capita income and GRDP variables. Meanwhile, 15.11 percent of the West Nusa Tenggara regional tax variables for the 2019-2023 period are explained by other variables not examined in this study or other variables outside the model.

3.4 Discussion

Based on the estimated results of this study regarding the influence of population, per capita income and GRDP on regional taxes in NTB, this study explains as follows:

3.4.1 The Influence of Population Number on Regional Taxes in West Nusa Tenggara Province

The results of the test of the influence of population on regional taxes can be seen in the table showing the results of the probability value of the independent variable population (X1) of 0.7816> 0.05 and a coefficient of -29535.01, then HA is rejected and H0 is accepted, which means that the Population variable has a negative and insignificant effect on regional taxes. The results of this study are in line with research conducted by Popkin and Ng [26] whose research results show that the population has a negative and significant effect on regional tax revenues. If the population increases, it will actually decrease regional tax revenues. This can occur due to changes in population structure and changes in consumption patterns. If the increase in population is dominated by groups with low income levels or no tax obligations, then this will cause a decrease in regional taxes. Likewise with changes in consumption patterns, if the increase in population does not provide a significant contribution to consumption activities, then regional tax revenues related to sales tax will also decrease.

This is not in line with the taxation theory "When the population increases, the demand for public goods will also increase, so the government will try to optimize the provision of goods, but with the return in the form of compulsory tax collection". And the results of this study are also in line with research conducted by Mahtta et al. [27], shows that the population has a positive but not significant effect. This means that the larger the population, the regional tax revenue will also increase. However, this result is not statistically significant, meaning that population growth does not have much effect on regional tax revenue. This is because the large number of residents has not been properly recorded so that the recorded taxes have not reached the optimal target.

3.4.2 The Influence of Per Capita Income on Regional Taxes in West Nusa Tenggara

In the test results of the influence of per capita income on regional taxes can be seen in the table above, the probability value of the independent variable Per Capita Income (X2) is 0.0044 <0.05 and the coefficient is -4657.964, then H0 is rejected and HA is accepted, which means that the Per Capita Income variable has a negative and significant effect on regional taxes. This research is in line with research Solarin et al. [28], whose research results show that Per Capita Income has a negative and significant effect, meaning that when Per Capita Income increases, it does not affect Regional Tax Revenue. This is because this study examined 34 provinces. So it can be concluded that even though community income increases, it does not necessarily increase regional tax revenue, and what determines the decision to pay taxes is a variable outside of per capita income.

3.4.3 The Influence of PDRB on Regional Taxes in West Nusa Tenggara

The results of the test of the influence of GRDP on regional taxes can be seen in the table showing the results of the probability value of the independent variable GRDP (X3)

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of 0.0003 <0.05 and a coefficient of 0.037899, then H0 is rejected and HA is accepted, which means that the GRDP variable has a positive and significant effect on regional taxes. The results of this study are in line with research conducted by Mose [29] which shows that gross regional domestic product has a positive and significant effect on regional tax revenues. This is in accordance with the theory that states that the greater the value of gross regional domestic product in a region, the higher the economic growth in the region. If economic growth increases, then the income and welfare of the community will also increase. With the increase in community income, it can increase the level of community consumption in paying taxes.

4. Conclusion

Based on the research results, it can be concluded that partially, independent variables (population, per capita income, GRDP) on the dependent variable (local tax) the results show that the population has a negative and insignificant effect on local tax. Per capita income has a negative and significant effect on local tax. While GRDP has a positive and significant effect on local tax in NTB. Conversely, Gross Regional Domestic Product (GRDP) has a positive and significant effect on regional tax revenues. Meanwhile, the results of simultaneous tests show that the three independent variables, namely population, per capita income, and GRDP together have a significant effect on regional taxes in NTB. Based on these findings, it is recommended that the regional government optimize tax collection efforts in each district and city in NTB, considering that regional tax revenues in several regions are still relatively low. One strategic step that can be taken is through the development of a regional economy based on local potential, especially in strengthening superior commodities. Even economic growth in various regions is expected to increase the per capita income of the community, which in turn will encourage the community's ability to fulfill regional tax payment obligations.

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6. Declaration

Author contributions and responsibilities - The authors made major contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

Availability of data and materials - All data is available from the author.
Competing interests - The authors declare no competing interests.
Did you use generative AI to write this manuscript? - I do not use AI assistance in my manuscript.
Declaration of generative AI and AI-assisted technologies in the writing process - During the preparation of this work the author did not use AI to write, edit, or other things related to the manuscript.

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