



THE EFFECT OF INFLATION, EXCHANGE RATE, LABOR, AND MONEY SUPPLY ON THE MANUFACTURING INDUSTRY SECTOR IN INDONESIA 2011 – 2020

Faizal Amri*¹ 

¹ Departemen Ilmu Ekonomi, Universitas Diponegoro, Indonesia

ABSTRACT

The manufacturing industry is the main supporting sector for the economy, considering its enormous contribution to Indonesia's national GDP compared to other sectors. However, the economic problems lately have resulted in a decline in Indonesia's economic conditions, which is marked by a reduction in national GDP and a decrease in the output of the Indonesian manufacturing industry sector. Thus, this study aims to analyze the effect of the complex variables in the current economy, namely inflation, exchange rates, labor, and the money supply, on the manufacturing industry sector in Indonesia in the long and short term. This study uses the ECM (error correction model) method in empirical testing. The data used is secondary time series data (quarterly) starting from 2011:Q1 – 2020:Q4; the data obtained comes from the Central Statistics Agency, Bank Indonesia, and the Ministry of Trade of the Republic of Indonesia. This study uses the Eviews10 application as an analytical tool. The analysis results conducted in this study show that the exchange rate and labor have a positive and significant influence on the manufacturing industry sector in the long and short term. The money supply has a positive and significant effect on the manufacturing industry sector in the long term only. Meanwhile, inflation has a negative but not significant effect both in the long term and short term. Of these critical variables, labor has the most crucial influence on the manufacturing industry sector. Therefore, the government needs to pay attention to policies related to labor as the main factor in increasing the output of the manufacturing industry.

Keywords: Manufacturing Industry, GDP, Inflation, Exchange Rate, Labor, Money Supply.

ABSTRAK

Industri manufaktur merupakan sektor pendukung utama bagi perekonomian melihat dari kontribusinya yang besar terhadap PDB Indonesia jika dibandingkan dengan sektor lainnya. Akan tetapi, dengan adanya masalah-masalah pada perekonomian pada akhir-akhir ini mengakibatkan penurunan pada kondisi perekonomian Indonesia yang ditandai dengan menurunnya PDB dan juga penurunan pada output sektor industri manufaktur Indonesia. Maka, penelitian ini bertujuan untuk menganalisis pengaruh dari variabel yang menjadi masalah dalam perekonomian saat

ARTIKEL INFO

Received:
October 3rd, 2021
Revised
November 20th, 2021
Accepted:
May 4th, 2022
Online:
June 15th, 2022

*Correspondence:
Faizal Amri

E-mail:
faizalamri.55544@yahoo.com



ini, yaitu inflasi, nilai tukar, tenaga kerja, dan jumlah uang beredar terhadap sektor industri manufaktur di Indonesia dalam jangka panjang dan pendek. Penelitian ini menggunakan metode ECM (error correction model) dalam pengujian empiris. Data yang digunakan merupakan data sekunder time series (triwulan) terhitung dari 2011:Q1 – 2020:Q4, data yang diperoleh bersumber dari Badan Pusat Statistika, Bank Indonesia dan Kementerian Perdagangan Republik Indonesia. Penelitian ini menggunakan aplikasi Eviews10 sebagai alat analisis. Berdasarkan hasil analisis yang dilakukan, penelitian ini menunjukkan bahwa nilai tukar dan tenaga kerja memiliki pengaruh positif dan signifikan terhadap sektor industri manufaktur pada jangka panjang dan pendek, serta jumlah uang beredar memiliki pengaruh positif dan signifikan terhadap sektor industri manufaktur pada jangka panjang saja. Sedangkan inflasi berpengaruh negatif namun tidak signifikan baik dalam jangka panjang maupun dalam jangka pendek. Dari variabel-variabel yang signifikan tersebut, tenaga kerja memiliki pengaruh terbesar terhadap sektor industri manufaktur. Oleh karena itu, pemerintah perlu memperhatikan kebijakan terkait tenaga kerja sebagai faktor utama dalam meningkatkan output industri manufaktur.

Kata Kunci: Industri Manufaktur, PDB, Inflasi, Nilai Tukar, Tenaga Kerja, Jumlah Uang Beredar.

JEL: D21; L11

Introduction

The manufacturing industry is an industrial sector that has an essential role in driving the Indonesian economy. The manufacturing industry is an industry that is engaged in the processing of raw materials or raw materials or semi-finished materials into finished goods that have a selling value. A country has an excellent level of economic development if there are many manufacturing industrial sectors in it. Because the manufacturing industry tends to be more capital intensive than other sectors. In Indonesia, the manufacturing sector is the key to changes in the Indonesian economy, which initially moved from the primary sector to the secondary sector. The manufacturing sector's contribution is very significant to economic growth in Indonesia, marked by an increase in Indonesia's GDP from time to time. The main priority for developing countries is the manufacturing industry because this sector is considered capable of encouraging other sectors (the leading sector).

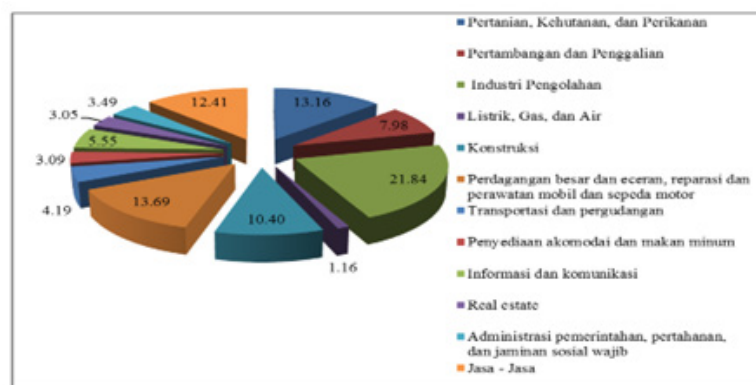


Figure 1: Sectoral Contribution to GDP by 2010 Constant Prices 2016 – 2020

Source: Central Bureau of Statistics, March 2020, processed.

