Effect of Macroeconomic Variables and Tax Rates on the Six ASEAN Countries Tax Ratio

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Abstrak
The tax sector supports a stable process of economic growth and the tax ratio is considered an indicator that can be used to assess the performance of the taxation sector. This study examines the impact of macroeconomic and tax rates on the magnitude of the tax ratio in the case of six ASEAN member countries during the period 1998 to 2018. Data processing was performed using panel data regression using the Generalized Least Square (GLS) method with the STATA program. This study has very interesting results because inflation has a significant influence on the level of a country's tax ratio. The relationship between inflation and taxes is said to be positive, so any increase or decrease in inflation will also cause an increase or decrease also in the taxation sector. In other words, inflation and taxes move in the same direction but with different magnitudes. Countries with a stable macroeconomic situation will create greater opportunities for investment and more jobs are created. This will further increase the purchasing power of consumers and assume the tax burden will be easy for the public.

Keywords: Tax Ratios, Macroeconomic, Inflation Rate

INTRODUCTION
The state needs a source of income to be able to carry out its functions as a public service provider for the people in the form of an allocation function, a distribution function and a stabilization function. Sources of government revenue are generally categorized in two categories, namely tax revenue and non-tax revenue. If the two income sources are insufficient, the government can seek loans or debt from other sources. Le, Dodson, & Bayraktar (2012) states that until now taxes are still the largest source of income for most countries in the world.

It is not easy to directly determine the benefits of taxation and, therefore, to determine whether the tax is good or not (Sinulingga, Nasution, & Batubara, 2018; Sari, & Nasution. 2014; Lubis & Usman, 2015). Any analysis of the relationship between taxation and economic activity must take into account other variables (Koch, et.al, 2005). The implementation of effective and efficient tax policies in developing countries is a formidable challenge and has been the subject of theoretical and empirical studies throughout the world. The tax share in developing countries is much lower than in developed countries, while tax revenue is considered an instrument to be able to support the growth and economic development of the country. Heinemann (2011) said that the performance of a country’s tax revenue is not only measured in nominal tax revenue, but also the ratio of tax to GDP (Tax Ratio) and the ratio between tax revenue and its potential. The tax ratio is considered as an indicator that can be used to view and assess the performance of the taxation sector by comparing the income received by the taxation sector with Gross Domestic Product (GDP) within a certain period of time which is usually for one year (Prasetyo, 2016).

As part of a group of developing countries, there are some countries from ASEAN members that have a ratio that is still low than the World Bank Standards which are around 15%.

![Perbandingan Rasio Pajak](source: OECD Revenue Statistics)

Figure 1. Tax Ratios of 6 ASEAN Countries

From Graph.1 above Indonesia itself has a tax ratio in the range of 11.53%. Indonesia’s Tax Ratio is still lower than the tax ratios of several neighboring countries such as Thailand which has a tax ratio of 17.5%, the Philippines with 17.5%, Vietnam with 22%, Singapore 14.1%, Malaysia 13.6% (OECD, 2017).

One principle of taxation is its effect on economic behavior. Apart from the economic inefficiencies that result from taxation, it is widely believed that taxes have an impact on the rate of economic growth. For example, developing countries generally support this view. If the government uses tax revenues collected to fund investments in social goods, especially goods that produce external benefits in the form of infrastructure, education and public health, then the rate of economic growth can be positively influenced by taxation (Kadir, 2018; Hendrawan, Kusmanto, & Warjio 2018).

To see changes occurring as a whole, the macro economy is considered appropriate as a variable to be able to explain the cause of the problem to be able to get a solution to be able to make an appropriate policy. Macroeconomic indicators are widely used, based on some interesting properties of macroeconomic indicators. Analysis of macroeconomics is usually implemented through two tools, monetary policy and fiscal policy. Both forms of policy are used to stabilize the
economy, which usually means pushing the economy to a level that is consistent with economic resources. Macroeconomics in fiscal policy is the use of government revenues and expenditures as instruments to influence the economy, including tools such as spending, taxes and debt. When the economy produces less than potential output, government spending can be used to use unused resources and increase output. Macroeconomic indicators are also much easier to compare between countries because macroeconomics is in many cases built in the same way for each country. Then the macroeconomic indicators are the appropriate input for large-scale macroeconomic models (Ye, 2017).

