

Analysis of the Effect of Gross Domestic Product and Total Population on State Tax Revenue (2016-2020)

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Abstract

Taxes are the main sector that provides income to the state, from which these funds will be used to finance the running of various sectors in Indonesia. Therefore, to advance the country a policy is needed by optimizing tax revenue, and each taxpayer must fulfill its obligation to pay taxes. The purpose of this research is to determine the factors that influence the amount of national tax revenue in Indonesia. From the theory obtained and from several previous studies, there are several factors that influence tax revenue, including the Gross Domestic Product (GDP) and population. The data used in this study are secondary data for the period 2016 to 2020 taken from the official website, namely the Central Statistics Agency (BPS) and the Ministry of Finance of the Republic of Indonesia, which are then analyzed using multiple regression analysis. The results of this research indicate that the gross domestic product (GDP) and population variables simultaneously and partially has an effect on state tax revenue at the 5% and 1% significance levels while when viewed through Islamic principles, Gross Domestic Product (GDP) reaches 80 percent so that GDP of Indonesia is recorded at around USD 1 trillion or equivalent to Rp. 14.04 trillion.

Keywords; Gross Domestic Bruto (GDP); Total Population; State Tax Revenue, Islamic Economic Principles.

Abstrak

Pajak adalah sektor utama yang memberikan pemasukan bagi negara, dimana dari dana tersebut akan digunakan untuk membiayai jalannya berbagai sektor di Indonesia. Oleh karena itu, untuk memajukan negara diperlukan kebijaksanaan dengan mengoptimalkan penerimaan pajak, dan setiap wajib pajak harus memenuhi kewajibannya untuk membayar pajak. Tujuan dari riset ini adalah untuk mengetahui faktor-faktor yang memberikan pengaruh terhadap jumlah penerimaan pajak nasional di Indonesia. Dari teori yang didapat dan dari beberapa penelitian terdahulu, ada beberapa faktor yang mempengaruhi penerimaan pajak, diantaranya adalah Produk Domestik Bruto (PDB) dan jumlah penduduk. Data yang digunakan pada penelitian ini merupakan data sekunder selama periode 2016 sampai 2020 yang diambil dari situs resmi yaitu Badan Pusat Statistik (BPS) dan Kementerian Keuangan Republik Indonesia yang kemudian dianalisis menggunakan analisis regresi berganda. Hasil riset ini menunjukkan bahwa variabel Produk Domestik Bruto (PDB) dan jumlah penduduk secara simultan dan parsial berpengaruh pada penerimaan pajak negara pada tingkat signifikansi 5% dan 1% sedangkan bila ditinjau melalui prinsip islami maka Produk Domestik Bruto (PDB) mencapai 80 Persen sehingga PDB Indonesia tercatat sekitar USD 1 triliun atau setara dengan Rp14,04 triliun.

Kata Kunci: Produk Domestik Bruto (PDB); Jumlah Penduduk; Penerimaan Pajak Negara, prinsip Ekonomi Islam.

Introduction

Taxes are one of the largest sources of state revenue that used to finance a country's expenditures, both for government operational costs and for infrastructure and state development. A country's tax revenues can prevent a country's budget deficit from rising and provide financing or a source of funds to overcome the impact of the economic crisis. Taxes issued by every person who is subject to tax will benefit those who pay taxes and by all Indonesian people for the achievement of welfare in the Indonesian state.

Based on the 2018 State Budget, tax revenues in 2016 were Rp. 1,285.0 trillion, in 2017 it was Rp. 1,472.7 trillion, and in 2018 it was Rp. 1,618.1 trillion. In the 2019 State Budget, tax revenue was obtained in the amount of Rp. 1,786.4 trillion. And in the 2020 State Budget, the temporary realization of the revenue component from taxation reached Rp. 1,282.77 trillion, Non-Tax State Revenue reached Rp.333.53 trillion, and the realization of Grants reached Rp.12.29 trillion. The growth in the realization of tax revenue and Non-Tax State Revenue was negative 19.71 percent and negative 17.23 percent, respectively based on the achievement of the temporary realization of the State Budget. *Perpres* 72/2020, Revenue from Taxation, Non-Tax State Revenue, and Grants reached 91.33 percent, 115.09 percent and 945.76 percent.¹

