

The Impact of Covid-19 Pandemic on Inflation in Indonesia

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Abstract

This study aims to analyze the existence and effect of Covid-19 on inflation in Indonesia. Covid-19, an outbreak of respiratory syndrome, has been named Corona Novel Virus 2019 or 2019-nCoV. The research method used Ordinary Least Squares (OLS) with inflation as a dependent variable. The interest rate, exchange rate, money supply, stock market, global and exported commodity price, and pandemic as independent variables. The pandemic indicator is measured by new cases added of Covid-19 per day in Indonesia. Using OLS, the result showed that the interest rate, stock market, exchange rate, and palm oil price have significantly affected Indonesia's inflation. On the contrary, both raw oil, i.e., Brent oil price and pandemic, significantly negatively affect Indonesia's inflation. However, the estimation fails to reflect the significant effect of the money supply to drive inflation. This paper implies that given higher new cases, Covid-19 per day has been the source of decreased inflation in Indonesia. It means that a pandemic is an impact on the weakness of the purchasing power of a consumer.

Keywords: Covid-19; Inflation; Interest Rate; Ordinary Least Squares; Pandemic

JEL Classification: E60, F45

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1. Introduction

Covid-19, an outbreak of respiratory syndrome, was first detected in Wuhan, China, at the end of December 2019. Initially, it is named Corona Novel Virus 2019 or 2019-nCoV. The term "novel," according to Gorbalenya et al. (2020), refers to diseases caused by humans infected by certain viruses, which requires further study. Covid-19, according to the World Health Organization (2020), is an infectious disease caused by SARS-CoV-2, which is one type of Coronavirus. Coronavirus is a virus that can cause illness in animals or humans. In humans, some coronaviruses known to cause respiratory infections from ordinary flu to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory

Syndrome (SARS). The most recent Corona Virus found to be a coronavirus disease, Covid-19.

According to data from Worldometer until March 5th, 2021, Covid-19 has spread in 221 countries, with a total of 116.233.565 cases, 2.581.943 deaths, 91.902.761 recovered, and 21.748.861 active cases with 99,6 percent in mild condition and 0,4 percent in serious or critical condition. The ten most-affected countries of Covid-19 at the same time were the United States, India, Brazil, Russia, UK, France, Spain, Italy, Turkey, and Germany. The United States is the first most-affected country of Covid-19 by 29,53 million total cases or contributing as 25,44 percent of total cases in the world. In contrast, China, where the first cases of Covid-19 found, has ranked 85th from 221 countries affected, with

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a total of 89.952 cases per March 5th, 2021. On the contrary, Indonesia has ranked 18th at the same time, with several 1.361.098 cases, 36.897 deaths, and 1.176.356 recovered.

The uncontrollable of spreading Covid-19 across countries worldwide have made a negative economic growth estimate for 2020. The economic growth of the world will drop in the recession phase. International Monetary Fund (IMF) released the World Economic Outlook Update January 2021 that reported the world's economic growth over in the year 2020 contraction up to -3,5 percent. The world's economic growth dropped significantly in 2020 than the economic growth estimated a year before, 2019, positively growth as 2,8 percent. Based on this report, all-region advanced economies and emerging market & developing economies dropped into negative growth at the end of 2020. But the advanced economies growth estimated dropped more deeply than developing economies. The most impactful contraction economic growth in developing economies was Latin America and the Caribbean, followed by ASEAN-5 (-3,7%), Middle East and Central Asia, Emerging and

Developing Europe, and Sub-Saharan Africa. All region also projected will recover speedily in the year 2021 and 2022, with growing positively. It might be caused by the program of vaccination that can apply in early the year 2021.

The impact of the Covid-19 virus also creates a rising unemployment rate in many infected countries. Many formal and informal sectors have impacted by increasing production costs caused by lockdown policy from some countries. Indonesia is still dependent on import raw material for more than 50 percent. The manufacturing and micro, small, and medium enterprises (SMEs) have impacted the global pandemic. The firm's consequences could have retired many workers to decrease the production cost. The International Labor Organization (ILO), on March 18th, 2020, even issued a policy framework consisting of three main pillars to fight the Covid-19 based on the International Labor Standards. The three components included protecting workers in the workplace, stimulating the economy and labour demand, and supporting employment and incomes (ILO, 2020).

