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The Effect of Inflation and MSME Production Growth on GDP with Fintech as an Intervening Variable (Study in Indonesia During the 2019-2022 Covid19 Pandemic)

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ABSTRACT

The Covid-19 pandemic has significantly accelerated digitalization in Indonesia, particularly in the Fintech sector. Fintech, which focuses on Micro, Small, and Medium Enterprises (MSME), has experienced rapid growth during the pandemic. This study analyses the impact of inflation, MSME production growth, and the role of Fintech on GDP. The research uses a quantitative approach known as analytical descriptive research to gain a comprehensive understanding with four variables which are observed. The data was compiled by offiacial resources, such as Bank Indonesia, Indonesia Statistic Bureau, and Finance Services Authority. The results indicate that inflation has a significant positive effect, while MSME production growth is positive but insignificant. Furthermore, Fintech positively and significantly contributes to the Gross Domestic Product (GDP). Fintech can be optimized to increase MSME production growth and GDP, even though it does not mediate between inflation and GDP.

Keywords: Fintech, inflation, MSME, GDP.

JEL Classification: E31, D22, G14.

INTRODUCTION

The Covid-19 pandemic has significantly impacted countries worldwide from 2019 to 2021. The SARS-CoV-2 virus, which causes Covid-19 disease, has rapidly spread and

claimed millions of lives. Besides the health consequences, the pandemic has also caused severe social and economic impacts. In Indonesia, as of 2021, there were 4,262,720 confirmed cases and 144,094 deaths due to Covid-19 (Fadilla & Purnamasari, 2021).

The COVID-19 pandemic has undoubtedly caused a decline in Indonesia's economic growth, as evidenced by the -4.19% figure in the second quarter of 2020. However, with decisive action and strategic planning, we can mitigate the impact of this crisis on our economy. However, by taking bold and confident steps, we can work towards a brighter future for Indonesia's economy. While movement restrictions and fluctuations in COVID-19 cases have disrupted various economic sectors, particularly the real sector, we can still identify opportunities for growth and development. It is essential to acknowledge the challenges we face, including mass layoffs by many companies that have increased unemployment and poverty (Feronika Br Simanungkalit, 2020).

Table 1. Indonesia's Economic Growth 2018-2019 in Quarter

Year	Indonesia's Economic Growth			
	Q1	Q2	Q3	Q4
2018	-0.41	4.21	3.09	-1.69
2019	-0.52	4.20	3.05	-1.74
2020	-2.41	-4.19	5.05	-0.42
2021	-0.92	3.31	1.55	-

Figure 1. Indonesia's Economic Growth 2018-2019 in Quarter

Source: Indonesia Central Bureau of Statistics

While most economic sectors experienced a downturn, E-commerce emerged as an exception with positive growth. E-commerce transactions in Southeast Asia increased 63% annually to US$62 billion. Nonetheless, other real sectors experienced significant challenges, and governments had to restrict the movement of their citizens to control the spread of the virus.

In this context, Fintech or Financial Technology emerged as one of the fast-growing innovations during the pandemic. Fintech provides digital financial solutions, accelerates financial services, and provides capital loans to businesses, especially MSMEs. The legal growth of Fintech provides hope for the recovery of the real sector and overall economic growth (İSABETLİ FİDAN & GÜZ, 2023).

However, along with the positive development of Fintech, there are also illegal Fintech that can harm the public. OJK and related agencies have taken decisive action against illegal online loans that violate the law. As of November 2021, 3.631 illegal online loans (as known by community that a financial service which lenders and loan recipients have loan agreements in the context of technology-based, used to be happen with online platforms) entities have been terminated. With the existence of legal Fintech, it is hoped that business actors, especially MSMEs, can utilize it to obtain capital and restore the real sector. Nonetheless, further measures are still needed to ensure that these loan facilities are used wisely so that they can make a real contribution to economic growth amid the pandemic (Sari & Saraswati, 2022a).

As an illustration in this analysis, this study was conducted on MSMEs that became customers or consumers of Fintech during the 2019-2022 period as one of the studies to conduct research related to how Fintech's role in helping the movement of the real sector through MSMEs.

