

Does GDP Affect Tax Revenue?

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Abstract: Does GDP Affect Tax Revenue?

Indonesia's largest revenue comes from taxes which function to fund expenses. The increase in tax revenues must be in line with Indonesia's economic growth which is reflected in the Gross Domestic Product (GDP). This study analyzes the effect of GDP revenue on total tax revenue in Indonesia during 1988-2021 using control variables including; the money supply (M2), the population (POP), and the amount of exports and imports (XM). GRDP is the main variable because it has 17th sectors which an important in supporting economic growth and increasing the burden of tax objects. This study used a quantitative descriptive method with the Newey-West HAC method. The results showed that this study was unbiased, GDP had a positive-significant effect as indicated by the percentage of GDP growth with an average of 7% during the study period. The control variables that have a positive-significant effect are M2 and XM, and the population is not significant because the increase in the population does not support awareness of paying taxes. When there is an increase in GDP, it can provide an increase in tax revenue, as well as if there is an increase in the money supply (M2) and exports-imports (XM). Increasing revenue in GDP, M2 and XM can support the creation of new revenue objects for taxes, this is what will support the development process, especially in terms of financing. In order to increase financing for the development process, the government continues to seek sources of tax objects, not only from sectors in GDP, but also from potential export-import, and all transactions that can increase the money supply.

Keywords: Tax Revenue; GDP; Money Supply; Total Population

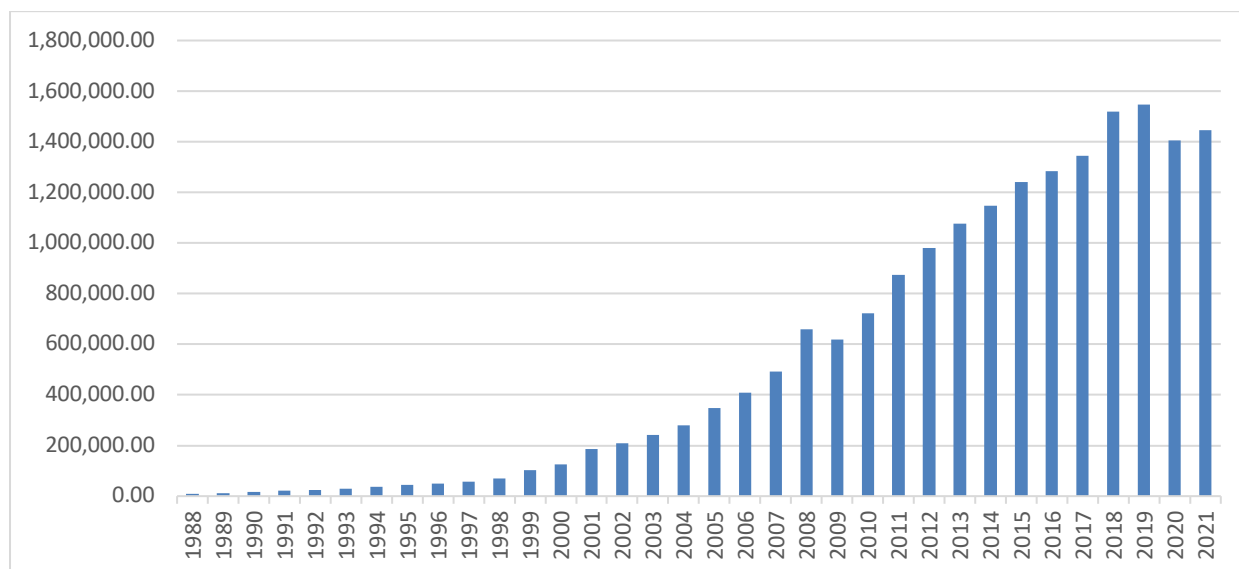
INTRODUCTION

Indonesia's largest revenue comes from taxes. Taxes are the obligatory dues made by the people to the state which are payable by the obliged to pay it under the Constitution's rule.



Tax payments do not get any achievements or rewards. Taxes are useful for financing general expenditures related to state duties in administering government functions (Waluyo, 2009).

Figure 1. Total Tax Revenue in Indonesia Year 1988-2021



Source: (Directorate General of Taxation, 2021)

Indonesia is a developing country that is promoting state development, especially in infrastructure, Indonesia is in dire need of funds to finance development, it turns out that the number of tax revenues increased each year is still somewhat less to cover the amount of expenditure available so that the Indonesian government still desperately needs other income funds. The government can not continue to borrow funds from foreign parties, because it will increase the length of the list of state debts, and for a refund, Indonesia should consider the interest and exchange rate of the country's currency lender. Therefore, foreign loans are considered to be less constructive for the Indonesian economy (Widharma et al., 2017). From 2020 to 2021 Indonesia's economic situation is shaken due to the shock of the Covid-19 disease outbreak, this is what makes Indonesia unable to survive and ultimately unable to rely on domestic revenue (tax) which covers losses due to the Covid-19 shock, up to 2022 still needs more strength to make the Indonesian economy rise. Tax is the main component of state revenue which should be able to cover state financial problems.

