Analysis of Influence of Population, Investment and Inflation on Regional Taxes with Gross Regional Domestic Products as an Intervening Variable: Case Study Districts and Cities in North Sumatra Province

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Abstract: Regional tax is one source for increasing regional income, in 2016 the regional tax in North Sumatra regencies and cities if averaged contribution of 6.14% to regional income means that the districts and cities in North Sumatra are very dependent on the central government through funds balance to manage his own household. This study aims to test and analyze simultaneously and partially the influence of population, investment, and inflation on gross regional domestic products and the influence of population, investment, and inflation on regional taxes with gross regional domestic products as intervening variables in districts and cities in the province North Sumatra. This type of research is quantitative research using secondary data. The research data used is panel data, with a population of 33 districts and cities in North Sumatra in 2013-2016. The method used is multiple regression and path analysis by adding intervening / mediating variables with SPSS and AMOS program analysis tools. The results of simultaneous analysis that population, investment, and inflation have a significant effect on Gross Regional Domestic Product and population, investment and inflation have a significant effect on regional taxes through Gross Regional Domestic Product in districts and cities in North Sumatra Province. Based on partial research that population and inflation have a significant effect on Gross Regional Domestic Product and investment does not affect the Gross Regional Domestic Product. Then the Gross Regional Domestic Product can mediate the relationship between the population and inflation with regional taxes, while the Gross Regional Domestic Product cannot mediate the investment relationship with regional taxes.

1 INTRODUCTION

Legislation No. 32 of 2003 which has been replaced by law Number 23 of 2014 jo. Number 9 of 2015 concerning regional government and law Number 33 of 2004 concerning financial balance between the central and regional governments, with the issuance of the law, the regional government has been given the authority to regulate its own regional household. Each region certainly strives to fill the coffers of its budget which has been set in the Regional Budget (APBD), including from Regional Original Revenue (PAD), which is one of the sources of the PAD in the form of regional taxes.

In accordance with the government system that applies in our country, taxes are managed by the central government and regional governments. Taxes managed by the central government are a source of state revenues contained in the State Revenue and Expenditure Budget (APBN), while taxes managed by regional governments are a source of regional revenue contained in the APBD. Based on law Number 28 of 2009 concerning regional tax and regional retribution, each for the type of tax has been clearly stipulated regarding the subject of tax and object tax and the tax rate that applies according to the existing rules.

Law Number 33 of 2004 Fiscal Balance between the Central and Regional Governments stipulates that among regional financial receipts comes from PAD which consists of several components of income, namely tax returns, regional levies, regional company yields, and regional wealth management results after being separated from legal component of taxes, levies and other regional income.

In an effort to finance increased expenditure, the government can increase taxes and / or loans. Higher
taxes will increase production costs and can reduce private sector investment. The government sometimes increases spending and investment in unproductive projects or the government sometimes mis-allocates resources and impedes economic growth (Olulu et al, 2014). The following are data regarding Regional Taxes in the Districts and Cities throughout the North Sumatra region.

The overall contribution of regional tax to PAD in 2016 can be seen as an average of 54.90%, down 0.66% from 2015, which is 55.56%, while we can see the contribution of regional tax to income of 6.14%. This proves that the districts and cities in North Sumatra are very dependent on the Balancing Fund allocated from the central government to the regional government. Of the entire regencies and cities in North Sumatra province, only two regencies and cities have contributed to regional income, namely Deli Serdang district (10.70%) and Medan city (26.99%), the rest of the value of local tax contribution to regional income far below the average, where the average distance of each region should not be much different, even in North Nias district only 0.42% of the influence of regional tax on regional income can signify a low regional capacity in terms of earning income from the sector taxation to manage the household needs of the region and only expect assistance from the central government through a balance fund.

Then the following are submitted regional tax ratios in the aggregate of provinces, districts and cities throughout Indonesia, where data is sourced from the Ministry of Finance (APBD processed 2016).

Figure 1: Aggregate Provincial, District and City Tax Ratios.

Based on tax ratio data in all provinces, it can be seen that the average national tax ratio is 1.9%. Provinces that have a tax ratio above the national average of 12 provinces as shown in the graph above. While the average local tax ratio in North Sumatra province is 1.7% below the national average of 0.2%. We can conclude the low potential of resources that can be extracted in North Sumatra. When compared with the province of Bali, which is 5.3%, the province of North Sumatra is very far behind while the tourism potential in North Sumatra is no less great than the province of Bali. The total tax for districts and cities in North Sumatra in 2013 amounted to Rp. 1,040,323,251,000 and for 2014 Rp. 1,545,439,089,000, this shows a significant increase from 2013 to 2014, namely 67.3%. For 2015 the total regional tax for each district and city is Rp. 1,521,291,460,000 and in 2016 amounting to Rp. 1,920,935,230,000 an increase of 79.2%. While from 2014 to 2015 there was a decrease in the amount of regional tax by 1.58%, this can be seen from the data of districts and cities that experienced a decrease in regional taxes from 2014 - 2015 namely South Tapanuli, Labuhan Batu, Langkat, Tanjung Balai, Binjai, and Padang Sidempuan.

