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Impact Analysis Of Monetary And Fiscal Policies On Indonesia's Economic Growth

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Abstract: After the Covid-19 pandemic, the world faced economic challenges stagflation, namely high inflation and declining economic growth. To overcome this, the Government made arrangements through monetary and fiscal policies. This study analyses the effect of monetary and fiscal policies on Indonesia's economic growth. This research has eight obtained monetary, fiscal and other macro-economic variables, a novelty compared to the previous researcher. Based on the impulse response analysis in the Vector Error Correction Model, the highest impacted variables to maintain economic growth were the growth of income tax and capital market index, and to negatively impact were exchange money and government expenditure. Over an extended period, it shows that the increase in inflation, money exchange, number of broad-money, interest rate, and government expenditure will impact the decrease of economic growth. In contrast, the increase in government income from tax and capital market indexes will impact the increase in economic growth.
Keywords: Fiscal Policies; Monetary Policies; Indonesia's Economic Growth.

Abstrak: Pasca pandemi Covid-19, dunia menghadapi tantangan ekonomi stagflasi, yaitu inflasi yang tinggi dan pertumbuhan ekonomi yang menurun. Untuk mengatasi hal tersebut, pemerintah melakukan pengaturan melalui kebijakan moneter dan fiskal. Penelitian ini menganalisis pengaruh kebijakan moneter dan fiskal terhadap pertumbuhan ekonomi Indonesia. Keterbaharuan dalam penelitian adalah komprehensif variabel yang terdiri atas variabel kebijakan moneter, kebijakan fiskal dan faktor ekonomi makro lainnya dan pada peneltian dilakukan analisa respons pertumbuhan ekonomi terhadap ganguan yang terjadi di variabel pengamatan. Berdasarkan analisis Vector Error Correction Model, variable yang paling berpengaruh untuk menjaga pertumbuhan ekonomi adalah pertumbuhan pajak penghasilan dan indeks pasar modal, dan yang berpengaruh negatif adalah nilai tukar uang dan pengeluaran pemerintah. Dalam jangka panjang terlihat bahwa kenaikan inflasi, nilai tukar uang, jumlah uang beredar, suku bunga, dan pengeluaran pemerintah akan berdampak pada penurunan pertumbuhan ekonomi. Sebaliknya, peningkatan pertumbuhan pendapatan pemerintah pajak dan indeks pasar modal akan berdampak pada peningkatan pertumbuhan ekonomi.
Kata Kunci: Kebijakan Fiskal; Kebijakan Moneter; Pertumbuhan Ekonomi Indonesia.

INTRODUCTION

The Government must help the nation prosper by providing economic conditions with stable economic growth. In order to provide that condition, the Government will intervene in the market and control financial and industry conditions through monetary and fiscal policies. Indonesia's economy has experienced significant growth over the past decade, averaging 4.583 per cent. Nevertheless, the nation has encountered several difficulties recently, such as a deteriorating fiscal deficit, stagnant investment growth, lacklustre manufacturing sector performance, and a drop in state revenue. The Government has implemented various policies, including monetary and fiscal policies, to address these

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challenges. This literature review analyses the impact of monetary and fiscal factors on Indonesia's economic growth, considering the current challenges facing the country's fiscal policy.

From the beginning of 2020 to 2021, during the COVID-19 pandemic, governments and central banks worldwide implemented monetary and fiscal policies to reduce interest rates, release tax incentives, and provide economic packages. The goal was to alleviate the negative economic impact and maintain public well-being by focusing on households, businesses, healthcare systems, and banks regarding reach and range (Weder, 2020; Gourinchas, 2020). Some policies adopted across countries consist of monetary and fiscal policies. Monetary policies usually consist of liquidity support to banks (IMF, 2020), while fiscal policies consist of subsidised transfers to retail households and selected industries, an extension of social safety facilities, and a healthcare system.