Economic growth is a very important indicator because every country will always try to be able to increase the economic growth of the country. The standard for economic growth of a country so far is gross domestic product (GDP). It is important to understand what components make up this measure and how they affect society at large, to be able to analyze and understand their impact on the economy (William & Turton, 2014). The occurrence of sustainable economic growth will rely on the ability of a country to invest and make resources that are organized and productive (Nyoni & Bonga, 2018). Indicators of economic growth seen from GDP, which in general, do not reflect the overall state of living standards or welfare of a country. With that, GDP per capita is often considered more able to reveal the average condition of citizens in a country. In a related study covering in developing countries, Tanzi (1992) found that half of the variation in tax ratios was explained by per capita income, the import share, the agriculture share, and the foreign debt portion.

GDP per capita, service sector share in GDP, and agriculture share in positive and significant GDP. High GDP per capita has the potential to realize higher tax revenues. This is because high per capita income implies that the purchasing power of a country’s population increases so that they pay taxes easily. To ensure an increase in per capita income, political will is needed, an efficient legal system, and consistency in the application of tax policies. If this is achieved then the country will attract investment which will lead to employment opportunities which will ultimately affect tax increases (Murunga et al., 2016).

Attracting foreign investment can help the domestic production sector to produce goods and services that cannot be provided by the domestic production sector. The foreign sector plays a very important role in increasing growth in GDP per capita, especially in the export and import trade activities and foreign investment. Countries are increasingly competing with each other to attract capital inflows into the country by reducing their tax rates on corporate profits. Determination of statutory tax rates set by the government because the government will respond to changes in taxes by other countries. Statutory tax rates are used competitively by each country to get profits into its jurisdiction. This results in a strategic interaction in setting mandatory tariffs (Devereux, Lockwood, Redoano, 2008).

In the economy, inflation becomes an important thing that is used as a benchmark for economic growth and a factor of consideration for investors in choosing the type of investment, as well as determining factors for the government in formulating physical, monetary and non-monetary policies to be implemented. Inflation is a continuous increase in prices and price increases that occur in all groups of goods and services. It may even be possible that the increase is not concurrent. However, the most important thing is the increase in prices of general goods occurs continuously during a certain period (Pohan, 2008). The rate of inflation can be different from one country to
another country or in one country for different times. Research conducted by Sookram & Saridakis (2009) states that inflation appears as a major factor that can affect the tax ratio and this shows the need for wise financial economic policies in a country.

In general, the occurrence of inflation can result in reduced investment in a country, encourage an increase in interest rates, encourage speculative investment, the failure of economic development, the balance of payments deficit, and the declining level of life and also the welfare of society and can result in political instability. A country with a lower inflation rate consistently shows an increasing currency value, because its purchasing power is increasing with other currencies. Thus, inflation is also a key factor in macroeconomic analysis. Investors' understanding of the impact of inflation on the rate of return or return on investment is needed when investors will choose the type of investment to be made. This is because inflation affects the value of money invested by investors. High levels of inflation will increase the risk of investment projects in the long run (Ye, 2015).

The economy, tax rates and income levels change substantially over a short period of time. There is no doubt that tax policy can influence economic choices. In general the variables that affect the tax ratio can be grouped into variables related to the economic sector. The economic sector cannot be separated from the occurrence of free trade, with this economic globalization can be a factor in the differences in tax rates between countries. With a low tax rate it is intended to attract many service and investment transactions to the country where the tariff applies. The tax rate measures how much (or less) tax is imposed on each group of income then compared to the overall tax rate. The tax rate to describe the ratio (usually expressed as a percentage) at which a business or individual is taxed (Ye, 2015).

There are several methods used to present tax rates, namely statutory tax rate, average tax rate, marginal tax rate and effective tax rate. Statutory tax rate is the rate determined in the Tax Law or legally established (Walby, 2010). Statutory tax rates are used competitively by each country to get profits into its jurisdiction. This results in a strategic interaction in setting mandatory tariffs. Based on the background that has been described previously, we can see that all of these factors appear to be closely related to each other and affect the tax ratio of a country, the state government needs to compare the tax ratio figures obtained by our country with other countries therefore. This paper aims to find out whether there is an influence on macroeconomic variables and tax rates on tax ratios in the six ASEAN member countries and which variable has the greatest influence.