Three sectors are the most significant contributor to GDP; these sectors include the manufacturing industry, the agricultural sector, and the trade sector. In Figure 1, it can be seen that these three sectors have contributed approximately 47% of the total GDP over

the last 5 years. The graph shows 12 sectors out of 17 sectors that contribute to GDP, the service management sector is combined into one, and the gas and electricity management sector is combined with the water management sector. The manufacturing industry contributed 21.84% of total GDP, whereas the contribution of manufacturing GDP was the highest contributor to real GDP from 2016 to 2020. The gift of the manufacturing sector contributed approximately 20.07% to Indonesia's GDP in the first quarter of 2019, which was only the difference between slightly with Germany at 20.6%, followed by Japan at 21%, South Korea at 27%, and China at 28.8% (BPS, 2020).

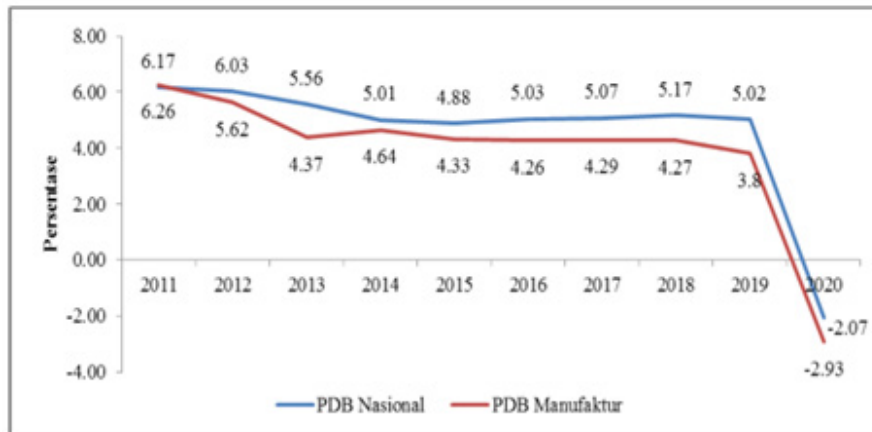


Figure 2: Manufacturing Sector Growth Rate with GDP Growth in 2011 –2020

Source: Central Bureau of Statistics, March 2020, processed.

In Figure 2, from 2011 to 2020, the contribution of manufacturing GDP to GDP from year to year has a positive trend which always increases every year. However, in 2020 it has decreased. The decline in the manufacturing sector's contribution only occurred in 2020; if seen from 2011 to 2019, the manufacturing industry sector continued to increase. The manufacturing GDP growth rate and the GDP growth rate in 2020 both experienced a negative trend where the manufacturing GDP growth rate decreased -2.93%, and the GDP growth rate decreased -2.07% from the previous year. This indicates that Indonesia's economic condition in 2020 has decreased compared to 2019. In 2019, the competitiveness of the manufacturing industry sector in Indonesia is still relatively low, ranking 41 out of 150 countries that are members of UNIDO (United Nations Industrial Development Organization), where several internal factors have caused a decline in the output of the manufacturing industry sector and the Indonesian economy, including (a) domestic macroeconomic conditions that are not conducive, (b) the low quality of state public institutions in carrying out their duties and functions as facilitators and services, (c) weak policies issued by the government regarding technology development in meeting productivity needs, (d) low business efficiency, especially business operations at the microeconomic level, and (e) weak business competition in Indonesia (World Economic Forum, 2019).

World, including Indonesia, which can cause a trade balance deficit. Meanwhile, external factors that can cause a decline in the output of the manufacturing industry sector as well as the Indonesian economy during the study period can be caused by the impact of the trade war that occurred between the United States and China from 2018 to 2019, which resulted in the inhibition of export and import activities of countries in Indonesia. When China's economic performance experienced a slowdown and reached its worst point, which only recorded 6.6 percent economic growth in 2018 or slowed down compared to 2017, which gained 6.90 percent, even targeting to grow in the range of 6%-6.5% in 2019 conditions, this

has also sparked concerns about the risks to world economic growth. This is because the Chinese economy accounts for a third of the world's economic growth. The world's second-largest economy is feeling the effects of a darkening trade outlook and government efforts to rein in risky borrowing after a rapid rise in debt levels (Bappenas, 2019). When China faces problems, all world trade will be affected, including Indonesia.

The decline in the output of the manufacturing industry sector to the economy in Indonesia is the economy affected by the Covid-19 pandemic. Before the Covid-19 pandemic, the manufacturing industry contributed the most to national economic growth (GDP) in the last five years. The Covid-19 pandemic that hit the whole world at the end of 2019 until now has caused various problems to the domestic economy, which can cause a decline in economic growth in Indonesia in recent times (Adhiem, 2021). The performance of the national manufacturing industry began to experience a significant decrease in March 2020, which was marked by the weakening of the Manufacturing PMI (Purchasing Managers' Index) in the manufacturing sector from 51.9 in February 2020 to 45.3 in March 2020 and a free fall. to a low of 27.5 in April 2020. (a reading below 50 represents a contraction in manufacturing activity). An official government statement reinforces this through the ministry of industry in April 2020, which stated that several manufacturing industrial sectors experienced a decline in production capacity by up to 50 percent, except the medical equipment and drug industries.