MSMEs are categorized based on the scale of their business. As per Law No. 20/2008 on Micro, Small, and Medium Enterprises, Micro Enterprises are productive businesses owned by individuals or individual business entities that fulfill specific criteria (Reksohadiprodjo, 2000). Small Enterprises and Medium Enterprises are stand-alone productive economic enterprises. Article 6 of the Law states that MSMEs must meet specific net worth or sales results criteria. The Job Creation Law has introduced changes to the definition and criteria of MSMEs to provide convenience and certainty for MSME actors in running their businesses. Under the Job Creation Law, MSMEs are independent economic enterprises operated by individuals or business entities that meet specific criteria. These criteria are based on business capital, excluding land and buildings for business premises. A micro-enterprise is a business with no more than Rp1 billion capital. Small enterprises have a capital of more than Rp1 billion up to Rp5 billion, while medium-sized. enterprises have a capital of more than IDR5 billion to IDR10 billion (Winarto, 2020a).

Inflation is thus a term used in economics to describe the general increase in the price level of goods and services in an economy. Mankiw (2006) defines inflation as the general and persistent tendency of prices to rise. Bank Indonesia explains inflation as a general and sustained increase in the prices of goods and services over a period, where an increase in one or two goods cannot be called inflation unless an increase in the prices of other goods accompanies it. Also, The BPS (Central Bureau of Statistics) also describes inflation as the tendency for the prices of goods and services to rise continuously. This rise in prices reduces the value of money, so inflation is an indicator of the decline in the value of money relative to goods and services in general (Sari &

Saraswati, 2022b).

Inflation can be caused by factors such as an increase in demand, rising production costs, an increase in the money supply and changes in the aggregate supply (AS) of goods and services in a region. The impact of inflation on the economy can be positive and negative, as Salim and Purnamasari (2021) noted. Bank Indonesia's expansionary monetary policy can overcome a sluggish economy by lowering interest rates. High and unstable inflation reflects economic instability, which can lead to general and sustained price increases and increased poverty levels in Indonesia (Bada et al., 2016).

In economic terms, the increase in the amount of goods and services produced by an economy over some time can be defined as output growth. In the manufacturing sector, output growth refers to the increase in the amount of physical goods produced by the manufacturing sector over a given period (Halim, 2020). Methods of measuring output growth include changes in output volume, output value or the percentage increase in output from the previous period. A high output growth rate can reflect healthy economic growth, increase employment opportunities and improve people's welfare. At the macroeconomic level, output growth is often measured by Gross Domestic Product (GDP), the total value of all final goods and services produced within a country's economic borders in a given period, usually one year. An annual increase in GDP indicates economic growth (Sarfiah et al., 2019).

In the context of micro, small and medium enterprises (MSMEs), output growth refers to an increase in the amount of goods or services produced by the MSME sector in a given period (Ilham F et al., 2023). MSMEs are small and medium-sized enterprises in various sectors of the economy, including trade, industry, services, agriculture and others. The measurement of MSME production growth includes changes in production volume, production value, or the percentage increase in production from the previous period (Kore & Septarini, 2018). High MSME production growth can reflect positive economic growth, increase employment opportunities, and improve the community's welfare (Halim, 2020). In addition, MSME production growth can contribute to reducing poverty and social inequality. However, excessive MSME production growth can lead to problems such as unfair competition and lower product quality. Therefore, controlling MSME production growth is essential for the government and industry players to maintain economic stability and community welfare (Winarto, 2020b).

Fintech is a technology-driven innovation in the financial services industry. Fintech products are financial transaction systems designed for efficiency. The growth of Fintech, especially in start-ups, is leading to significant changes, including access to credit through online platforms such as peer-to-peer (P2P) lending. Rizal et al., 2019 highlighted that P2P lending fintech has become a financing alternative, especially for the lower middle market segment. Saripudin et al., 2021, highlighted the contribution of Islamic Fintech in supporting productive sectors that traditional banking services have yet to serve. Ardiansyah, 2019, presented the relationship between financial and technology (Fintech) models in overcoming the capital problems of MSMEs, mainly through crowdfunding and P2P lending. Winarto (2020) finds that Fintech improves

financial literacy and inclusion of MSMEs, provides more accessible and faster access to finance, and contributes to local economic empowerment and growth.

Gross Domestic Product (GDP) is a crucial parameter to understand the economic condition of a country in a given period; it can be analyzed based on current or constant prices. The Central Bureau of Statistics (BPS) defines GDP as the sum of value added by all economic units in the country or the total value of final goods and services produced by all economic units in a given period, usually one year. GDP is a crucial indicator for assessing a country's economic health and provides a snapshot of the production level and overall economic activity. GDP reflects the total value added by all economic units in the country or the sum of the final value of goods and services produced by all economic units.

GDP at current prices represents the value added of goods and services calculated at prevailing prices yearly. GDP at constant prices, on the other hand, shows the value added of goods and services calculated by reference to the prices prevailing in a given year. GDP at current prices provides information on changes in the economy's structure, while GDP at constant prices helps assess economic growth from one year to the next. Thus, current and constant prices of GDP are essential in providing comprehensive information on a country's economic development.