In 2017, tax revenues reached IDR 1,343,529 trillion or reached 91 percent of the APBN target. This tax revenue has the highest component with details of oil and gas reaching IDR 50.3 trillion or 120.4%, and non-oil taxes reaching IDR 1,097.2 trillion or 88.4%. Land and building taxes (PBB) have reached IDR 16.8 trillion or 108.9% of the target of IDR 15.4 trillion. And for

other taxes Rp 6.7 trillion or 77.5% of the Rp 8.7 trillion targets. The 2017 VAT reached 100.6 percent, indicating a healthier trend in taxation and being able to support the state budget. Customs and excise revenue reached IDR 192.3 trillion or 101.7%, import duties IDR 35.0 trillion or 105.1%, and export duties IDR 4.0 trillion or 149.9%.

In 2018, tax revenues reached IDR 1,518,789.8 trillion or 92 percent of the realization of the APBN target, namely IDR 1,414, which means there is a tax shortfall of IDR 108.1. Tax revenue based on the realization of the 2018 State Budget, namely the processing industry of IDR 363.60 trillion (up 11.12%); trading sector IDR 234.46 trillion (23.72%); financial & insurance services IDR 162.15 trillion (11.91%); construction & real estate IDR 83.51 trillion (6.62%); mining IDR 80.55 trillion (51.15%); and agriculture IDR 20.69 trillion (21.03%). Almost all tax revenues grew by double digits, indicating that 2018 tax revenues were quite optimal. With details of tax revenue, the 2018 tax ratio reached 11.5% of GDP, better than 2017 which was only 10.7% of GDP.

In 2019, the realization of tax revenue reached IDR 1,546,141 trillion or 84.4 percent. The realization of oil and revenue of gas income tax only reached IDR 59.1 trillion or 89.3 percent of the target, while the rest of the non-oil and gas tax realization reached IDR 1.273 trillion or 84.2 percent of the target. It can be interpreted that in 2019, there was another shortfall in last year's tax revenue which widened from the previous government's outlook of IDR 140 trillion. Taxes as a fiscal instrument are still directed at boosting the competitiveness of the national economy through the provision of incentives and policies to accelerate restitution in the business world.

In 2020, tax revenues only reached Rp. 1,404.507 trillion, which is following the target set in Presidential Regulation Number 72 of 2020 of Rp. 1,198.82 trillion. Non-oil and gas income tax receipts of IDR 560.67 trillion or 52.41 percent; Value Added Tax (VAT) and sales tax on luxury goods which contributed IDR 448.39 trillion or 41.91 percent of total revenue; Oil and gas PPh contributed IDR 33.18 trillion or 3.1 percent; Land and building taxes contributed IDR 27.73 trillion or 2.59 percent, experiencing a contraction of 19.71 percent compared to the previous year. The contraction that occurred was inseparable from the slowdown in the Indonesian economy and international trade transactions due to COVID-19. On the other hand, income from types of taxes such as Article 21 Income Tax, Article 22 Import Income Tax, Article 25/29 Income Tax, and domestic VAT are quite affected by the relief of tax payments in the recovery of the national economy. Contracted economic growth has had an impact on economic productivity and consumption levels.

In 2021, tax revenue will reach IDR 1,444,541 trillion, which can be interpreted as equivalent to 100.19 percent of the 2021 State Budget revenue target. The fulfillment of this target illustrates a better economic recovery. Income tax reached IDR 696.5 trillion or 101.9 percent; Non-oil and gas income tax of IDR 594 trillion due to positive economic growth; Oil and gas income tax of IDR 772.3 trillion driven by rising oil commodity prices; Value added tax (VAT) of IDR 551 trillion or 106.3 percent driven by normal economic activities and significantly increased import activities. Meanwhile, land and building tax reached IDR 30.1 trillion or 110.2 percent driven by adjustments to stamp duty rates.

The Covid-19 pandemic that occurred in 2020-2021 caused Indonesia's state tax revenue to decline, sources of the domestic revenue sector were not ready to face the shock of this pandemic, so economic growth decreased to number -3, and another impact was the appearance of signs of a major recession (Long et al., 2022). The recession that is predicted to occur in 2020 is predicted to be the fourth biggest recession since 1870 based on calculations of a decline in economic activity, international trade, retail sales, and consumption of oil. The lockdown policy to limit activities at the new normal level caused many workers to lose their jobs and lose the number of hours worked, and if drawn in a straight line it could put pressure on the economy (Widiiswa & Hendy Prihambudib, 2021).

Taxes originating from MSMEs should be able to support the recession that occurs because the value of public consumption must be maintained, but unfortunately, it is conveyed by some literature that analyzes the application of the digital economy to MSMEs amid the COVID-19 pandemic, but several studies do not analyze how technological innovation affects the sustainability of SMEs. MSME taxes are reduced so that sources of state income are also reduced, and this increases opportunities for other countries to lend to Indonesia (Dhian et al., 2022).