According to the Ministry of Finance in the 2020 KITA APBN, the role of tax revenue is becoming increasingly important in supporting *countercyclical* fiscal policy, as well as being an administrator for providing intensive taxation in order to maintain economic stability and National Economic Recovery. In the performance of tax revenue until the first quarter of 2020, the performance of PPN & PPnBM continues to show improvement, growing by 2.47 percent. Domestic PPN itself grew by a *double* digit of 10.27 percent. Several main types of non-oil and gas Income Tax (PPh) taxes such as Article 26 PPh and Final PPh also showed encouraging performance, growing by 24.59 and 9.75 percent, respectively, indicating improvements in consumption and economic activity, and employment, which can be seen in the performance of Article 21 PPh. which grew steadily at 4.94 percent. The following is tax revenue data for 2016 to 2020.²

A country can be said to experience positive economic growth if the quantity of goods and services produced by the country increases. However, in reality it is quite difficult to know how many goods and services a country produces in a certain period of time. Therefore, to measure economic growth or output growth, it is done by using changes in the monetary value (money) contained in the Gross Domestic Product (GDP). The higher the value of GDP,

¹ Meichio Lesmana, Siti Nurma Rosmitha, and Andika Rendra Bimantara, "Analisis Penerapan Etika Jual Beli Islami Dalam Meminimalisir Distorsi Pasar Pada Pasar Tradisional," *Islamic Economica Journal* 6, no. 2 (2020): 175–192.

² APBN KITA Kinerja dan Fakta 2020, *Kementrian Keuangan Republik Indonesia, Kaleidoskop 2020* (Jakarta, 2020).P. 61-62.

the people's per capita income also increases so that tax revenues will increase through income taxes and other taxes.³

In the Central Bureau of Statistics in the 2016-2019 Indonesian Gross Domestic Product (GDP) Report, it shows economic developments in the period 2016-2019 as measured by GDP at current prices and GDP at constant prices shows an increasing *trend*. GDP at current prices shows the structure of the economy based on business fields. Meanwhile, GDP at constant prices in 2010 shows the level of economic growth as a reflection of achievements in development. Quarterly GDP at current prices, the structure of the Indonesian economy by business sector from quarter to quarter did not change significantly during the 2016-2019 period. The Processing Industry Business Field provides the largest contribution every quarter with an average contribution of 20.06 percent. In addition, wholesale and retail trade, car and motorcycle repairs contributed an average of 13.06 percent, followed by agriculture, forestry and fisheries, which contributed an average of 13.04 percent and mining and quarrying 7.53 percent.⁴

In the development of Indonesia's GDP in the 2020 quarter, it shows that the Indonesian economy in the first quarter of 2020 compared to the first quarter of 2019 (y-on-y) grew by 2.97 percent. This growth is driven by all business fields. The highest growth was achieved by the Financial Services and Insurance Business Fields growing 10.62 percent, followed by Health Services and Social Activities growing 10.39 percent and Information and communication growing 9.80 percent. Indonesia's economic growth in the first quarter of 2020 compared to the previous quarter was influenced by seasonal factors in the fields of agriculture, livestock, hunting, and agricultural services where food crops grew expansively by 57.37 percent the effect of the rice and secondary crops harvest. This resulted in the Agriculture, forestry and fishery business fields growing by 9.46 percent. However, this growth rate was unable to contain the economic contraction in the first quarter of 2020 by 2.41 percent. Several business fields that grew positively include the Financial Services and Insurance Business Fields by 5.34 percent, Information and Communications by 2.97 percent, Health Services and Social Activities by 1.09 percent, and Real Estate by 0.49 percent.⁵

Populations can be grouped based on certain variables, for example by age, gender, religion, language, occupation or livelihood, place of residence and so on. One of the most frequently used grouping is population grouping according to age and gender. Grouping according to age and gender is useful in

³ Ginting, "Pengaruh Produk Domestik Bruto Dan Sbi Terhadap Penerimaan Pajak Di Indonesia," *Jurnal Ekonomi Kuantitatif* 1, no. 1 (2019): 28.

⁴ Badan Pusat Statistik Republik Indonesia, *Produk Domestik Bruto Indonesia Triwulan 2016-2020* (Jakarta, 2020).