Regard to use digitalization of finance services, the research aims to observe the GDP that is effected by the production of MSME, inflation, and fintech that provides finance resources for MSME. Especially, the research explains in pandemic covid-19 period, 2018-2021, in Indonesia.

METHODE

This research uses a quantitative approach known as analytical descriptive research to gain a comprehensive understanding. This approach focuses on collecting data in the form of numbers and statistics to accurately describe the relationship between variables and the characteristics of the phenomenon under study.

Through this approach, the research seeks to answer the formulated research questions and thus contribute to a deeper understanding of the phenomenon. Therefore, this research aims to describe in detail the observed variables and critically analyze the relationship between these variables, using quantitative analysis tools to support the validity of the findings. By adopting a quantitative approach to analytical descriptive research, the results of this study can make a valuable contribution to the development of understanding in this area.

Data collection was carried out on a secondary basis where data was obtained from the BI, OJK, BPS and various other sources as required. The researchers then used the data to test hypotheses about the relationship between each variable.

The researcher was observed independents variable, dependent variable and also intervening variable. Below is a research design that becomes a framework for this research.

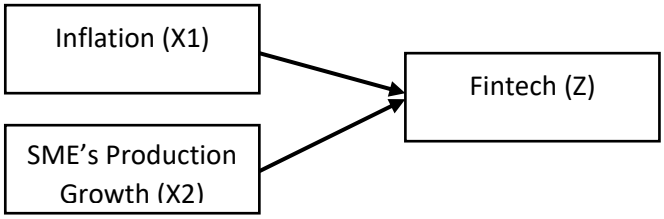

Figure 2. Research Framework I

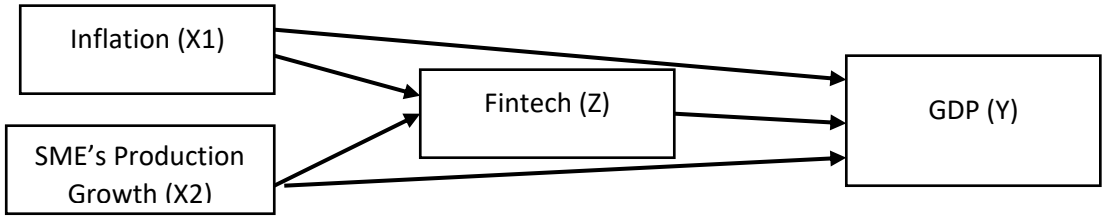

Figure 3. Research Framework II

In order to test the relationship between the variables shown in the figure above, the models of regression with each hypothesis are following below:

The Figure 1. explain model of regression: $Z_t = \beta_0 + \beta_1 X1_t + \beta_2 X2_t + \varepsilon$

The Figure 2. explain model of regression: $logY_t = \beta_0 + \beta_1 X1_t + \beta_2 X2_t + \beta_3 logZ_t + \varepsilon$

Ha1: There is an effect of inflation on GDP during the 2019-2022 period.

Ha2: There is an effect of SME's production growth on GDP during the 2019-2022 Period

Ha3: There is an effect of Fintech on GDP during the 2019-2022 Period

Ha4: There is an effect of Inflation, MSME Production Growth and Fintech on GDP during the 2019-2022 Period

Ha5: There is an effect of Fintech as an intervening variable from the Inflation variable and the MSME Production Growth variable on GDP during the 2019-2022 Period.

Based on the independent and dependent variables that have been formulated, here is the operational definition of the variable:

Table 2. Description Variable

Variable Role	Variable	Description	Unit
Independent	Inflation	the rate of increase in prices over a given period of time	Persentage (%)
Independent	SME's Production Growth	the rate of increase in amount of production in SME's sector over a given period of time	Persentage (%)
Intervening	Fintech	*The rate of increase uses technology to modify, enhance, or automate financial services for businesses or consumers*	Persentage (%)
Dependent	GDP	the rate of value added created through the production of goods and services in a country during a certain period.	Persentage (%)

To analyze the data, the authors use multiple linear regression tests and Sobel tests to see the linear relationship between the independent variable (X1) and the dependent variable (Y) and whether or not there is a mediating influence of the intervening variable. This analysis is also carried out to determine the relationship between the dependent variable and the independent variable and to see whether the value of the relationship is positive or negative.

