

Impact of COVID-19 Pandemic on Gross Domestic Product and Household Consumption in Indonesia

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Abstract— The welfare of the people is a major concern in handling the COVID-19 pandemic in Indonesia. Welfare in Indonesia can be reflected through the Gross Domestic Product (GDP) where household consumption has the largest portion in it. Using the quantitative research method of the two-mean paired difference test, this study aims to identify any significant average differences in GDP and household consumption before and during the impact of the COVID-19 pandemic in Indonesia. This study concludes that there is no significant average difference in GDP or household consumption before and during the COVID-19 pandemic. This condition can illustrate that government policies in dealing with COVID-19, especially economic recovery programs that are incentives to the people, are able to maintain household consumption levels and GDP.

Keywords—gross domestic product; economic growth; covid-19; household consumption; Indonesia

I. INTRODUCTION

COVID-19 first took the world's attention through cases that appeared in Wuhan, People's Republic of China in 2019, which then spread as pandemic, Indonesia included. Through a statement delivered directly by the President of Indonesia Joko Widodo and accompanied by the Minister of Health of the Republic of Indonesia and according to the video transcript of the press conference on March 2, 2020, COVID-19 has entered Indonesia with the detection of 2 positive COVID-19 patients who were exposed from citizens of Japan. [19]. As of the writing of this research, Indonesia is undergoing the second wave of the pandemic with a total record of 4,153,355 cases and 5,990 daily cases (COVID-19.go.id, September 9, 2021). Various measures have been implemented by the government through restrictions on community mobilization, fiscal stimuli and the National Economic Recovery Program (PEN) which aims to maintain domestic economic activity while still trying to minimize the spread of the COVID-19 virus.

Indonesia has experienced a contraction in economic growth in 2020 as a result of the pandemic. Indonesia's economic growth in the last 10 years has averaged 4.7%, but in 2020 Indonesia's economic growth was recorded to have contracted to 2.07% y.o.y [14]. The Indonesian economy, which is still dominated by the household consumption component up to 56.93% of the gross domestic product (GDP), causes the household consumption component to have a major contribution to economic growth and movement in Indonesia[15]

Economic growth can be interpreted as an increase in output per capita in the long term [12] or it can be expressed as an indicator that shows the extent to which economic activity can generate additional income for the people in a certain period [11]. Economic growth can be measured using GDP data[3]. The OECD[17] defines household consumption as the total of all public expenditures used to meet the needs of daily life such as food, shelter, energy, transportation, and others. In the global scope, household

consumption has the largest share of a country's GDP with the global average share of household consumption being 60% of GDP. This makes household consumption an aspect that requires imminent attention in efforts to maintain economic movement during the pandemic.

Various studies related to the impact of the pandemic on economic growth have been carried out in various countries in the world. In a global-scale study by Puaschunder[6], the limitations of community mobilization that occur cause the economy to slow down because the circulation of capital and the utilization of human resources as a component of driving economic growth is limited. Abodunrin, Oloye, & Adesola[1] concluded that judging from its impact, COVID-19 pandemic has negative effect on the global economy that is greater than during the 2008 global financial crisis and the Great Depression era. The output or GDP of a country will decrease, especially in the services, transportation, and tourism sectors[5]. Another study that examined regionally countries in the world showed that economic growth was negatively affected, especially in developing countries[7]. For affected countries, the pandemic indicator figures such as number of cases and deaths have a strong correlation to economic growth [4].

Ketertarikan terhadap penelitian juga muncul terhadap dampak pandemi terhadap konsumsi rumah tangga. Baker & Meyer[2] menemukan bahwa pada masa-masa awal pandemi konsumsi masyarakat sedikit meningkat karena tindakan preventif dan kebutuhan kesehatan, namun kemudian konsumsi turun drastis secara keseluruhan sepanjang pandemi. Kemudian, dengan meneliti negara-negara terdampak pandemi COVID-19, Susilawati, Falefi, & Purwoko[8] menyatakan bahwa dari berbagai aspek yang terdampak, konsumsi rumah tangga adalah komponen PDB yang terdampak paling signifikan. Secara historikal, Wu[9] melakukan penelitian terhadap 138 negara dengan data kurun waktu 1996-2017, dan memperoleh kesimpulan bahwa ketidakpastian yang disebabkan pandemi mempengaruhi konsumsi rumah tangga secara negatif.

