

How Population, Number of Motor Vehicles and Per Capita Income Affect Income Tax

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Abstract: This study aims to determine the effect of population, number of vehicles, and per capita income on tax income in Malang Regency using a quantitative descriptive approach. Multiple regression analysis is used to determine the magnitude of the influence of the independent variable on the dependent variable. The population in this study is the number of vehicle tax objects of Malang Regency, amounting to 560,986 and the number of people or population of Malang Regency amounting to 1,522,201 people of all ages. This study uses panel data, classic assumption tests (heteroscedasticity, multicollinearity, autocorrelation test) and determination coefficient test, F test, and t-test to determine the relationship between population, number of vehicles, and per capita income on income tax. The results showed that the population has a significant effect on number of vehicles on income tax in Malang Regency, as well as the number of vehicles has a significant effect income tax. Meanwhile, per capita income has no significant effect on income tax in Malang Regency. In the determination coefficient test (R²), it shows that the per capita income (PDRB) on the dependent variable of income tax is 82.2%. It means that the variation of the independent variable consisting of the total population, number of vehicles, per capita income (PDRB) can explain 82.2% of the variation in the dependent variable (income tax), while the remaining 17.8% is influenced by other variables. It is hoped that this research can be used as input and evaluation, especially for decision-makers to formulate strategic policies to increase the realization of income tax or Motor Vehicle Taxes.

Key words: Population, Vehicles, Per capita income, Income tax

1. BACKGROUND

Development is the use of all the potential sources that exists in each region, therefore development is more directed to the regions, so that implementation is left directly to each region to manage its own household affairs (Ghofir, 2015: 15). Building a prosperous society is a noble ideal, but also a formidable challenge. Indonesia has a large population and adequate natural resources, but that alone is not enough to build a nation and state of this size. Therefore, it is necessary to have targeted and planned actions (Gilarso, 2004: 331). In order to realize the welfare of the community, it requires a large amount of funding such as taxes which are collected based on legislation.

One of the sources of regional income that comes from local revenue (PAD) is obtained through local taxes, regional fees, and the results of separated regional wealth management. Taxes are dynamic in nature and follow developments in the social and economic life of the State and its people. Based on Law Number 28 of 2007 concerning General Provisions and Tax Procedures, taxes are mandatory contributions to those owed by individuals or entities that are compelling based on law, without receiving direct compensation which is used for the prosperity of the people as much as possible.

Along with the running of the bureaucracy in Indonesia and the development of a paradigm of thinking, which then come up with a role between the central government and local governments, which then made a separate demand for local governments to provide a better, more effective and efficient role. The formation of Law Number 32 of 2004 concerning Regional Government is an effort to improve the quality of government services to the community, through a regional autonomy policy. Regional autonomy is intended to encourage the realization of an increase in community welfare and excellent services for the community.

Motor vehicle tax is one of the potential sources of regional income (PAD). In this case, the regional government is very interested in paying attention to the growth in the number of motor vehicles which is increasing rapidly in each region. The object of motor vehicle tax is the ownership and or control of

motor vehicles. Excluded from the definition of motor vehicles as referred to in paragraph (2) in Law Number 28 of 2009 concerning Regional Taxes and Regional Retributions are trains, motor vehicles that are solely used for the purposes of state defense and security, motor vehicles owned and / or controlled by embassies, consulates, representatives of foreign countries on the principle of reciprocity and international institutions that obtain tax exemption facilities from the government, as well as other tax objects stipulated in regional regulations.

As one component of PAD revenue, the potential for regional tax collection is more for other components of PAD revenue. This is due to several factors, especially because the potential for local tax collection has clear characteristics. Based on research conducted by Giovani (2014) in East Java Province, the variables that have a significant effect on motor vehicle tax revenue in East Java Province are the variable number of motor vehicles and total population, while the rupiah exchange rate or exchange rate variable does not show a significant effect on tax revenue in East Java Province. Based on data from the Regional Revenue Agency of East Java Province, the Technical Implementation Unit for Malang Regional Revenue Management, the number of motor vehicles in Malang Regency in 2018 is shown in table 1 below.