**Table 1. Overview of the World Economic Outlook Projection
(Percent Change, Year over Year)**

	Estimate		Projections	
	2019	2020	2021	2022
World Output	2.8	-3.5	5.5	4.2
Advanced Economies	1.6	-4.9	4.3	3.1
Emerging Market and Developing Economies	3.6	-2.4	6.3	5.0
ASEAN-5	4.9	-3.7	5.2	6.0
Emerging and Developing Europe	2.2	-2.8	4.0	3.9
Latin America and the Caribbean	0.2	-7.4	4.1	2.9
Middle East and Central Asia	1.4	-3.2	3.0	4.2
Sub-Saharan Africa	3.2	-2.6	3.2	3.9

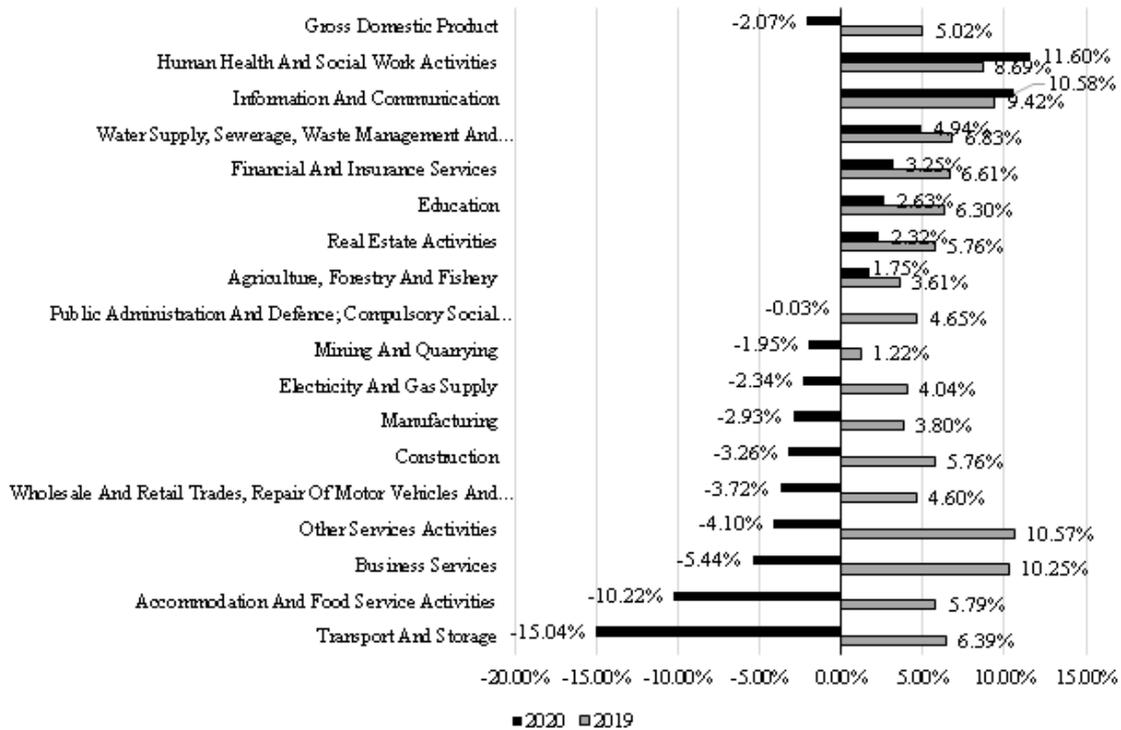
Source: International Monetary Fund, 2021

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All over the year 2020, Indonesia has faced an economic paralyzed on multisectoral that proved the contraction on economic growth as -2,07 percent, lower than a year before in 2019 as 5,02 percent. Figure 1 showed that many sectors in 2020 have growth lower than the year of 2019, except for both Human Health & Social Work Activities and Information & Communication sectors. The sector that having contraction along year of 2020 is Transport & Storage (-15,04%), Accommodation & Food Service Activity (-10,22%), Business Service (-5,44%), Other Services Activities (-4,10%), Wholesale & Retail Trades, Repair of Motor Vehicle (-3,72%), Construction (-3,26%), Manufacturing (-2,93%), Electricity & Gas Supply (-2,34%), and Mining & Quarrying (-0,03%). In the state of emergency, global pandemic, the government has released a mitigation policy to prevent the rapidly spreading of Covid-19. Many public sectors and government officials had to close in over a particular period to maintain the World Health Organization's health protocol (WHO). All activities before the

pandemic have processed the offline system (*working from the office*, WFO). Still, it has switched into the online system (*working from home*, WFH) in the pandemic period. It will be no surprise if the information and communication sector is still growing faster in 2020 than a year before.

The Covid-19 pandemic, according to Nicola *et al.* (2020) study, has resulted in over 4,3 million confirmed cases and over 290,000 deaths worldwide. It had also raised concerns over an impending economic downturn. Social alienation, self-isolation, and travel constraints have reduced the population across all financial industries, resulting in the loss of many jobs. Schools have closed, and there is less demand for commodities and manufactured goods. Health services, on the other hand, have seen a large rise in demand. Owing to panic purchasing and stockpiling of produce, the food market has also seen a rise in demand. This research outlined the socio-economic impact of Covid-19 on individual facets of the global economy to the global epidemic.