Interest in research has also emerged on the impact of the pandemic on household consumption. Baker & Meyer[2] found that in the early days of the pandemic, people's consumption increased slightly due to preventive measures and health needs, but then consumption fell drastically overall throughout the pandemic. Then, by examining countries affected by the COVID-19 pandemic, Susilawati, Falefi, & Purwoko[8] stated that among all various aspects affected, household consumption was the component of GDP that was most significantly affected. Historically, Wu[9] conducted a study of 138 countries with data from 1996-2017, and concluded that the uncertainty caused by the pandemic negatively affected household consumption.

This study aims to analyze the impact of the COVID-19 pandemic on GDP and household consumption in Indonesia. The GDP variable is taken because it describes the economic performance of a country in a certain period, and the household consumption variable is taken because it has a significant portion of GDP.

Researchers hoped that the results of this study can provide general views and insights regarding the condition of Indonesia during the pandemic to financial practitioners and public policy makers, especially in economic recovery during the COVID-19 pandemic. This research is also expected to trigger other similar research by using other indicators to gain new perspectives.

II. MATERIAL AND METHODS

2.1 Economic Growth

Indonesia is a country with an open economy, so in the expenditure approach, GDP (Y) can be calculated using Keynes' theoretical framework with components of private consumption (C), Private Investment (I), Government Expenditure (G), and net export value (XM)[13]. The formulation can be described as follows:

$$Y = C + I + G + (X-M) \quad (1)$$

2.2 Household Consumption

The Central Bureau of Statistics of the Republic of Indonesia (BPS) defines household consumption expenditure as expenditure on goods and services by households for consumption purposes. In this case, the household functions as the end user (final demand) for various types of goods and services available in an economy. Through (1), it can be seen that household consumption is a component of GDP calculation.

2.3 Research Model

The research framework model used can be seen in Chart 1. The study used two independent variables to be tested for two average differences with paired samples, namely before and during the COVID-19 pandemic in Indonesia.

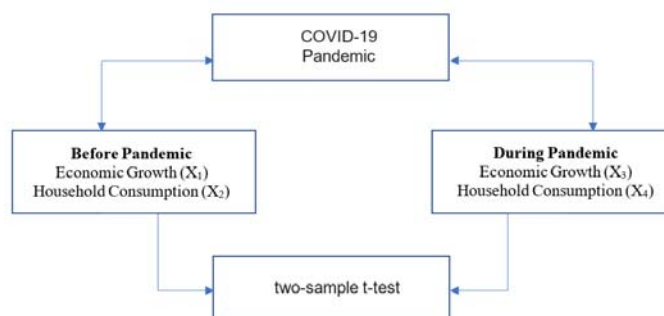


Figure 1. Kerangka Penelitian

2.4 Hypothesis Development

1. Sikder, Zhang, & Ahmod[7] examines countries in the world regionally and shows that the economic growth of all countries is negatively affected as indicated by a decline in GDP, especially in developing countries. Based on these conclusions, the following hypotheses can be formulated::

H₁ : There is a significant average difference between Gross Domestic Product before and during the COVID-19 pandemic

2. Susilawati, Falefi, & Purwoko[8] concluded in his research that the COVID-19 pandemic had a negative impact on the Indonesian economy in various sectors. The sector that was most significantly negatively affected was the household consumption sector. Based on these conclusions, the following hypotheses can be formulated:

H₂ : There is a significant average difference between household consumption before and during the COVID-19 pandemic

2.5 Sample and Data Collection Method

In this study, data collection was carried out using literature study techniques and purposive sampling from secondary data published by Bank Indonesia and the Central Bureau of Statistics of the Republic of Indonesia. The initial data used is current price data from GDP and Indonesian household consumption in the period 1 quarter of 2019 to quarter 2 of 2021, totaling 5 pairs of data for each dependent variable. Purposive sampling is a data collection technique with certain criteria. The current price data is used because it is more real in describing the conditions for a relatively short period of time. The data is then interpolated into monthly data using the quadratic match sum method using the Eviews 9 application so that 15 pairs of data are obtained for each dependent variable.

The criteria used in sampling are the amount of data and the same period as the midpoint of the start of the pandemic in Indonesia. The end point for the sample data period is the 2nd quarter of 2021 as the latest data output from Bank Indonesia and the Central Statistics Agency of the Republic of Indonesia (BPS) when the author conducted this research.

2.6 Data Analysis Method

Analysis of the data used in this study is a statistical analysis of the two-average paired difference test with a small sample or Paired Sample T-Test. The difference test is carried out by comparing two calculated averages (means), whether there is a significant difference between before and after a treatment (COVID-19 pandemic). The significance level used is 5% as the level commonly used in socio-economic research. Before conducting the two-mean difference test in pairs, a descriptive statistical analysis was carried out on all variables to provide an overview regarding the characteristics of each research variable. Both tests were performed using the IBM SPSS Statistics 25 program.

