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EFFECT OF MACROECONOMIC FACTORS ON ECONOMIC GROWTH IN INDONESIA

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ABSTRACT

Indonesia's GDP growth from 2007 to 2022 shows a significant trend, reflecting the positive dynamics of a growing economy. This growth is influenced by macroeconomic factors such as inflation, interest rates, unemployment, fiscal and monetary policies, and international trade conditions. This study investigates the factors affecting Indonesia's economic growth, mainly focusing on foreign direct investment (FDI), exchange rate, inflation rate, interest rate, and exports. This study uses quantitative methods with quarterly data from 2007 to 2022. The data used are time series data obtained from the Central Statistics Agency (BPS), the Investment Coordinating Board (BKPM), and Bank Indonesia (BI). The analysis used the Vector Error Correction Model (VECM) approach to understand the long-run and short-run relationships. The findings show that FDI is insignificant for Indonesia's economic growth, while exchange rates and exports negatively impact growth in the short and long run. Inflation has a negative effect in the long run, and interest rates have a positive impact in the long run. Policy implications include improving FDI efficiency, maintaining currency stability, controlling inflation, setting appropriate interest rate policies, and diversifying exports to support economic growth.

Keywords: Economic Growth, FDI, Macroeconomics, GDP, VECM

JEL: E01; O11; O47

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Introduction

In the face of challenging global uncertainties in 2024, Indonesia's economic growth faces significant risks. Otoritas Jasa Keuangan (2024) notes that international factors such as the economic slowdown in China and the United States, geopolitical tensions (including the

Ukraine-Russia war and the Palestinian-Israeli conflict), commodity price volatility, the threat of climate change, and a decline in the global manufacturing Purchasing Managers' Index (PMI) could negatively impact the Indonesian economy. The economic slowdown in major economies could lower Indonesia's export demand and reduce investment flows. The decline in the global manufacturing PMI also indicates a drop-in industrial activity, which could affect exports and domestic production. To address these challenges and support sustainable economic growth, Bank Indonesia (2024b) maintained the BI-Rate at 6.25 percent in its Board of Governors Meeting on July 16-17, 2024. This decision aims to keep inflation within the 2.5±1 percent target for 2024 and 2025, stabilize the rupiah, and attract foreign capital. The central bank will continue to use comprehensive monetary, macroprudential, and payment system policies to support Indonesia's economic growth amidst global financial market uncertainty.

National income is an essential indicator in assessing Indonesia's economic growth (Dadkhah, 2009). National income includes a country's overall output of goods and services, known as gross domestic product (GDP). This measure provides a comprehensive picture of Indonesia's economic conditions, including how production is distributed throughout society and utilized in economic activities. The distribution of national income encompasses components such as wages and salaries, corporate profits, rental income, interest, and other forms of income. Additionally, national income describes the pattern of output use, including household consumption, investment, government spending, exports, imports, and changes in inventories. Thus, national income analysis helps understand the dynamics of Indonesia's economic growth and provides insight into how various economic factors contribute to the country's economic development. Based on data from the Statistics Indonesia (2023), Indonesia's GDP from 2007 to 2022 showed a significant growth trend (Figure 1). This trend reflects the positive dynamics in Indonesia's economic conditions that continue to develop from year to year. This consistent GDP growth is inseparable from the influence of various macroeconomic factors that can affect overall economic performance (Newfarmer & Shaw, 2009). Macroeconomic factors that influence Indonesia's economic growth include, but are not limited to, inflation, interest rates, unemployment rates, fiscal and monetary policies, and international trade conditions.
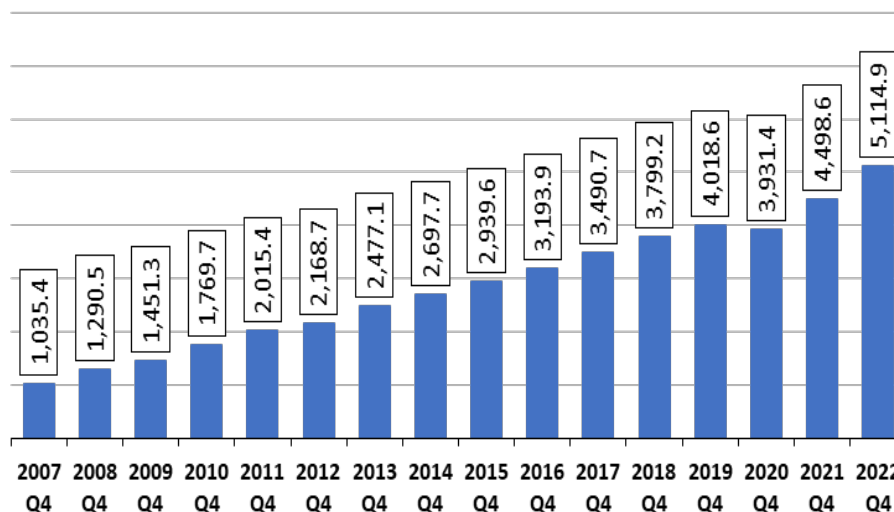

Figure 1: Development of Indonesia's Macroeconomic Factors 2007-2022 (In Trillion Rupiah)

Foreign direct investment is the first factor that affects a country's economic growth. Solow & Touffut (2012) suggest that capital goods and R&D investments are vital to promoting

long-term economic growth, increasing total factor productivity, and the economy's ability to grow sustainably. Foreign investment often brings much-needed capital into the domestic economy, which can be used to increase production capacity, innovation, and efficiency. Firms engage in research and development (R&D) and the production of machine tools, which are critical components for modernizing the industrial sector. R&D undertaken by these firms can lead to new technologies and more efficient production processes, improving domestic firms' productivity and global competitiveness (Hofmann, 2013). The Ministry of Investment (BKPM) (2023) report shows the investment realized in Indonesia during the first half of 2023. During this period, Indonesia recorded an investment of IDR 678.7 trillion, an increase from last year. This high level of investment reflects investors' confidence in Indonesia's economic prospects and the stability of monetary policies implemented by the government. The sectors that dominated investment were the base metal industry, housing, industrial estates, transport, and warehouses. Thus, FDI is a crucial factor influencing a country's economic growth.

The exchange rate is another element that can influence a country's economic growth. The effect of the exchange rate on GDP can be seen in the competitiveness of exports and imports, imported inflation, and its impact on foreign debt and investment (Hatmanu et al., 2020). Changes in exchange rates can thus have a significant effect on economic growth, depending on specific financial and policy conditions (Soukiazis & Cerqueira, 2012). A higher exchange rate can increase the cost of a country's exports for overseas purchasers, reducing the competitiveness of export products. With increased revenue from exports, the country's GDP can grow faster due to increased production and trade activity (Basia et al., 2023). Sofian et al. (2023) report shows that throughout 2022, the rupiah weakened against several major currencies, such as the USD, AUD, EUR, and GBP, but strengthened against the JPY. In early 2023, the rupiah strengthened against the AUD, EUR, GBP, and JPY, while it tended to stabilize against the USD. These exchange rate changes demonstrate the complex dynamics of the Indonesian economy and its wide-ranging impact on various sectors. A weakening rupiah against the USD, AUD, EUR, and GBP in 2022 could increase the cost of imports from these countries, potentially fueling imported inflation. As a result, changes in exchange rates have a significant and diverse impact on a country's economic growth. A variety of economic factors and policies determine this impact.