Table1. Number of Registered Motor Vehicles in Malang Regency for year 2018

Type of Vehicle	Class of Vehicle		
	Not for public	Public	Government
Passenger car	36.245	698	555
Bus	491	1.161	16
Freight car	13.532	7.831	129
Motor cycle	498.038	0	2.243
Heavy and large equipment	44	0	0
Total	549.150	9.693	2.943

Source: Regional Revenue Agency of East Java Province, UPT PPD South Malang

To increase the realization of motor vehicle tax, the Provincial Government of East Java can organize efforts through its own policies and strategies so that it can find out what factors can increase the potential for vehicle tax revenue in Malang Regency. Based on the background above, the purpose of this study is to investigate factors that influence motor vehicle tax.

2. LITERATURE REVIEW

2.1. Regional Income Tax

Regional taxes are compulsory contributions made by individuals or entities to regions without balanced direct compensation, which can be enforced based on the prevailing laws and regulations, which are used to finance the administration of regional government and regional development (Mardiasmo, 2016: 12). Regional tax is a tax determined by local governments and the results are used to finance government spending and regional development (Siahaan, 2013: 9). Regional taxes should not cause greater cost than the capacity of regional tax administration.

Motor Vehicle Tax (PKB) is a tax on the ownership or control of a motor vehicle (a two-wheeled vehicle or more and its trailer used on all types of land roads and driven by technical equipment in the form of a motorbike or other equipment which functions to convert a certain energy resource into power, the movement of the motorized vehicle concerned, including large moving tools). Law Number 28 of 2009 concerning Regional Taxes and Regional Retributions defines Motor Vehicle Tax (PKB) as a tax on ownership or control of motorized vehicles.

Ratnasari et al. (2016) also found that simultaneously, number of motor vehicles, per capita GRDP, incoming vehicle mutations, and tax arrears had a significant effect on motor vehicle tax income in Southeast Sulawesi province, while partially the motor vehicle tax arrears had no significant effect. Another result shows that statistically there is a significant effect on motor vehicle tax revenue in Southeast Sulawesi province, Indonesia.

2.2. Population

Population plays an important role in the economy, according to the classic assumption that population is able to influence economic growth. The amount of income can be influenced by the population, the higher one's income, the higher one's ability to pay (the ability to pay) various levies

set by the government. This is also in line with research conducted by Giovani (2014), Hasnuri (2014) and Yanti (2014) which states that in motor vehicle tax revenue, population have a positive and significant effect on motor vehicle tax revenue. It means that the greater the population, the need for motorized vehicles also increases and inevitably the owner or operator of these vehicles is burdened by motor vehicle taxes.

2.3. Number of Motor Vehicles

According to Law Number 22 of 2009 concerning Road Traffic and Transportation defines a motorized vehicle as any vehicle that is driven by mechanical equipment in the form of a machine other than a vehicle that runs on rails. A motor vehicle is any vehicle that uses engine power as its essence to move or walk, this vehicle is usually used for the transportation of people and goods or as a means of transportation but the vehicle is not one that runs on rails like a train. Motorvehicles have wheels, and usually run on roads. The types of motorvehicles can vary, from cars, buses, motorbikes, off-road vehicles, light trucks, to heavy trucks. The number of motorized vehicles will directly affect motor vehicle tax revenue. The more the number of motorized vehicles, usually it will increase motor vehicle tax revenue. This is evident from many studies, such as in research conducted by Giovani (2014), Hasnuri (2014), and Yanti (2014) which stated that in the receipt of 36 motor vehicle taxes, the number of motor vehicles in an area has a positive and significant effect on motor vehicle tax revenue. It means that the greater the number of motor vehicles will increase the object of motor vehicle tax. With the large number of motor vehicle tax objects, it will increase regional revenue from vehicle taxes because taxes will be collected annually.