RESULT

This study uses regression analysis of time series data with the aim of determining the variable effect of inflation (X1), SME's Production Growth (X2), Fintech (Z) through GDP (Y). Based on the results of processing time series data and passed classic statistic test, the followinng equation is obtained below:

Tabel 3. Regression Model 1 Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30.18991	0.169546	178.0630	0.0000
Inflation (X1)	0.105903	0.345970	0.306103	0.7644
Production (X2)	0.030043	0.013276	2.262957	0.0414
R-squared	0.309837	F-statistic		2.918069
Adjusted R-squared	0.203658	Prob(F-statistic)		0.089781

Source: Processed Data, 2023

$$\text{Model 1..... } Z_t = 30.18991 + 0.105903X1_t + 0.030043X2_t + \varepsilon$$

Based on the significance value obtained from the statistical test results with a constant value of 0.105903 and a prob. t stat value of 0.306103, which means that with an α = 5% level or 95% significance level, Ho is accepted and Ha is rejected. This also means that inflation has a positive and insignificant effect in this model. This value means that for every unit increase in the inflation variable, there is a 0.105903 increase in the fintech variable, ceteris paribus.

According to the significance value obtained from the statistical test results with a constant value of 0.030043 and a prob. t stat value of 2.262957, which means that with an α = 5% level or 95% significance level, Ha is accepted and Ho is rejected. This means that SME production growth has a positive but insignificant effect in this study. This value means that for every unit increase in the SME production variable, there is a 0.030043 increase in the fintech variable, ceteris paribus.

Based on the regression results, the authors found that the constant value of the independent variables as a whole on the dependent variable is 30.18991, then with a Prob (F-statistic) value of 2.918069, which means that with an α = 5% level or 95% significance level, Ha is accepted and H0 is rejected. This also means that all the independent variables have a positive yet one significant and insignificant effect in this study. Furthermore, with an R2 value of 0.309837, it can be said that in this study, the independent variables together can influence the dependent variable, GDP, by 30.98%, and other variables outside this model influence the remaining 69.02%.

Tabel 4. Regression Model 2 Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.49225	0.991335	12.60144	0.0000
Inflation (X1)	0.149984	0.041100	3.649258	0.0033
Production (X2)	0.001039	0.001855	0.559894	0.5859
logFintech (Z)	0.090099	0.032830	2.744411	0.0178
R-squared	0.739210	F-statistic		11.33803
Adjusted R-squared	0.674013	Prob(F-statistic)		0.000813

Source: Processed Data, 2023

Model 2..... $logY_t = 12.49225 + 0.149984X1_t + 0.001039X2_t + 0.090099logZ_t + \varepsilon$

Based on the significance value obtained from the statistical test results with a constant value of 0.149984 and a prob. t stat value of 0.0033, which means that with an α = 5% level or 95% significance level, Ha is accepted and H0 is rejected. This also means that inflation has a positive and significant effect in this study. This value means that for every unit increase in the inflation variable, there is a 0.1499 increase in the GDP variable, ceteris paribus. This also indicates that the value of inflation in this period is low, so it positively affects GDP.

Based on the significance value obtained from the statistical test results with a constant value of 0.001039 and a prob. t stat value of 0.5859, which means that with an α = 5% level or 95% significance level, H0 is accepted, and Ha is rejected. This means that SME production growth has a positive but insignificant effect in this study.

Based on the significance value obtained from the statistical test results with a constant value of 0.090099 and a prob. t stat value of 0.0178, which means that with an α = 5% level or 95% significance level, Ha is accepted, and H0 is rejected. This also means that Fintech positively and significantly impacts this study. This value means that for every

1 unit increase in the Fintech variable, there is a 0.090 increase in the GDP variable, assuming ceteris paribus.

Based on the regression results, the authors found that the constant value of the independent variables as a whole on the dependent variable is 12.49225, then with a Prob (F-statistic) value of 0.000813, which means that with an α = 5% level or 95% significance level, Ha is accepted and H0 is rejected. This also means that all the independent variables have a positive and significant effect in this study. If each increase in the independent variable by 1 unit causes an increase in the GDP variable by 12.49225, ceteris paribus. Furthermore, with an R2 value of 0.739210, it can be said that in this study, the independent variables together can influence the dependent variable, GDP, by 73.92%, and other variables outside this model influence the remaining 26.08%.

DISCUSSION

According to statistic result, the inflation has a positive and significant effect in this study. The constant value of inflation explains if inflation increase 1%, there will be 0.14% increasing in GDP variable, ceteris paribus. although some studies show a positive relationship between inflation and GDP, most studies show that inflation has a negative impact on economic growth. Inflation can lead to a decrease in the purchasing power of money, which reduces consumption and, therefore, GDP (Smith, 2019). In addition, Smith (2019) also states that high inflation can make investment less attractive as it creates uncertainty about the future and can affect the balance of payments as exports become more expensive. However, research by iqbal & Nawaz, 2010 shows the same results as the researchers, where inflation has a positive effect when it is low. Overall, although some studies find a positive relationship between inflation and GDP, most studies show that inflation has a negative impact on economic growth.