Source: obtained from Indonesia Statistic Central Bureau processed, 2021

Figure 1. Gross Domestic Product (GDP) Growth by Sectors

The Covid-19 pandemic is not only impacted on the real sector but also the finance and monetary market. Many recent studies emphasize the link between finance, monetary, and real indicators on inflation. There are also available studies of the pandemic effect on economic activities. This study's newest modelling estimates the pandemic impact on inflation that is still limited in previous studies. This paper takes the *Ordinary Least Squares* (OLS) method to estimate the pandemic impact on inflation in Indonesia. Therefore, this paper aims to analyze the existence and effect of Covid-19 on inflation in Indonesia.

1.1 Previous Study

Karlsson et al. (2014) investigated the effect of the 1918 influenza pandemic on Sweden's short- and medium-term economic results. The study used apparent exogenous differences in the incidence rate between Swedish regions to estimate the pandemic's effect. When a pandemic strikes, the number of vulnerable people in their homes skyrockets. There was also evidence that the pandemic was having a negative effect. There was also proof that the pandemic had a negative impact on capital returns. The pandemic has a significant negative effect on capital incomes, which seems to be a mixture of short- and medium-term responses. Rising poor-house levels seem to contradict increasing workforce scarcity because poor-house levels have positive effects. Internal migrations were not the cause of the findings, according to some indirect evidence of a pandemic labour supply reaction. The pandemic had a huge impact on the average worker's quality of life.

The variables of money supply, imported inflation, and real income had the most important effect on the inflation rate in the Libyan economy, according to Ahmed (2013), in both the long and short run. Other variables, such as the exchange rate, production difference, and inflation expectation, were effective factors in the rise of inflation after the above variables. Furthermore, the research found the error correction term (-0.45) to be negative and statistically important, indicating that the inflation rate has a significant and stable tendency to return to long-run equilibrium when short-run shocks occur. Using

multiple linear regression study, Wulan & Nurfaiza (2015) found that the variable interest rate, money supply, and Rupiah exchange rate all had a major positive impact on the inflation rate. Yolanda (2017) looked at the effects of the BI rate, foreign exchange rate, money supply, oil price, and gold price on inflation and its impact on the human development index (HDI) and poverty in Indonesia from 1997 to 2016. The study's findings revealed major variables at the BI Rate, Foreign Exchange Rates, Money Supply, oil price, and gold price to Indonesia's inflation rate at the same time. The findings also revealed that the BI rate, money supply, oil price, and gold price variables all had a favourable and meaningful impact on the degree of inflation. In contrast, the exchange rate variable did not affect.

Kamber & Wong (2020) created an analytical model to investigate global influences on trend inflation and the inflation gap. Although global factors can significantly impact the inflation deficit, they only play a minor role in driving trend inflation, according to the findings. The impact of global influences on the inflation deficit may be largely due to commodity price shocks. They also discovered that, in comparison to existing inflation targeted, global factors had a greater impact on inflation, especially pattern inflation, for the community of Asian economies. One view is that inflation targeting has reduced global factors' impact on inflation, especially on-trend inflation.

Arslan et al. (2016) identified three key inflation dynamics (EMEs). First, inflation in EMEs has moderated and remained broadly steady since the early 2000s. Second, over the last decade, inflation persistence has decreased. Third, since the financial crisis, EMEs' exchange rate pass-through, both short- and long-term, has decreased. Also, the paper found that global trends have a greater impact on inflation in EMEs that are more exposed to trade.

Ozili & Arun (2020) investigated the effects of Covid-19's global spillover on the economy. The impact of social distancing strategies on economic growth and stock price indexes are explained empirically in this analysis. The results show that an increase in lockdown days, monetary policy

decisions, and foreign travel bans significantly impacted economic activity and market prices. External movement restrictions and increased monetary policy expenditures, on the other hand, had a favourable effect on the pace of economic activity. The rising number of reported

coronavirus infections, on the other hand, had no discernible impact on economic activity. External movement restrictions and increased monetary policy expenditures, on the other hand, had a favourable effect on the pace of economic activity.

2. Research Method

2.2 Data

This paper used the secondary database from Indonesia Statistics Central Bureau, Bank Indonesia, Ministry of the Health Republic of Indonesia, yahoofinance.com, and investing.com. This paper was used domestic inflation as a dependent variable that proxied by Headline Inflation (INF, in percent per year). The independent variables were used Interest Rate Domestic (IRD) proxied by BI 7 Day Repo Rate (in percent), Composite Stock proxied by Jakarta Stock Exchange Composite/JKSE (in Rupiah), Exchange Rate (in USD/IDR), Money Supply (in Rupiah), Global Commodity Price proxied by Brent oil (in USD/barrel) and Gold (in USD/troy ounce), Exported Commodity Price proxied by Palm oil (USD/metric ton), and Pandemic (PDC) proxied by new cases added per day in Indonesia. The data set relative to Indonesia and the World in daily from March 2nd, 2020 to March 2nd, 2021. The data both inflation rate and money supply used the *compound annual growth rate* (CAGR) method to interpolate from monthly to daily data series. The method of this paper estimated with Ordinary Least Squared (OLS) to show the effect of Covid-19 on inflation in Indonesia.

