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THE IMPACT OF INFLATION, INTEREST RATES, AND EXCHANGE RATE ON THE GROWTH OF THE MANUFACTURING SECTOR IN EAST JAVA

Wahyu Aditama Putra Mukti Wibawa[1*]
wahyu.aditama@pasca.unair.ac.id[1*]
Karari Budi Prasasti[2]
values kararibudiprasasti@uniska-kediri.ac.id[2]
SekolahPascasarjana Universitas Airlangga[1*]
Fakultas Ekonomi Universitas Islam Kadiri[2]

ABSTRAK

Sektor industry pengolahan merupakan sector yang penting dan memberikan kontribusi besar dalam pertumbuhan ekonomi di Provinsi Jawa Timur. Penelitian ini bertujuan untuk menganalisis pengaruh dari variable makro ekonomi terhadap pertumbuhan ekonomi dari sector industry pengolahan. Penelitian ini menggunakan data sekunder yang bersumber dari Badan Pusat Statistik. Data berupa data time series dari variable suku bunga, inflasi, serta nilai tukar terhadap pertumbuhan ekonomi pada sektor industry pengolahan di jawa timur. Pengujian dilakukan dengan menggunakan metode error correction model. Dari hasil penelitian dapat diambil kesimpulan bahwa secara jangka panjang variable suku bunga, inflasi, dan nilai tukar tidak berpengaruh signifikan terhadap variabel pertumbuhan ekonomi pada sektor industri pengolahan pada provinsi Jawa Timur baik itu secara parsial maupun secara simultan. Sedangkan dalam jangka waktu yang panjang variabel inflasi tidak berpengaruh secara signifikan terhadap variabel pertumbuhan ekonomi. Sedangkan variabel suku bunga dan variabel nilai tukar berpengaruh secara signifikan terhadap pertumbuhan ekonomi pada sektor industri pengolahan di Provinsi jawa Timur. Secara jangka panjang ketiga variabel independent berpengaruh secara signifikan terhadap pertumbuahan ekonomi pada sektor industri pengolahan di Provinsi Jawa Timur.

Kata kunci: Inflasi, Kurs, Suku Bunga, Pertumbuhan Ekonomi, IndustriPengolahan

ABSTRACT

The manufacturing sector is an important sector that significantly contributes to economic growth in East Java. This study analyzes the impact of macroeconomic variables on the economic growth of the manufacturing sector. The data used in this study is secondary data sourced from the Central Statistics Agency (BPS). The data consists of time-series data for the variables of inflation, interest rates, and exchange rates, and their impact on economic growth in the manufacturing

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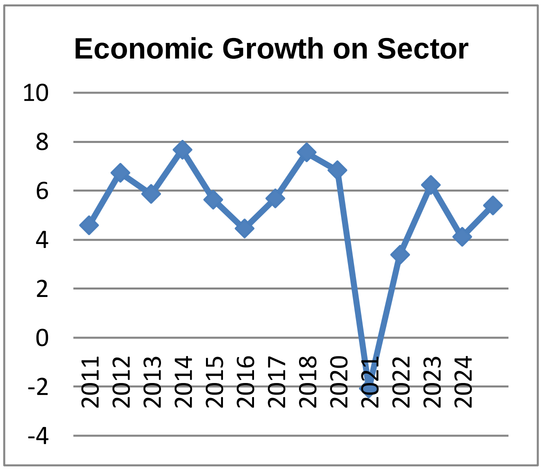
sector in East Java. The analysis was conducted using the Error Correction Model (ECM).The findings definitively show that inflation, interest rates and exchange rates do not significantly influence economic growth within East Java's manufacturing sector, whether considered individually or collectively. Inflation has no effect on long-term economic growth. Interest rates and exchange rates have a significant impact on the sector's economic performance. It is clear that all three variables have a significant impact on the long-term economic growth of the manufacturing industry in East Java.