Bethink that the strategic position of tax revenue, the acceleration from the realization of enhancement tax revenue every year is expected, to support sustainable economic growth. Of course, the main source of state revenue that can still be excavated by the Indonesian government is tax, by increasing taxpayers or expanding the tax object. If all the potential can be maximized, so it will be able to increase tax revenue to finance the development of the state and improve the welfare of the community (Hartmann et al., 2023; Kim & Lee, 2023)

World Bank, (2020) predicts that Indonesia's GDP in 2020 will reach a growth rate of 0 percent or a decrease compared to the projected increase of 5.1 percent at the beginning of the year. The Director General of Taxes, Suryo Utomo at the commemoration of Tax Day 2020 stated that there were at least two impacts of the COVID-19 pandemic on the economy which ultimately

led to a decrease in tax revenues. Declining public consumption has created prolonged uncertainty for the investment climate and the business world and a weakening economy which has reduced commodity prices and Indonesia's export activities (CNN Indonesia, 2020). In short, the disruption that has occurred in the world economy has put pressure on the achievement of ongoing tax revenues (Ma et al., 2020; Clemens & Veuger, 2020; Rizqi, 2021).

The gap or phenomenon that occurs is Indonesia with the number 3 largest population in the world, but the number of taxpayers does not significantly affect tax revenue, this is because many citizens still save wealth or are unwilling to pay their income as taxes, this continues to be a dilemma in Indonesia, besides that the money supply which always increases every year can also trigger inflation, but on the other hand, it is believed that it can facilitate tax revenues to absorb tax objects which can come from value-added taxes and even corporate taxes, as well as for exports and imports which can become an object of tax revenue, where Indonesian products that are also in demand by the foreign community can become revenue input for this country, all of this as long as it is based on strengthening the tax system in Indonesia (Jakurti & Süßmuth, 2023; Liu & Ge, 2023; Lundstøl, 2022).

Based on the above explanation, the researcher is interested to investigate more about the factor that can make affect the total tax revenue in Indonesia from 1988 to 2017, by using the main free variable the Gross Domestic Product (GDP) and other free control variables are population, money supply, and Export-Import. The reason for selection The GDP is the main independent variable, because; GDP is economic statistics is most noticed because they are considered the best single measure of community welfare. The underlying thing is that GDP measures two things at the same time: the total income of everyone in the economic sectors and the total spending of the country to buy goods and services resulting from the economic sectors (Mankiw, 2006 ; Apeti & Edoh, 2023; Goldman & Ozel, 2022).

There are 17 economic's sectors in GDP that can reflect the state of Indonesia's economy along with the potential for imposition of new tax objects, so the higher the GDP revenues will support the increase in tax revenue. GDP receipts increase annually, so that from each sector will potentially contribute to the tax revenue of Indonesia (Mutiara, 2015).

The three largest GDP revenue sectors, namely industry, agriculture, and retail trade, can survive due to shocks, but unfortunately, the imposition of taxes on these sectors is not optimal, so the tax ratio is less able to relate to the imposition of these large sectors, as is the case within agriculture where the income of a farmer is minimal, it causes the imposition of a small percentage of taxes, even though this sector is a sector that provides large GDP revenues, and

there is also a dilemma in the industrial sector where this sector can provide a large value-added contribution, but in On the other hand, during the Covid-19 pandemic, it was the industrial sector that carried out the most layoffs of workers, and this had an impact on reducing potential income tax.

The relationship between GDP's revenues and tax revenues is also found in the Tax Ratio theory, which is how the government collects tax revenue in the form of absorption from the business field sector that is contained in GDP. The performance of tax revenues is reflected in the annual tax ratio's enhancement (Setiaji, G., & Amir, 2005).

Currently, amount of Indonesia's Tax Ratio is 10,3%, while the government targets as much as 10,9%. Certainly, 10,3% is a low number compared to the average tax ratio in the world, which is equal to 15%. Therefore, the government should pay attention to increasing the tax ratio through the addition of tax objects or new taxpayers in the business field sector contained in GDP (Juanito, 2017).

The reason for the selection of the population, money supply, and export-import as a free control variable is the number of people in Indonesia who have diverse behavior, one of which is consumptive behavior. Consumptive behavior can be defined as buying excessive goods or services even if not needed. Consumption can be marked by the increase in the money supply in the community. The money supply is part of the monetary economy that has a major impact on the Indonesian economy (Solis, 2002).

With the increasing consumptive population, then it will be an opportunity to increase tax revenue and expansion of tax objectives. Moreover, the foreign trade or export-import sector may also increase tax revenue in Indonesia with the sale of genuine domestic products and specialization of goods abroad especially those classified as luxury (Moningka, 2006).

LITERATURE REVIEW

In the displacement theory, the effect conveyed by Peacock and Wiseman is based on the view that the government always increases spending while the public does not like to pay increased taxes to finance the increasing government spending. Peacock and Wiseman base their theory on a theory that society has a level of tax tolerance, a level where people can understand the amount of tax levy required by the government to finance expenditures. This level of tolerance is an obstacle for the government to increase tax collection. Economic development led to increased tax collection even though the tax rate did not change; and increased tax revenue caused government spending to also increase, therefore under normal circumstances,

an increase in GNP causes greater government revenue, as well as greater government spending.