2.3 Empirical and Econometric Model

The empirical paper model derived from Yolanda (2017) modified with a global pandemic variable as:

$$INF = f(IRD, CS, ER, MS, GCP, ECP, PDC) \quad (1)$$

Then, write down as:

$$INF = \beta_1 IRD + \beta_2 CS + \beta_3 ER + \beta_4 MS + \beta_5 GCP + \beta_6 ECP + \beta_7 PDC \quad (2)$$

Then, Equation (2) derived to econometric model with *Ordinary Least Squared* (OLS) method as:

$$INF_t = \alpha_0 + \beta_1 IRD_t + \beta_2 \ln CS_t + \beta_3 \ln ER_t + \beta_4 \ln MS_t + \beta_5 \ln GCP_t + \beta_6 \ln ECP_t + \beta_7 PDC_t + e_t \quad (3)$$

where: INF is inflation, IRD is the domestic interest rate, CS is composite stock, ER is the exchange rate, MS is money supply, GCP is global commodity price, ECP is the exported commodity price, PDC is pandemic, is a constant, , ,, is the elasticity of the independent variable, t is period in day-t, and e is an error. This paper used log natural in some variables to standardize in the unit. Inflation (INF) as a dependent variable was proxied by Headline Inflation (in percent per year). Then, the independent variables used:

1. Interest Rate Domestic (IRD) was proxied by BI 7 Day Repo Rate (in percent).
2. The Composite stock was proxied by Jakarta Stock Exchange Composite/JKSE (in Rupiah).
3. Exchange Rate (in USD/IDR).
4. Money Supply (in Rupiah).
5. Global Commodity Price proxied by Brent oil (in USD/barrel) and Gold (in USD/troy ounce).
6. Exported Commodity Price proxied by Palm oil (USD/metric ton).
7. Pandemic (PDC) proxied by new cases added per day in Indonesia.

This paper analyzed five models that modified in proxy of global commodity and the exported commodity prices. The last result was identified as the *Best Linear Unbiased Estimator* (BLUE) by the Gauss-Markov Theorem.