Keywords: Inflation, Interest Rates, Exchange Rates, Manufacturing Sector

1. INTRODUCTION

Economic growth is a crucial indicator for measuring the success of development in a region. One sector that makes a significant contribution to economic growth, particularly in East Java Province, is the manufacturing sector. This sector not only absorbs a large labor force but also plays a strategic role in creating added value and promoting exports(Suyanto & Sugiarti, 2019).

However, the growth of the manufacturing sector is not immune to macroeconomic dynamics that influence its performance. Three key indicators that are frequently highlighted include inflation, interest rates, and exchange rates(Prasasti & Slamet, 2020). Elevated inflation levels will lead to higher production expenses and diminish consumers' purchasing power, which will negatively impact the demand for industrial goods. Interest rates influence capital costs and investment decisions, while fluctuations in exchange rates can impact the competitiveness of industrial products—especially those that are export-oriented or heavily reliant on imported raw materials(Prasasti et al., 2022).



Picture 1
Economic Growth on Sector

In the context of East Java—as one of the provinces with a strong industrial base in Indonesia—understanding the impact of these three macroeconomic variables is highly important. Moreover, the global and national economic dynamics in recent years have shown significant fluctuations, which may affect the

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manufacturing sector in this region. Therefore, this study is conducted to empirically analyze how inflation, interest rates, and exchange rates affect the economic growth of the manufacturing sector in East Java. The results of this study are expected to provide valuable input for regional policymakers and industry players in formulating strategies that are adaptive to macroeconomic changes.

East Java Province is one of the regions with the largest economic contributions in Indonesia, particularly on the island of Java. One of the key sectors supporting the economic structure of East Java is the manufacturing sector, which includes various industries such as food and beverages, textiles, chemicals, metals, and other industrial goods. Data from the Central Bureau of Statistics (BPS) show that this sector makes a substantial contribution to East Java's Gross Regional Domestic Product (GRDP) every year. The manufacturing sector not only plays a strategic role in increasing economic added value, but also supports job creation, regional export strength, and investment growth(Sari et al., 2016).

However, the dynamics of manufacturing sector growth are significantly influenced by macroeconomic conditions, both at the national and global levels(Esquivias & Harianto, 2020). The three main macroeconomic variables often discussed in economic studies—and theoretically closely related to manufacturing activities—are inflation, interest rates, and exchange rates(Hafidz Meiditambua Saefulloh et al., 2023).

The inflation rate reflects the general increase in the prices of goods and services. Excessively high inflation can raise production costs, especially when it affects raw materials and energy used in industrial processes. This can erode profit margins and reduce competitiveness. On the other hand, controlled inflation indicates price stability and sends a positive signal to investors and business actors. Therefore, inflation fluctuations have both direct and indirect effects on manufacturing growth(Jefry & Djazuli, 2020).

Interest rates, as set by the monetary authority (Bank Indonesia), affect borrowing or credit costs. In the industrial sector, financing is a crucial component, particularly for production expansion, machinery purchases, or working capital(Arios Tiblola et al., 2024). High interest rates increase the cost of capital and may hinder investment in the industrial sector. Conversely, low interest rates can stimulate industrial growth by encouraging investment and consumption. Thus, changes in interest rates affect production activity and investment decisions within the manufacturing sector(TONYE & NWIKINA, 2023).

The exchange rate, or the value of the rupiah against foreign currencies, has major implications—especially for industries dependent on imported raw materials or oriented toward exports. A depreciation of the exchange rate (a weakening rupiah) can increase the cost of importing raw materials, thereby burdening production costs. However, depreciation can also enhance the competitiveness of export products, as Indonesian goods become cheaper in international markets.

Therefore, exchange rate volatility is a critical factor to analyze in relation to sectoral growth.According to Hasanudin (2022)several factors influence a country's economic growth, including inflation and interest rates. Inflation is defined as a general increase in the prices of goods and services over a certain period, while interest rates refer to the cost that borrowers must pay on loans and the return that lenders receive for their investment.It is essential to understand how these three macroeconomic variables affect the manufacturing sector specifically(Amri, 2022).