2.4. Per Capita Income

Per capita income is an important indicator to determine economic conditions in a region, which is indicated by the Gross Regional Domestic Product (GRDP), both at current prices and at constant prices. GRDP is defined as the amount of added value produced by all business units in an area or is the sum of the value of the final goods and services produced by all economic units in an area. GRDP at current prices illustrates the added value of goods and services calculated using the price each year, while GRDP at constant prices shows the added value of goods and services calculated using the price in a particular year as the basis. GRDP on the basis of price applies to see economic shifts and structure, while at constant prices 38 is used to determine economic growth from year to year. Research conducted by Hasnuri and Basuki (2014) found that the number of motor vehicles has a positive and significant effect on motor vehicle tax revenue, the population has a positive and significant effect on motor vehicle tax revenue, and the gross regional domestic income (PDRB) also has a positive and significant effect on motor vehicle tax revenue.

2.5. Conceptual Model

Based on the theoretical review and review of previous research above, there is a conceptual research model that can be seen in the figure 1 below.

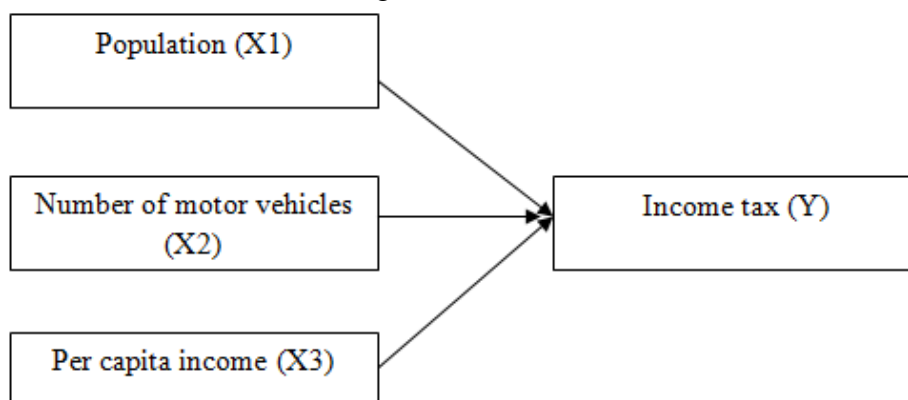


Figure1. Conceptual Model

Research Hypotheses

H1: There is a significant effect of population on motor vehicle income tax in Malang Regency

H2: There is a significant effect of number of motor vehicles on motor vehicle income tax in Malang Regency

H3: There is a significant effect of per capita income on motor vehicle income tax in Malang Regency

3. RESEARCH METHOD

This research is explanatory research. The approach in this research is a quantitative approach. The research variables consisted of, X1 = total population, X2 = number of motor vehicles, X3 = income per capita and Y = tax income. The research object is motor vehicles in Malang Regency. The research time period was from January 2016 to December 2018. The research sample consisted of 560,986 vehicles from residents of Malang Regency and amounting to 1,522,201 people of all ages. The analysis technique used is Multiple Linear Regression, Classical Assumption Test (Normality Test, Multicollinearity Test, Autocorrelation and Heteroscedasitistas Test), Hypothesis Test (F Test and T Test), and test of the coefficient of determination.

4. RESULTS AND DISCUSSIONS

4.1. Classical Assumptions Test

The classical assumption tests that used in this study are normality, multicollinearity, autocorrelation, and heteroscedastisitas test). The normality test aims to test whether the variables are normally distributed in the research model. The statistical result for normality test can be seen in the table 2 below.