Of course, there are different views on the theory presented by Wagner. Wagner's law regarding the development of government activities, however in conveying Wagner's theory did not mention the theory regarding the selection of public goods, where to enjoy these public goods the state must provide funding so that these public goods can be realized and can be enjoyed by the whole community. Wagner bases his views on a theory called the organic theory of government (organic theory of the state) which considers the government as an individual who is free to act independently of other members of society. This is also not what was conveyed by Peacock and Wiseman where the government should have the role of Stabilizer, Distributor, and Allocator, and from this role, it must prioritize the needs of the community so that the government's egoism does not occur in carrying out its role

Wiseman and Peacock were two economists who proposed a theory on the relationship between government spending and taxation in the context of public finance. They argued that government spending tends to increase over time due to a phenomenon they called "the ratchet effect. According to Wiseman and Peacock, the ratchet effect occurs because government spending tends to be sticky and difficult to cut once it has been established. As a result, when a crisis occurs or a new spending program is implemented, government spending tends to increase and then remains at that higher level even when the crisis is over or the program is no longer needed. To finance this increased spending, Wiseman and Peacock argued that taxes would have to be raised. However, they noted that taxpayers would resist these tax increases, which could lead to political instability and a backlash against the government. In response to this pressure, governments would often resort to deficit spending, which could lead to inflation and other economic problems. Wiseman and Peacock concluded that the relationship between government spending and taxation was complex and depended on a variety of factors, including political pressure, economic conditions, and the ability of the government to manage its finances effectively. They argued that the challenge for policymakers was to strike a balance between the need for government spending to support economic growth and social welfare programs, and the need to maintain fiscal discipline and avoid excessive taxation and deficit spending (Henrique et al., 2020).

Adolph Wagner's law of "increasing expansion of public and state activities" postulates that as real income increases, there is a long-run tendency for the share of public expenditure to increase relative to national income. alongside Wagner's law, another very famous theory on the determinants of public expenditure is the so-called Peacock and Wiseman's "displacement

effect." Alan Peacock and Jack Wiseman in their well-known 1961 monograph *The Growth of Public Expenditure in the United Kingdom* explained their hypothesis according to which government expenditure tends to evolve in a steplike pattern, coinciding with social upheavals, notably wars. However, in a further article, they suggested two complementary approaches to the empirical analysis of public expenditure growth, the first being represented by factor analysis at the general econometric level, and the second by the development of models of group behavior leading to explanations in terms of the changing relationships of social groups through time.

Another theory of taxation emphasizes that taxes are an important and obligatory levy to meet the needs of society (public procurement of goods). This was disclosed by Economic Figures, Rosen and Ted Gayer, the existence of tax incidents that depend on the deposition of tax revenues is due to a balanced budget (balance-budget incidence), which calculates the combined effect of tax collection and government financial spending. In general, the distributional effect of taxes depends on how the government uses tax revenues to finance expenditures. Tax revenues are usually not selected for certain expenditures, so this problem is known as differential tax incidence, because differential tax incidence can see how much change in tax revenue and how one type of tax is treated with another.

A hypothesis explained that what is assumed to be other taxes (other taxes) is a lump sum tax, namely a tax imposed on a person with a constant amount, there is no difference in the amount of the tax burden on each person. The tax collection system may change to a progressive tax, namely the tax collection rate in the proportion that increases with the greater amount used as the tax base, and the proportion increases for each particular amount each time it increases. The types of taxes are Proportional, Progressive, and Regressive.

In addition to the lump sum tax, explains that there is a unit tax, which is the imposition of a tax per unit of each item purchased, and an ad-valorem tax, which is a tax imposed as a proportion of each amount purchased. A good tax system must meet the following criteria a: Fair distribution of the tax burden, following a reasonable portion, as little as possible interference with market mechanisms, able to correct private sector inefficiencies, the tax structure must be capable of being used in fiscal policy, and the system must be understood by taxpayers like Administration and implementation costs should be minimal and Is certain, can be implemented, and acceptable.

Rosen and Ted Gayersaidn that the tax burden can be transferred to other parties, someone who pays a tax burden that should not be borne by himself is called a tax impact and

this event is known as the tax incident theory which is generally divided into three concepts of the tax burden are: the analysis only gives effect to one type of tax on the distribution of people's income without looking at the distributional effects of other types of taxes or the consequences of a government program, and then balanced budget, analyzing the effect of tax distribution on government spending originating from taxes in the same amount, so differential, analyzing various financing alternatives with taxes on a government program in the same amount. From the point of view of public economics, the definition of the economy (direct tax or indirect tax) is imprecise because a shift in a tax depends on 4 economic factors, namely: elasticity of supply; demand elasticity; forms of payment, and motivation of entrepreneurs.