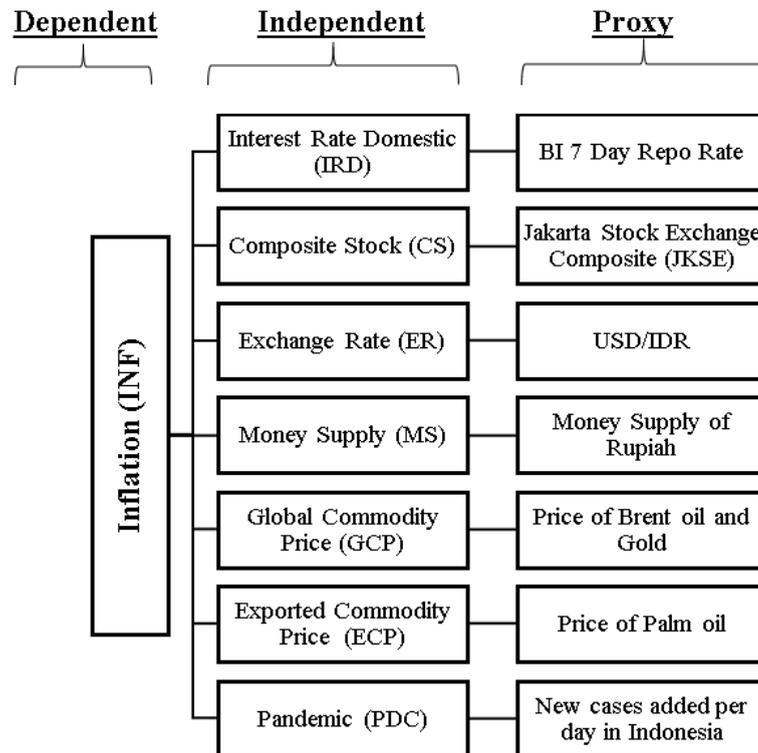


Figure 2. Flow Chart of Variable Calculated

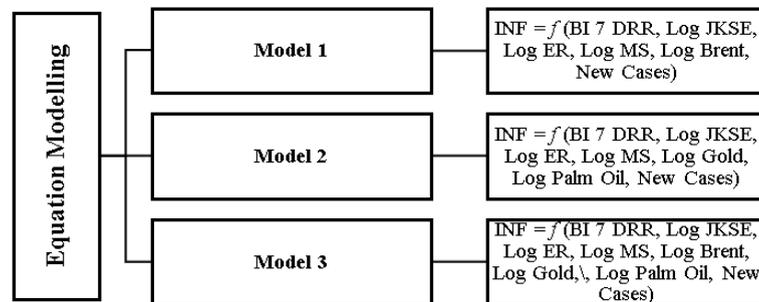


Figure 3. Equation Modelling

3. Results And Discussion

3.1 Results

The global pandemic, Covid-19, led to the fluctuation and paralyzed many sectors in all affected countries. This pandemic has found in the last year of 2019 in Wuhan City, China. It does not take a long time to spread the pandemic to 221 countries in the world until March 5th, 2021. In the 1st Quarter of 2020, all affected countries, both emerging and developed, have faced a decrease in economic growth. As an emerging country, Indonesia is at a higher risk of the fast-spreading of Covid-19 to prevent economic

stability. Table 2 showed a statistic descriptive of several economic and pandemic indicators. First, inflation was an average of 1,74 percent from March 2nd, 2020 to March 2nd. Inflation has declined since pandemic Covid-19 founded in early March 2020 in Indonesia. It assumed that the purchasing power of consumers also dropped at the same time. Many workers, especially in low-middle income classes, were retired without the last payment from the firm. In the small-medium firms and the big firm, many workers were retired to handle the firm still survived caused by the global pandemic.

**Table 2. Summary Statistic Descriptive
Period of March 2nd, 2020 to March 2nd, 2021**

	Inflation	BI 7 Day Repo Rate	JKSE	Exchange Rate	Money Supply	Brent	Gold	Palm Oil	New Cases Covid-19
Mean	1.740285	4.095085	5285.035	14616.10	6678258.	43.38342	1822.350	787.6543	3719.278
Median	1.542812	4.000000	5126.690	14561.50	6752233.	43.14500	1840.150	762.3500	2926.500
Maximum	2.950000	4.750000	6435.205	16608.00	7200431.	67.04000	2069.400	1075.800	13802.00
Minimum	1.326234	3.500000	3937.630	13875.00	6238267.	19.33000	1480.600	572.4000	0.000000
Std. Dev.	0.447520	0.332095	592.7466	585.4197	215102.2	10.09426	112.7116	132.2147	3494.153
Skewness	1.434759	0.346780	0.374215	1.442057	-0.238636	-0.033555	-0.624528	0.438463	1.031358
Kurtosis	3.812966	2.059376	2.204693	5.035833	2.317064	3.072937	3.315522	2.003952	3.200935
Jarque-Bera	86.72673	13.31654	11.62845	121.5116	6.768355	0.095779	16.18200	17.17085	41.87791
Probability	0.000000	0.001283	0.002985	0.000000	0.033906	0.953239	0.000306	0.000187	0.000000
Sum	407.2268	958.2500	1236698.	3420168.	1.56E+09	10151.72	426429.9	184311.1	870311.0
Sum Sq. Dev.	46.66378	25.69685	81864203	79852892	1.08E+13	23741.34	2960012.	4073011.	2.84E+09
Observations	234	234	234	234	234	234	234	234	234