Table2. Normality test

Variables	Kolmogorov-Smirnov Z	Sig.	Description
X1_Population	1.116	.166	Normal
X2_Motor Vehicle	.858	.454	Normal
X3_Per capita Income	1.778	.359	Normal
Y_Income Tax	1.299	.068	Normal

Source: Data processed, 2020

Based on the table above, the Kolmogorov-Smirnov Z value in the population variable is 1.116 with a sig value of 1.166 greater than 0.05. Therefore, it can be concluded that data in the population variable are normally distributed. Furthermore, the Kolmogorov-Smirnov Z value on the variable number of motor vehicles is 0.858 with a sig value 0.454 greater than 0.05. The values of Kolmogorov-Smirnov Z for per capita income and income tax also have the value higher than 0.05, they are 1.778 and 1.299. It can be concluded that per capita income and income tax are normally distributed.

Multicollinearity test aims to test whether the regression model found a correlation between independent variables. The result of multicollinearity test can be seen in the table 3 below.

Table3. Multicollinearity Test

Variable	Tolerance	VIF	Description
X1_Population	.315	3.172	Non-Multikolinearitas
X2_Motor vehicle	.299	3.343	Non-Multikolinearitas
X3_Per capita income	.861	1.162	Non-Multikolinearitas

Source: Data processed, 2020

Multicollinearity test can be seen by looking at the VIF and the tolerance value obtained. If the tolerance value is greater than 0.10 and the VIF value is smaller than 10, it can be concluded that there is no multicollinearity. From the test results, it is known that all VIF values in the variable population, number of motorized vehicles, and per capita income are less than 10 and the tolerance value is greater than 0.10, so it can be concluded that there is no multicollinearity between the independent variables.

Heteroscedasticity test is carried out to test whether the regression model has an unequal variation from the residuals of one observation to another. A good regression model is if there is homoscedasticity or not heteroscedasticity. Heteroscedasticity test in this study was tested with scatterplots. Data does not experience heteroscedasticity if in the scatter plot image the dots are spread above and below zero and do not form a certain regular pattern. Result of heteroscedasticity will be shown in the figure 2 below.

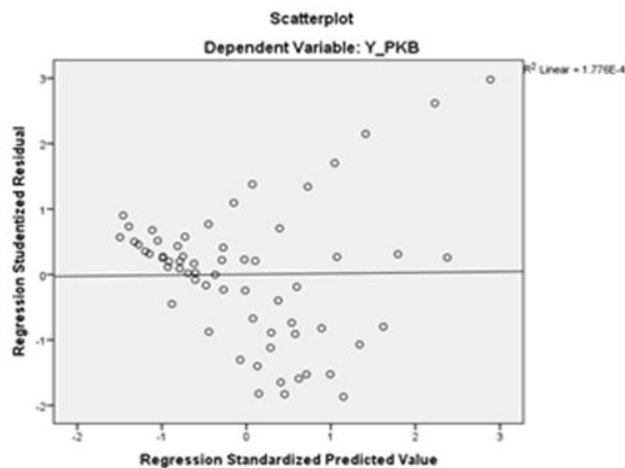


Figure2. Heteroscedasticity test

Source: Data processed, 2020

The results of the heteroscedasticity test for the variable population, number of motor vehicles, per capita income on motor vehicle tax revenue show that the dots are spread above and below the zero figure. The dots spread out and do not form a certain regular pattern so that it can be concluded that the regression model does not occur heteroscedasticity.

The autocorrelation test aims to test whether in the linear regression model there is a correlation between confounding error in t period and confounding error in t-1 period. In this study, to determine whether autocorrelation occurred or not, identification was carried out using the Durbin Watson Test. If the Durbin Watson value is between 1.54 and 2.46 then there is no autocorrelation. It can be concluded that the research model does not contain autocorrelation.

Table4. Autocorrelation test

Model	R
R	.907 ^a
R Square	.822
Adjusted R Square	.813
Std. Error of the Estimate	1461402917.30943
Durbin-Watson	1.937

Source: Data processed, 2020

Based on the table 4 above, a regression model can be said free from autocorrelation if it has a Durbin-Watson (DW) value between $dU < d < 4 - dU$. Based on the table above, it is known that the Durbin-Watson value is 1,937, thus the Durbin Watson value is in the interval 1.65 to 2.35 ($1.65 < 1.937 < 2.35$), so it can be ascertained that the multiple linear regression model does not occur autocorrelation.