Another situation that explains the tax incidents is that there are tax incidents from each taxing unit imposed on consumers or producers and tax incidents from each taxing unit depend on how elastic the demand for and supply of an item is. Thus it concludes previous theories, what is adhered to by the tax system in Indonesia, namely following what was conveyed by Peacock and Wiseman, that the government always tries to increase its spending by relying on increasing revenue from taxes, even though the public does not like paying large taxes to finance the increasing government spending. The increase in tax revenue causes Government spending is also increasing. Under normal circumstances, an increase in GNP causes greater government revenue, as well as greater government spending. Peacock and Wiseman based their theory on a theory that society has a level of tax tolerance, namely a level where people can understand the amount of tax levy required by the government to finance government spending. So people realize that the government needs funds to finance government activities so that they have a level of community readiness to pay taxes.

This level of tolerance is an obstacle for the government to increase tax collection arbitrarily. In Peacock and Wiseman's theory, there is a displacement effect, namely social disturbances that cause private activities to be transferred to government activities. Alleviation of disturbances is not only enough to be financed solely with taxes, so the government must borrow funds from abroad. After the problem is resolved comes the obligation to pay off debt and pay interest. Increasing government spending is not only because GNP has increased but because of these new obligations. A further consequence is that taxes do not decrease back to their original level even though the interruption has ended.

In more recent work, Peacock and Scott underlined how an examination of the relevant articles reveals ignorance both of Wagner's definition of "state activity" and of his insistence that he was not engaged in prediction. There are several large multi-country studies, which

have reached mixed results. Although several studies test Wagner's law for single countries, panel data analyses are almost absent. Bachas et al., (2020) generate panel-based estimates of the degree of cyclicality in government consumption, transfers, subsidies, and tax revenues. Their results suggest that the current government. Expenditures increase during recessions, mainly due to an increase in transfers, the recession were primarily caused by direct effects of the pandemic, rather than resulting from labor market disruptions.

Current tax conditions cannot cover all state spending, the state is always in debt to cover development needs. In theory, short-term foreign debt can increase current income due to greater aggregate demand, but in the long term it does not change income or future consumption because of the smaller capital stock and lower incomes, so the foreign debt will be larger in the long run. This view will burden future generations of society (Mankiw, 2006).

Indonesia is considered to be lacking in maximizing the object of tax collection, so it must strengthen the basis for tax collection, namely looking for new tax objects and utilizing residents who have not been registered as taxpayers, so that tax objects are spread widely and the tax potential and state finances increase, according to David Ricardo. the state comes from the deepest component and as stated by Adam Smith that competent human resources can be maximized to increase state revenues.

Keynes had a nuanced view of taxation, which evolved. In general, he believed that taxation could be an effective tool for government intervention in the economy, but that its effectiveness would depend on the particular circumstances of the economy and the goals of the government. One of Keynes' early contributions to tax theory was his argument that in times of economic downturn, the government should increase spending and reduce taxes to stimulate demand and encourage economic growth. This idea was known as the "fiscal stimulus" and is now a commonly accepted tool for governments to use during recessions (Bossone, 2021).

Keynes also believed that taxes could be used to redistribute wealth and promote social justice. He argued that progressive taxation, which taxes higher-income individuals at a higher rate than lower-income individuals, was an important way to ensure that the benefits of economic growth were shared more equally throughout society. In later years, Keynes became more skeptical of the ability of taxation to effectively manage the economy. He argued that tax policy was subject to political pressures and that politicians often made decisions based on short-term interests rather than long-term economic goals. He also recognized that taxes could create disincentives for economic activity and that excessive taxation could lead to economic

inefficiencies. Overall, Keynes believed that taxation could be a useful tool for managing the economy, but that it needed to be carefully balanced with other policies and should be implemented with a clear understanding of its potential benefits and drawbacks (Eggertsson & Petracchi, 2021).

According to Keynesian economics, taxes and government spending are closely related. Keynes believed that government spending could help boost economic activity and stimulate demand during times of economic downturn, but that this spending had to be financed through taxes. Keynes argued that during a recession, when private demand is low, the government could step in and increase its spending on infrastructure, social welfare programs, and other initiatives. This increased government spending would create demand and stimulate economic activity, which would then lead to job creation, increased consumer spending, and economic growth (Backhouse, 2021; Bossone, 2021; Eggertsson & Petracchi, 2021; Henrique et al., 2020; Sari Aksakal, 2020). However, Keynes recognized that this increased government spending would have to be financed through taxes. He believed that taxes could be used to redistribute income and promote social justice, but also recognized that taxes could create disincentives for economic activity and lead to economic inefficiencies. Keynes saw taxes and government spending as complementary tools for managing the economy. In times of recession, the government could increase its spending to stimulate economic activity, but this spending would have to be financed through taxes, which could also be used to promote social justice and other important goals (Correa, 2021).

METHODS

This study uses a time series model, that is: is a forecast of future values based on past values of a variable and past mistakes. Time series models are usually used for forecasting. The research method used is quantitative descriptive, using the Eviews test tool. This study uses a research period from 1988 to 2021, especially after the Covid-19 pandemic in Indonesia from 2020-2021 state revenue from taxes was severely disrupted. The variables suspected to affect tax revenue are; the ratio of agriculture to GDP, the ratio of the industrial sector to GDP, total foreign debt, money supply, the ratio of the villagers to the total population, and the ratio of total export and import trade to GDP. So the model in this research is :

$$TR = \beta_0 + \beta_1 GDP_t + \beta_2 M2_t + \beta_3 Pop_t + \beta_4 XM_t + e_t(1)$$

Explanation :

TR: tax revenue, GDP: Gross Domestic Product, M2: money supply, Pop: population, XM: export and import. This study has a hypothesis (estimation) about the influence of the independent variables used to have a relationship that can affect the dependent variable, the hypothesis is as follows; H₁: Gross Domestic Product can affect tax revenue, H₂: money supply can affect tax revenue, H₃: Population can affect tax revenue, H₄: export and import can affect tax revenue.