Besides investment and exchange rates, inflation is also considered an important factor affecting a country's economic growth. Inflation, primarily caused by structural imbalances in economic growth pressures, can seriously affect economic growth. These structural imbalances often occur when aggregate demand in the economy far exceeds production capacity, leading to a general rise in prices (Kaltenborn et al., 2020). High and uncontrolled inflation can create economic uncertainty, reduce investor confidence, and negatively impact business investment (Mejía, 2011). When inflation is high, the cost of living and production costs increase. This can reduce consumers' purchasing power as goods and services become more expensive, while their income may not increase as quickly (Oloto, 2023). Bank Indonesia (2024c) reports that Consumer Price Index (CPI) inflation for the latest month was recorded at 0.25 percent (month-to-month/mtm) and 3.00 percent (year-on-year/yoy). Core inflation, which excludes volatile prices such as food and energy, stood at 0.29 percent (mtm) and 1.82 percent (yoy). The increase in core inflation was mainly due to higher gold commodity prices and seasonal demand. Thus, inflation has a considerable effect on economic growth. High inflation can lower consumers' purchasing power, raise manufacturing costs, and erode investor confidence (Blejer & Škreb, 2016).

Interest rates are often considered significant elements influencing a country's economic growth. A rise in domestic interest rates can slow economic growth by reducing private spending and investment. When interest rates increase, individuals and companies face higher borrowing costs (Soukiazis & Cerqueira, 2012). According to Bourguignon et al. (2008), higher interest rates can increase demand for domestic financial assets. This can strengthen financial stability and encourage capital inflows, which can help stabilize the exchange rate and reduce inflationary pressures. However, an increase in interest rates should be approached with caution due to its far-reaching impact on the economy. Bank Indonesia has raised its benchmark interest rate by 25 basis points to 6.25 percent. This increase aims to strengthen rupiah stability and safeguard economic growth from the impact of global uncertainties. The rate hike was undertaken in the context of rising global risks, including uncertainty in international financial markets and fluctuations in commodity prices. By raising interest rates, Bank Indonesia seeks to maintain the attractiveness of domestic financial assets and prevent capital outflows that could weaken the rupiah (Bank Indonesia, 2024a). Therefore, the influence of interest rates on consumption, investment, capital flows, and exchange rate stability demonstrates the complexity of the relationship between monetary policy and economic growth.

In addition to the four listed elements, exports play a significant role in a country's economic growth. Exports can significantly contribute to the economy through various mechanisms. Hofmann (2013) argues that exports can drive economic growth through these mechanisms, which include increasing economies of scale, product quality, innovation, and market diversification. The Statistic Indonesia (2024) reported that Indonesia's export value in June 2024 reached US$20.84 billion, a decrease of 6.65 percent compared to May 2024 but an increase of 1.17 percent compared to June 2023. The decline in export value from the previous month may be due to seasonal fluctuations or lower demand from international markets. However, the annual increase reflects a positive trend in Indonesia's export capacity, indicating its ability to expand its international market and improve global competitiveness. Indonesia's trade balance in June 2024 showed a surplus of US$2.39 billion. This trade surplus indicates that the value of exports exceeds the value of imports, which could boost foreign exchange reserves and contribute to exchange rate stability. According to the BPS report, despite monthly volatility, the value of exports and imports has generally increased over time, demonstrating positive dynamics in the Indonesian economy.

This research contributes to the economic literature, particularly in understanding the relationship between macroeconomic factors such as Foreign Direct Investment (FDI), exchange rate, inflation, interest rate, and exports with Indonesia's economic growth. While previous studies tend to explore the influence of each of these factors separately, this research highlights a gap in the literature that focuses on the integrated impact of these five factors on specific sectors of the economy. Understanding such dynamics is crucial to formulating policies promoting more inclusive and sustainable economic growth in Indonesia. By conducting a comprehensive analysis of the integrated effects of FDI, exchange rate, inflation, interest rate, and exports on economic development, this study fills a gap in the literature. In addition, this study offers new insights that can enrich the discussion on economic policy strategies in Indonesia by providing more robust empirical evidence on how specific sectors respond to changes in macroeconomic factors. The results of this study are expected to serve as a foundation for future studies that want to explore further the specific effects of these variables on particular economic sectors, as well as assist policymakers in designing more targeted and effective strategies in the face of dynamic global economic challenges.

Literature Review

Effect of FDI on Economic Growth

According to Solow's theory of economic growth (Solow & Touffut, 2012), investment and GDP are part of the economic mechanism, where investment plays a critical role in driving a country's economic progress. Foreign investment can significantly raise a country's capital stock if it increases. This increase in capital stock plays an important role in strengthening economic and industrial infrastructure, which are vital components of overall economic development. When the capital stock increases, companies have more resources to expand their production capacity. With additional capital, companies can expand production facilities, update equipment, and adopt the latest technology to improve efficiency and productivity (Böhm, 2018). Anderson & Hazleton (2020) stated that increased business investment has a ripple effect on economic growth. These effects include creating new jobs, thereby reducing unemployment. In addition, increased business investment contributes to increased production, boosting the company's revenue. Higher revenues allow firms to pay better salaries and invest further in product and technology development. Consumers tend to have more disposable income with rising corporate income and wages. This increase in consumer spending fuels aggregate demand, stimulating economic activity.

Previous research shows various findings related to the effect of investment on a country's economic growth. Gochero & Boopen (2020), Dewi & Sarfiah (2022), Jufri & Bahri (2022), and Kurniawati & Islami (2022) concluded that increased investment is positively related to a country's economic growth. According to them, higher investment can increase production capacity, create new jobs, and foster innovation and infrastructure development, contributing to higher GDP growth. However, findings from Rudiawan & Meirinaldi (2019) and Siddikee & Rahman (2020) provide a different view. Both studies show that investment does not always positively impact GDP growth. Without proper planning and management, investments can lead to wasted resources and inefficiencies, reducing economic growth. When investments are made without considering the market's actual needs or without an effective implementation strategy, the results obtained can be far from expected. Meanwhile, Sundari & Mitra (2020) and Destiani et al. (2023) highlighted that investment does not significantly contribute to GDP. They underline that the success of investment in increasing GDP depends heavily on the context and other enabling factors. Therefore, the proposed hypotheses regarding the effect of FDI on economic growth are as follows:

H1o : FDI have no effect on economic growth

H1a : FDI have an effect on economic growth

Effect of Exchange Rate on Economic Growth

The general equilibrium theory emphasizes how fluctuations in currency exchange rates can majorly impact resource allocation and international trade dynamics (Hofmann, 2013). An increase in a currency's value can make exports more expensive and imports less expensive, thus diminishing the competitiveness of domestic goods in the international market and lowering GDP. A rise in the value of the domestic currency, also known as currency appreciation, can make goods and services exported from the country more expensive for overseas buyers (Todaro & Smith, 2014). Domestic consumers benefit from lower prices for imported goods and services. As a result, export demand may decrease, while imports may increase (Böhm, 2018). According to this theory, currency exchange rates are crucial

for setting domestic and overseas prices. Changes in currency exchange rates can affect economic growth through several mechanisms. A more robust exchange rate can increase the purchasing power of the domestic currency and reduce imported inflation, which in turn can favor economic growth (Sengupta, 2011). On the other hand, an excessively high exchange rate can hurt exports and competitiveness, slowing economic growth. In addition, changes in exchange rates can affect foreign investment and debt, potentially impacting a country's economic growth (Ho & Yuen, 2002).