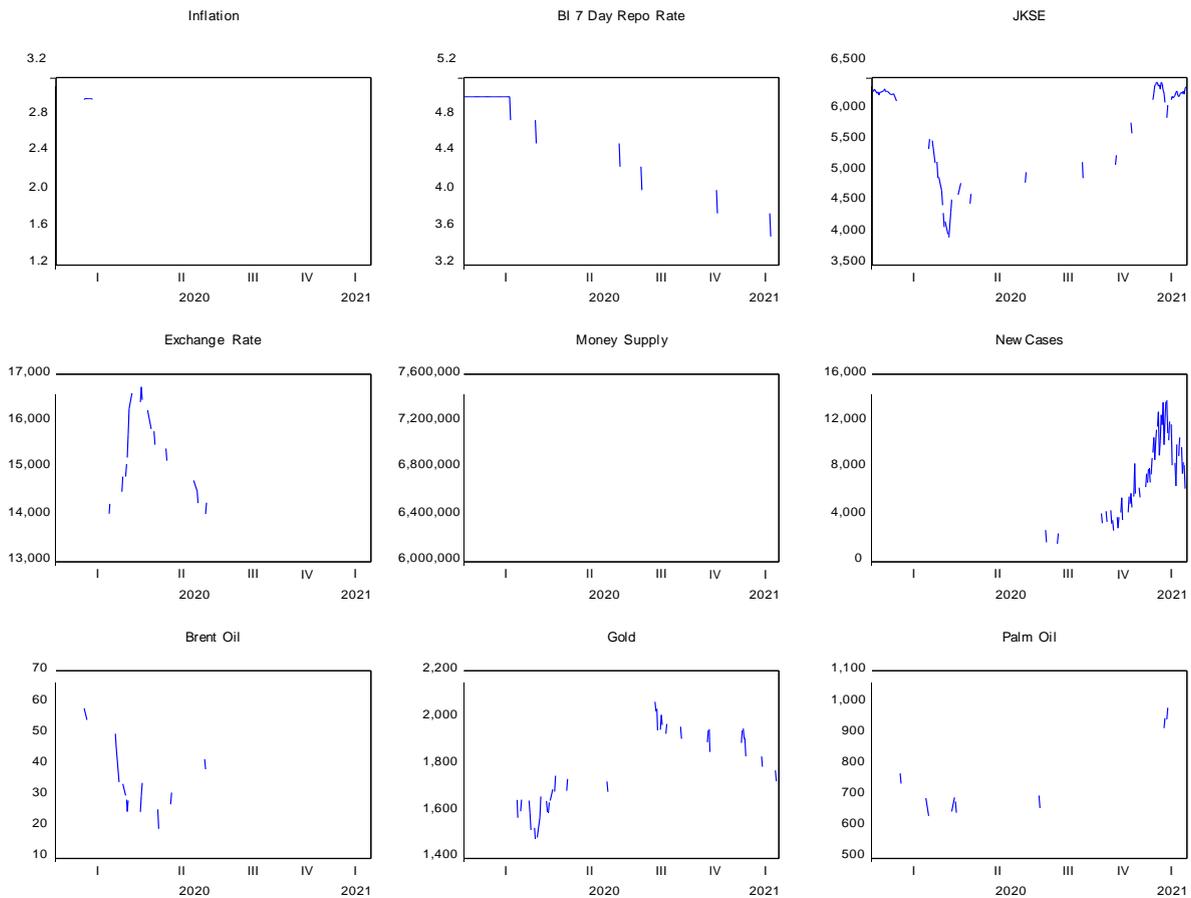
Source: obtained from secondary data processed, 2021

Another monetary indicator, such as stock price, exchange rate, money supply, and interest rate, showed a fluctuation wave in the 1st Quarter of 2020. Stock price proxied by Jakarta Stock Exchange Composite (JKSE) was a negative correlation to inflation as -0,50. On average, JKSE was IDR 5.285,04 from March 2nd, 2020, to March 2nd, 2021. The first cases of Covid-19 in Indonesia found in early March 2020. The first cases impacted the price of JKSE dropped at IDR 3.937,63 on March 24th, 2020. The second shock also showed by the fluctuation of the exchange rate Rupiah to Dollar US that depreciated at IDR 16.608 per 1 USD. The average exchange rate was IDR 14.616,10/USD, and the most appreciated point was IDR 13.875,00/USD. It was affected to drive money flow in domestic economic activities. The money supply was growing up to 5,30 percent (*month-to-month*) in March 2020, with the value of IDR 6.440,46 trillion.

In monetary policy, as a central bank, Bank Indonesia has followed the Fed to decrease the interest rate for promoting money liquidity. Bank Indonesia (BI) 7 Days Repo Rate has declined

150 basis points (bps), from 5,00 percent in early 2020 to 3,50 percent on February 18th, 2021. BI 7 days repo rate also had a positive correlation to inflation, i.e., 0,80. Then, the component of the pandemic that proxied by new cases per day showed growing exponentially. On average, new cases added per day were 3.719 cases, with the highest cases achieved to 13.802 cases per day after a long holiday on January 29th, 2020. Indonesia has to more work hard to catching-up on the new normal phase with the lower new cases added condition.

The global commodity price used Brent oil and Gold, in which raw oil is one of the most imported goods in Indonesia. The exported commodity price used Palm oil, which included one of the most exported goods in Indonesia. Table 3 found that Brent, Gold and Palm Oil had a negative correlation with inflation. Figure 4 presented that Brent, Gold, and Palm oil dropped significantly from the 1st to 2nd Quarter of 2020. Those components reached the lowest price was USD 19,33 for Brent oil (on April 21st, 2020), USD 1.480,6 for Gold (on March 18th, 2020), and USD 572,4 for Palm oil (on May 6th, 2020).



Source: data processed with Eviews-10, 2021

Figure 4. The Economic and Pandemic Indicators
Period of March 2nd, 2020 to March 2nd, 2021

Table 3. Correlation

	INF	BI	JKSE	ER	MS	Brent	Gold	Palm Oil	New Cases
INF	1.00	0.80	-0.50	0.54	-0.79	-0.62	-0.84	-0.57	-0.54
BI	0.80	1.00	-0.80	0.54	-0.94	-0.80	-0.65	-0.90	-0.82
JKSE	-0.50	-0.80	1.00	-0.75	0.78	0.91	0.35	0.91	0.87
ER	0.54	0.54	-0.75	1.00	-0.63	-0.77	-0.33	-0.62	-0.58
MS	-0.79	-0.94	0.78	-0.63	1.00	0.82	0.65	0.87	0.75
Brent	-0.62	-0.80	0.91	-0.77	0.82	1.00	0.41	0.85	0.80
Gold	-0.84	-0.65	0.35	-0.33	0.65	0.41	1.00	0.41	0.35
Palm Oil	-0.57	-0.90	0.91	-0.62	0.87	0.85	0.41	1.00	0.89
New Cases	-0.54	-0.82	0.87	-0.58	0.75	0.80	0.35	0.89	1.00