This study was analyzed and estimated using the ordinary least square method (OLS), which is one of the methods that can be used to estimate parameters in regression analysis. The working principle of OLS is to minimize the sum of squares error, data must be normally distributed, and there is no problem with multicollinearity, heteroscedasticity, and autocorrelation. If all assumptions are met then the estimation result with OLS is said to meet the Best Linear Unbiased Estimator properties (BLUE)(Gujarati, 2003).

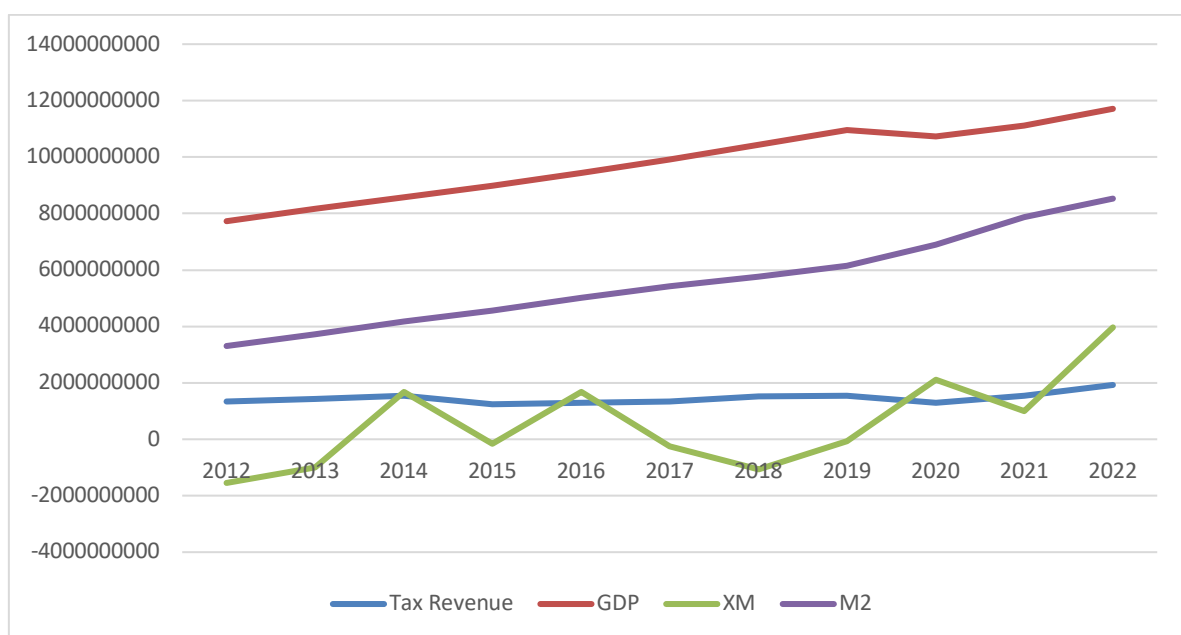
Because at the beginning of testing this research experienced problems with the classical assumption test, such as the occurrence of bias problems in the heteroscedasticity and autocorrelation tests, causing the BLUE (Best Linear Unbiased Estimators) assumption to be fulfilled, so to overcome these problems a further classical assumption test was carried out using the regression model estimation method. Newey-West HAC (heteroscedasticity and consistent autocorrelation) standard error or more commonly called Newey-West HAC. Newey-west HAC is not only for large samples but can also be used for small samples (Gujarati, 2003). In estimation, this study no longer contains heteroscedasticity and autocorrelation problems, so that no further classical assumption testing is needed, but it can still carry out hypothesis testing based on the T or F distribution. The potential biases or limitations of this method, size of the sample used for regression analysis can affect the statistical power and precision of the estimates. With a small sample, it may be challenging to detect significant relationships or obtain reliable coefficient estimates.

RESULT AND DISCUSSION

GDP usage in 1984 was 25%, then increased in 1996, which amounted to 26.12%, but due to the economic crisis that hit Indonesia, in 1998-1999 the percentage of net exports decreased to 25.5%. Exports and imports contribute to growth in Indonesia by 1.25%, and the total revenue of Indonesian state tax on exports and imports since 2010 accounted for approximately 30% and increased in 2016 to a total of 36%. Indonesia's export value reached 374 billion in December 2016, an increase of 27.58 percent over the previous year's period of

US \$ 293 billion. The most exported commodities from Indonesia to various countries throughout 2016 were crude palm oil and coal, while for 2017 commodity wood press increased the number of exports. Whereas given its role in Indonesia's total non-oil and gas imports during 2016, mechanical aircraft engines provide the largest role at 17.99 percent, followed by machinery and electrical appliances at 15.15 percent, iron, and steel at 8.80 percent, the vehicle, and share is 5.98 percent, organic chemicals by 5.54 percent, plastic, and plastic goods by 4.16 percent, and iron and steel goods of 3.27 percent (Darman, 2013).