⁵ *Ibid.*

helping to plan for the fulfillment of basic needs for the population according to the needs of each age group, both for food, clothing, education, health, employment and other needs.⁶

According to the Central Statistics Agency in the Official Statistics News was stated that, as a result of the population census in 2020, the total population of Indonesia in September 2020 was recorded at 270.20 million people. The result of the population census in 2020 compared to the 2010 population census show an increase in the population of 32.56 million people or an average of 3.26 million every year. In the last ten years (2010-2020) Indonesia's population growth rate is 1.25 percent per year. There is a slowdown in the population growth rate of 0.24 percent when compared to the population growth rate in the period (2000-2010) of 1.49 percent.⁷

Tax is a fiscal policy of a country and one of the largest sources of state revenue used to finance state expenditures, be it for development, infrastructure, and government and for the benefit of the people. Meanwhile, Gross Domestic Product (GDP) is a method used by the state to measure economic growth or *output* growth using changes in the value of money or monetary. In a country, positive economic growth can occur if the quantity of goods and services produced by the country increases. If economic growth continues to be positive, it will also affect the welfare of the people. People's welfare can be felt if development and economic equality can be carried out properly. Taxes are also an important instrument in the welfare of the people, if every citizen is obedient to paying taxes, the welfare of the people can be implemented quickly.⁸

In this study, we as authors intend to examine the effect of Gross Domestic Product (GDP) and Total Population on State Tax Revenue. With the formulation of the problem, namely: 1) does the Gross Domestic Product affect tax revenue in Indonesia? And 2). Does the population have an effect on tax revenue in Indonesia?

Definition of Tax

According to the Taxation Law No. 28 of 2007 in Mujiyati and Aris's book, taxes are mandatory contributions to the state owed by private parties or entities that are coercive under the law, without getting direct compensation and are used for

⁶ dan Steeva Tumangkeng Cerly M Mongdong, Vecky A J Masinambow, "Analisis Pengaruh PDRB, Jumlah Penduduk Dan Infrastruktur Terhadap Penerimaan Pajak Daerah Di Kota Tomohon 18" 1, no. 5 (2018): 204.

⁷ Badan Pusat Statistik Republik Indonesia dan Kementerian Dalam Negeri, "Berita Resmi Statistik Hasil Sensus Penduduk 2020", 2021.

⁸ Siti Nurma Rosmitha Meichio Lesmana, Ahmad Suminto, "pembiayaan property indent (kpr syariah) ditinjau dari maqashid syariah dan," *Journal of Islamic Economics and Philanthropy (JIEP)* 4, no. September (2021).

state needs for the greatest prosperity of the people. In accordance with the 1983 Taxation Regulations, the applicable taxes in Indonesia include: Income Tax (PPH), Value Added Tax (PPN), Stamp Duty (BM), Land and Building Tax (PBB), Land Rights Acquisition Fee and/or Building (BPHTB).⁹

Tax Revenue

Tax revenue is the dominant source used to finance the state for routine and development spending, the state revenue is one of the important components in the framework of independence in state development.¹⁰ Taxes are the largest domestic revenue from year to year, it can be seen that tax revenues continue to increase and contribute greatly to state revenues. Several efforts have been made by the government in order to increase tax revenue, including by carrying out tax reforms. The main objective of tax reform is to further uphold the country's independence in financing national development by further directing all potentials and capabilities from within the country, especially by increasing state revenues through taxation from various sources.

Definition of Gross Domestic Product

Gross Domestic Product (GDP) is a component of national income in addition to Gross National Product (GNP), Net National Product (PNN), National Income (NI), Personal Income (PI), and Personal Income Disposable. Sukirno described the notion of Gross Domestic Product (GDP) as the value of goods and services in a country produced by production factors belonging to the citizens of that country and foreign countries. Goods and services are produced not only by companies owned by residents of that country but by residents of other countries as long as the company is still operating in that country. More fully Gross Domestic Product (GDP) is explained by Latumaerissa as the total value of all goods and services produced by a country in a certain period or one year including goods and services produced by companies owned by residents of that country and by residents of other countries living in the country.¹¹

Mankiw formulates the calculation of Gross Domestic Product (GDP) as follows:

⁹ Bangun Eris Siki Sasongko, "Faktor-Faktor Yang Mempengaruhi Kemauan Untuk Membayar Pajak Orang Pribadi Yang Melakukan Pekerjaan Bebas Faktor-Faktor Yang Mempengaruhi Kemauan Untuk Membayar Pajak Orang Pribadi Yang Melakukan Pekerjaan Bebas" (Universitas Muhammadiyah, 2014).