Source: data processed with Eviews-10, 2021

Notes: Inflation (INF), Jakarta Stock Exchange Composite (JKSE), Money Supply (MS), Exchange Rate IDR to USD (ER), Bank Indonesia 7 Day Repo Rate (BI).

Table 4. Robustness Estimates of Domestic Inflation in Indonesia
Period of March 2nd, 2020 to March 2nd, 2021
Dependent Variable: Inflation

Variable	Proxy	Model 1	Model 2	Model 3
IRD	BI 7 DRR	1.844468***	1.280499***	1.234484***
CS	Log JKSE	2.556238***	1.952284***	2.372474***
ER	Log ER	4.915397***	4.995705***	4.351347***
MS	Log MS	-2.426510	-1.237369	-0.696324
GCP	Log Brent	-0.386070*		-0.349245**
GCP	Log Gold		-2.696101***	-2.666392***
ECP	Log Palm Oil	2.010113***	1.345915***	1.245424***
PDC	New Cases	-8.14E-06	-1.89E-05**	-1.90E-05**
Constant	Constant	-48.61906	-37.33875	-41.32048
R ²		0.863929	0.914454	0.920423
R ² -Adj		0.859714	0.911804	0.917594
F-statistic		204.9854	345.1205	325.3081
Prob(F-statistic)		0,000000	0,000000	0,000000

Source: Data processed with Eviews-10, 2021

Note: *means significance at a 90% level of confidence, **means significance at a 95% level of confidence, ***means significance at a 99% level of confidence. Interest Rate Domestic (IRD) proxied by BI 7 Day Repo Rate, Composite Stock proxied by Jakarta Stock Exchange Composite (JKSE), Exchange Rate (ER) of Rupiah to the Dollar United States, Money Supply (MS), Global Commodity Price proxied by Brent Price and Gold Price, Exported Commodity Price proxied by Palm Oil Price, and Pandemic (PDC) proxied by New Cases Added Covid-19 per Day in Indonesia.

Table 3 explained the correlation between the variables used in this study. Inflation had a positive correlation with BI 7 days repo rate and exchange rate. Conversely, inflation had a negative correlation among variables of JKSE, money supply, brent oil, gold, palm oil, and new cases. Some of the variables were a strong correlation with inflation, i.e., BI 7 days repo rate (0,80), money supply (-0,79), and gold (-0,84). The others, JKSE, exchange rate, brent oil, palm oil and new cases, were moderate in correlate with inflation.

3.2 Discussion

This paper aims to analyze the affected factors in domestic inflation, including the shock of pandemic Covid-19. Table 4 explained three models to analyze an economic paralyzed,

especially on domestic inflation. The first model indicated that BI 7 Days Repo Rate, JKSE, exchange rate, and palm oil had a positive significance to drive inflation. It meant that the increase of 1 percent of BI 7 Days Repo Rate would increase inflation by 1,84 percent, then 1 percent of JKSE also increase inflation by 2,56 percent, an 1 percent of the exchange rate would increase inflation of 4,92 percent, and 1 percent increased of palm oil price would increase 2,01 percent of inflation. On the opposite, the only brent oil price was a negative significance to drive on inflation. On average, a 1 percent increase in brent oil price would decrease inflation by -0,39 percent. The others, money supply, and new cases added Vovid-19 was no significant effect on inflation. The value of the R2-adjusted of the first model was 0,860. The other word, all independent variables

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in the first model explained 85,97 percent on the dependent variable.

The second model reported that BI 7 Days Repo Rate, JKSE, exchange rate, and palm oil price also had positive significance to drive inflation. It meant that, on average, a 1 percent increase of BI 7 Days Repo Rate, JKSE, exchange rate, and palm oil price could rise on inflation as 1,28 percent; 1,95 percent, 4,99 percent; and 2,01 percent. However, gold price and new cases Covid-19 were of negative significance to drive inflation. On average, a 1 percent increase in gold price would decrease inflation by -2,70 percent. Then, a one-person added in new cases of Covid-19 would decrease inflation as -1,89E-05 percent. The only money supply variable that was no significantly impacting inflation. The value of the R2-adjusted of the second model was 0,912. All independent variables in the second model explained 91,18 percent on the dependent variable.