Research findings on the effect of exchange rates on GDP growth show significant variations., Huong (2019), Hapsariet al. (2020), Mohammed & Ahmed (2021) and Adewole (2023) identified that a weakening exchange rate could contribute to an increase in GDP. When the domestic currency weakens, exports become more competitive in the international market as domestic goods and services become cheaper for overseas buyers. However, findings from Rudiawan & Meirialdi (2019), Sriyana (2019) and Riani & Imron (2022) present a different view. They argue that a weakening exchange rate can lead to high inflation as imported goods become more expensive, reducing people's purchasing power and hindering economic growth. Uncontrolled inflation can lead to economic unpredictability, reduced investment, and increased social instability. Additionally, high inflation may force monetary authorities to raise interest rates to cope with inflation, further depressing economic growth. Meanwhile, Zuhroh (2022) argues that although exchange rate changes can affect international trade, their impact on GDP is often not large enough to be considered significant, especially if other factors, such as economic policy and domestic market conditions, play a key role in economic growth. Therefore, the proposed hypotheses are as follows:

H2o   :Exchange rate have no effect on economic growth

H2a : Exchange rate have an effect on economic growth

Effect of Inflation on Economic Growth

The quantity theory of money states that an increase in income will improve the demand for money, while an increase in interest rates reduces it. Interest rates are the price of money, and rising prices reduce the desire to hold money (Dadkhah, 2009). This theory links the inflation rate to the growth of money in circulation. According to this theory, if money growth exceeds real economic growth, it can cause inflation. High inflation tends to have a detrimental impact on GDP. High inflation often creates economic uncertainty, reducing public investment and consumption. Uncertainty about future prices makes financial planning difficult, so businesses may be reluctant to make new investments or expand their operations. High inflation can create uncertainty, reduce public consumption, and disrupt resource allocation (Böhm, 2018). Szostak (2009) notes that the expected inflation rate is defined concerning the prices of consumer goods and services as measured by the personal consumption expenditure deflator in GDP. This means that projected inflation is more than simply a general price increase; it also refers to changes in the prices of products and services purchased by households. In other words, expected inflation reflects how consumers anticipate price changes affecting their daily spending.

Research on the effect of inflation on GDP growth shows a variety of findings that demonstrate the complexity of the relationship between the two variables. The findings of Ali & Asfaw (2023) and Sari et al. (2023) show that low inflation tends to impact GDP growth positively. Low inflation helps maintain people's purchasing power and reduce the cost of living, boosting domestic consumption. In addition, price stability makes business planning

easier and reduces the risks associated with price fluctuations, which can stimulate investment and business expansion. On the other hand, findings from Rudiawan & Meirialdi (2019), Uddin (2019), and Triyawan et al. (2022) provide a different view, suggesting that high inflation can contribute to an increase in GDP. In some contexts, high inflation can encourage specific sectors to expand, especially if accompanied by increased investment and consumption, spurring economic growth. However, findings from Juliansyah et al. (2022), Niken et al. (2023) and Nkalu & Agu (2023) show that the inflation rate does not contribute significantly to GDP growth. The correlation between inflation and GDP can vary based on the inflation rate and macroeconomic conditions, and in other cases, inflation may have no meaningful impact on GDP growth. Thus, the hypotheses proposed are as follows:

H3o : Inflation rates have no effect on economic growth

H3a : Inflation rates have an effect on economic growth

Effect of Interest Rate on Economic Growth

Monetary theory emphasizes the vital role of money and monetary policy in controlling economic activity. The theory examines how changes in the money supply, interest rates, and monetary policy influence inflation, economic production, and unemployment. This theory states that changes in the money supply will affect interest rates and economic activity. When the central bank sets a low interest rate, it stimulates lending and investment, which boosts a country's GDP (Meyers, 2010). On the other hand, high interest rates may discourage borrowing and investment, lowering economic activity and eventually leading to a drop in a nation's GDP (Taylor, 2010). Decreased interest rates and increased financial spending can stimulate economic activity by increasing investment, consumer spending, and business activity and reducing a country's debt burden. Increasing government financial spending can also create jobs, expanding the country's economic growth (Kim & Heshmati, 2013). Monetary theory argues that effective monetary policy management can help stabilize the economy and dampen business cycle fluctuations. When the government increases its spending, whether in infrastructure investment, social spending, or other programs, it can create new employment opportunities in various sectors (Walsh, 2003).

Research on the effect of interest rates on GDP growth shows mixed results. Nisa (2022) and Riani & Imron (2022) indicate that low interest rates boost GDP growth. Low interest rates can reduce borrowing costs for individuals and businesses, promoting more consumption and investment. On the other hand, findings from Rudiawan & Meirinaldi (2019), Hapsari et al. (2020), and Usman et al. (2023) show high interest rates can encourage more significant savings and investment, contributing to economic growth. Investors may still be keen to invest if high interest rates are accompanied by economic stability or positive growth prospects. More significant investment can increase production capacity and boost economic growth. Meanwhile, the findings of Irzam & Setyari (2020), Zuhroh (2022), and Rafi et al. (2023) show that interest rates have no significant effect on GDP. The correlation between interest rates and GDP might change based on broader macroeconomic factors and only sometimes has a consistent impact. The effect of interest rates on GDP is sometimes linear or direct. Broader macroeconomic conditions, such as the inflation rate, economic expectations, and the labor market situation, can influence how interest rate changes impact economic growth. Therefore, the hypotheses are as follows:

H4o : Interest rates have no effect on economic growth

H4a : Interest rates have an effect on economic growth

Effect of Exports on Economic Growth

The Heckscher-Ohlin-Vanek (HOV) theory of international trade is developed based on the foundations of David Ricardo's theory of comparative advantage and Eli Heckscher and Bertil Ohlin's theory of factors of production. According to the HOV theory, an increase in a country's exports can contribute to GDP growth because exports reflect a comparative advantage in the utilization of relatively abundant factors of production. When a country exports goods that utilize its abundant factors of production, it can increase revenue from international trade. This can strengthen economic sectors related to the exported goods, increase investment in those sectors, and create jobs. As a result, exports fueled by comparative advantage can expand the domestic market, increase national income, and contribute to economic growth (Keuschnigg, 2012). The effect of exports on a country's economic growth is significant. Foreign direct investment directed at exports also makes a significant contribution. The industrial sector, heavily reliant on exports, is the primary driver of economic development. Long-term growth depends on the success of policies that benefit the non-state sector. In this scenario, exports play a vital role in generating output and employment and form an intrinsic part of the economic growth strategy (Sengupta, 2011).