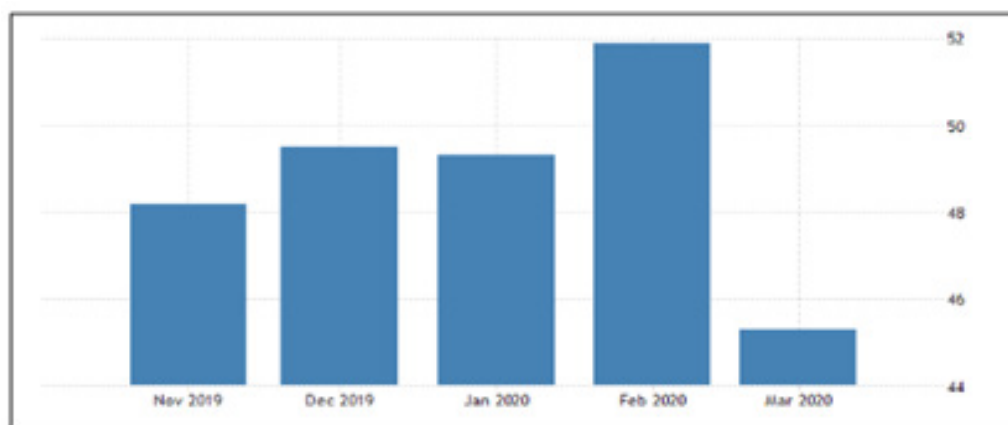


Figure 3: Value of Purchasing Managers Indonesian Manufacturing Index November 2019 – March 2020

Source: Trading Economics, 2020.

The decline in production capacity in the manufacturing sector was caused by various factors, including declining demand, suppression of supply of goods, delays in goods delivery, and factories' closing to reduce the unmet need for additional capital (Kusumah, 2020). It can be seen from the value of the Indonesian Manufacturing PMI (Purchasing Managers Index) in March, as depicted in Figure 3; the PMI value is a leading indicator or indicator that can describe trends that will occur in the future in a country's economic activities made based on a survey of purchasing managers in various business sectors. PMI figures are calculated based on the company's index consisting of New Demand (30%), Output (25%), Workers (20%), Delivery Time (15%), and Stock of Goods Purchased (10%).

In regulating the economy, the government, especially the monetary authority, has the authority to play with how the economy runs according to the desired conditions; one of the government's tools in playing with the economy is through monetary policy. Monetary policy is a dynamic instrument in macroeconomics carried out by the government to achieve

a desired economic condition. Monetary policy has effective variables compared to fiscal variables. Therefore monetary policy has a rapid effect on economic activity (Andersen & Jordan, 1968).

In Indonesia, monetary policy is generally implemented by Bank Indonesia. The Central Bank has the authority to stabilize prices and affect performance in the real sector. The Central Bank carries out transmission in cooperation with banking and financial authorities and other real sectors. Monetary policy is also defined as a policy by the monetary authority (central bank) in controlling monetary aggregates (base money, money supply, and bank credit), which is carried out with all efforts to influence the development of monetary variables (interest rates, money supply, exchange rates, credit, and inflation) as a means of achieving specific economic goals or conditions. There are two kinds of monetary policy: contractionary and expansionary monetary policy. These policy aims to encourage or slow down the economy. In carrying out monetary policy, there are various instruments in its implementation, namely interest rates, exchange rates, credit, asset prices, and expectations (Pohan, 2008).

In maintaining the stability of domestic currency prices, Bank Indonesia has two dimensions in its implementation. First, BI maintains the stability of the rupiah against prices and services based on the inflation rate. Secondly, it maintains the stability of the rupiah exchange rate against foreign exchange rates. This is reflected in the framework for implementing BI's monetary policy, known as the ITF (Inflation Targeting Framework). The ITF in monetary policy implements the policy interest rate as a reference for monetary policy. The policy interest rate used by Bank Indonesia is the BI-7 Day Reverse Repo Rate (BI7RPP), where the policy interest rate is used as the main instrument in influencing economic conditions by considering the inflation target. Based on the problems described above, the variables in the study that are thought to affect the manufacturing sector in Indonesia are as follows:

With an increase in the price of goods, inflation will affect people's interest in buying or using these goods. Inflation can affect companies in carrying out production activities. When inflation is high, the price of raw materials also increases, which will increase production costs. To anticipate this, the company will reduce its production capacity. As a result, the output will decrease, followed by a decrease in company profits. Exchange Rate, when the rupiah exchange rate rises, imported goods will be cheaper. Companies that depend on raw materials from abroad will benefit because the price of raw materials will be lower. Besides that, the export output produced by the company has a higher selling value and will increase company profits. Labor is the primary production factor in a company because it is the most important component that must exist when a company wants to carry out production activities. The more workers and the more skilled the workforce owned by a company will increase the production capacity and output and the quality of the company's output. The amount of money in circulation is the total value of money in the community. With the government's efforts to increase the amount of money circulating in society, where money is a production function as capital, the money supply can affect the manufacturing industry through the aggregate demand side of the manufacturing industry output.

This study is guided by the existing literature and will try to analyze the effect of monetary and labor variables on the manufacturing industry sector. This study attempts to conduct similar research with different research objects and modifications to the independent variables by referring to previous studies.