¹⁰ Encep Herdiana Rachman Nalendra, *Pengaruh Produk Domestik Regional Bruto (PDRB) Dan Tingkay Inflasi Terhadap Penerimaan Pajak*, n.d.

¹¹ Irene Sarah Larasati dan Sri Sulasmiyati, "Pengaruh Inflasi, Ekspor, Dan Tenaga Kerja Terhadap Produk Domestik Bruto (PDB)," *Jurnal Administrasi Bisnis (JAB)*. 63, no. 1 (2018): 10–11.

$$Y = C + I + G + NX$$

Information:

Y	: Gross Domestic Product (GDP)	G	: Country shopping
C	: Consumption	NX	: Net exports
I	: Investment		

Definition of Population

The definition of population according to BPS (2015) is all people who live in a geographical area for six months or more and or those who live for less than six months but aim to settle down. High population growth rate will be able to increase output level and market expansion in both domestic and foreign markets. The addition of a high population accompanied by technological changes will encourage savings and also the use of economies of scale in production. Population increase is something that is needed and not a problem, but as an important element that can spur economic development and growth. The amount of income can affect the population, if the population increases then the income that can be withdrawn also increases.¹²

Previous Research

The following previous studies that are relevant to this research, including:

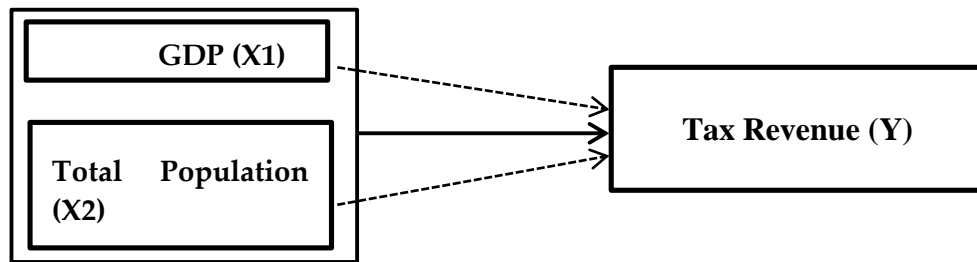
- a) Research entitled "Analysis of the Influence of *PDRB*, Population, and Infrastructure on Regional Tax Revenue in *Tomohon* City" made by *Mongdong, Masanimbow, and Tumangkeng*. With Multiple Regression analysis, this study found that *PDRB*, population, and infrastructure had no effect on the amount of tax revenue in the city of *Tomohon*.¹³
- b) Research by *Basheer, Ahmad, and Hassan* entitled "Impact of Economic and Financial Factors on Tax Revenue: Evidence from Middle East Countries". The result of the study found that there was a significant relationship between economic factors such as GDP growth, the ratio of bank capital to assets, risk premium on lending, net inflows of foreign investment to tax revenues in Middle Eastern countries.¹⁴

¹² Emi Masyitah, "Faktor-Faktor Yang Mempengaruhi Penerimaan PPN Dan PPnBM," *Accumulated Journal* 1, no. 2 (2019): 93.

¹³ Mongdong, Masinambow, dan Tumangkeng, Op.Cit, hal. 2016

¹⁴ Muhammad Farhan Basheer, Aref Abdullah Ahmad, dan Saira Ghulam Hassan, *Impact of Economic and Financial Factors on Tax Revenue: Evidence from the Middle East Countries*" *Accounting*, 2019, 53–60, <https://doi.org/10.5267/j.ac.2018.8.001>.

Framework of Thinking



Information:

: Partial

—————

: Simultaneous

GDP (X1), Total population (X2),

Tax revenue (Y)

Information: *partial, simultaneous*

Research Method

This study uses quantitative methods to analyze the data obtained, namely data on the level of Gross Domestic Product (GDP), Total Population, and Total Tax Revenue. The type of data used is secondary data where GDP data and total population are obtained from the Central Statistics Agency (BPS) report and the Total Tax Revenue data is obtained from the Ministry of Finance's Annual Performance Report. The research period is for five years namely 2016 to 2020 in the form of quarterly data. The secondary data obtained were processed using statistical tools, namely *Eviews* version 9, with a significance level of 5%. Quantitative data processing will apply basic rules in statistics and econometrics. Which includes descriptive statistical tests and multiple regression with the help of *Eviews* version 9. The data will also be tested for classical assumptions which include normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test and overall model test.¹⁵ Descriptive statistics is a part of statistics that studies the tools, techniques, and procedures used to explain and describe a collection of data or the results of research, the data collected needs to be presented to make it easier to understand, interesting, informative, and interesting for others.¹⁶ Multiple regression analysis is used to show the

¹⁵ Agus Widarjono, *Ekonometrika Pengantar dan Aplikasinya Disertai Panduan Eviews*, 5 ed. (Yogyakarta: UPP STIM YPKN, 2018).