Findings on the effect of exports on GDP growth show mixed results. Shah et al. (2020) and Dewi & Sarfiah (2022) suggest that increasing exports will boost GDP growth. Increased exports can expand the market for domestic products, increase foreign earnings, and stimulate domestic production activities. Increased exports can also create jobs and increase national income, contributing to GDP growth. On the other hand, findings from Manikandan et al. (2019), Hapsari et al. (2020), and Destiani et al. (2023) have found that increased exports can have a negative influence on GDP growth. In some cases, increased exports can lead to higher production costs and inflationary pressures, hindering economic growth. Suppose the increase in exports occurs rapidly without increased production capacity. In that case, the country may face problems such as shortages in the supply of domestic goods and price instability, which can cause economic distortions that hinder GDP growth. Meanwhile, the findings of Devkota (2019), Shaik & Gona (2020), and Kurniawati & Islami (2022) show that exports have no significant effect on GDP growth. While exports can contribute to national income, their impact on GDP is often too small to be considered significant, significantly, if other factors also affect economic growth. Therefore, the hypotheses are:

H5o : Exports have no effect on economic growth

H5a : Exports have an effect on economic growth

Data and Research Methods

Materials and Method

This research is a quantitative study that uses secondary data types with time series data categories. This method focuses on objectively measuring variables and employing statistical techniques to identify patterns and relationships in the data. In the context of this research, secondary data are used to examine macroeconomic variables that potentially affect Indonesia's economic growth. Secondary data was chosen because it provides consistent and verified historical information and allows for in-depth analysis of the temporal relationships between variables. The data examined in this study include quarterly data on GDP, FDI, exchange rates, inflation, interest rates, and exports from 2007 to 2022. GDP and export data were obtained from the Central Bureau of Statistics (BPS), an official institution presenting

statistical data on economic and trade activities in Indonesia. FDI data were obtained from the Investment Coordinating Board (BKPM), which provides information on foreign investment and investment sector development. Data on exchange rates, inflation, and interest rates were taken from Bank Indonesia (BI), the monetary authority that regulates monetary policy, and data related to money and foreign exchange markets (see Table 1). Data were collected by accessing annual and quarterly reports published by the respective institutions. The obtained data were verified to ensure accuracy and consistency before further analysis. The collected data were processed and analyzed using Eviews 10 statistical software.

Table 1: Variable Units and Sources

Variable	Symbol	Unit	Source
Gross Domestic Product	GDP	Billion Rupiah (Rp)	Central Bureau of Statistic (BPS)
Foreign Direct Investment	FDI	Thousand Dollar (USD)	Investment Coordinating Board (BKPM)
Exchange Rate	EXR	Rupiah per 1 Dollar (USD)	Bank of Indonesia (BI)
Inflation	INF	Percent (%)	Bank of Indonesia (BI)
Interest Rate	INR	Percent (%)	Bank of Indonesia (BI)
Export	EXP	Million Dollar (USD)	Central Bureau of Statistic (BPS)

Data Analysis Techniques

The approach used in this test is the VAR (Vector Autoregression) and VECM (Vector Error Correction Model) methods, which examine the relationship between macroeconomic variables that affect economic growth. VAR is a statistical method used to capture the linear relationship between multiple time series and model them as functions of their own lagged values (Kilian & Lütkepohl, 2017). Meanwhile, VECM is an extension of VAR used when the variables' data are cointegrated, meaning they have a stable long-term relationship. The flow in testing with the VAR/VECM method is presented in Figure 2.
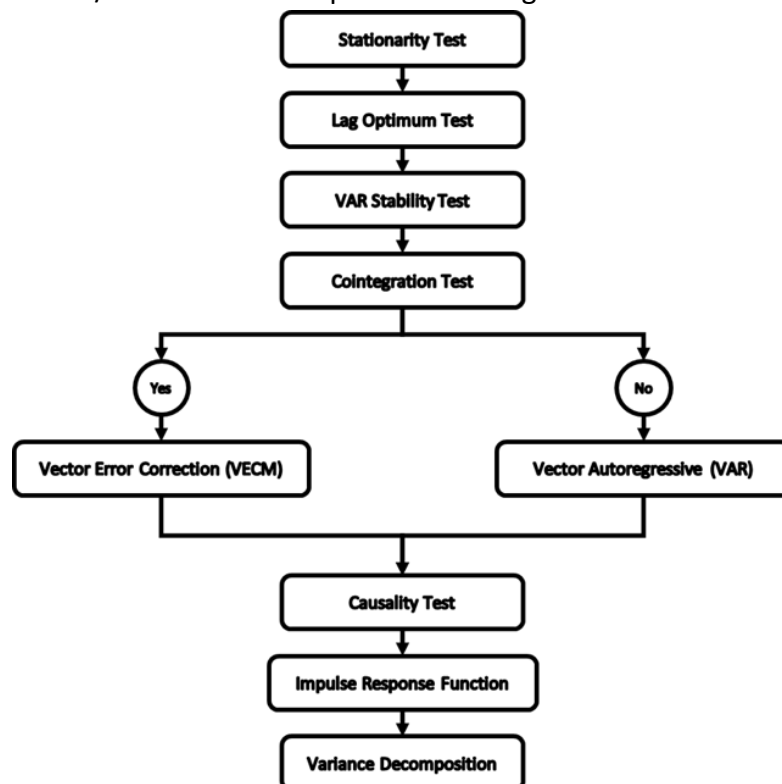

Figure 2: Testing Flow on VAR/VECM

This study aims to analyze the contribution of specific variables to GDP fluctuations over some time. By applying the VAR/VECM model, this analysis seeks to provide valuable insights for economic policy formulation and strategic planning at the national level. This approach will provide strong empirical evidence to support more effective policies promoting sustainable economic growth. Based on the existing literature review, the proposed econometric model is as follows:

$$\Delta GDP_t = \alpha_1 + \beta_2 \Delta GDP_{t-1} + \beta_3 \Delta FDI_{t-1} + \beta_4 \Delta EXR_{t-1} + \beta_5 \Delta INF_{t-1} + \beta_6 \Delta INR_{t-1} + \beta_7 \Delta EXP_{t-1} + \varepsilon$$

<div align="right">1</div>

The regression model presented in equation (1) is an attempt to understand the relationship between changes in GDP and a number of factors that are considered influential. Independent variables such as changes in FDI, changes in exchange rates, changes in inflation rates, changes in interest rates, and changes in exports are thought to have a significant impact on changes in GDP.

Finding and Discussion

Result

Stationarity Test

Stationarity test refers to the statistical properties of time series that do not change over time. The stationarity test shows whether a time series has consistent properties over time or if some trends or patterns can affect its behavior. In this study, ADF and Phillips-Perron are used. Ho, in this test, states that the data are stationary. If the data are non-stationary, the next step is to convert them to stationary before using in the model (Singh & Tripathy, 2020). The following are the results of the unit root test or stationarity test:

Table 2: Unit Root Test Results

Variable	Augmented Dickey-Fuller (ADF)		Phillips-Perron (PP)	
	Level	First Difference	Level	First Difference
GDP	0.9235	0.0000	0.9970	0.0000
FDI	0.9395	0.0000	0.8748	0.0000
EXR	0.8469	0.0000	0.8609	0.0000
INF	0.3437	0.0000	0.1314	0.0000
INR	0.1881	0.0007	0.2593	0.0011
EXP	0.5344	0.0186	0.8288	0.0000

Table 2 shows the results of the stationarity analysis at the 5 percent significance level. The decision on the stationarity test is if the p-value is lower than (0.05), then H0 is rejected with H0 stating that the data tested is not stationary. The test results show that the probability value of the six variables is greater than α (0.05) from either the ADF or PP test, so H0 is accepted. This finding indicates that GDP, FDI, EXR, INF, INR, and EXP are not stationary at the level. Furthermore, the stationarity test results at the first difference level show that all six variables show probability values less than α (0.05). Thus, the six variables can be said to be stationary at the first difference.