Literature Review

According to Rahardjo (2013), economic growth is an effort to increase production

capacity to increase the amount of output. Economic growth can be seen through gross domestic product or commonly called GDP. Economic growth is an increase in output per capita in the long term, which emphasizes three aspects in it; these aspects are (1) process, (2) per capita output, and (3) long term. This means that economic growth is a process and not a picture of the economy at any given time. The pressure is on changes or developments in economic conditions themselves (Boediono, 1999).

Classical Economic Theory (Adam Smith)

Among many classical economists, Adam Smith and David Ricardo have set the foundation for the development of economic thought. Although there are many differences of opinion about an economic problem, classical economists have the same perception about the economic order of society, including:

Free market policies (*Laissez Faire*) are at the core of an economy. Therefore, every individual or group of businesses must be given the freedom to run their economy; economic activities based on market mechanisms will be more beneficial to society as a whole than if there is government intervention in their implementation; the value of goods, the level of wages and rent, the rate of profit is determined by the mechanism of attraction between supply and demand in the market.

According to Arsyad (2010), the classical view has three absolute requirements to achieve economic harmony and general welfare: specialization, efficiency, and free markets. There are two main aspects of classical economic growth: total output and population growth. Adam Smith said that there are three aspects of a country's total output growth system, namely available natural resources, human resources, and capital accumulation, with the following explanation:

The amount available in the "maximum limit" for economic growth. According to Adam Smith, available natural resources are the basis for production activity in society. If the resources are not fully utilized, the population and capital stock will trigger output growth. Still, output growth will stop if natural resources have been exhausted or used optimally.

Humans have a passive role in the process of output growth. This means the population will adjust to the needs of labor. In this case, Adam Smith views labor as one of the inputs in the production process, and specialization is one of the crucial factors in increasing labor productivity.

The capital stock has the most crucial role in economic development as a "development fund" because the speed of economic development depends on the availability of development funds. In addition, the stock of capital is an active element in production because it determines the level of output. The amount and rate of growth of output depend on the rate of growth of the capital stock and the maximum limit of natural resources. Which has another meaning, output growth will decline if the carrying capacity of natural resources cannot keep pace with the pace of economic activity in the community. Population growth is considered to be able to encourage economic growth. The increase in population will expand the market; market expansion will increase the level of specialization in the economy to increase economic activity. The population will increase if the prevailing wage level is higher than the subsistence wage level, i.e., the wage level is sufficient to survive. If the prevailing wage rate is greater than the subsistence wage, the community will tend to marry young, resulting in the number of births increasing and vice versa.

The Effect of Inflation on the Manufacturing Sector

Inflation is when the general price of goods continuously increases over a certain period. When the inflation rate is high, people's purchasing power will decrease due to relatively high prices of goods; they will invest more of their funds in the capital market and for savings. For companies, the investment will increase the cost of input goods; if production costs increase, it will reduce company profits if the income from the sale of goods produced by the company is less than the cost of producing goods.

Tandelilin (2010) explains that inflation can increase company costs. An increase in production costs that is higher than the increase in the selling price will have an impact on the decline in profitability or company profits, and vice versa if the rise in production costs is lower than the increase in the selling price of a company (producer), the company's profitability will increase. The increase or decrease in company profits will affect stock prices and the desire or interest of investors to invest in a company.

The decline in trading activity, as well as the decline in industrial performance in the economy as a result of high inflation, will have an impact on declining economic growth. Ardiansyah (2017) shows that inflation has a negative and significant effect on growth in Indonesia. Daniel (2018) shows the same results: inflation has a negative relationship with economic growth.

The Effect of Exchange Rates on the Manufacturing Sector

According to Sukirno (2011), several factors determine exports, namely the existence of competitiveness and depending on economic conditions in other countries. For a country that adheres to a free trade system, its ability to sell its goods abroad depends on its ability to compete with similar goods in the international market. Economic income level strongly influences the volume of trade abroad in that country. An increase in production in a country will increase the volume of that country's exports—the level of policy on trade restrictions and protection of export destination countries. The stricter the policies in the export destination countries will reduce the volume of the number of exported goods—the foreign exchange rate of the export destination country. The increase in the value of foreign exchange in the export destination country against the exporting country can increase the purchasing power of the export destination country, increasing the export volume of the exporting country. The exchange rate compares the value of one country's currency with the value of another country's currency. When the rupiah exchange rate depreciation occurs, it positively impacts the trade balance due to increased export demand. The price of domestic goods will be lower than the price of foreign goods; foreign consumers will prefer to import goods from Indonesia. When the rupiah depreciates, companies that export their output abroad benefit from receiving payments in foreign currency. As foreign trade activities increase, the domestic economy will also increase as income through foreign exchange increases. Meanwhile, when the rupiah appreciates, it will be profitable for domestic companies, and the cost of imported raw materials will be much cheaper. The company will have the advantage of importing raw materials from abroad and technology, including machinery, to increase production capacity.

Rodrik (2008) found a relationship between the exchange rate and economic growth, forming a positive relationship. The exchange rate is a good instrument because it can help the liquidity of the capital market so that the investment world moves forward, which in turn will create economic growth (Wong et al., 2005). This condition can stimulate economic growth when currency undervaluation occurs, especially in developing countries. Currency undervaluation causes domestic prices to be cheaper than foreign prices. The operating chan-

nel of the exchange rate at the time of depreciation is through the tradable sector, especially the industrial sector. A low exchange rate will increase the demand for exports of domestic goods.