The Indonesian Government implemented fiscal and monetary policies to deal with COVID-19 in economic, social, and public health. In fiscal policies, the Government has refocused on activities and budget reallocations. The Ministry of Finance reallocated State Budget (APBN) funds amounting to the IDR. 62.300 trillion. The funding sources were reallocation from the official travel budget, non-operational spending, and honorariums. The budget was redirected towards handling and controlling the pandemic, social protection, and providing incentives for the business world. The Regional Budget is anticipated to be restructured and reallocated for these three purposes. The Ministry of Finance issued PMK 23/2020, which offers tax relief for employees and businesses, such as government-funded employee Income tax, import income tax exemption, and reduced Article 25 Income Tax instalments, as well as providing additional incentives and Value-Added Tax facilities for businesses affected by the pandemic. The Indonesian Government tightened the policy by setting a monetary policy aligned with fiscal policy to optimise economic conditions, even during the pandemic. The Monetary Authority aims to maintain the Rupiah exchange rate, maintain low inflation, and provide incentives to stimulate economic growth.

According to the Governor Central Bank of Indonesia (Perry, 2022), 2023, the global economy will face five challenges and impacts in Indonesia. First is the decline of global economic growth, which is predicted to be around 2.000 per cent (the previous year was 3.000 per cent), and there is some potential that some countries will be in recession. Secondly, high inflation due to the energy crisis as the impact of geopolitics, the war between Russia and Ukraine; after the Covid-19 pandemic, the production and supply chain did not recover well, and the result to supply has not met the demand in the market, the inflation was predicted 9.200 per cent and above 10.000 per cent in Europe. Thirdly, the high-interest rate, due to high inflation, the Central Bank in the world has the same policy to control inflation by increasing interest rates. Federal Reserve (The FED) has already adjusted nine times, raising interest rates in the last year, March 2023, to 5.000 per cent.

Meanwhile, Central Bank Indonesia is increasing the BI 7-Day Reverse Repo Rate (BI7DRR) from 3.500 to 5.750 per cent. According to the finance minister (Sri Mulyani), in December 2022, The current condition of Indonesia's inflation is 5.510 per cent with economic growth of 5.040 per cent, while in America and Europe, inflation is around 8.000 per cent to 11.000 per cent with a minus growth rate. The fiscal and monetary policies that the US and European governments and central banks have taken are too extreme to boost

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economic growth following the easing of the COVID-19 pandemic. Fourth, the impact of The FED's consistently increasing interest rate makes the US dollar and IDR weaker, which impacts the capital market and budget policy. The fifth is investors' perception that they prefer to keep the cash in the recession, which affects financial institutions' performance.

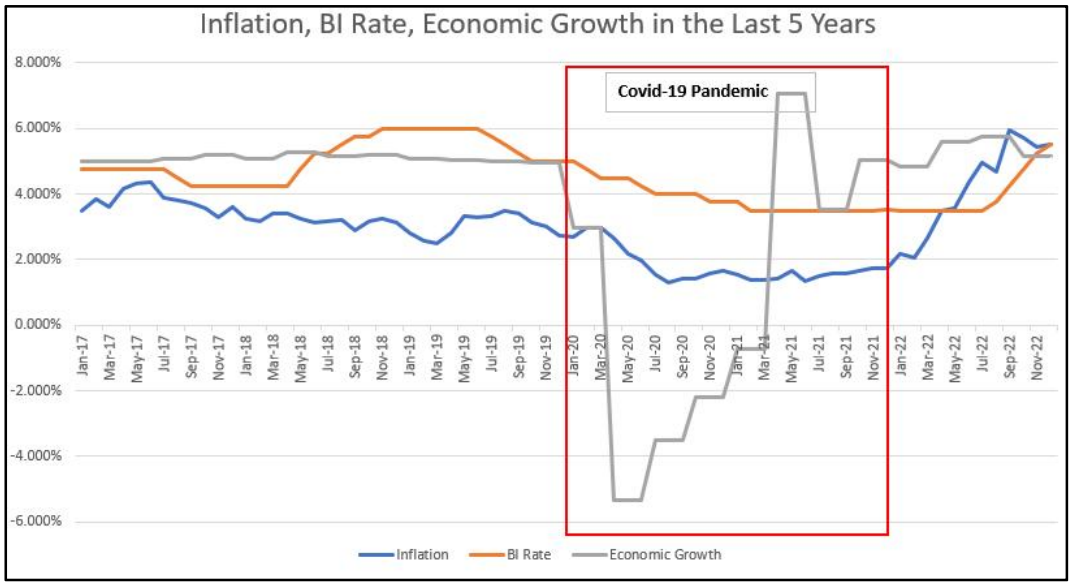

Figure 1. The Movement of Inflation, BI Rate, and Economic Growth
Source: BI, Central Bureau Statistic, Data Processed by Author, 2023