III. RESULT AND DISCUSSION

3.1 The Result of Hypothesis Testing

Descriptive statistical analysis was conducted on all variables, both GDP and household consumption before the Paired Sample T-Test was performed. Descriptive statistical analysis was conducted to provide an overview of the characteristics of each research variable. Then the difference test of two paired averages is carried out by comparing two calculated averages (means) to determine whether there is a significant difference between before and after a treatment (COVID-19 pandemic). The significance level used is 5%.

(1) Difference Test of Two Average Gross Domestic Product Variables

The difference test of two paired averages on the GDP variable was carried out with a significance level of 5%.

Table 1 Paired Samples Statistics-1

	Mean	N	Std. Deviation	Std. Error Mean
BEF_PDB	1317.1000	15	36.32930	9.38019
DUR_PDB	1310.4333	15	55.77241	14.40037

Based on the results of descriptive statistics for the GDP variable, Indonesia's GDP before the pandemic had an average of 1317.10 out of 15 data, a standard deviation of 36,32930, and a standard error of 9.38019. Meanwhile, Indonesia's GDP during the pandemic had an average of 1310,4333 from 15 data, a standard deviation of 55,77241, and a standard error of 14,40037. Average GDP is known to decline during the COVID-19 pandemic.

Table 2 Paired Samples Test-1

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
BEF_PDB - DUR_PDB	6.66667	53.51544	13.81763	-22.96919	36.30253	.482	14	.637

H₁ : There is a significant average difference between Gross Domestic Product before and during the COVID-19 pandemic

The results of the two-mean paired difference test on the GDP data reflected in table 2 states that the pairwise mean difference is 6.66667 with a standard deviation of 53,51544 and an average standard error of 13,81763. The difference in average is between -22,96919 and 36,30253 (significance 5%) and the significance value for 2-tailed is 0.637 or greater than alpha.

(2) Difference Test of Two Average Household Consumption Variables

The difference test of two paired averages on household consumption variables was carried out with a significance level of 5%.

Table 3 Paired Samples Statistics-2

	Mean	N	Std. Deviation	Std. Error Mean
BEF_KRT	749727.0867	15	21085.21262	5444.17849
DUR_KRT	745279.0467	15	19650.74178	5073.79971

Based on the results of descriptive statistics for household consumption variables, Indonesian household consumption before the pandemic had an average of 749727.0867 from 15 data, a standard deviation of 21085.21 and a standard error of 5444.17849. Meanwhile, Indonesian household consumption during the pandemic had an average of 745279.0467 from 15 data, a standard deviation of 19650.74178, and a standard error of 5073.79971. Average household consumption is known to decline during the COVID-19 pandemic.

Table 4 Paired Samples Test-2

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
BEF_KRT - DUR_KRT	4448.0400	12136.17606	3133.54718	-2272.75028	11168.83028	1.419	14	.178

H₂ : There is a significant average difference between household consumption before and during the COVID-19 pandemic

The results of the two-mean paired difference test on household consumption data as reflected in table 4 states that the paired mean difference is 4448,04000 with a standard deviation of 12136,17606 and an average standard error of 3133,54718. The difference in the average difference between -2272.75028 and 11168,83028 (significance 5%) and obtained a significance value for 2-tailed of 0.178 or greater than alpha.

3.2 Discussion

This study aims to examine whether there are significant differences in GDP and household consumption in Indonesia before and during the COVID-19 pandemic. Several studies that have been conducted previously can be used in the process of formulating this research hypothesis. Through research on regionally affected countries, Sikder, Zhang, & Ahmod[7] concluded that the economic growth of all countries was negatively affected as indicated by a decline in GDP, especially in developing countries. Junaedi & Salistia [4] also concluded in their research that the parameters of the COVID-19 pandemic affected economic growth in various affected countries ($R^2 = 0.6273$), both developed and developing countries. In fact, the negative impact will increase with the increase in the number of cases and the amount of debt to the affected countries. In terms of household consumption, Susilawati, Falefi, & Purwoko[8] concluded that the household consumption sector is the sector most affected by the COVID-19 pandemic in both the load and worst-case scenario. Wu [9] stated that the uncertainty caused by the pandemic negatively affects household consumption in developing countries (including Indonesia) with a Feasible Generalized Least Square (FGLS) coefficient of -0.131.