The government is trying to increase PAD through regional taxes. According to (Richard A. Musgrave and Peggy B. Musgrave, 1993) the size of the tax is largely determined by the GRDP, so the GRDP has an effect on regional tax revenues. GRDP values in districts and cities throughout North Sumatra have increased from year to year, on the other hand regional income cannot be separated from national income in terms of concepts, definitions, metology, scope and data sources. This is intended to maintain the feasibility and consistency of the results of calculations and simplification in comparative studies and other analyzes, so the 2000 base year used at the national level has been simultaneously applied throughout Indonesia from the provincial to the district level which previously used the 1993 base year. One of the factors that influence PAD is GDP growth (Abdul Halim, 2001). According to Clark and Lawson good GDP growth shows a good condition of economic growth. Economic growth is an increase in real per capita income that continues to be sourced from within the region. By achieving high economic growth and equal distribution of income means that it can directly reduce poverty. The higher the regional GDP directly the regional tax increases, so that the revenue of PAD also increases (Lintan Gupita Prasedyawati, 2013).

According to Robert Malthus, the consequence of a continuous increase in population is the demand for food is increasing (Adisasmita, 2005). Not only food needs, a large population also requires greater infrastructure and public infrastructure. North Sumatra Province is ranked fourth in the province which has the largest population in Indonesia. The development of the population will affect government spending, if the development of the population increases, the bigger budget will be needed.
With the increase in population and GDP per capita, it causes an increase in people's purchasing power. With the increase in people's purchasing power, regional income from the Tax sector has also increased. The economic development of a region is determined by the ability of the region to finance all program activities that it has planned. In order to implement the program, the regions need sufficient funding, which is one of the dominant contributors to fulfilling regional funding through regional taxes. Efforts to increase regional taxes are by increasing the welfare of the people in their respective regions, through increasing investment, increasing GDP, and stabilizing the pace of inflation. With the increase in people's welfare, it is expected that the ability and awareness of the community to pay taxes will be carried out well.

The relationship of population, investment and inflation to local taxes has been widely investigated. In the Helti K A (2010) study in the analysis of factors that influence local taxation and the level of efficiency and effectiveness of collection stated that among the variables of inflation, population, and GDP that most affected local tax revenues was the population. Whereas according to Muchtolifah (2011) in the effect of GDP, inflation, industrial investment and labor on PAD stated that simultaneously and partially the GDP variable, inflation, industry investment and labor have an effect on PAD, the dominant variable affecting is GRDP.

2 THEORETICAL FRAMEWORK

2.1 Local Tax

Regional Tax according is compulsory contributions made by individuals or entities to the regions without balanced direct compensation, which can be imposed based on applicable laws and regulations, which are used to finance regional government and regional development. Regional taxes have a dual role, namely as a source of regional income (budgetary) and as a regulator (regulator).

Theories that support tax collection According to Aristanti Widyaningish (2011: 11-12) the tax collection theory provides an explanation of the state's right to collect taxes. These theories are among others:

Pikul Power Theory, The tax burden must be paid must be adjusted to the capacity of each person. To measure load power two approaches can be used:

- Objective elements, seen from the amount of income and wealth a person has.
- Subjective elements, taking into account the magnitude of material needs that must be met.

Devotional Theory, The basis of the fairness of taxation lies in the relations between the people and their country. As dedicated citizens, the people must always realize that paying taxes is an obligation.

Theory of Purchasing Power Principles, The basis of justice lies in the tax collection. It means collecting taxes means attracting purchasing power from community households for state households. Furthermore, the state will channel back to the community in the form of maintaining community welfare. Thus the interests of the whole community are preferred.

2.2 Total Population

The population of Indonesia in 2016 reached 262 million with the assumption of a development of 1.49% (World Bank Data) of the population issued by the 2016 Central Bureau of Statistics. Meanwhile for the population according to BPS data for the North Sumatra region it reached 4, 26 million, if the population in North Sumatra is set at 5.6% of the total population of Indonesia.