The monthly movement of Inflation, BI Rate, and economic growth every month is shown in **Figure 1**. It shows that during the COVID-19 pandemic, which started in January 2020, economic growth significantly decreased and increased in March 2021, while the same phenomenon happened in inflation as a result and BI Rate as a monetary policy to control inflation. From January 2017 to December 2019, the economic growth, inflation, and BI Rates were stable but became unstable during Covid-19. The unstable condition, according to OECD Economic Outlook (Interim Report March 2023), is projected to remain in 2023 and 2024; it is stated that global economic growth will slow in 2022 to 3.200 per cent; this happened because of Russia's aggression towards Ukraine. This war causes an imbalance in the energy supply and affects the cost-of-living crisis in many countries. (OECD, 2023). Therefore, the Government must prepare the proper regulations to control and mitigate unstable conditions, especially economic growth. This study aims to analyse the effect of monetary and fiscal policies on Indonesia's economic growth. Analysing monetary and fiscal factors on Indonesia's economic growth is crucial to understanding the country's financial performance, identifying policy recommendations, and examining the impact of various monetary and fiscal policies on the country's key economic indicators, such as GDP growth, inflation, unemployment, and income inequality.

This research has eight obtained variables, a novelty compared to the previous researcher. The observed monetary policy variables are broad money supply (M2) and interest rates (BI Rate). In contrast, fiscal policy variables are growth in government

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expenditure and growth income of taxes, with other variables (macro-economic variables) influencing inflation, IDR-USD exchange rate and capital market index (IDX).

Compared to previous researchers, the analysis was limited to monetary policy and macroeconomic variables, and the analysis commonly used ordinary least squares. This research uses comprehensive monetary, fiscal, and macroeconomic variables needed to obtain economic growth. The method in this research uses VECM, which provides a response analysis of economic growth if there is a shock in variables obtained ten months earlier. The analysis is critical to understanding how the regulator executed the impact of shock in monetary and fiscal regulation. By analysing the impact of monetary and fiscal factors on Indonesia's economic growth, this review aims to provide insights into how the country can address its current economic challenges and achieve sustainable growth in the future.

THEORETICAL REVIEW

Indonesia relies on monetary and fiscal policies to sustain and accelerate economic growth. Monetary policy, managed by Bank Indonesia, focuses on controlling inflation and maintaining currency stability through interest rate adjustments, reserve requirements, and open market operations. On the other hand, fiscal policy, which the Government manages, focuses on government spending, taxation, and borrowing to influence economic activity. There was a correlation between monetary and fiscal policies in the impact of the budget deficit and inflation. From a fiscal perspective, the tightening inflation causes tightening economic growth and limited jobs employment; therefore, the synergy of both policies is necessary.

Economic Growth. Economic growth is essential to analysing a country's health and economic development. Abuiyada's (2018) definition of economic growth is measured solely in terms of an increase in per capita income or annual gross national product (Growth Domestic Product), regardless of its distribution and the level of societal participation in effective growth. Gross Domestic Product is the value a country gives to its products and services (Cahyani, 2018). GDP can describe the country's economic growth for a predetermined period, as seen from the prevailing market prices, so GDP is an important indicator. A country's ability to meet its people's needs can describe economic growth (Sari & Baskara, 2018).

Economic strain is mainly caused by good governance and domestic policies, strong best institutions, and attachment to free markets (Alenda-Demoutiez, 2022).