¹⁶ Walpole, RE., Myers RH., *Probability & Statistics for Engineers & Scientists*, 9 ed. (Millan: Mac Millan Pub. Co.Inc, 2012).

mathematical relationship between the dependent variable and more than one independent variable.¹⁷

Data is collected by downloading all annual reports on the BPS and Ministry of Finance *websites* related to the required data. Then for data on population and tax revenues, interpolation is carried out first, this is because researchers need quarterly data while what is provided by the site is annual data.¹⁸ Interpolation is a technique for obtaining estimates or estimates of a point or value between known points. The data is processed using multiple regression processing techniques, where the type of data used is *time series* data. Based on the background and research objectives that have been described previously, the hypotheses in this study are:

1. Effect of GDP variable (X1) on tax revenue (Y)
H₀ : GDP has no effect on the amount of tax revenue
H₁ : GDP has an influence on the amount of tax revenue
2. The effect of the population variable (X2) on tax revenue (Y)
H₀ : The population has no effect on the amount of tax revenue
H₁ : The population has an influence on the amount of tax revenue
3. The effect of the variable GDP (X1) and population (X2) on tax revenue (Y)
H₀ : GDP and population simultaneously have no effect on tax revenue
H₁ : GDP and population simultaneously have an effect on tax revenue

To test the hypothesis above, the following is the research model that was built, namely:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Information:

- Y : Amount of Tax Revenue
X₁ : Gross domestic product
X₂ : Total population
 β_0 : constant
 β_i : Variable Coefficient
 ε : Error

¹⁷ Anton Bawono, Arya Fendha Ibnu Shina, *Ekonometrika Terapan Untuk Ekonomi dan Bisnis Islam Aplikasi dengan Eviews* (Salatiga: LP2M IAIN Salatiga, 2018).

¹⁸ Marinus Ignasius Jawawuan Lamabelawa, *Analisis Perhitungan Metode Interpolasi Pada Data Time Series Kemiskinan Di NTT*, 8, no. 1 (2018): 7.

Result and Discussion

Result

Table 1 displays the descriptive statistical values of all the variables used in this study. The mean value of Tax Revenue, GDP, and total population both have positive values, this indicates that there is an effect of GDP and population on tax revenue. The mean value of GDP is 3.66 which means that for five years from 2016-2020 the Indonesian economy grew by around 3.66% every quarter. The smallest GDP figure is -5.32% this happened in the second quarter of 2020, when at that time Indonesia had entered a difficult economic period due to the Covid-19 pandemic. Then the population shows an average of 66,026.44 people every quarter.

Table 1. Descriptive Statistics of Research Variables

	Obs	Mean	Std. Dev	Minimum	Maksimum
Tax	20	298,7225	31,27052	227,6873	342,3560
GDP	20	3,657500	3,232988	-5,320000	5,270000
Population	20	66.026,44	1026,886	64353,20	67649,96

Source: *Researcher data processing with Eviews 9*

Table 2 presents the final results of the research model regression. Simultaneous Test (F) was conducted to find out whether the independent variables together have an influence on the dependent variable. It can be seen from table 3, the probability value of F Statistics is 0.000189. These results indicate that at a significance level of 95% ($\alpha=5\%$), and a significance level of 99% ($\alpha=1\%$), the independent variables, namely GDP and Total Population, jointly affect the dependent variable, namely the Amount of State Tax Revenue. This means that tax revenue in Indonesia is influenced by Gross Domestic Product (GDP) and population.