Lag Optimum Test

The most optimal lag is selected by considering the values of the AIC and SC information criteria. In this context, the desired VAR model has the smaller values of these information

criteria. In other words, the smaller the AIC and SC values, the better the model is considered. Therefore, the optimal model selection will consider the VAR model with the lag length that produces the smallest AIC and SC values (Agung, 2009).

Table 3: Lag Optimum Test Results

Lag	LR	FPE	AIC	SC	HQ
0	NA	9.71e+33	95.28587	95.49349*	95.36724*
1	84.35765*	6.67e+33*	94.90401*	96.35740	95.47361
2	35.95305	1.06e+34	95.33532	98.03447	96.39314

Based on the optimal lag test results in Table 3, the Akaike information criterion (AIC) shows that lag 1 is the ideal lag to choose. In addition, based on the AIC method, lag 1 has the most asterisks (*). Thus, lag 1 is the most optimal lag for continued testing.

VAR Stability Test

The VAR stability test is an analysis used to evaluate the stability of VAR models in the face of changes in data or economic circumstances. VAR models are used in econometric analysis to model the simultaneous relationship between several variables. The VAR stability test aims to ensure that the model remains relevant and accurate over time or when there are changes in economic circumstances. If the VAR model is unstable, the prediction results may not be reliable, and the interpretation of the relationship between variables may be inconsistent. The following are the results of the VAR stability test presented in Table 4 and Figure 3:

Table 4: VAR Stability Test Results

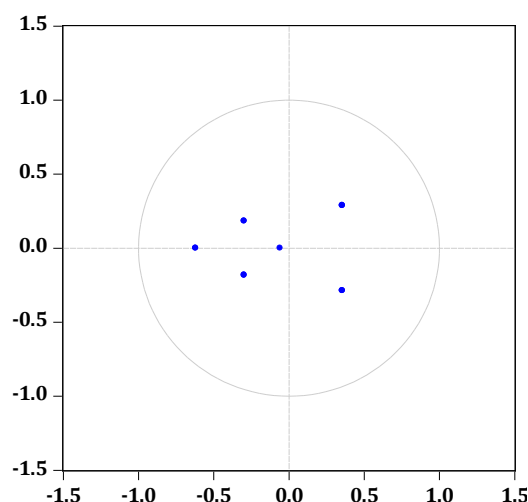| Root	Modulus
-0.618222	0.618222
0.355502 - 0.287711i	0.457340
0.355502 + 0.287711i	0.457340
-0.296312 - 0.182634i	0.348075
-0.296312 + 0.182634i	0.348075
-0.058253	0.058253

Figure 3: VAR Stability Test Results

Table 4 and Figure 3 display the results of the VAR stability test, which shows that the VAR model is considered stable. The decision is taken because all the output's modulus values (absolute values) are less than 1. In addition, the output results also show that all blue dots (inverse roots) are inside the circle (unit circle).

Cointegration Test

A cointegration test is a time series analysis technique that determines whether two or more time series have a stable long-term relationship. When two or more time series are stated to be cointegrated, it signifies that there is a long-run relationship that allows the time series to continue moving together despite short-term variations. The Johansen cointegration test can be used to evaluate if there is cointegration between multiple time series in the system, and it provides a deeper knowledge of the relationship of the variables under test (Singh & Tripathy, 2020). The following are the results of the Johansen cointegration test:

Table 5: Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Trace Statistic			Max-Eigen Statistic		
	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	195.9555	103.8473	0.0000	54.68323	40.95680	0.0008
At most 1 *	141.2723	76.97277	0.0000	44.74206	34.80587	0.0024
At most 2 *	96.53023	54.07904	0.0000	34.64290	28.58808	0.0074
At most 3 *	61.88733	35.19275	0.0000	24.16638	22.29962	0.0271
At most 4 *	37.72094	20.26184	0.0001	20.30228	15.89210	0.0095
At most 5 *	17.41867	9.164546	0.0012	17.41867	9.164546	0.0012

Table 5 shows test findings at a 0.05 or 5 percent significance level. The Johansen cointegration test rejects Ho if the probability value is less than α (0.05). Ho in the cointegration test indicates no cointegration between the variables being examined. The test findings show that all probability values for the trace and Max-Eigen statistics are less than α (0.05), demonstrating cointegration between the variables analyzed.

VECM Test (Long-term and Short-term Relationship)

The VECM model is a restricted VAR model used when the time series to be predicted are cointegrated. Cointegration indicates that there is a long-run relationship between the variables. VECM allows the model to accommodate long-run relationships that may not be apparent in a VAR model, and this makes the VECM model relevant for analyzing and forecasting cointegrated time series (Singh & Tripathy, 2020). The results of VECM testing in the long run and short run are presented in Table 6.

Table 6 shows the results of vector error correction model (VECM) modeling in the long run. The decision rule is Ho is rejected if |t-statistic| > t-table, with Ho stating that variable X has no significant effect on variable Y. The findings show that the FDI coefficient value (0.033980) and t-statistic value (-1.22603) are smaller than t-table (2.00172), so Ho is accepted. Thus, FDI in the previous period has a positive but insignificant contribution to GDP in the long run. While the coefficient values of the exchange rate (-340.5089), inflation (-98869.84), and export (-55.50261) with their respective t-statistic values for the exchange rate (-4.84598), inflation (-2.19296), and export (-5.94304) are more significant than the t-table value (2.00172), so Ho is rejected. Thus, an increase in the exchange rate, inflation, and exports in the previous

period significantly impacts the decline in GDP in the long run. Meanwhile, the coefficient value of the interest rate (266052.7) and the t-statistic value (3.12286) is greater than the t-table value (2.00172), so Ho is rejected. In other words, an increase in interest rates in the previous period seriously impacts the rise in GDP in the long run.

Table 6: VECM Test Results

Variable	Long Run		Short Run	
	Results	Decision	Results	Decision
FDI (-1)	0.033980 [0.55179]	Ho Accepted	-0.015012 [-1.22603]	Ho Accepted
EXR (-1)	-340.5089 [-7.61149]*	Ho Rejected	-98.24270 [-4.84598]*	Ho Rejected
INF (-1)	-98869.84 [-2.19296]*	Ho Rejected	6537.846 [0.66241]	Ho Accepted
INR (-1)	266052.7 [3.12286]*	Ho Rejected	-23413.39 [-0.83691]	Ho Accepted
EXP (-1)	-55.50261 [-5.94304]*	Ho Rejected	-9.856552 [-2.64688]*	Ho Rejected

Notes : Significant at 5 percent (*)

　　　　t-Table (2.00172)

While in the short term, the findings show that the coefficient value of FDI (-0.015012) and interest rate (-23413.39) with the t-statistic value of FDI (-1.22603) and interest rate (-0.83691) are smaller than the t-table value (2.00172), so Ho is accepted. Thus, FDI and interest rates have no significant contribution to GDP in the short run. Meanwhile, the coefficient values of the exchange rate (-98.24270) and export (-9.856552) with respective t-statistic values for the exchange rate (-4.84598) and export (-2.64688) are more significant than the t-table value (2.00172), so Ho is rejected. This means that the exchange rate and exports significantly impact the decline in GDP. In other words, an increase in the exchange rate and exports in the previous period significantly impacts the decline in GDP in the short term. Furthermore, the coefficient value of inflation (6537.846) and the t-statistic value of inflation (0.66241) are smaller than the t-table value (2.00172), so Ho is accepted. In other words, the inflation rate in the previous period has no significant contribution to GDP in the short run.