As a province with a large industrial base, the resilience of the industrial sector to macroeconomic pressures will determine the stability and sustainability of regional economic growth. Especially in a global environment marked by uncertainty—such as geopolitical tensions, changes in global interest rates, and supply chain disruptions—the industrial sector is required to be both adaptive and resilient. The present study aims to empirically examine the influence of inflation, interest rates and exchange rates on the economic growth of the manufacturing sector in East Java Province. The research offers value not only to the academic community but also delivers practical insights for policymakers, industry practitioners, and stakeholders in formulating industrial development strategies grounded in macroeconomic stability.

2. THEORY AND HYPOTESIS

Economic Growth Theory

Economic growth is defined as the endeavour to augment production capacity with a view to achieving an increase in output, which is typically measured by Gross Domestic Product (GDP) or Gross Regional Domestic Product (GRDP) within a designated area (Prasasti& Slamet, 2020). It signifies a protracted process of escalating per capita yield, emphasising three pivotal components: the essence of the process, the per capita yield, and a long-term outlook. In contrast to offering a static perspective on the economy at a specific point in time, economic growth captures the evolving and dynamic nature of economic development, emphasising the transformation and progression that occur over time.

According to Kuznets(Nicholson & Snyder, 2012), economic growth is the long-term increase in a country's capacity to provide various economic goods to its population. This increase in capacity is made possible through advancements or adjustments in technology, institutions, and ideology in response to existing conditions.

Economic Growth Theory According to Adam Smith

Adam Smith, a renowned classical economist, is widely recognised for his seminal contributions to economic theory, particularly in the context of economic growth. In his seminal work An Inquiry into the Nature and Causes of the Wealth of Nations, he outlined his perspective on economic growth by focusing on two key elements: total output and population growth. According to Smith's theory, the total output of a given economy is influenced by three primary factors: natural resources, human resources, and capital stock. Conversely, population growth has been identified as a pivotal indicator of market size and a critical factor in determining the rate of economic expansion (Charoenrat et al., 2013).

Economic Growth Theory According to David Ricardo

It is widely acknowledged that David Ricardo's most significant contribution to the field of economic growth theory is the formulation of the Law of Diminishing Returns. The contention was made that population growth or an expanding labour force could result in a decrease in marginal productivity, primarily due to the finite availability of land. Ricardo's seminal work elucidated the pivotal role of technological progress and adequate capital accumulation in the enhancement of labour productivity. It is therefore argued that, through these means, sustained economic growth can be achieved (Husen &Armansyah, 2020).

Neoclassical Theories

Joseph A. Schumpeter

The Theory of Economic Development, Schumpeter explores the significance of entrepreneurs in driving economic progress. He concluded that economic growth is fundamentally an outcome of innovation, propelled by the actions of innovators and entrepreneurial individuals.

Robert Solow

Solow asserted that economic growth is the result of a series of processes influenced by four key elements: human capital, capital accumulation, technological advancement, and overall output

Inflation Theory

Quantity Theory of Money (Monetarist Model)

The aforementioned theory posits that the aggregate price level is contingent on the quantity of money in circulation, with the inflation rate being influenced by the growth rate of the money supply. In the event of an increase in the money supply that exceeds the rate of growth in transactions or the availability of goods, there is a corresponding decrease in the purchasing power of money, which consequently results in higher prices.(Prayogi, 2022). Therefore, it is important to control the money supply and the volume of credit that can increase it.

Interest Rate Theory

Interest is the price of loanable funds. This theory, developed by classical economists in the 19th century, sees the interest rate as a key factor in decisions to save or invest. The higher the interest rate, the more funds will be offered. Consequently, a positive correlation exists between interest rates and the supply of funds. In essence, the interest rate signifies the cost of utilising financial resources over a specified duration, a determination that is influenced by the interplay between supply and demand (Oyadeyi et al., 2025).