Adam Smith's Theory, Adam Smith argues that supported by empirical evidence that high population growth will be able to increase output through increasing levels and expanding markets both domestic and foreign markets. The addition of high population accompanied by technological changes will encourage savings and also use economies of scale in production. Population addition is one thing that is needed and is not a problem, but as an important element that can spur development and economic growth. The amount of income can affect the population. If the population increases, the income that can be withdrawn also increases. The greater the number of residents will lead to increased demand for consumer goods, then will encourage the economy of scale in production, so that it will reduce production costs, and ultimately will affect Regional Original Income. With the tendency of population growth in turn, it will increase Regional Original Income (Sukirno, 2003).

Population is an important element in economic activity and in an effort to build an economy. Increasingly fast population growth has made the proportion of the immature population to be higher and the number of family members increases. With the increasing population, it means that more goods and services are needed to meet the needs of the
population who can increase the amount of consumption, so that it can increase the per capita income of the region.

2.3 Investments

Investment can be interpreted as spending or expenditure on investors or companies to buy capital goods and production equipment to increase the ability to produce goods and services available in the economy (Sukirno, 2006). Harrod-Domar Theory Expressing that the model of economic growth is a development of Keynesian theory. The theory focuses on the role of savings and industry is very decisive in regional economic growth (Arsyad, 1997). Some of the assumptions used in this theory are that: The economy is in full employment and capital goods in the community are fully utilized. In the economy of two sectors (Households and Companies) means the government sector and trade do not exist. The amount of community savings is proportional to the amount of national income, meaning the savings function starts from the original point (zero). The tendency to save (Marginal Propensity to Save = MPS) is fixed, as well as the ratio between capital and output (Capital Output Ratio = COR) and capital-output ratio (Incremental Capital Output). This theory has weaknesses, namely saving trends and capital-output increase ratios in reality are always changing in the long run. Similarly, the proportion of labor and capital use is not constant, prices are always changing and interest rates can change and will affect investment. In the endogenous growth model it is said that the investment returns will be higher if the aggregate production in a country gets bigger. It is assumed that private and public investment in the field of resources or human capital can create an external economy (positive externalities) and spur productivity that is able to compensate for the scientific tendency to decrease the scale of yield.

An interesting implication of this theory is being able to explain the potential benefits of complementary investment in capital or human resources, infrastructure facilities or research activities. Given that complementary investments will generate personal and social benefits, the government has the opportunity to improve the efficiency of domestic resource allocation by providing various types of public goods (infrastructure facilities) or actively encouraging private investment in technology-intensive industries where human resources are accumulated. Thus this model encourages active government participation in managing investment both directly and indirectly. In Indonesia, investment or investment can be classified into two parts, namely: Domestic Investment (PMDN) and Foreign Investment (PMA).

2.4 Inflation

Increase the price of just one or two items not called inflation, unless the increase extends to a large part of the price of other items.

Keynesian Theory, Inflation occurs because a society wants to live beyond the limits of its economic capacity. The inflation process, according to this view, is nothing but the process of seizing part of sustenance among social groups who want a greater share of what the community can provide. The process of this struggle finally translates into a situation where people's demand for goods always exceeds the amount of goods available (the inflationary gap). According to Irving Fisher in Sadono Sukirno's book (2002: 25), the increase in general prices or inflation (P) is caused by three factors, namely the money supply (M), the velocity of money circulation (V), and the amount of goods traded (T). According to him inflation is the process of raising prices of general goods that apply in the economy. This does not mean that the prices of various items rise by the same percentage. The important thing is that there is a continuous increase in the general prices of goods for a certain period. The increase that occurs only once (although with a large enough percentage) is not inflation. Calculating Inflation Rate

GNP Deflator = (nominal GNP: real GNP) 100%

2.5 Gross Regional Domestic Product (GRDP)

According to (Sadono Sukirno, 2004) GDP is the value of all goods and services produced within one year in a certain area without distinguishing ownership of production factors, but more requires the existence of production factors used in the production process, GDP is one of reflection of economic progress of a region. The increase in GDP will cause regional income from the tax and levy sector to increase. This has an impact on increasing PAD in the area.

2.6 Effect of Gross Regional Domestic Product on PAD

Gross Regional Domestic Products can be interpreted as the value of goods and services
produced in that country in a given year. These goods and services are produced not only by companies belonging to the population of the country but by residents of other countries who reside in that country (Sukirno, 2003).

The higher a person's income, the higher the ability of people to pay various levies set by the government. In the macro concept, it can be analogized that the greater the GRDP obtained, the greater the potential for regional revenue.