During the pandemic, one of the sectors that was severely affected was the MSME sector. The study explains in Indonesia, period 2018-2021, that production growth of MSME has constant value of 0.001039 yet a prob. t stat value of 0.5859 that insignificant effect. This means that MSME production growth has a positive constant value but insignificant effect in this study.

Although the impact of increased MSME production on GDP is insignificant in this study, the value with a positive constant means that growth in MSME production will have a positive impact on GDP. As MSMEs grow, the production of goods and services will increase. This increases the demand for goods and services, increasing economic growth. MSMEs also create new jobs, which increases people's purchasing power. This, in turn, increases economic growth.

MSMEs are an important sector of the Indonesian economy. In general, several studies have shown that MSME output growth positively impacts GDP. This is because MSMEs

significantly contribute to GDP, employment, and income distribution. The significant contribution of MSMEs to the national economy shows that MSME output growth can contribute to overall economic growth.

A study conducted by INDEF in 2019 found that Fintech positively impacts economic growth in Indonesia by 0.45%, contributing to GDP. Another study conducted by Astuti in 2022 found that Fintech positively impacts economic growth through investment in Indonesia.

Fintech is an innovation in financial services that uses technology to deliver financial services more efficiently, quickly and affordably. Fintech has the potential to increase GDP by helping people who previously did not have access to financial services to gain access to them. This can be done by making financial services more affordable and accessible. In addition, Fintech can help businesses improve their operational efficiency by using technology to automate processes that were previously done manually. This can save costs and increase productivity, where technology can be used to develop new and better financial products and services. A study by Maulana & Wiharno, 2022 found that a 1% increase in fintech lending would increase GDP by 0.653%, unemployment by 1.163% and inequality by 0.0215. However, Fintech lending does not positively impact poverty levels or financial inclusion. Furthermore, Raden (2021) research found that Fintech lending has a positive and significant impact on people's income. Then, research conducted by Maulana and Wiharno (2022) found that Fintech contributes to GDP and reduces unemployment and poverty levels. Overall, these studies show that fintech positively impacts the economy, particularly GDP, employment and poverty reduction. However, there are also concerns about the impact of fintech on income inequality.

These findings are consistent with the findings of Maulana and Wiharno (2022), where there is a positive impact of P2P lending that can promote economic growth in Indonesia. This can be explained based on the relationship between P2P lending and other variables that affect the economy, such as labour absorption variables by MSMEs, poverty rate, Gini ratio, GDP, growth of other economic sectors, household consumption level and inflation rates.

In general, the absence of an impact of fintech variables on inflation is due to the low value of inflation. This is supported by the effect of inflation on GDP in this model, which has a positive and significant value. In principle, high inflation will have a negative effect on GDP, but inflation having a positive effect indicates that inflation has a low value.

In addition to the MSME output growth variable, based on the results of the Sobel test, the intervening variable affects the value of the effect of the MSME output growth variable on GDP. This is consistent with previous studies where fintech can positively impact MSMEs. Although the MSME production growth variable did not have a significant effect in this study, several studies found a significant and positive effect on

GDP or economic growth, including Rachman, 2016, who found a positive effect of production value on economic growth, especially in the case of Makassar City.

In this study, the effect of the MSME production growth variable on GDP is not significant, which may be due to the impact of the COVID-19 pandemic, which is also supported by previous data that economic growth has a negative value at the beginning of the pandemic. In addition, in Indonesia, the MSME sector was also affected by the pandemic, and the government tried to keep this sector afloat at the time by providing various special assistance to MSMEs.

CONCLUSION

Based on the study's results on the effect of inflation variables and MSME production growth on GDP during the COVID-19 pandemic (2019-2022), with Fintech as an intervening variable, several things can be concluded. Among them, inflation and Fintech have a positive and significant influence. With a positive influence, any increase in the inflation and Fintech variables will increase the GDP variable. Then, the growth of MSME production has a positive but insignificant impact. This is indicated because there is a significant impact of the COVID-19 pandemic on the MSME sector, so in this period, the effect of MSME production growth was positive but not significant. According to result statistic, fintech can also affected by SME's production growth which it should be concern of authority to develop fintech system and regulation. Hopefully, fintech system and regulation can provide more SME's and affect GDP growth.

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