Keynes (1936) posited that money is a form of wealth held by the public. There are three principal rationales for the retention of currency: transactions, precautionary motives and speculation. Keynes's argument posited that demand for money for transactional and precautionary purposes is not significantly influenced by prevailing interest rates. It is therefore evident that the term 'liquidity preference' is specific to the speculative demand for money, which is influenced by prevailing interest rates.

Exchange Rate Theory

The foreign exchange rate is defined as the value of a foreign currency in relation to the Indonesian rupiah, with the US dollar being the most frequently referenced currency in this context. The exchange rate is indicative of the value of one country's currency in terms of another country's currency, and is utilised in trade transactions.

Hypothesis

H1: Inflation significantly affects the growth of the manufacturing sector in East Java

H2: Interest rates significantly affect the growth of the manufacturing sector in East Java.

H3: Exchange rates significantly affect the growth of the manufacturing sector in East Java.

H4: Inflation, interest rates, and exchange rates significantly affect the growth of the manufacturing sector in East Java.

3. METHODOLOGY

The present study constitutes a quantitative research project. The data utilised in this study is secondary in nature, having been sourced from BPS and comprising time series data from 2004 to 2024. The data is analysed using the Error Correction Model (ECM) technique. The dependent variable in this study is economic growth in the manufacturing sector, while the independent variables are inflation, interest rates and exchange rates. The analysis results are then interpreted in order to assess the impact of the independent variables (inflation, interest rates, and exchange rates) on economic growth in the manufacturing sector.

$\Delta Yt = \beta 0 + \beta 1 \Delta Xt + \beta 2 ECT + ut$

$ECT = Yt\text{-}1 - \alpha Xt\text{-}1$

Where:

ΔY_t: Change in the dependent variable at period t.

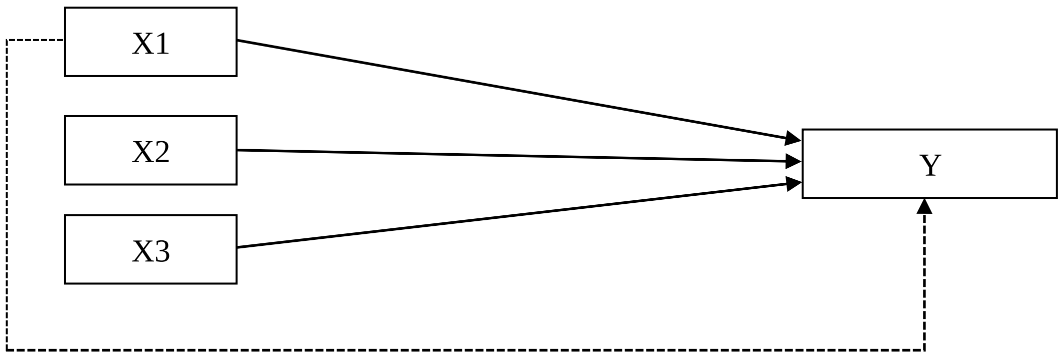
ΔX_t: Change in the independent variable at period t.

ECT: Error Correction Term, which is the difference between the value of the variable in the previous period and its equilibrium value (e.g., ECT = $Y_{t-1} - \alpha X_{t-1}$).

β_0, β_1, β_2: Coefficients that measure the influence of changes in the independent variable, the dependent variable, and the error correction term on the change in the dependent variable.

u_t: Residual (error term) that cannot be explained by the model.

Research Framework



Picture 2

4. RESULTS AND DISCUSSION

Economic growth in a region is an economic indicator that reflects the condition of a country or area's economy. High and stable economic growth indicates that the region or country is in a good and prosperous state. In the manufacturing sector, economic growth reflects the industry's development. The manufacturing industry makes a significant contribution to the development of a region and provides various benefits to the national economy(Karentina, 2019).