A nation is deemed to possess favourable economic circumstances when it experiences significant economic expansion or a rise in the production of goods and services, referred to as Gross Domestic Product (GDP). Evaluating the extent of economic growth involves utilising Real GDP, a metric derived from constant prices, to mitigate the impact of price fluctuations during the measurement time frame. Gross Domestic Product is one of the best measures of economic performance because it is the total national income and expenditure on the output of goods and services. GDP can be seen as the expenditure and the total income of everyone in the economy. GDP is divided into four expenditure groups: consumption, investment, government purchases, and net exports. Therefore, by using the symbol Y for GDP, then GDP equals the sum of C (Consumption), I (Investment), G (State Expenditures) and E (Net Exports)

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Quoting the website of the Central Bureau of Statistics (2023), Gross Domestic Product data is one of the essential indicators to determine a country's economic condition in a certain period. GDP can be found through three approaches: the Production Approach, the Income Approach, and the Expenditure Approach. Conceptually, the three approaches will produce the same number. Expenditure GDP is the value of goods and services used as final consumption by households. These non-profit institutions serve households, the government plus investment (gross fixed capital formation and inventory changes), and net exports (exports minus imports).

Other researchers have elaborated on economic growth by explaining the indirect factors that influence it, such as fiscal policies, bureaucracy, interest rates, financial system efficiency, and investment (Paksi, 2021). According to the results of the ordinary least squares (OLS) method, exports and household consumption positively influence Indonesia's economic growth. In contrast, labour growth has no impact, and inflation negatively affects it. (Pravitasari & Insukindro, 2023) They examined the influence of government spending, debt, output gap, tax, inflation, interest rate, and exchange rate on Indonesia's economic growth. The research conducted by (Elfaki et al., 2021) and titled "The Impact of Industrialization, Trade Openness, Financial Development, and energy consumption on Economic Growth in Indonesia" analysed the effect of financial development, energy consumption, industrialisation, and trade openness on economic growth in Indonesia, with a particular focus on how these factors interact with each other. This study makes a significant contribution by providing new insights into this topic. (Tan et al., 2020) conducted a study in Malaysia, Singapore, and Thailand. Three findings were reported: first, the interest rate hurt economic growth; second, government spending hurt economic growth in Malaysia and Singapore but had a positive impact in Thailand; and third, monetary policy was more effective in Malaysia and Singapore, while fiscal policy was more effective in Thailand. Given that Indonesia has the largest Muslim population of approximately 209 million (87.600 per cent), it is essential to consider these policies in Indonesia. (Widyastuti & Arinta, 2020) They argued that the expansion of consumer financing through Sharia Banking may hinder Indonesia's economic growth in both the short and long terms. Hence, Sharia banking is expected to shift its focus towards more productive forms of financing to contribute to the nation's economic growth.

Monetary & Fiscal Policies. Monetary policy is a vital tool central banks use to regulate the economy. It refers to the actions taken by a central bank to influence the availability and cost of money and credit in the economy with the primary objective of maintaining price stability, which is typically defined as a low and steady rate of inflation. However, central banks also consider other objectives, such as achieving full employment and maintaining financial stability. There are two primary types of monetary policy: expansionary and contractionary policies. Expansionary monetary policy involves increasing the money supply and lowering interest rates to stimulate economic growth and inflation.

In contrast, contractionary monetary policy involves decreasing the money supply and raising interest rates to slow economic growth and decrease inflation. Monetary policy can be implemented using various tools, including open market operations, discount rate changes, and reserve requirement changes. Open market operations involve buying or selling government securities in the open market to influence money supply and interest rates. In contrast, discount rate changes involve altering the interest rate at which banks

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can borrow money from the central bank. Reserve requirement changes involve modifying the amount of money banks must hold in the reserve.

The relationship between economic growth and monetary policy, specifically the role of policy interest rates, was extensively examined by (Arintoko & Kadarwati, 2022) using the VAR method, which showed that policy interest rates respond positively to unexpected GDP changes. Previous studies have suggested that monetary policy plays a crucial role in regulating economic growth, inflation, and exchange rates (Nyumuah, 2018); (Abbasinejad et al., 2018); (Sethi et al., 2019); (Mandel et al., 2019) (Arintoko, 2021); (Tai Nguyen et al., 2022). (Kim & Lim, 2018) and (Kim et al., 2020) note that monetary policy shocks can affect exchange rates. (Mehar, 2022) found that monetary policy can positively affect employment opportunities and accelerate investment growth while controlling inflation. The creation of investment opportunities is closely linked to employment opportunities (Shim et al., 2018). (Wang et al., 2023) observed the role of monetary and fiscal policies in China's recovery from the COVID-19 pandemic. The Indonesian Ministry of Finance and the president have the authority to make fiscal policies in Indonesia. The Fiscal Policy Agency at the Indonesian Ministry of Finance regulates fiscal policy in Indonesia. Fiscal policy management involves various instruments, such as changing tax rates, regulating government spending and subsidies, and managing state debt. Every year, fiscal policy is published in the State Budget after the People Representative Council approves it. If the People's Representative Council did not approve the State Budget, the Government could use the previous State Budget.