Granger Causality Test

The Granger causality test is performed to see if prior knowledge of one variable can help predict the other. Ho, in the Granger causality test, states that the regression parameters associated with the variables are not jointly significant (Aljandali & Tatahi, 2018). The Granger causality test is presented in Table 7.

Table 7 displays the causality test results with the decision that if the probability value is smaller than α (0.05), then Ho is rejected. The findings show that the relationship between FDI and GDP is unidirectional. The causality relationship that occurs is that GDP influences FDI. This finding aligns with Aviantih (2023) in five ASEAN countries for 2010 to 2021. The findings also show a unidirectional relationship between exchange rates and GDP. The causality relationship that occurs is that GDP affects the exchange rate. Meanwhile, the exchange rate does not make a profound contribution to GDP. This finding aligns with Adewole's (2023) research on Nigeria from 1970 to 2022. Meanwhile, there is no causality relationship between inflation, interest rates, and exports to GDP. The finding is supported by Juliansyah et al. (2022)

for Indonesia from 1999 to 2020, Zuhroh (2022) for Indonesia, and Shaik & Gona (2020) for India from 1990 to 2017.

Table 7: Granger Causality Test Results

	GDP	FDI	EXR	INF	INR	EXP
GDP	-	11.3253 (0.0013)	8.36038 (0.0053)	1.42810 (0.2368)	0.12861 (0.7211)	1.06611 (0.3060)
FDI	0.35373 (0.5542)	-	1.70958 (0.1960)	1.21902 (0.2740)	1.26522 (0.2651)	0.18878 (0.6655)
EXR	2.23581 (0.1401)	7.60790 (0.0077)	-	1.39122 (0.2429)	1.85074 (0.1788)	0.02201 (0.8826)
INF	0.37216 (0.5441)	0.33893 (0.5626)	5.97697 (0.0174)	-	11.4674 (0.0013)	9.33698 (0.0033)
INR	2.47828 (0.1207)	4.80649 (0.0322)	0.18289 (0.6704)	0.13275 (0.7169)	-	12.6659 (0.0007)
EXP	1.54058 (0.2194)	12.2000 (0.0009)	3.22657 (0.0775)	1.12971 (0.2921)	11.0795 (0.0015)	-

Impulse Response Function

The impulse response function (IRF) is used to analyze the persistent effect of shocks in time series. The function helps understand the difference between two expected future paths: one in the presence of shocks in the current period and the other in the absence of such shocks. By observing the difference between the expected future path with and without the shock, it is possible to understand the impact and persistence of the initial change on the variables in the system (Meyers, 2010). The results of the impulse response function test are presented in Figure 4 below:
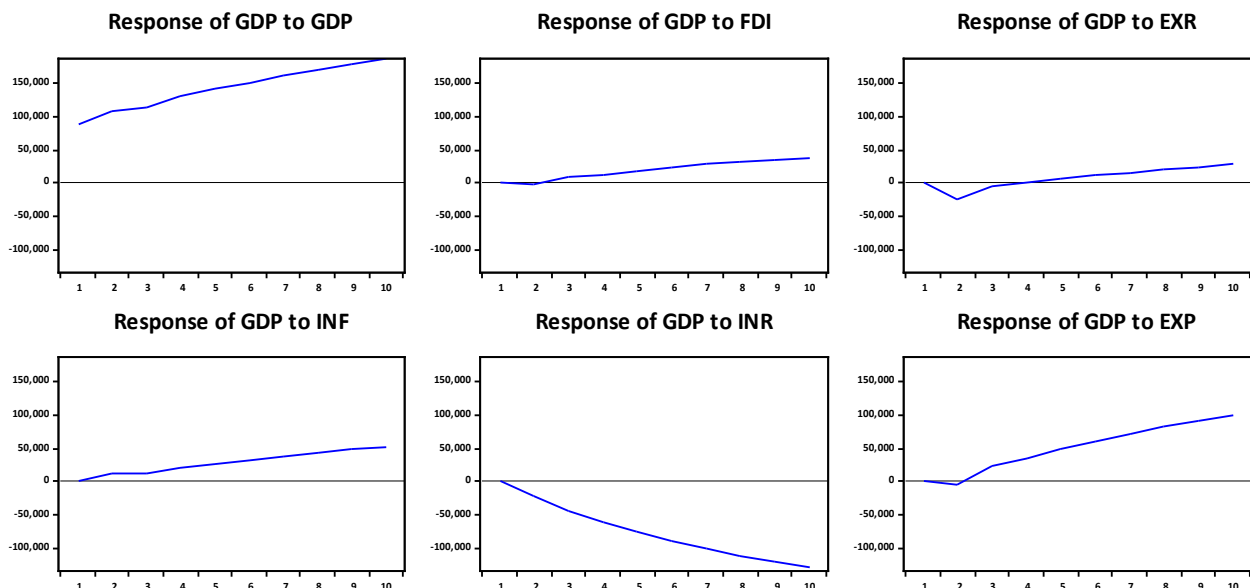

Figure 4: Impulse Response Function Results

Figure 4 depicts the response of GDP to shocks in GDP, FDI, exchange rate, inflation, interest rate, and exports. The reaction of GDP to shocks in GDP itself increases in the second phase before stabilizing until the third period. In the following periods, the GDP response continues to rise. Furthermore, the reaction of GDP to FDI shocks is steady in the second period, followed by an increase in the subsequent periods. The response of GDP to exchange

rate shocks varies significantly in the second and third periods. In subsequent periods, the response tends to rise. The responsiveness of GDP to inflation shocks then increases in the second phase before stabilizing in the third quarter. In the following periods, the GDP response continues to rise. GDP responds negatively to interest-rate shocks. The GDP response then tends to drop further in subsequent periods. In the second phase, GDP's response to the shock to exports is slightly negative. The GDP reaction to exports in subsequent eras tends to rise.