The last model, the third model, showed that BI 7 Days Repo Rate, JKSE, exchange rate, and palm oil price had a positive significance to drive inflation. On average, a 1 percent increase of BI 7 Days Repo Rate, JKSE, exchange rate, and palm oil price would increase inflation as 1,23 percent, 2,37 percent, 4,35 percent, and 1,25 percent. The three variables, including Brent price, gold price, and new cases Covid-19, were a negative significance to drive on inflation. The impact of a 1 percent increase of Brent price and the gold price would dropped inflation of -0,35 percent and -2,67 percent. For pandemic variable, an increase of 1 new case added of Covid-19 would decrease inflation as -1,90E-05 percent. The money supply was still consistent with no impact on inflation. This paper implies that given higher new cases, Covid-19 per day has been the source of decreased inflation in Indonesia. It means that pandemic was an impact on the weakness of the purchasing power of a consumer. The value of the R2-adjusted of the third model was 0,918. It meant that all independent variables in the third model explained 91,75 percent on the dependent variable.

The result of the three models showed that the third model was the best model than the

others. It proved by the highest value of R2-adjusted and the least value of standard error than other models. This finding of the third model supports Wulan & Nurfaiza (2015) study that interest rate has a significant positive effect on the inflation rate. The finding also supports the study of Yolanda (2017) that BI rate and exchange rate have a partial effect on inflation positively and significantly, but the opposite the gold and raw oil price variable in this research has a negative significant effect on the inflation that were did not support it. This finding still correlates with studies of Karlsson et al. (2014) that pandemic leads to a significant increase in poor-home levels. There is also evidence that the pandemic negatively influences the return of capital. For capital incomes, the pandemic has a strong negative impact, and this impact seems to be a combination of short-and medium-term responses. However, the result of the money supply was no support in previous studies.

These results suggest that inflation is a disease in a country's economy that has an effect on all economic activities. Another series of study findings indicated that the variables analyzed have a major impact on the rate of inflation, suggesting that the government will use these studies to assess fiscal and monetary policy. The government must apply a policy to prevent and mitigate the economic decline and deep recession. First, the government has to make a trust and good offers for foreign investor with the competitive interest rate, and cut some rigid of regulation for investing in Indonesia. Second, the government can release the taxation burden with tax holiday policy for manufacture sectors to keep productivity in pandemic period. Third, the increase of new cases pandemic will decrease the inflation rate, caused the weakness of purchasing power of a consumer. It means that the government has to make raised the purchasing power consumer not only people with categorized lower-middle income but also upper income. The aid funds for lower-middle income people needed when many worker have retired in formal and informal sectors. Then, the government has to create a job policy to recruit huge worker that priority to labor intensive like a program of "Padat Karya". For people with upper

income level, government can continue to reduce some tax burden in property, luxurious goods, etc.

4. Conclusions

This paper aims to analyze the existence and effect of Covid-19 on inflation in Indonesia. This study's best model result finds that BI 7 Days Repo Rate, JKSE, exchange rate, and palm oil price are a positive significance to drive on inflation. On the contrary, this study also presents a significant negative effect of Brent price, gold price, and new cases Covid-19 on inflation. However, the other variable of money supply has no significant effect on inflation. This paper implies that given higher new cases, Covid-19 per day has been the source of decreased inflation in Indonesia. It means that pandemic impacts the weakness of a consumer's purchasing power, shown by the lower inflation trend.

This research result that interest rate, BI rate and exchange rate have a significant positive effect on the inflation rate. The opposite the gold and raw oil price variable in this research has a negative significant effect on the inflation. This finding still correlates with studies of Karlsson *et al.* (2014) that pandemic leads to a significant increase in poor-home levels. There is also evidence that the pandemic negatively influences the return of capital. For capital incomes, the pandemic has a strong negative impact, and this impact seems to be a combination of short-and medium-term responses. However, the result of the money supply was no support in previous studies. The government must apply a policy to prevent and mitigate the economic decline and deep recession. First, the government has to make a trust and good offers for foreign investor with the competitive interest rate, and cut some rigid of regulation for investing in Indonesia. Second, the government can release the taxation burden with tax holiday policy for manufacture sectors to keep productivity in pandemic period. Third, the government has to make raised the purchasing power consumer. The aid funds for lower-middle income people needed when many worker have retired in formal and informal sectors. Then, the government has to create a job policy to recruit huge worker that priority to labor intensive like a

program of "Padat Karya". For people with upper income level, government can continue to reduce some tax burden in property, luxurious goods, etc.

The finding of this study needs to be addressed with further research. First, this study's limitation was using OLS methods that it can explore with advanced empirical modeling. Second, this study has limited the period for a pandemic, caused the time is still running until finished this study. Lastly, due to limited data availability, this study estimates only in national data aggregate that cannot explore the pandemic impact on inflation for every region in Indonesia. Further study needs to explore and address the relationship among spatial estimates on pandemic impact in every region.

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