Preparing the State Budget includes regulating state income and expenditures to increase economic growth, increase production and employment opportunities, and improve people's welfare. In addition, the APBN also aims to increase government transparency to the People's Representative Council and the public and to improve coordination within the Government. State Budget functions include allocation (provision of public goods), distribution (fair distribution of funds), stabilisation (maintaining economic balance), authorisation (implementation of income and spending), control (regulating expenditures), and accountability (accountability for the use of public funds). (Perdana, 2021) explains that the State Budget consists of revenue and expenditure. On the expenditure side, there are three main posts, namely government expenditures to purchase goods and services, government expenditures for employees, and government expenditures for transfer payments, which include payments of direct subsidies or assistance to various groups of people, pension payments, and interest payments for government loans to the community. The revenue side shows where the funds come from: taxes (various kinds), Central Bank loans, loans from the domestic community, and loans from abroad. The revenue and government expenditure imbalance caused a budget deficit and created fiscal risk.

According to (Parisi & Rusydiana, 2016), fiscal risks that cannot be adequately anticipated will burden the budget so that it will have the opportunity to hinder development and achieve economic growth. The impact of fiscal risk in developing countries is more severe than in developing countries. These risks can quickly spread to the overall economy, leading to capital flights and potentially altering the direction of economic growth. One alternative to solving the budget deficit is issuing bonds, sovereign bonds, or Sukuk to finance infrastructure or other spending (Hossain et al., 2021). Research conducted by (Ngo Nguyen, 2020) with the object of ASEAN shows that corruption and

political stability significantly influence the budget deficit, while inflation and GDP per capita have various influences in ASEAN countries. In Indonesia, the factors influencing the budget deficit are inflation, GDP per capita, population, corruption, and military stability. (Gruner, 2017) stated that public expenditure decisions by fiscal policymakers and political parties bargain for the budget. (Marimuthu et al., 2021) I researched fiscal deficit consequences and contribution to sustainable economic growth in ASEAN; the result mentioned that interest rates moderate fiscal and current account deficits. The researcher also reminds the policymaker that it was dangerous based on the behaviour of government revenues, interest rate dynamics, political stability, and outstanding debt in deficit financing. Fiscal deficit relies on the debt of ASEAN's state budget's ability to generate inflation.

Other Macro Economic Factors. Some researchers have examined inflation and capital market macroeconomic variables and stated that the relationship between the Stock Market, Financial Innovation (M1/M2 ratio), and cryptocurrency (Bitcoin) to Indonesia's economic growth in the long run has a positive impact. In contrast, in the short run, the stock market has a positive correlation, and others are negatively correlated. Based on a study conducted by researchers regarding monetary and fiscal factors affecting Indonesia's economic growth, factors such as falling state revenue and rising expenditures to offset declining growth will likely mean a fiscal shortfall of nearly 7.000 per cent of GDP in 2020 (Ngunyen, 2020), Indonesia's government revenue (as a share of GDP) is substantially lower than that of most other emerging countries, including others in the region (IMF, 2021). Resilient economic growth, low government debt, and prudent fiscal management have been cited as reasons for the upgrades and are vital to attracting financial investment.

Research conducted by (Azam et al., 2016) in four countries (Bangladesh, India, China, and Singapore) revealed long-term cointegration among economic growth, foreign direct investment (FDI), stock market development, and inflation. In the short run, the stock market has a positive relationship with economic growth in all countries; however, this relationship is significant only in India and China. Finally, stock market development and FDI inflows play crucial roles in economic growth and development in these selected countries. (Setiawan, 2020) In his research, he informed that a strong and positive correlation exists between GDP and stock market performance in Indonesia. Concerning the correlation between foreign and domestic investments and their impact on economic growth, (Alice et al., 2021) stated that foreign and domestic investments contribute to a country's Gross Domestic Product (GDP) growth. However, the impact of foreign investment was not significant in this study.