The Effect of Labor on the Manufacturing Sector

According to [Sunaryo \(2001\)](#), the Cobb-Douglas production function has a utility function; if the input used in the production process increases, the resulting output will also increase. If the company employs more labor, inputs will increase the amount of output produced. This is in line with [Oey \(2019\)](#) research, which shows that the workforce has a significant positive influence on the manufacturing industry. According to [Fatkurahman \(2017\)](#), human capital (labor) positively and significantly impacts industrial production. This means that if there is an increase in the workforce, it will increase the company's production value; on the contrary, if there is a decrease in the force, its production value will also decrease.

The Influence of the Money Supply on the Manufacturing Sector

The Cambridge theory, better known as the Marshall-Pigou theory, emphasizes the function of money as a general medium of exchange (mean of exchange) because the classical theory of the need for money (demand for money) is the need for a liquid transaction tool. This theory says that money is used as a store of wealth because money has a fluid nature which is easy to exchange for goods. Cambridge's theory emphasizes the behavioral factors that relate the demand for money to the volume of transactions. The demand for money is not only influenced by the volume of transactions and institutional factors of a country; it can also be affected by interest rates, people's wealth, and expectations in the community in the future ([Boediono, 1994](#)). Keynes's theory, based on Cambridge's theory, expresses a different opinion from classical monetary theory. The difference lies in emphasizing other functions of money, namely as a store of value and not just a means of exchange. Keynes's theory is also known as the theory of Liquidity Preference ([Boediono, 1994](#)).

According to [Kistianingsih \(2019\)](#), the money supply is positively related to economic growth in Indonesia. There is a stable long-term relationship between government policies controlling the money supply and economic growth. The more the money supply in the community increases, the economic growth will increase in line with Keynes's hypothesis that the money supply has a positive effect on output and growth. If the money supply in society is high, the central bank will take a policy of lowering interest rates; this condition will encourage investment, creating an increase in output that triggers economic growth.

Research Method

This research is quantitative descriptive research where the data obtained comes from various sources, including: (1) the Central Statistics Agency, (2) Bank Indonesia, and (3) the Ministry of Trade. The type of data used in this study is secondary data, a quarterly time series starting from the early quarter of 2011 to the final quarter of 2020 (2011Q1 – 2020Q4). The method used is the ECM (Error Correction Model) method. The basic model of the long-term equation in this study is as follows:

$$LMPDB = \beta_0 + \beta_1 INF_t + \beta_2 LNT_t + \beta_3 LTK_t + \beta_4 LJUB_t + e$$

The formation of the ECM model is done by entering the first lag of the residual from the regression results in the long-term equation into the stationary variable regression at the same difference for the short-term equation. The ECM models that can be used in this study are as follows:

$$D(LMPDB) = \alpha_0 + \alpha_1 D(INF)_t + \alpha_2 D(LNT)_t + \alpha_3 D(LTK)_t + \alpha_4 D(LJUB)_t + ECT_{t-1} + e$$

Information:

β_0	= constant
$\beta_1 \beta_2 \beta_3 \beta_4$	= Independent Variable Regression Coefficient
α_0	= constant
$\alpha_1 \alpha_2 \alpha_3$	= Regression coefficient ratio independent variable
L	= Logarithm
D	= Change
MPDB	= Manufacturing GDP
INF	= Inflation
NT	= Exchange rate
LTK	= Labor
LJUB	= Amount of Money Supply
e	= Error
ECT	= Error Correction Term

Analysis Results

Stationary Test of Research Variable Data

The stationarity test in this study used the Augmented Dickey-Fuller unit root test or the ADF test. The results of the ADF test at the level of the research variables are as follows:

Table 1: Unit Root Test Results

Variable	Level			1 st difference			2 nd difference		
	t-statistic	Prob	Decision	t-statistic	prob	Decision	t-statistic	prob	Decision
LMPDB	-1.77424	0.3866	Not Stationer	-1.3756	0.5829	Not Stationer	-12.174	0.0000	Stationer
INF	-1.17573	0.6749	Not Stationer	-8.5444	0.0000	Stationer	-5.5044	0.0001	Stationer
LNT	-2.09937	0.2460	Not Stationer	-8.0559	0.0000	Stationer	-4.5817	0.0010	Stationer
LTK	-1.63868	0.4535	Not Stationer	-1.38637	0.5787	Not Stationer	-6.85746	0.0000	Stationer
IJUB	-3.38606	0.0178	Stationer	-8.66747	0.0000	Stationer	-836571	0.0000	Stationer

Source: Output Eviews10, 2021, processed.

Based on Table 1, some variables are not stationary in the manufacturing industry, inflation, exchange rates, and labor level because the probability is more than = (0.05). In contrast, the money supply variable is stationary at the Level level. Then proceed with the next integral degree test to the first difference. The manufacturing industry and labor variables are not stationary at the first difference level because they still have a probability value above = (0.05). Because they are not all stationary, the following integral degree test is carried out on

the second difference. At this level, all variables are stationary, and the ECM estimation can be continued to the next stage.

Cointegration Test

In cointegration testing, the first step is to estimate the long-term equation and then take the residual of the long-term equation, which will be used as an ECT (Error Correction Term) variable.

Table 2: Results of the Long-Term Equation

Variable	Coefficient	t-statistic	probability
INF	-0.001587	-0.655819	0.5162
LNT	0.140536	2.278375	0.0289
LTK	0.297938	5.210427	0.0000
IJUB	0.236047	5.002816	0.0000

Source: Output Eviews10, 2021, processed.