RESEARCH METHODS

This study uses a quantitative approach. The objective in quantitative research is to determine the relationship between one (the independent variable) and the other (the dependent variable) in a population and sample (Babbie, Earl R, 2010). The quantitative approach in this study was carried out using correlational quantitative analysis.

The data used in this study is a combination of time series data with cross section data called panel data. In this study the time periods analyzed from 1998 to 2018 were combined from six ASEAN countries using secondary data. The population in this study are ten ASEAN member countries, namely Brunei Darussalam, Indonesia, Cambodia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.) The sample in this study were six ASEAN member countries, namely Indonesia, Malaysia, Singapore, Thailand, the Philippines and Vietnam.
Sugiyono (2012) states that the independent variable or independent variable is a variable that influences or causes changes in the dependent variable. This variable is also said to be a predictor or timulus. Independent variables in this study are Economic Growth, Per capita Income, Inflation and Tax Rate. The dependent variable is a variable that is considered to be dependent or caused by other variables (Babbie, Earl R, 2010). The dependent variable referred to in this study is Tax Ratio.

Regression analysis is used in this study where the regression discusses the relationship between one variable called the dependent variable and other variables that are independent variables. The research method used is the panel data regression test which is a combination of time series data and cross section data. The data that has been collected will be analyzed with the GLS multiple regression model and its regression analysis using the STATA program. In addition to using GLS multiple regression analysis, there are several methods that can be used to estimate the regression model with panel data, namely the Pooled Least square (Common effect) method, the Fixed effect method and the random effect method. This study also uses the Classical Assumption Test in its calculations.

For the classic assumption test, four tests will be conducted, namely the normality test, the multicollinearity test, the heterokedasticity test, and the autocorrelation test. The purpose of conducting a classic assumption test is to ensure that the regression equation obtained has an accurate, unbiased and consistent estimate. Regression model will be used as an unbiased estimation tool if it meets the requirements in the form of best linear unbiased estimator which means that there is no heteroscedasticity, no multicollinearity, and also no autocorrelation that affects.

If there is heteroscedasticity, the variant is said to be not constant so that it can cause a standard error bias. If there is multicollinearity, it will be difficult to isolate individual influences from the

\[(\text{TAXRATIO})_{it}=\alpha+\beta_1(\text{PE})_{it}+\beta_2(\text{PDBPER KP})_{it}+\beta_3(\text{TI})_{it}+4(\text{TAXRATE})_{it}+\epsilon_{it}\]

Where:
- \(\text{TAXRATIO}\) : Tax / GDP receipts
- \(\text{PE}\) : Economic growth
- \(\text{PDBPERKP}\) : Income per capita Income per capita
- \(\text{TI}\) : Inflation rate
- \(\text{TAXRATE}\) : Tax Rates
- \(\alpha\) : Constanta
- \(\beta_1, \beta_2, \beta_3, \beta_4\) : Regression Coefficient
- \(\epsilon\) : Error Term

\(i=1,2,3,\ldots,6\) : Number of Cross Sections
\(t=1,2,3,\ldots,20\) : Time period

RESULTS AND DISCUSSION

This study uses STATA statistical applications with four independent variables. Methods that can be used to estimate the regression model with panel data are the Pooled Least square method (Common effect), the Fixed effect method and the random effect method. In panel data analysis, to choose the best estimation method, Hausman test and Chow test will be used before the procedure. In the Chow Test the results obtained that the best model used is to use FEM (Fixed Effect Model). Whereas in the Haustman Test it is used to test which is better between the fixed effect method or the random effect method which follows the Chi-Square distribution with as many independent degrees as the independent variable. From these tests the best model results used are the Random Effect Model.

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If there is heteroscedasticity, the variant is said to be not constant so that it can cause a standard error bias. If there is multicollinearity, it will be difficult to isolate individual influences from the
variable, so that the level of significance of the regression coefficient becomes low. With autocorrelation, the estimator is still biased and remains consistent, it just becomes inefficient.