The hypothesis test shows that although the descriptive statistical results of the GDP variable indicate a decrease in the average GDP during the COVID-19 pandemic, the results of the two-differentiated average paired GDP variable test indicate that the 2-tailed significance value is 0.637 or greater than alpha. Based on this figure, it can be concluded that there is no significant difference in average GDP between before and during the COVID-19 pandemic. This conclusion is not in line with the results of research by Sikder, Zhang, & Ahmod[7] and Junaedi & Salistia[4]. For household consumption variables, although the results of descriptive statistics indicate a decrease in the average household consumption during the COVID-19 pandemic, in the two-tailed test results the average 2-tailed significance value is 0.178 or greater than alpha. This means that there is no significant difference in average household consumption from before and during the COVID-19 pandemic. These results are not in line with the results of research by Susilawati, Falefi, & Purwoko[8] and Wu[9].

The COVID-19 pandemic has caused economic turmoil in various countries in the world, both developed and developing countries. To overcome this, the provision of stimulus is carried out by various countries in the world. For example, in early 2021 President Biden signed into law "The American Rescue Plan" worth USD 1.9 trillion to revive the American economy[20]. Malaysia

in 2021 is noted to have approved four stimulus packages worth IDR 784 trillion with a focus on maintaining the sustainability of small and medium enterprises and direct cash transfers to vulnerable groups[21]. Similar stimulus policies were also implemented by Indonesia in the context of economic recovery during the COVID-19 pandemic and researchers believe that the recovery program will help boost the economy and household consumption in Indonesia..

Government policies in economic recovery in Indonesia are carried out through synergy between Bank of Indonesia (BI), the Financial Services Authority (OJK), and the Ministry of Finance of the Republic of Indonesia. Based on joint press releases numbered SP No.23/93/DK, SP 18/DHMS/OJK/4/2021, and SP-33/KLI/2021, the Ministry of Finance of the Republic of Indonesia stated that the realization of the National Economic Recovery Program (PEN) in 2020 reached IDR 579.80 trillion. The program is dominated by the provision of vaccines, incentives for health workers, and COVID-19 treatment in sum of IDR 62 trillion; social protection and assistance for vulnerable communities worth IDR 216 trillion; MSME capital assistance and guarantees worth IDR 172 trillion; and tax incentives in sum of IDR 58 trillion to maintain business continuity and maintain people's purchasing power[22]. The policy is part of the counter-cyclical policy implemented in the 2020 State Budget (APBN) to deal with the COVID-19 pandemic. Brownbridge & Canagarajah[10] believe that an effective countercyclical policy will be able to shorten the recession period caused by crisis. Without this economic recovery program, the World Bank estimates that 8.5 million Indonesians will fall into poverty[18]. In an effort to continue to restore the economy, the Government of Indonesia has increased the target of the PEN program to Rp 744 trillion in 2021, which is still focused on social protection, health, and the handling of COVID-19 pandemic[23]. All of these recovery programs have an impact on fiscal consequences where there is a spike in government spending for the 2020 fiscal year by 12.4 percent compared to the realization of government spending in 2019[16]. This form of recovery policy is in accordance with Wu's opinion [9] who believes that an increase in state spending to maintain people's purchasing power will be able to help maintain a country's economic performance during crisis, especially in terms of household consumption.

Based on the elaboration of recovery above, it can be said that Indonesia's economic recovery efforts were able to maintain the level of GDP and household consumption at a relatively stable level. This statement is supported by the results of this study which concludes that there is no significant average difference in GDP or household consumption between before and during the COVID-19 pandemic in Indonesia.

3.3 Implications

This research has managerial implications, especially for formulators and public policy actors in Indonesia. Especially in measures to recover the economy during the COVID-19 pandemic. This research can provide a perspective in determining priority sectors in economic recovery and determining the focus of a limited budget. In terms of theoretical implications, this research can provide a certain point of view in case studies of the impact of the pandemic on the country's economy, as well as triggers for other similar studies.

3.4 Limitations

This research is limited to the object of economic indicators and conditions in Indonesia. In addition, this study has limitations in terms of available data. Until the time of the research conduct, the data available was only until the 2nd quarter of 2021. The longer the data that can be used, the more representative the research will be, and even different conclusions can be drawn.

IV. CONCLUSION

This study resulted in the main conclusion that there was no significant average difference between before and during the COVID-19 pandemic in Indonesia on the variables of GDP and household consumption..

With its dominant proportion of Indonesia's GDP, this makes household consumption a worthy variable to focus on in economic recovery measures in Indonesia during the COVID-19 pandemic. Policies aimed at maintaining people's purchasing power are very helpful in maintaining economic performance in times of crisis. The PEN program and other programs implemented in Indonesia have so far been able to maintain the performance of the Indonesian economy and prevent a more severe crisis condition.

This research is expected to contribute to the formulation of economic recovery policies, in particular providing views on how a focus on household consumption can have a significant impact on the success of economic recovery efforts in Indonesia.

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