In contrast, domestic investment has a considerable effect on GDP. On the other hand, domestic investments substantially impact gross domestic product. According to (Qamruzzaman & Wei, 2018), there is a positive and significant correlation between financial innovation, stock market development, and economic growth in the long run. Additionally, the Granger causality test conducted in this study indicates bidirectional causality between financial innovation, economic growth, and stock market development in both the long and short runs. These results support the theory that market-based financial development and innovation within the financial system can drive economic growth.

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METHODS

Time-series analysis can also be applied to single-variable (univariate) or data types with many variables (multivariate). Statistical methods have been used to analyse and solve multivariate time-series problems, including vector autoregression (VAR) and vector error correction (VECM). In 1980, Sims introduced the VAR model as an alternative to the traditional macroeconomic analysis. Unlike previous models, the VAR model is based on a theoretical concept and is therefore considered a non-model. It has minimal endogenous variables and includes lag as an independent variable. The VAR model is designed for time-series data that do not contain trends, and the stochastic trend in the data indicates the presence of both long- and short-term components that require separate analyses. The advanced model trends in economic variables continue to become more sophisticated. Granger developed this concept by adding the cointegration concept to the model, which sharpens the model. In 1987, Engle and Granger created the idea of cointegration and error correction. The model was continually developed in 1990; Johansen and Juselius developed the Vector Error Correction Model, which enriched the VAR model by adding errors for non-stationary data.

The VAR model has the condition that the data used must meet the requirement condition, which is stationary at level I(0) or level differencing I (I). If the data are not stationary at level I(0), several stationary processes will be carried out first. If the data are stationary and it is proven that there is no cointegration between several variables, the VAR model can be used. However, suppose the data are stationary after differencing in the same order, and there is proven cointegration between several minimal variables with rank one. In this case, the model used in **Figure 2** is the Vector Error Correction Model (VECM) (Riffin & Feryanto, 2021).

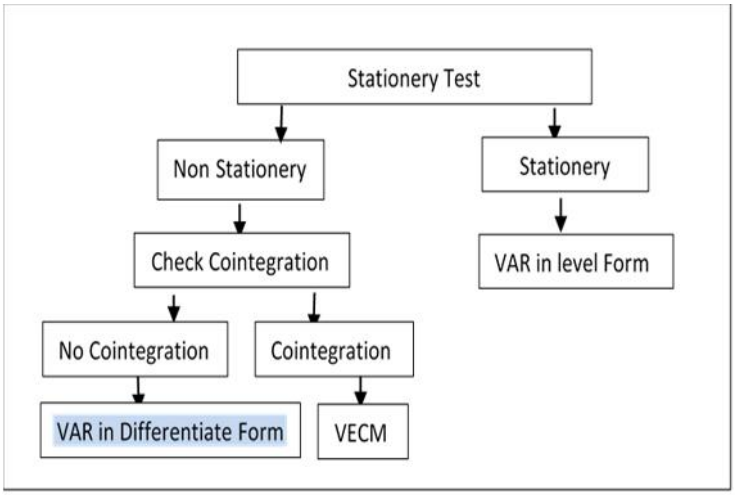

Figure 2. Model Development VAR/ VECM.
Source: (Riffin & Feryanto, 2021; Waluyo Jati et al., 2022)

The variable data in this research consists of eight variables, as shown in **Table 1**. Data is categorised as monetary, fiscal, and macroeconomic variables as the impacted variables. The monetary variables are the amount of broad money (Ln_M2) and the bank interest rate under Central Bank Indonesia's control. Data categorised as fiscal variables

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are the growth of government income tax (Tax) and growth of government expenditure (Gov_Exp), which both are monitored by the Financial Minister in Indonesia Budget of Income and Expenses (APBN-Anggaran Pendapatan dan Belanja Negara). The macroeconomic impact of monetary and fiscal policies were market responses in Inflation (Inflation), money exchange of the Indonesia Rupiah and the United States dollar (Kurs IDR- USD), Indonesia's capital market Index (IDX), and growth of Indonesia's economy (GDP). The data was obtained as secondary data, downloaded from the web of Central Bureau Statistic Indonesia, Indonesia Stock Exchange, Central Bank Indonesia, and Ministry of Finance Indonesia from 2010 to 2021 (ten years).