In the normality test, the data held are not problematic and are normally distributed. In the initial calculation multicollinearity occurs by showing the variable of economic growth and income per capita has a VIF value of more than 10, then one of the variables needs to be excluded. The excluded variable is the variable of economic growth because it has the largest VIF. After that the multicollinearity test was repeated. Furthermore, for the autocorrelation and heterokedasticity tests also did not show any significance or problems in both cases.

After finding the right model and there are no problems in the data to be processed, the next step is to determine whether the independent variables used have an influence on the dependent variable. The hypothesis test will be conducted. Previously, it should be noted that at the beginning of the classical assumption testing there was a violation in the heterokedasticity test, the solution to how to deal with the violation was to add robust standard errors to the model.

With a sample of 126 observations, the output of data processing shows that the model is considered good for explaining variables that affect the Tax Ratio. Regression results also inform that each (dependent variable) and (independent variables) included in the estimation model, obtained a coefficient of determination (R2) of 0.2253 which means that overall can explain the variation of the tax ratio of 25.53%. For the test between independent variables and dependent variables judging from the coefficients of each variable, the coefficient on tax rates is greater than the coefficient of income per capita and both coefficients are negative. While the coefficient of inflation has a positive coefficient which is certainly greater than the coefficient of income per capita and the coefficient on tax rates. Here are the outputs for the regression test:

| Taxratio | Coef. | Std. Err | z   | P>|z| |
|----------|-------|----------|-----|-----|
| Percapita| -0.03016| 0.08670 | -0.35| 0.728 |
| Inflasi  | 0.10531 | 0.03866 | 2.72| 0.006 |
| Taxrate  | -0.07442 | 0.06372 | -1.17| 0.243 |
| Krisis   | -0.1942 | 0.53514 | -0.36| 0.717 |
| _cons    | 16.303 | 2.5583 | 6.37| 0.000 |

Source: Author Data Processing Results

Based on Table 1 above, it shows that from each variable used the inflation rate variable has an effect on the increase or decrease in the tax ratio. While other variables, namely the variable income per capita and tax rates do not have an influence on the size or the small tax ratio of a country. Inflation rate variable with a significance level (α) of 5% and p-value from column P>| z | the ti row obtained from the results in the above output is 0.006. Then the p-value (0.006) <α (0.05) and H0 are rejected, so that the conclusion is that there is a variable influence of the inflation rate on the tax ratio.

Inflation appears as a major factor that can affect tax ratios and high inflation rates implying worsening economic conditions and an increase in the real tax burden. The results of this study are consistent with research conducted by Sookram & Saridakis (2009) which also shows that the inflation rate affects the tax ratio. The economies of developing countries are strongly influenced by consistent inflation trends which will have an impact on GDP growth as well as tax structure and tax collection methods. The relationship between inflation and taxes is positive, so any increase (decrease) will cause an increase (decrease), on average, in taxes. In other words, inflation and taxes move in the same direction but with different magnitudes (Patoli et al. 2016).
CONCLUSION
From the results of data processing with statistics that have been done, this study can answer the research objectives to find out what factors can affect the size of a country’s tax ratio. The results show that the inflation rate can affect the size of the ratio of a country. Inflation can affect the distribution of income, allocation of factors of production and products. High inflation rates are often expressed as a measure of macroeconomic wheel instability and an inability of the government to control macroeconomic policies. Developing country economies are strongly influenced by consistent inflation trends that have an impact on GDP growth as well as tax structure and tax collection methods (Patoli et al., 2016). Being important for fiscal policy planners and budget makers must emphasize some preventive measures that can control inflation which can serve as a key element in contracting the fiscal deficit. When inflation rises, it will cause a contraction in taxes, widening the fiscal balance gap in income and expenditure. Such a fiscal deficit can increase inflationary trends if financed by the money supply. Highlights the relationship between inflation and taxes collected at a certain time period. Inflation can change the tax characteristics and contribution system in many ways, if the tax value is calculated in nominal fractional changes, inflation will cause an effective tax increase.

BIBLIOGRAPHY