Based on Table 2, in the long term, the independent variables that are significant to the dependent variable of the manufacturing industry are the exchange rate, labor, and money supply, where the probability value of each of these variables is below $\alpha = (0.05)$. At the same time, the inflation variable is not significant to the manufacturing industry in the long term because the probability value of the variable above is $\alpha = (0.05)$.

Table 3: Cointegration Test Results

Variable	t-statistic	Prob	Decision	Stage
ECT	-5.4656608	0.0001	Stationer	Level

Source: Output Eviews10, 2021, processed.

Test ECM (Error Correction Model)

The ECM test is an estimation test in the short term, carried out by entering the residual ECT variable into the equation. The results of the short-term ECM equation in this study are as follows:

Table 4: Short-Term ECM Equation Results

Variable	Coefficient	t-statistic	probability
D(INF)	-0.000980	-0.424188	0.6742
D(LNT)	0.134138	2.114888	0.0421
D(LTK)	0.402262	2.968032	0.0055
D(IJUB)	0.163049	1.105892	0.2768
ECT(-1)	-0.654801	-3.783858	0.0006

Source: Output Eviews10, 2021, processed.

As seen from Table 4 above, in the short term, the significant variables for the manufacturing industry are labor and the exchange rate because they have a probability below $\alpha = (0.05)$. At the same time, the variables that are not significant are inflation and the money supply. The ECT variable shows a probability below $\alpha = (0.05)$ and has a negative coefficient, which means that ECT meets ECM requirements. The equation model obtained in the short term is as follows:

$$D(LMPDB) = 0.001349 - 0.000980D(INF)_t + 0.134138D(LNT)_t + 0.402262D(LTK)_t + 0.163049D(LJUB)_t - 0.654801_{-1}$$

Discussion

The Effect of Inflation on the Manufacturing Industry

In the long term, the result of data processing is that inflation has a negative and insignificant effect on the manufacturing industry. In the short term, the inflation coefficient value is -0.00098, which means that when inflation increases by 1%, the manufacturing industry sector decreases by -0.00098% with the assumption of *ceteris paribus*. The value of the inflation coefficient in the long term is -0.001587, which means that when inflation increases by 1%, the manufacturing industry sector decreases by -0.001587% with the assumption of *ceteris paribus*. Then, based on data processing results in the short term, inflation has a negative and insignificant effect on the manufacturing industry. So, hypothesis H1 is rejected.

The results of this study are from the research of [Budyanti \(2014\)](#) and [Kistianingsih \(2019\)](#), which show that inflation has no significant effect on the manufacturing industry. The results in this study can be strengthened by the theory put forward by [Nopirin \(2009\)](#) that inflation can lead to an increase in production activity because, in a state of inflation, the price increase in output goods occurs before the rise in input costs (wages) so that entrepreneurs get profits first. This increase in profits will encourage production growth. However, when the inflation rate is not controlled (hyperinflation), it can decrease output. Under these conditions, the decline in the actual currency value is huge, so people will tend not to use cash. As a result, transactions will use the barter system more and be followed by a decrease in production. Inflation in Indonesia from 2011 - to 2020 was classified as light or slight inflation because it was still below 10%. Companies do not think that the increase in inflation is an obstacle because the price increase for input raw materials is not too high, which means that the company can still control its production activities to maximize profitability in the short and long term.

The Effect of Exchange Rates on the Manufacturing Industry

As a result of data processing in the long term, the exchange rate positively affects the manufacturing industry. The long-term exchange rate coefficient is 0.140536, which means that when the US dollar exchange rate against the rupiah increases by 1%, the manufacturing industry sector increases by 0.140536% with the assumption of *ceteris paribus*. Then, based on the results of data processing in the short term, the exchange rate has a positive and significant effect on the manufacturing industry. In the short term, the exchange rate coefficient is 0.134138, which means that when the exchange rate of the US dollar against the rupiah increases by 1%, the manufacturing industry sector will increase by 0.134138% with the assumption of *ceteris paribus*. So, hypothesis H2 is accepted.

The results of this study are in line with research by [Ismanto, Rina, and Kristini \(2019\)](#) that the exchange rate has a significant effect on economic growth. During the period 2011 to 2020, the rupiah exchange rate against the US dollar tends to depreciate because from 2011 to 2020, the rupiah continues to weaken. Depreciation of the exchange rate can cause the prices of imported goods to become more expensive. As a result, people will prefer to use domestic goods, which are relatively cheaper than imported goods. For the company itself, the depreciation of the exchange rate will generate profits because the price of exported goods will be much higher, increasing the company's profitability if they receive payments using foreign currencies.

People abroad see that domestic goods are cheaper, increasing export demand for domestic goods. The parties who benefit from the rupiah depreciation are companies that export their goods abroad. In the future, increased export activity will increase the domestic trade balance, stimulating economic growth in the country. This is in line with research by [Rodrik \(2008\)](#), which states that when there is currency undervaluation, domestic prices will be cheaper than foreign prices; when there is depreciation, the sector that benefits is the tradable sector, namely the industrial sector. Furthermore, the results of this study can be strengthened by the theory of [Sukirno \(2011\)](#), which states that if there is an increase in the value of the currency (appreciation) in the export destination country, it can increase export demand because the price of exported goods will be much lower. This will benefit the exporting company in the short and long term.