3 RESEARCH METHOD

This study uses secondary data in the form of time series during the years 2013-2016. The location of this study is 33 (thirty three) regencies and cities in North Sumatra Province. The scope of this research was carried out by focusing on the discussion of the influence of population, investment, and inflation and regional taxes on GRDP in districts and cities in North Sumatra Province 2013-2016.

Types and Data Sources of Research. This type of research is quantitative research, which is research that uses scientific methods that have criteria based on facts, use principles of analysis, use hypotheses, use objective measures, and use quantitative data. In collecting data and information needed for research, the data used is secondary data of City District in North Sumatra province in 2013-2016.

Quantitative research tests the comparative causal relationship of measured (parametric) research variables. Comparative causal research is research that compares causal relationships between two or more variables in different time periods. This study aims to analyze the direct and indirect effects of independent variables on the dependent variable through an intermediate variable with a path analysis approach. This study uses statistics programs help SPSS and AMOS.

4 ANALYSIS

Multiple linear regression models (multiple regression analysis) can be called a good model if the model meets the assumptions called classical assumptions.

The first thing to do is to examine whether the data is stationary or not. This Stasioneritas test needs to be done because a regression analysis should not be done when the data used is not stationary, and normally if it still done the resulting equations then are a spurious regression.

4.1 The Results of the Analysis of the Influence of Population, Investment, Inflation on GRDP Simultaneously and Partially

4.1.1 Simultaneous Statistical Test (F)

The probability value is 0.000. When compared with the significance value of the test results against \( \alpha = 0.05 \), then 0.000 < 0.05. That is, H0 is rejected means, there is an influence of population, investment, and inflation on GRDP simultaneously at a confidence level of 95%.

4.1.2 Partial statistical test (t)

The t statistic test is done by comparing the significance values smaller than \( \alpha = 0.05 \). Can see the results of testing the statistics t (partial test) on the population, investment, inflation, against GRDP described as follows. Variable number of population has a coefficient number of 0.921 with a significance value of 0.000 smaller than \( \alpha = 0.05 \). This means that partially the population variable has a significant positive effect on the GRDP variable.

The investment variable has a coefficient number of -0.023 with a significance value of 0.447 greater than \( \alpha = 0.05 \). That is, partially the investment variable has a negative and not significant effect on the GRDP variable. The inflation variable has a coefficient number of 0.175 with a significance value of 0.000 smaller than \( \alpha = 0.05 \). That is, partially the inflation variable has a significant positive effect on the local tax variable.

The path diagram is then made, then broken into sub-sectors so that the structure of the path analysis can be described as follows:

![Path Analysis Approach](diagram.png)
4.2 The Results of the Analysis of the Direct Effect of Population, Investment, Inflation, and GDP on Regional Taxes

The estimation of the effect of population, investment, and inflation on local taxes with GDP is an intervening variable.

4.2.1 Simultaneous statistical test (F)

That the probability value is 0.000. When compared with the significance value of the test results against \( \alpha = 0.05 \), then 0.000 < 0.05. That is, H0 is rejected, meaning that there is an influence of population, investment, and inflation on local taxes with GDP as an intervening variable simultaneously at a 95% confidence level.

4.2.2 Partial Statistical Test (t)

The \( t \) statistic test is done by comparing the significance values smaller than \( \alpha = 0.05 \). From the results of table 4.13 above, we can see the results of testing the statistics \( t \) (partial test) on the population, investment, inflation, against GRDP described as follows.

Variable number of population has a coefficient number of 0.171 with a significance value of 0.165 greater than \( \alpha = 0.05 \). That is, partially variable population number has a positive and insignificant effect on regional tax variables. The investment variable has a coefficient number of 0.130 with a significance value of 0.003 smaller than \( \alpha = 0.05 \). That is, partially the investment variable has a significant positive effect on the local tax variable.

The inflation variable has a coefficient number of 0.094 with a significance value of 0.048 smaller than \( \alpha = 0.05 \). That is, partially the inflation variable has a significant positive effect on the local tax variable.

GRDP variable has a coefficient number of 0.663 with a significance value of 0.000 smaller than \( \alpha = 0.05 \). That is, partially the GRDP variable has a significant positive effect on the regional tax variable. This can be shown in sub-sector 2 below:

From the picture of sub-sector 2 the path equation can be made as follows:

\[
Y_2 = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Y_1 + \epsilon_2
\]

\[
Y_2 = 0.171X1 + 0.130X2 + 0.094X3 + 0.663Y_1 + 0.466
\]

Where:

\[
\epsilon_2 = \sqrt{1-R^2} = \sqrt{1 - 0.783} = \sqrt{0.217} = 0.466
\]

The value of \( R^2 \) of the second hypothesis is 0.783. That is, the coefficient of determination from the contribution of independent variables to the dependent variable is 78.3% (0.783 x 100%). That is, 78.3% of local taxes are influenced by variables of population, investment, inflation, and GDP, the other 21.7% are influenced by other variables.