Variance Decomposition

Variance decomposition is the process of explaining variation or uncertainty in the forecasting error of a statistical model. Variance decomposition is performed by considering structural innovations, which are fundamental changes in the system. This method can assist in determining how much each structural innovation contributes to the forecasting inaccuracy of each variable in a model. By looking at the results of variance decomposition, it is possible to identify variables or innovations that significantly influence forecasting uncertainty, as well as how the contribution of variables changes over time (Lütkepohl, 2005). The results of the variance decomposition test are presented in Table 8:

Table 8: Variance Decomposition Results

Period	GDP	FDI	EXR	INF	INR	EXP
1	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	93.75810	0.027672	2.878690	0.824279	2.392264	0.118991
3	88.90378	0.273358	1.686655	0.880027	6.564188	1.691990
4	83.84108	0.459258	1.048005	1.281237	10.30937	3.061047
5	78.81187	0.743013	0.751744	1.686191	13.26782	4.739360
6	74.29160	0.959712	0.650278	2.095220	15.63957	6.363616
7	70.40204	1.177407	0.646628	2.459507	17.48851	7.825908
8	67.08747	1.350285	0.694633	2.779692	18.97585	9.112069
9	64.26984	1.507761	0.767943	3.051795	20.17297	10.22969
10	61.87042	1.638139	0.851917	3.285868	21.15723	11.19642

The variance decomposition results in Table 8 show the contribution of each variable to the variation of GDP. The exchange and interest rates contribute 2 percent in the second period (in the short term). Meanwhile, FDI, inflation, and export variables only contribute to the GDP variable, which is less than 1 percent. Then, in the tenth period (in the long term), the interest rate variable showed the most significant influence among other variables, with 21 percent, followed by exports, with a contribution of 11 percent. Meanwhile, FDI, exchange rate, and inflation variables only affect 1.6 percent, 0.8 percent , and 3.2 percent in the tenth period.

Discussion

Effect of FDI on GDP

The test results reveal that FDI does not contribute significantly to GDP in the long or short run. This research implies that changes in FDI inflow have little effect on Indonesian GDP. This result aligns with research conducted by Destiani, et al. (2023), who analyzed Indonesian data from 1990 to 2021 and discovered that FDI has no substantial impact on GDP growth in both the long and short run. Similar findings were also documented by Sundari & Mitra

(2020) in the Indian context, who looked at the period from 1990 to 2015, as well as Siddikee & Rahman (2020) for Bangladesh, who examined data from 1980 to 2019 and discovered that FDI has no substantial short-term influence on GDP. This finding contradicts Solow's economic growth theory, which expects foreign investment to contribute positively to economic growth by increasing capital stock, labor productivity, and overall economic efficiency. According to the theory, FDI should accelerate economic growth through technology, managerial know-how, and infrastructure development, increasing the economy's production capacity and competitiveness. However, the reality shows that the expected benefits of FDI are not always achieved. Several empirical studies have found that the impact of FDI on economic growth can vary and depends on several factors.

One of the reasons why FDI does not contribute significantly to GDP may be related to the inability of local firms to manage foreign capital flows efficiently. When local firms need more managerial or technical capacity to utilize the technology and investment brought by foreign capital, the potential benefits of FDI in increased productivity and economic growth may not be realized. This inability can be due to various factors, including skills shortages in the labor market, inadequate infrastructure, or regulatory barriers that hinder operational efficiency. In addition, the need for more adequate markets for commodities produced by foreign companies can also be a limiting factor. If insufficient demand for goods and services is made with foreign capital, then FDI flows cannot trigger significant economic growth. This is in line with the explanation by Herrmann & Lipsey (2003), who note that inefficiencies in managing foreign capital and limited commodity markets might lessen FDI's favorable influence on economic growth. Local factors such as government policy, institutional quality, and enterprises' ability to adapt to foreign investment all impact how much FDI can contribute to economic growth. To maximize the benefits of FDI, recipient nations must increase the efficiency of foreign capital management.

Effect of Exchange Rate on GDP

Meanwhile, the test results indicate that the exchange rate has an adverse and substantial effect on GDP in the long and short run. In this situation, an increase in the exchange rate will lead to a fall in Indonesia's GDP. This finding is supported by Riani & Imron (2022), who analyzed the rupiah exchange rate from 2013 to 2020 and found that the exchange rate contributed negatively to GDP growth in both timeframes. Similar findings were also obtained from Sriyana (2019) who evaluated the rupiah exchange rate from 1971 to 2019, and Rudiawan & Meirinaldi (2019), who examined rupiah exchange rate data from 1991 to 2017. These findings suggest that an increase in the rupiah exchange rate has no advantageous effect on GDP but causes a decline. This result contradicts the general equilibrium theory, which states that the exchange rate should positively influence a country's GDP. According to the theory, a domestic currency depreciation can increase the competitiveness of a country's exports. When the domestic currency weakens, the prices of exported goods and services become cheaper for international buyers, which may increase foreign demand as they are more competitive in the global market. This increase in foreign demand can positively impact economic growth, including an increase in export volume and expansion of export sectors.

However, the reality is that an increase in the exchange rate, which indicates an appreciation of the home currency, harms GDP. This can be explained by the export-decreasing effect caused by a stronger currency, which makes domestic products more expensive in the international market. As a result, the decline in exports can reduce revenue from the foreign trade sector and hinder national economic growth (Hatmanu et al., 2020). In the

long run, exchange rate stability is more favorable for a country's economy. Exchange rate stability creates a more stable environment for international trade, facilitates better business planning, and reduces uncertainty affecting foreign and domestic investment. This stability is vital for developing confidence in the market and promoting sustainable economic growth, especially FDI-driven. Ho & Yuen (2002) note that exchange rate stability is critical in creating a conducive environment for trade and investment, thus supporting long-term economic growth. Exchange rate instability can disrupt trade and investment by increasing risks and transaction costs, which in turn can hamper overall economic growth. Investors prefer a stable environment with little exchange rate risk to maximize profits.

Effect of Inflation on GDP

Furthermore, the test results reveal that inflation has a negative and significant long-run impact on GDP but has no meaningful short-term impact. This finding is supported by a study by Sari et al. (2023) who analyzed Indonesian data from 2000 to 2021, which indicated that inflation negatively impacted GDP growth in the long and short run. A similar study by Ali & Asfaw (2023) for Ethiopia from 1980 to 2022 also showed that inflation had a considerable negative influence on long-term economic growth. Uddin (2019) supported these findings with a study of Bangladesh data from 1987 to 2017, which revealed that inflation harms GDP in the long run but has no influence in the short term. This finding is consistent with the quantity theory of money, which holds that inflation can significantly negatively influence a country's GDP. According to the quantity theory of money, inflation is frequently produced by an increase in the amount of money in the economy that outpaces the growth in the output of goods and services. When the amount of money circulating in the economy increases dramatically without a corresponding development of production, prices of goods and services tend to rise, leading to inflation. High inflation can limit people's purchasing power since products and services become more expensive while salaries do not increase at the same rate.

Carlberg (2002) explains that high inflation can decrease the purchasing power of money and cause economic instability. When inflation increases significantly, people's purchasing power decreases, which can lead to a decline in consumption and investment. Dadkhah (2009) adds that high inflation can harm the economy by lowering absolute income levels, affecting overall economic growth. To control inflation, the government and monetary authorities can implement various measures, such as restrictive fiscal and monetary policies, reducing subsidies, and adjusting prices. These measures are designed to reduce the amount of money in circulation and control inflationary pressures. However, such measures are not without risks and can harm economic activity. Seeley (2017) mentions that measures to control inflation can also challenge economic growth if not implemented carefully. Policies to control inflation need to be designed with a balance between price stability and economic development in mind so as not to hamper economic activity excessively and affect the overall growth potential of the economy. Inflation management frequently entails tight monetary policy, such as hiking interest rates or lowering the money supply. While these policies can reduce inflation, they can also negatively influence economic growth.