The Effect of Labor on the Manufacturing Industry

The results of data processing in the long term, labor has a positive and significant effect on the manufacturing industry. The value of the labor coefficient in the short term is 0.402262, which means that when the workforce increases by 1%, the manufacturing industry sector increases by 0.402262% with the assumption of *ceteris paribus*. The value of the coefficient of labor in the long term is 0.297938. When the workforce increases by 1%, the manufacturing industry sector increases by 0.297938% with the assumption of *ceteris paribus*. Then, based on data processing results in the short term, labor has a positive and significant effect on the manufacturing industry. So, hypothesis H3 is accepted.

The results of this study are in line with research conducted by [Oey \(2019\)](#) and [Fatkhu-rahman \(2017\)](#) that labor has a significant effect on the manufacturing industry. During the period 2011 - to 2020, the workforce in the manufacturing industry sector tended to increase, but in 2020 the force in the manufacturing industry sector has decreased significantly. The performance of the manufacturing industry follows this in its contribution to GDP. When the workforce increases, the contribution of the manufacturing industry also increases. However, if the workforce decreases, the manufacturing industry's contribution will also decrease.

The results of this study can be strengthened by the theory of the production function of Cobb Douglas in [Sunaryo \(2001\)](#) because, in production activities, there is a utility function, namely, if there is an increase in the input used, the output will also increase. This means that if there is additional labor input, the resulting output will increase; on the contrary, if there is a decrease in the labor input used, the resulting output will decrease. And also, Adam Smith's theory says that there are three aspects in the total output growth system, namely natural resources, human resources, and capital accumulation. Human resources (labor) are an essential aspect of economic activity, namely through the workforce's specialization or expertise. It can increase productivity in economic activities.

The Effect of the Money Supply on the Manufacturing Industry

As a result of data processing in the long term, the money supply positively influences the manufacturing industry. The coefficient value of the money supply in the long term is 0.236047. When the money supply increases by 1%, the manufacturing industry sector increases by 0.236047% with the assumption of *ceteris paribus*. Then, based on the results of data processing in the short term, the money supply has a positive and insignificant effect on the manufacturing industry. The value of the labor coefficient in the short term is 0.163049, which means that when the money supply increases by 1%, the manufacturing industry sector increases by 0.163049% with the assumption of *ceteris paribus*. So, hypothesis H4 can be accepted in the long term, but hypothesis H4 is rejected in the short term with the same

direction of the relationship. It can be concluded that the money supply only affects the manufacturing industry in the long run.

The results of this study are in line with research by [BudiYanti \(2014\)](#) and [Kistianingsih \(2019\)](#) that the money supply has a positive and significant relationship to the manufacturing industry and economic growth. According to the data in this study, the money supply from 2011 to 2020 has increased every year. According to Keynes's hypothesis, in the long run, the money supply can increase output because when there is an excess of money supply, the central bank tends to lower interest rates; when interest rates fall, this condition encourages people to invest, which will eventually trigger an increase in output and an increase in growth. In line with Keynes's hypothesis, [Mishkin \(2012\)](#) states that an increase in the money supply will cause an increase in domestic demand, which will follow in output. However, an increase in the money supply can also harm the economy, namely inflation.

According to the Keynesian view, in the short term, if the increase in the money supply occurs earlier than changes in demand and supply of output in the community, it will cause inflation called cost-push inflation, i.e., input prices of production costs tend to rise first. So it will reduce output due to increasing production input costs.

Conclusion

Based on the results of data processing and data analysis that have been explained regarding the effects of inflation, exchange rates, labor, and the money supply in the long and short term, in this study, it can be concluded that:

1. The inflation variable has a negative and insignificant effect on the manufacturing industry in Indonesia in the long and short term. Inflation does harm the manufacturing industry because it can lead to an increase in the prices of production inputs. However, the low inflation rate in Indonesia from 2011 – to 2020 resulted in a less pronounced increase in the cost of input raw materials. In addition, the rise in company profits also occurred due to rising prices of output goods due to inflation.
2. The exchange rate variable has a positive and significant impact on the manufacturing industry in Indonesia in the long and short term. The value of the rupiah, which continues to depreciate in the period 2011 – 2020, can increase the growth of the manufacturing sector because, with the depreciation, the demand for exports of domestic goods will increase so that the output produced by the manufacturing industry will also increase.
3. The labor variable has a positive and significant impact on the manufacturing industry in Indonesia in the long and short term. Labor is the main factor of production besides capital and technology in the production process of the manufacturing industry. The increase in labor used by the manufacturing sector can improve the performance of the manufacturing industry, which can be seen through the increase in output that the manufacturing industry can produce in Indonesia. Conversely, suppose there is a decrease in the workforce used by the manufacturing sector. In that case, it can cause a decline in the performance of the manufacturing industry because the output produced also decreases.
4. The money supply variable has a positive and significant effect on the manufacturing industry in Indonesia. Meanwhile, in the short term, the money supply has a positive and insignificant effect on the manufacturing industry sector in Indonesia. The increase in the money supply can increase economic growth. With an increase in the money supply, people will put some of their funds/wealth for consumption to make producers produce more goods which

then the demand for factors of production increases. However, suppose the increase in the money supply in the community exceeds changes in demand and supply of output goods in the community. In that case, it will cause inflation of input goods, harm the company, and reduce the output produced.

5. The variables of inflation, exchange rate, labor, and the number of manufacturing industries can explain the effect on the manufacturing industry in the long and short term. Labor has the most significant influence on the long and short-term manufacturing industry based on the partial test between significant variables. This means that control over the workforce in Indonesia, especially the manufacturing sector workforce, is very influential in encouraging the growth of the manufacturing industry.