Figure 2. Tax Revenue, GDP, XM & M2 Growth in Indonesia Year 1988-2021



Source: Central Agency on Statistics of Indonesia (2022)

According to a report from the Ministry of Finance (Ministry of Finance), Indonesia's tax ratio in 2021 is 9.11% of GDP. Even though it has increased compared to 2020, Indonesia's tax ratio in 2021 is still below the pre-pandemic level as shown in the chart. In 2017 Indonesia's tax ratio was at the level of 9.89% of GDP. The figure then increased to 10.24% in 2018, then fell to 9.77% in 2019, and dropped further to 8.33% in 2020. 2020 was the year in which Indonesia's tax ratio decreased the most. This happened because of the Covid-19 pandemic which limited people's economic activities, while in 2021, Indonesia's tax ratio will begin to increase in line with the strengthening of tax performance and the recovery of the national economy from the impact of the pandemic. The decline in the tax ratio was caused by the weakening Indonesian economy.

The economy grew by 5.02%, even though this realization was lower compared to 2018

at 5.17%. The dependence on natural resources and commodities to drive Indonesia's economic activity makes the economy sensitive to fluctuations in commodity prices on international markets. When it hurts the economy, tax revenues in turn will also decrease. In DGT's tax policies, they mention 3 policies, even though these 3 policies have trade-off impacts on tax revenues and tax ratios. The first policy is the PTKP limit of IDR 54 million. The income that does not include tax in Indonesia has as much as 108% of the average population income per year. Second, the taxable entrepreneur's turnover limit is IDR 4.8 billion. As a result of increasing PKP limits, more and more Taxpayers are not confirmed as PKP so many goods and services delivered in Indonesia are not subject to VAT. Third, the MSME Final PPh scheme fell from 1% to 0.5% and reduced the potential for PPh revenue in the short term. In administration, DGT faces challenges in terms of organization, human resources, business processes, and regulations. Tax regulations are still not optimal in terms of legal certainty, fairness, and support for increasing tax revenues.

Result

Table 1. Results of Time Series Regression Using the HAC Method

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	78726.20	2390.890	0.887271	0.4151
GDP	0.676281	0.008372	8.000291	0.0002
M2	0.291887	0.038729	3.271620	0.0049
POP	-0.000002	0.000762	-0.392873	0.4566
XM	0.192803	0.045361	3.887366	0.0245
R-squared			0.994809	

Source: Secondary data output after processing, 2022; (Indri, 2022)

The R-Square value shown in table is 0.994, this means that between the independent variable and the dependent variable, there is a connection, and explains that the overall dependent variable can influence the independent variable equal to 99% in this research model.



Table 2. Summary of hypothesis

Variable	Coefficient	T-Statistics	T-Table	Probability	Significance	Support For Hypothesis
H1:GDP →Tax revenue	0.676281	8.000291	2.04523	0.0002	Significance	Yes
H2:M2 →Tax revenue	0.291887	3.271620	2.04523	0.0049	Significance	Yes
H3:POP →Tax revenue	-0.000002	-0.392873	2.04523	0.4566	Insignificance	No
H4:XM→Tax revenue	0.192803	3.887366	2.04523	0.0245	Significance	Yes

Source: Secondary data output after processing, 2022; (Indri, 2022)

This study has used the Newey-West HAC method, so there is no need for testing classical assumptions. The next test is the T-test and F test, below are the results of the two tests :

Table 3. T-Test Results

Independent Variable	Coefficient	T-Statistics	T-Table	Probability	Information
GDP	0.676281	8.000291	2.04523	0.0002	Significance
M2	0.291887	3.271620	2.04523	0.0049	Significance
POP	-0.000002	-0.392873	2.04523	0.4566	Insignificance
XM	0.192803	3.887366	2.04523	0.0245	Significance

Source: Secondary data output after processing, 2022; (Indri, 2022)

Based on table can be seen that the independent variables that have a t-statistic value greater than the t-table and which have a significant influence on total tax revenue are variable GDP, M2, and XM.

Table 4. F-Test Results

Dependent Variable	F-Calculate Value	F-Table Value	Information
Total Tax	11092,44	0.2102	Significance

Source: Secondary data output after processing, 2022; (Indri, 2022)

Based on table by comparing the f-count with the f-table value, it is known that in this research model, $f\text{-count} > f\text{-table}$, thus indicating that all that the regression model in this study is suitable for use, the selection of independent variables can also explain its influence on the dependent variable.