Effect of Interest Rates on GDP

The test results show that interest rates have a favorable and considerable effect on GDP in the long run, while the effect is not significant in the short run. This finding is supported by Nisa's (2022) research, which analyzed Indonesian data from 2010 to 2020 and found that interest rates significantly impact GDP growth in the long run. Riani & Imron (2022) research also supports this result by analyzing Indonesian data from 2013 to 2020, which

shows that interest rates contribute positively to economic growth in the long run. In addition, Usman & Osagie (2023) found similar in a study covering Nigeria from 1980 to 2017, where the effect of interest rates on GDP in the short run was insignificant but, in the long run, had a substantial positive impact. Although these findings highlight the positive effect of interest rates in the long run, the results reject some assertions of traditional monetary theory. According to economic theory, interest rates that prevail over a more extended period should significantly influence the economy more than short-term variables. Long-term interest rates are considered more important because they reflect market expectations of future economic conditions, including inflation, economic growth, and monetary policy. Long-term interest rates influence investment and consumption decisions in the economy.

Tily (2007) states that changes in interest rates can play a central role in promoting or slowing down economic growth. Lower interest rates tend to encourage investment and consumption, increase aggregate demand, and, in turn, accelerate economic growth. Conversely, higher interest rates can suppress investment and consumption, reduce aggregate demand, and slow economic growth. Changes in interest rates affect the economy through various channels, including their impact on the level of investment, consumption, exchange rates, and international capital flows. A prudent monetary policy that is responsive to economic conditions is essential to achieve the goal of balanced economic growth. According to Bourguignon et al. (2008), sound monetary policy can help stabilize the economy by controlling inflation, stimulating investment growth, and regulating foreign capital flows. Monetary policy can avoid uncontrolled price increases that harm people's purchasing power and cause economic instability by regulating inflation. Controlled inflation promotes consumer and company confidence, which is necessary for long-term economic success. Therefore, interest rate policy should be designed by considering its impact on various aspects of the economy. The policy must also be geared towards balancing economic growth and macroeconomic stability.

Effect of Exports on GDP

Finally, the test results show that exports contribute negatively and significantly to GDP in the long and short run. This finding is supported by a study by Manikandan et al. (2019), which analyzed Indian data from 1950 to 2014 and found that exports contribute negatively to GDP in both time horizons. Destiani et al. (2023), in their research for Indonesia from 1990 to 2021, also confirmed that exports harm GDP in both the long and short run. Hapsari et al. (2020) showed a similar result for Indonesia from 2010 to 2019, where the effect of exports on GDP in the short run is negative and significant. These results contradict the HOV theory, which suggests that exports should contribute positively to economic growth by utilizing comparative advantage and increasing the welfare of the exporting country. According to the HOV theory, countries with abundant factors of production can export commodities that make efficient use of these factors of production, enhancing wealth and economic growth. This theory holds that countries with a surplus of specific aspects of production, such as labor or capital, will have a competitive advantage in manufacturing factor-intensive commodities. As a result, by exporting these commodities, the country may make the best use of its production factors while increasing national income.

One potential reason exports contribute negatively to GDP is that an increase in exports may lead to an appreciation of the national currency. When the value of the currency increases, exported goods and services become more expensive for the trading partner country. This can reduce the demand for imports from that country, leading to a decrease in

revenue for the exporting country. Anderson & Hazleton (2020) explain that an increase in the exchange rate can cause goods and services to become less competitive in the international market, thereby reducing exports and negatively affecting the exporting country's economy. Another factor is the concentration of exports on certain products, which can be detrimental to economic growth if the country is overly dependent on one type of commodity. Newfarmer & Shaw (2009) note that declining commodity selling prices can harm export earnings and economic growth. Dependence on commodity products whose prices fluctuate can cause financial instability and hinder sustainable economic growth. Policies promoting commodity price stability, such as establishing strategic reserves and international trade agreements that reduce price volatility, can also help mitigate the detrimental effects of commodity price changes.

Conclusion

The results showed that Foreign Direct Investment (FDI) does not significantly affect Indonesia's economic growth (GDP) in both the long and short term. So, these results reject Solow's theory of economic development. The exchange rate has a negative and significant impact on GDP both in the long and short run. The results align with previous findings and contradict the general equilibrium theory. Inflation has a significant negative effect in the long run, but it has an insignificant positive impact on GDP in the short run. These results are in line with the quantity theory of money. Then, for interest rates, it has a significant positive effect in the long run, but in the short term, it has an insignificant negative impact on GDP. The result supports the statement of monetary theory in the long run. Meanwhile, exports negatively and significantly affect GDP in both the long and short run. These results are different from the Heckscher-Ohlin-Vanek (HOV) theory.

Based on the results of this study, it is recommended that economic policies taken by the Indonesian government focus more on stabilizing the exchange rate and inflation, given their significant impact on economic growth. In addition, the government needs to review its strategy regarding FDI, given its failure to contribute significantly to economic growth in the short and long term, which rejects Solow's theory of economic development. This review could be directed at improving the competitiveness and effectiveness of foreign investment to contribute more optimally to GDP. Regarding interest rates, a more stable long-term monetary policy should be prioritized to support economic growth, while the short-term impact can be addressed with balancing measures. Finally, the negative result of exports on GDP, which is not in line with the HOV theory, indicates the need for policies to strengthen the export sector to be more competitive in the international market, including by diversifying export products and destination markets.

This study has several limitations that must be considered when interpreting the results. Time limitation is one of the constraints where the research was conducted in a relatively short period, so it may not be able to capture the broader and deeper dynamics of economic change. In addition, data limitations are also a challenge. The data may cover only some relevant aspects and may affect the research results. The limitations of the variables used in this study may also affect the validity of the results. The selected variables may not cover all economic growth factors, such as fiscal policy, labor, and other socio-political factors. In addition, external factors such as geopolitical events, international policy changes, and global economic fluctuations should also be considered when interpreting the results. These events can significantly impact the Indonesian economy and may affect the variables under study.

Declaration

This research article is an original work that has not been published elsewhere and is not under consideration for publication in any other journal or platform. The research is completely original and the results presented are new contributions to the field of study discussed. We ensure that all content, data, and analyses contained in this article are the result of the hard work and careful research of the author team. No part of this article is a duplication or plagiarism of any other work.

Conflict of Interests

The authors expressly declare that there are no competing financial, professional, or personal interests that could influence or interfere with the objectivity and integrity of this study. All authors have worked with dedication and independence, ensuring that the results presented are purely based on objective data and analyses. There are no affiliations or relationships that could create a conflict of interest in the conduct and reporting of this study.

Availability of Data and Materials

The data used in this study are sourced from the Central Bureau of Statistics (BPS), the Investment Coordinating Board (BKPM), and Bank Indonesia (BI), covering the time span from 2007 to 2022. Further information on the data collection methodology, specific sources, and detailed analyses can be found in the body of this article.

Authors' Contribution

All authors played an active role in every stage of the research. They jointly conceptualized the study, developed and elaborated the methodology, and ensured the research design met rigorous scientific standards. The authors also wrote the manuscript, ensuring that the data and analyses were presented clearly and accurately. This writing process involved intensive discussion and collaboration among the authors to produce a comprehensive and in-depth manuscript.

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