4.2. Hypothesis Tests

Hypothesis testing is done to see the effect of the independent variable on the dependent variable either partially or simultaneously. In testing this hypothesis, observations were made on the R-Squared value and the F-statistical value. Table 5 below shows the result of the hypothesis test.

Table5. Hypothesis test Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-9469292166.459	4588318467.488		-.2.064	.043
	X1_Population	34100.118	14569.176	.229	2.341	.023
	X2_Motor vehicle	292828.704	42782.471	.688	6.845	.000
	X3_Per capita income	125.908	73.897	.101	1.704	.094

Dependent Variable: Y_Income tax

Based on the result in the table above, it can be describe as follow:

1. A constant of -9469292166.459; means that if the Total Population (X1), Number of Motor Vehicles (X2), and Per Capita Income (X3) is 0, then the Motor Vehicle Tax revenue (Y) is - 9469292166.459 or if the Motor Vehicle Tax revenue variable is not influenced by other variables then the value is negative 9469292166.459.
2. Population variable regression coefficient (X1) of 34100.118; this means that if the other independent variables are fixed in value and the Total Population variable increases by 1%, then the Motor Vehicle Tax (Y) revenue will increase by 34100.118. The coefficient is positive, meaning that there is a positive influence on the number of residents on motor vehicle tax revenue. So it can be concluded that the higher the population, the greater the motor vehicle tax revenue.
3. The regression coefficient for the Number of Motor Vehicles (X2) variable is 292828.704; this means that if other independent variables are fixed in value and the number of motor vehicles increases by 1%, then the motor vehicle tax revenue (Y) will increase by 292828.704. The coefficient is positive, meaning that there is a positive influence between the Number of Motor Vehicles on Motor Vehicle Taxes. So it can be concluded that the higher the number of motor vehicles, the greater the motor vehicle tax revenue.
4. The regression coefficient for per capita income (X3) is 125.908; this means that if other independent variables are fixed in value and per capita income increases by 1%, then the motor vehicle tax revenue (Y) will increase by 125.908. The coefficient is positive, meaning that there is a positive influence between per capita income on motor vehicle Taxes. So it can be concluded that the higher the income per capita, the higher the motor vehicle tax revenue.

4.3. Result of T-Test

The t-test shows the effect of population, number of motor vehicles, per capita income on motor vehicle tax revenue is partially affected. Below the description of t-test analysis.

1. The population variable (X1) has a significance value (Sig.) of 0.023 with a value of α (degree of significance) 0.05 which means $0.023 < 0.05$ or there is a significant effect and the t test shows $2.341 > t$ table (1.67). So it can be interpreted that the population has a significant effect on Motor Vehicle Tax revenue.
2. The variable number of motor vehicles (X2) has a significance value (Sig.) of 0.000 with a value of α (degree of significance) 0.05, which means $0.000 < 0.05$ or there is a significant effect and the t test shows $6.845 > t$ table (1.67). So it can be interpreted that the number of motorized vehicles has a significant effect on Motor Vehicle Tax revenue.
3. The per capita income variable (X3) has a significance value (Sig.) of 0.094 with a value of α (degree of significance) 0.05 which means $0.094 > 0.05$ or there is no significant effect and the t test shows $-1.705 < t$ table (1.67). So it can be interpreted that per capita income does not have a significant effect on motor vehicle tax revenue.

4.4. Result of F-Test

The F-test basically shows if all the independent variables included in the model have the accuracy of the model on the dependent variable. Table 6 below shows the result of F-test.