Discussion

The results in table show that the variables that have a significant influence on tax revenues are GDP (Gross Domestic Product), M2 (money supply), and XM (Exports and Imports). The occurrence of fluctuations in GDP revenue can reflect how the state of the economy and the increasing growth of the business sector in the GDP can support a good economy in a country, of course, a good country will have an increasing trend of GDP revenue in each sector of the business field (Handoko, I., Aimon, H., & Sofyan, 2013). The population does not show its effect, this is because if we look at the situation regarding the large population it does not guarantee high tax revenue, this is because not all taxpayers are willing to register themselves as taxpayers, most of them are not willing to pay taxes from some of the income they receive, this is because according to him it will reduce his welfare.

Most of the economic activities are mostly engaged in production and consumption. However, it's often difficult for the government to detect any existing business entities, then this will have an impact on the lack of maximum income tax on corporate income, so the government maximizes through building land tax, value-added tax, and international tax. Another problem that the government encounters are the difficulty of determining the income of traders. Therefore, it will have an impact on the receipt of personal income tax that is less than the maximum. Each sector of the economy has a different industry share to increase tax revenues, For example, the agriculture, agricultural activities are difficult to be objects of taxation, especially there are have low income, which is most agricultural activities are regulated on a small scale, there are many farmers do not want to rely on the industry for further farming, so triggering to lower tax revenues (Agbeyegbe et al., 2006).

On the other hand, positive relationships can be expected between industry and services for tax revenue. Manufacturing companies are usually easier to tax objects because business



owners have bookkeeping that follows accounting practices through the processing industry and can also increase personal income tax, corporate income tax, and, every single output that can make VPN Tax (Brooks, 2002).

The export and import variables in this study also have a positive and significant effect on tax revenue in Indonesia, with a coefficient value of 0.084 and a probability value of 0.03. By looking at the real situation in Indonesia, the main destination of Indonesia's non-oil and gas exports is the first to United States (US) valued at US 15.68 billion or a market share of 11.94 percent, the second is China with a market share of 11.49 percent worth US \$ 15.10 billion, and the third is Japan worth US \$ 13.21 billion with a market share of 10.06 percent (Darman, 2013).

M2 variable is also a significant variable to tax revenue in Indonesia, this is seen with the coefficient value of 0.08 and probability value of 0.036. M2 has an influence on tax revenues in Indonesia, with the increase in the amount of money circulating in the community, it can be interpreted that the community is very consumptive to meet their daily needs. This consumptive nature can make someone more likely to satisfy his needs, with someone who is consumptive it will be easy to be charged as a tax potential. All goods that someone buys must contain a tax value, so it can potentially increase total tax revenue (Mahdavi, 2008).

The variable of the population (Pop) in this research has a negative and not significant effect on tax revenue with a coefficient number equal to -0.005 and Probability equal to 0,363, this means that for every increase in population is 1%, then tax revenue will decrease by 0.005. Indonesia's population in 2017 amounted to 262 million people, while those registered as taxpayers amounted to 36,031,972, increasing population in Indonesia is not accompanied by an increase in the number of taxpayers, this causes a lack of maximum absorption of tax potential. There are still many people who neglect their obligations to pay taxes and have low knowledge of the community to participate in becoming a taxpayer. The government must make more efforts to increase the awareness of the people about the importance of paying taxes, and improvements to the tax system to make it easier to understand and accessible to all taxpayers (Carlson, 2023; Carrera, 2023; Di Muzio, 2023; Olanrewaju & Funlayo, 2021; Rössner, 2023).

The things that make low taxpayers are how to fill out a registration system that relies on volunteers or willingness. Public ignorance of this tax system is low, so the number of registered taxpayers will also be low, and another factor is the government which is considered

not to have created the NPWP as a registration system that is more easily digested by the public. The government's extensification and intensification programs are deemed not to target the new tax market share that is much more needed today (Suhendra, 2010).

CONCLUSION

This study explains that GDP is the main independent variable which is the focus of research and has proven to have a very positive and significant effect on tax revenues in Indonesia. This is supported by the real conditions that exist in Indonesia where every year GDP increases in revenue, besides that 17 business sectors in GDP can be further explored by the government as new tax potential. In addition, the agricultural sector has begun to switch to processing agricultural products with the industrial sector playing an important role in tax revenues in Indonesia and making it easier for agricultural products to be exported abroad.

Export-import (XM) is the control variable which also has an influence on tax revenues in Indonesia. Seeing these export conditions certainly makes the government eager to accommodate exporters to expand the market share of merchandise, then the large number of foreign products that are allowed to be sold in Indonesia can also provide additional state revenue through import taxes. Another influential control variable is the money supply (M2). The more consumers want to shop, the greater the influence of the flow of money on demand and supply on tax revenues. The tax that applies here is in the form of VAT on sales and buyers, the more products that are in demand by consumers, the more supply is offered by producers, so from the producer and consumer side they can increase taxes

In the context of handling the Corona Virus Disease Pandemic that has occurred since 2020, tax revenue has decreased, and facilities for reducing the nominal percentage of tax collection have been provided by the government, such as the facilities provided in PMK No. 28, including in the form of free VAT facilities for government agencies/agencies, Hospitals, which import Taxable Goods in the form of medicines, vaccines, laboratory equipment, detection devices, personal protective equipment, patient care equipment, or other tools to handle the Covid-19 pandemic.

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