Table 2. Research Model Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1245.381	384.5408	-3.238619	0.0048
GDP	9.867439	1.829225	5.394328	0.0000
Population	0.022840	0.005759	3.965870	0.0010
R-squared	0.635269	Mean dependent var	298.7225	
Adjusted R-squared	0.592359	S.D. dependent var	31.27052	
S.E. of regression	19.96520	Akaike info criterion	8.963340	

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Sum squared resid	6776.359	Schwarz criterion	9.112700
Log likelihood	-86.63340	Hannan-Quinn criter.	8.992497
F-statistic	14.80485	Durbin-Watson stat	1.252303
Prob(F-statistic)	0.000189		

Source: Researcher data processing with *Eviews 9*

Discussion

The Determinant Coefficient Test (R^2) is used to measure how much the regression line is owned, in this case what is measured is how big the proportion of the dependent variable is explained by all the independent variables. The greater the value of the determinant coefficient the better the dependent variable can be explained by the independent variable. Based on table 2 above, the R^2 value shows a value of 0.635269, this figure can be translated that the regression line in this study is very good at explaining that the variation of the independent variables of GDP and Total Population can affect the dependent variable Total State Tax Revenue by 63.53% and the remaining 36.47% influenced by other variables outside this research.

Then a partial test (t-test) was carried out how each independent variable had a significant or no effect on the dependent variable. From table 3, the information on the *probability* value of the GDP variable (X_1) is 0.0000 and the population variable (X_2) is 0.0010. This value indicates that at a significance level of 95% ($\alpha=5\%$), and a significance level of 99% ($\alpha=1\%$) each variable of GDP and population has a significant effect on the variable of state tax revenue.

Based on the research results, in general it is obtained the fact that GDP and Population have a positive effect on state tax revenues. Thus, the hypothesis that GDP has a positive effect on tax revenue is true. The results of this study are in accordance with research by Rahmanta (2020), and Mongdong (2018) which generally found that there was a positive effect of GDP on state tax revenues. Indirectly, this also does not support the results of Salebu's research (2018) which states that GDP has a negative effect on tax revenue. The population also shows a positive relationship to tax revenue, meaning that this is in accordance with research by Mongdong (2018), and Lestari (2016).

Table 2 shows the coefficient value of the GDP variable is 9.867 meaning that when the total GDP of Indonesia increases by 1% then the state tax revenue increases by 9.87% *ceteris paribus*. Based on previous theory and research, it can be explained that when there is a change in GDP, it indicates a change in income received and an increase in public consumption, an increase in GDP in this case is an increase in economic growth which then increases per capita income, from per capita income it will be followed by an increase in payments. Taxes by the public and ultimately increase the amount of state tax revenue. The results of this

research can be input for the government in Indonesia, in order to make the value of GDP a stimulus to increase the value of tax revenues in the future. The coefficient value of the population variable is 0.0023 it means that when the population increases by 1% then the total state tax revenue will increase by 0.0023% *ceteris paribus*. This is in accordance with previous research which stated that the larger the population, the higher the tax revenue. However, the coefficient figures show that they are not statistically significant, meaning that the growth in the total population does not have much effect on tax revenues. This result is in accordance with Mongdong's research (2018) which explains that this could be due to the large number of residents who have not been recorded neatly by the government so that the recorded taxes have not reached the optimal target.

Conclusions and Suggestions

Conclusions

The results of this study indicate that the Gross Domestic Product variable has an influence on state tax revenues. This can happen because if GDP increases then it indicates an increase in people's income, the possibility of increasing tax payments by the community which will ultimately increase state tax revenues. So the government can provide a stimulus to the industrial sector that affects the level of GDP and can increase it. Then the population variable also has a positive influence on tax revenue. However, the effect given is not statistically significant, this is presumably due to the untidy recording of the population which causes tax revenues to not reach the optimal target while when viewed through Islamic principles, Gross Domestic Product (GDP) reaches 80 percent so that GDP Indonesia is recorded at around USD 1 trillion or equivalent to Rp. 14.04 trillion.

Suggestions

As for the shortcomings of this research which can also be input for further research, this research does not take into account how the effects of the COVID-19 pandemic condition affect the economy. Islamic economic review is a part that needs to be followed up and applied to analyze gross domestic product (GDP). This study also does not examine the types of central taxes that are affected by the independent variables used. In addition, the limitation lies in the small number of samples used in 2016-2020. The study conducted by Hany focused on the problem of the effect of Gross Domestic Product (GDP) on the population. Therefore, it is necessary to have further studies by comparing several cases with different characters.

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