Table 6. F-test

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	581215589374676100000.000	3	193738529791558700000.000	90.714	.000 ^b
	Residual	126006210716509440000.000	59	2135698486720498940.000		
	Total	707221800091185600000.000	62			
a. Dependent Variable: Tax Income_Y						
b. Predictors: (Constant), Per capita income_X3, Population_X1, Motor vehicle_X2						

Based on the table above, the calculated F statistical value is 90,714 and a significance value of 0,000 where this result is greater than F table (2.52) at n of 63, and the significance value is less than 0.05

(0.000 <0.05). So it can be said that hypothesis is accepted and it can be concluded that the population, the number of motor vehicles, the per capita income together have an effect on motor vehicle tax revenue.

4.5. The Coefficient of Determination (R²)

The coefficient of determination in linear regression is often defined as the ability of all independent variables to explain the variance and the dependent variable. The result of coefficient of determination of this study can be seen in the table 7 below.

Table 7. Determination Coefficient (R²)

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.907 ^a	.822	.813	1461402917.30943	1.937
a. Predictors: (Constant), Per capita income_X3, Population_X1, Motor vehicle_X2					
b. Dependent Variable: Income tax_Y					

Based on the table above, the R² (R Square) number is 0.822 or (82.2%). This shows that the percentage of the contribution of the influence of the independent variables consisting of the population, number of motor vehicles, and percapita income to the dependent variable of motor vehicle tax revenue is 82.2%. It can also be interpreted that the of the independent variable consisting of population, number of motorized vehicles, per capita income is able to explain 82.2% of the variation in the dependent variable (Motor Vehicle Tax revenue). While the remaining 17.8% is influenced or explained by other variables that do not included in this research model.

4.6. Discussion

Based on the statistical result, total population has a significant effect on motor vehicle tax revenue. The results of this study are in accordance with research conducted by Giovani (2014), Hasnuri (2014), and Yanti (2014) which states that in motor vehicle tax revenue, population and / or population growth in an influential area positive and significant towards motor vehicle tax revenue. It is understandable that the greater the population, the need for motor vehicles also increases and inevitably the owner or operator of these vehicles is burdened by motor vehicle taxes.

This study found that the number of motor vehicles has a significant effect on motor vehicle tax revenue. This result is in accordance with research conducted by Giovani (2014), Hasnuri (2014), and Yanti (2014) which states that the receipt of 36 motor vehicle taxes, the number of motor vehicles in an area has a positive and significant effect on motor vehicle tax revenue. It is understandable that the greater the number of motor vehicles will increase the object of motor vehicle tax. With the large number of motor vehicle tax objects, it will increase regional revenue from vehicle taxes because taxes will be collected annually.

In this study, per capita income (PDRB) does not have a significant effect on motor vehicle tax revenue. Research results from Hasnuri & Basuki (2014) shows that one of the independent variables, namely Gross Regional Domestic Product (PDRB) has a positive and significant effect on Motor Vehicle Tax Revenues. Another result of this study found that total population, number of motor vehicles, per capita income (PDRB) together have an effect on motor vehicle tax revenue. The results of this study are in accordance with research conducted by Rizal (2016), Giovani (2014), Hasnuri (2014), and Yanti (2014) which states that population, number of motorized vehicles, per capita income (PDRB) affect simultaneously to motor vehicle tax revenue.

5. CONCLUSION

Based on the results of this study, it can be concluded that to increase the potential for revenue and contribution from motor vehicle tax in regions, especially in Malang Regency, East Java, Indonesia, taking into account several factors that can affect the increase in tax revenue. Regional Revenue Agency of East Java Province through the Regional Revenue Management Unit of South Malang, Tax department in Talangagung, Kepanjen, Malang Regency, requires maximum performance and makes socialization efforts with related parties in an effort to be able to generate optimal motor vehicle tax revenue so that the Regional Original Income target can be achieved. With the achievement of the target, the tax revenue sharing from the East Java Provincial Government to the Malang Regency Government is also getting bigger. Further researchers who are interested in examining more about

Motor Vehicle Tax revenue can further expand the factors that have a big influence in increasing tax revenue considering the motor vehicle tax become one of the determining factors for the success of taxation.

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