The industry can absorb labor by creating job opportunities. Additionally, it contributes to state revenue through taxes. Indirectly, the presence of the manufacturing industry also facilitates technology transfer. The manufacturing industry in East Java has experienced fluctuations. In general, the growth of the manufacturing sector in East Java has been positive from 2022 to 2024. However, in 2020, the sector encountered a substantial decline, resulting in negative growth. The following figure illustrates the economic growth of the manufacturing sector:

The present study employs the Error Correction Model (ECM) for the purpose of analysis. The ECM approach enables researchers to examine both the short-term and long-term impacts of the independent variables on the dependent variable.The independent variables in this study are inflation, interest rates, and exchange rates. The dependent variable is the economic growth of the manufacturing sector.

A number of procedures must be followed when applying ECM, one of which is a stationarity test. The primary function of this test is to ascertain whether the data is stationary. The data utilised in this study comprises time series data, with annual observations from 2014 to 2024. The stationarity of the data was tested using the Dickey-Fuller test. The findings for each variable indicate that all the data in the study are stationary. Consequently, the subsequent data analysis can be undertaken using the ECM method.

Table 1: Cointegration Test Results

Variable	t Statistic	Pobability
Z(t)	-4.165	0.0008

Source: STATA processed

The results of the cointegration test indicate that Z(t) is stationary at level. This can be observed in Table 1.1. Subsequently, A prolonged experiment was conducted with the objective of evaluating the impact of the independent variables on the dependent variable.

Table 2: Results of the Long-Term Impact Test

Variable	Coefficient	t Stat	Prob
Inflation	0.33357	0.88	0.401
BI rate	0.76124	1.35	0.206
Exchange	0.00006	0.20	0.844

Source: STATA processed

The findings of the long-term impact test demonstrate that inflation, interest rates, and the exchange rate exert a negligible influence on the economic growth of the manufacturing sector. This is demonstrated in the table above. The probability test results show that all three independent variables are not statistically significant in relation to the dependent variable.

Table 3: Results of the Short-Term Impact Test

Variable	Coefficient	t Stat	Prob
D1.Inflation	0.48972	1.71	0.126
D1.BIRate	1.33664	1.97	0.044
D1.Exchang	-0.00112	-1.07	-0.003
L1.ect	-1.13069	-3.49	0.008

Source: STATA processed

Subsequently, a short-term impact test was conducted on the three independent variables. The findings from this test are presented in Table 3. The short-term economic growth of the manufacturing sector is significantly influenced by two independent variables: interest rates and the exchange rate. Conversely, inflation exerts minimal influence on the economic growth of the manufacturing sector, irrespective of the time frame considered.

In the short term, the economic growth of the manufacturing sector is influenced by all three variables in question collectively. However, when considered over an extended period, the combined effect is rendered negligible.

This can be explained by the fact that these monetary variables tend to produce short-term effects that are not sustained over time. As a result, the influence of monetary variables on the economic growth of the manufacturing sector in East Java tends to be temporary.

5. CONCLUSION

The study demonstrates that, over an extended period, inflation, interest rates and exchange rates exert negligible influence on economic growth in the manufacturing sector, either in isolation or in combination. However, in the short term, interest rates and exchange rates have a significant impact on economic growth in the manufacturing sector in East Java, albeit on a partial basis. Moreover, it is evident that all three independent variables – inflation, interest rates and exchange rates – exert a significant influence on the short-term economic growth of the manufacturing sector.

6. RESEARCH RECOMMENDATIONS

Recommendations for the government, as the policymaker, include the need to maintain the stability of macroeconomic variables in order to create a favorable environment for the sustainability of the manufacturing industry, which makes a significant contribution to economic growth in Indonesia, particularly in East Java. The government should implement policies that have a positive impact on the industrial sector, especially the manufacturing industry. Bank Indonesia, as the authority responsible for monetary policy, needs to stabilize monetary conditions through various interventions, as this study has shown that several monetary variables have a significant impact on the economic growth of the manufacturing sector in East Java.

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