Research Suggestions and Limitations

For the government, especially monetary policymakers (Bank Indonesia), it is necessary to maintain inflation at a low level; the aim is to be able to spur Indonesia's economic growth, especially the growth of manufacturing industry output, as well as control related to the rupiah exchange rate which continues to weaken. In taking the monetary policy, it is necessary to pay attention to Indonesia's development of the money supply. Through policies related to the money supply, it can increase economic growth, especially the output growth of the manufacturing industry sector.

The government needs to improve policies related to the workforce, especially the workforce in the manufacturing industry sector, which is currently declining. Seeing the manufacturing industry sector, which in production activities uses a lot of human resources in the production process and as a sector to increase employment in Indonesia, it is hoped that with the increasing number of workers that the manufacturing industry sector can absorb, the performance of the manufacturing sector can increase to increase output.

In the future, the government needs to improve policy formulations related to the domestic industry by looking at the contribution of the industry, especially the manufacturing industry, as the main wheel of the Indonesian economy at this time so that in the future, the domestic manufacturing industry can continue to provide added value and can improve the investment climate of the manufacturing industry sector in Indonesia, especially investment. In technology.

Limitations in this study include the limitations of references in this study so that there are deficiencies in supporting the theory or justification of the problems proposed related to the manufacturing industry sector; this study uses four independent variables, which are macroeconomic variables but have not paid attention to socio-political conditions and other internal factors. in manufacturing companies, and this study uses a period from 2011 to 2020, wherein 2020 there are problems in the Indonesian economy because it is affected by the Covid19 pandemic.

Reference

- Adhiem, M. A. (2021). Prospects of Manufacturing Sector and National Economic Recovery. *Jurnal Bidang Ekonomi dan Kebijakan Publik*, 13(9).
- Andersen, L. C., & Jordan, J. L. (1968). Monetary and Fiscal Action: A Test of Their Importance in Income Stabilization. 52(4), 7 - 25.
- Ardiansyah, H. (2017). The Effect of Inflation on Economic Growth in Indonesia. *Jurnal Pendidikan Ekonomi*.

- Arsyad, L. (2010). *Development Economics, Fifth Edition*. Yogyakarta: UPP STIM YKPM.
- Bambang Ismanto, L. R. (2019). *The Effect of Exchange Rates and Imports on Indonesia's Economic Growth*.
- Bappenas. (2019, Mei). *Commodity Price Development in International Market (Monthly)*. Retrieved September 2021, from <https://www.bappenas.go.id/id/profil-bappenas/unit-kerja/deputi-bidang-ekonomi/direktorat-perencanaan-makro/contents-direktorat-perencanaan-makro/perkembangan-harga-komoditas-di-pasar-internasional/>
- Boediono. (1994). *Monetary Economics : Synopsis Series Introduction to Monetary Economics*. Yogyakarta: LPBFE.
- Boediono. (1999). *Economic Growth Theory*. Yogyakarta: BPFE UGM.
- BPS. (2020). *Sectoral Contribution to National GDP Based on 2010 Constant Prices*. Retrieved Maret 1, 2020, from <https://www.bps.go.id>
- Budiyanti, E. (2014). *Effect of Monetary Policy on the Manufacturing Industry Sector in Indonesia*.
- Daniel, P. A. (2018). *Analysis of the Effect of Inflation on the Economic Growth Rate in Jambi City*. *Jurnal ekonomis: Journal of Economics and Business*.
- Fatkurahman. (2017). *The Role of Human Capital and Investment Capital on the Value of Small Industry Production in Pekanbaru City*.
- Ismanto, B., Kristini, M., & Rina, L. (2019). *Pengaruh Kurs dan Impor Terhadap Pertumbuhan Ekonomi Indonesia Periode Tahun 2007-2017*. *Ecodunamika*, 2(1).
- Kistianingsih, D. (2019). *Analysis of the Effect of the Money Supply, Inflation, Investment and the Rupiah Exchange Rate on Economic Growth in Indonesia in 2000-2017*.
- Kusumah, A. (2020, Desember). *Covid-19 and the Manufacturing Industry in Indonesia: A Light Note*. Retrieved September 2021, from <https://feb.umri.ac.id/covid-19-dan-industri-manufaktur-di-indonesia-sebuah-catatan-ringan/>.
- Mishkin, F.S. (2012). *Macroeconomics Policy and Practice*. Boston: Pearson.
- Nopirin. (2009). *Monetary Economics*. Jakarta: BPFE.
- Oey, W. W. (2019). *Determinants of Indonesian Manufacturing Industry Output 2007-2013*.
- Pohan, Aulia. (2008). *Monetary Economics. Book II. 1st edition. Cetakan kesepuluh*. BPFE UGM: Yogyakarta.
- Rahardjo, A. (2013). *Economic Development Theories*. Yogyakarta: Graha Ilmu.
- Rodrik, D. (2008). *The Real Exchange Rate*.
- Sukirno, S. (2011). *Macroeconomic Theory Introductory Third Edition*. Jakarta: Rajawali Pers.
- Sunaryo, T. (2001). *Managerial Economics Application of Microeconomic Theory*. Jakarta: Erlangga.
- Tandelilin, E. (2010). *Portfolio and Investment Theory and Application*. Yogyakarta: Kanisius.
- Wong, P.K., Ho, Y.P. & Autio, E. (2005). *Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data*. *Small Bus Econ* 24, 335–350. <https://doi.org/10.1007/s11187->

005-2000-1

World Economic Forum. (2019). The Global Competitiveness Index Report. 2015 - 2019.