4.3 The Results of the Analysis of the Influence of Population, Investment, and Inflation on Local Taxes with GDP as an Intervening Variable

The testing of the hypothesis used is by conducting a path analysis approach between the independent...
variables of population, investment, and inflation on the dependent variable of regional tax with GDP as an intervening variable. The applications used in this path analysis are SPSS and AMOS.

Figure 5: Standardized Estimate Path Analysis.

5 RESULTS

The influence of one independent variable (X) on the dependent variable (Y), both directly and indirectly, is as follows:

5.1 Effect of Population, Investment and Inflation on GDP Simultaneously and Partially

The results of multiple regression analysis of variable population, investment, and inflation on GDP simultaneously are concluded that there is an influence of population, investment, and inflation on GDP in the districts and cities of North Sumatra as evidenced by conducting simultaneous testing with a significance value of 0.000 <0.05 and there is a simultaneous influence of population, investment, and inflation on local taxes with GDP as an intervening variable with a significance value of 0.000 <0.05.

The results of testing the variable population number on GDP shows a significance value of 0.000 <0.05, with a coefficient of 0.921, meaning that the population has a significant positive effect on GRDP. It can be concluded that the population is one of the factors to increase GRDP in regencies and cities in North Sumatra Province, the increasing number of population will also increase GDP. This is a reality that if the population is managed properly, namely by providing skills and improving education, the number of residents will be a strength and will contribute to the development process in this case the GDP will increase.

Testing of investment variables against GRDP with a significance value of 0.447 >0.05, with a coefficient value of -0.762, meaning that investment has a negative effect that is not significant or does not affect GDP. The fact should be that with the increase in investment, the GRDP will also increase, because with the increase in investment, employment and labor will increase, with increasing employment, the income of each per capita will increase, which will increase GRDP.

The test results of the inflation variable have a significant positive effect on GDP, this is evidenced by the significance value of 0.000 <0.05, with a coefficient of 0.175. Inflation is one of the important economic indicators that can provide information about the development of prices of goods and services paid by consumers. The annual GRDP increases along with inflation fluctuations due to economic growth, therefore with increasing inflation it will also increase GDP in the districts and cities of North Sumatra Province.

5.2 Effect of Population, Investment, Inflation, and GDP on Regional Taxes

The population based on the results of the study shows that the significance value is 0.165 >0.05 with direct coefficient of 0.17, meaning that the population has a positive and insignificant effect on local taxes in regencies and cities in North Sumatra Province, whereas if you see the effect of the population on taxes the area through GRDP has a significance value of 0.000 <0.05, meaning that if through GRDP, the total population has a significant effect on local taxes, with the indirect coefficient value of 0.607 and the total influence is positive 0.78.

Thus, if you look at the effect of population numbers on local taxes, this study is contrary to Tax is one of the important factors for investors in determining the decision to invest in a country. In theory, taxes affect investment decisions as long as the tax imposition affects the amount of costs and profits obtained by investors, so from this it can be concluded that in the districts and cities in North Sumatra Province the rate of regional tax imposition on investors is still low so investors invest their assets in the district and cities in North Sumatra Province.

Analysis of the effect of inflation on district and municipal taxes in North Sumatra concluded that there was a significant positive effect of inflation on local taxes with a significance value of 0.048 <0.05.
Then if through GRDP, inflation has a significant positive effect on district taxes and the city of North Sumatra with a significance value of 0.000 <0.05, with indirect values of 0.119 and total influence of 0.21.

The influence of GRDP on regional taxes in aggregate has a significant positive effect because the significance value is 0.000 <0.05 with a coefficient of 0.663.

6 CONCLUSIONS

Population, investment, and inflation simultaneously influence the GRDP of regencies and cities in North Sumatra Province for the period of 2013 - 2016. Partially the population and inflation have a significant positive effect on GRDP, and investment has a negative or insignificant effect or no effect on GDP in regencies and cities in North Sumatra Province for the period of 2013-2016.

The population, investment, inflation, and GRDP have a positive direct effect on local taxes in regencies and cities in North Sumatra Province for the period of 2013-2016.

Variables for population, investment, and inflation affect regional taxes with GRDP as an intervening variable in districts and cities in the North Sumatra Province for the period of 2013 - 2016. GRDP is not an intervening variable (unable to mediate) on investment relations with local taxes. GDP is an intervening variable (able to mediate) the relationship between population, and inflation with regional taxes.

REFERENCES