Table 1. Research Data Description and Sources

No	Variables	Symbol in Data Processed	Data Sources	Measurement
1	Inflation	Inflation	Central Bureau Statistics Indonesia	Per cent
2	Indonesia Capital Market Index (IDX Composite)	Ln_IDX	Indonesian Stock Exchange (IDX)	Logarithmic Natural (LN)
3	Money Exchange Rate: Indonesia Rupiah and United State Dollar, Kurs (IDR-USD)	Ln_Kurs	Central Bank Indonesia (Bank Indonesia)	Logarithmic Natural (LN)
4	Growth of Government Income from Tax	Tax	Ministry of Finance Indonesia	Per cent
5	7Days BI Repo	BI_rate	Central Bank Indonesia (Bank Indonesia)	Per cent
6	The number of Broad Money	Ln_M2	Central Bank Indonesia (Bank Indonesia)	Logarithmic Natural (LN)
7	Indonesia Growth Economic (GDP)	GDP	Central Bureau Statistics Indonesia	Per cent
8	Growth of Government's Expenditure	Gov_Exp	Ministry of Finance Indonesia	Per cent

Source: Author's Summary

The Vector Error Correction Model (VECM) is a restricted VAR used for variables that are non-stationary but have the potential to cointegrate. In VECM, there is a speed of adjustment from short to long-term. The basic equation of VECM is

$$L_t = \sum_{i=1}^{p-1} \Gamma_i \Delta Z_{t-i} + \Pi Z_{t-i} + \mu_0 + \pi_1 t + \varepsilon_t \quad \text{..... (1)}$$

The meaning of the notation for the above equation is: Π is α β parameter matric, α is representative of ECM coefficient matric, while β represents the transpose cointegration vector. The symbol of $^{p-1}$ is VECM ordo, which comes from the optimum lag of VECM. L_t the first difference vector ($Z_t - Z_{t-1}$), $Z_t$is the eight observation variables consist of inflation, Ln_Kurs, Ln_M2, Tax, BI Rate, GDP, GovExp, Ln_IDX. Γ_i shows the matric

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of the regression coefficient. At the same time, π_0 is the intercept vector, π_1 is the regression coefficient vector, ε_t is the error term vector, and $_t$ is the according to time observation.

The applied VECM equation for this research based on the elaboration of equation (1) becomes below equation (2) is

$$\begin{vmatrix} G_t \\ In_t \\ L\ K_t \\ L\ M2_t \\ T_t \\ B\ R_t \\ G_t \\ L\ In_t \end{vmatrix} = \begin{vmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \\ \alpha_4 \\ \alpha_5 \\ \alpha_6 \\ \alpha_7 \\ \alpha_8 \end{vmatrix} + \begin{vmatrix} \beta_1 & \beta_1 & \beta_1 & \beta_1 & \beta_1 & \beta_1 & \beta_1 & \beta_1 \\ \beta_2 & \beta_2 & \beta_2 & \beta_2 & \beta_2 & \beta_2 & \beta_2 & \beta_2 \\ \beta_3 & \beta_3 & \beta_3 & \beta_3 & \beta_3 & \beta_3 & \beta_3 & \beta_3 \\ \beta_4 & \beta_4 & \beta_4 & \beta_4 & \beta_4 & \beta_4 & \beta_4 & \beta_4 \\ \beta_5 & \beta_5 & \beta_{53} & \beta_5 & \beta_5 & \beta_5 & \beta_5 & \beta_5 \\ \beta_6 & \beta_6 & \beta_6 & \beta_6 & \beta_6 & \beta_6 & \beta_6 & \beta_6 \\ \beta_7 & \beta_7 & \beta_7 & \beta_7 & \beta_7 & \beta_7 & \beta_7 & \beta_7 \\ \beta_8 & \beta_8 & \beta_8 & \beta_8 & \beta_8 & \beta_8 & \beta_8 & \beta_8 \end{vmatrix} \begin{vmatrix} G_t \\ In_t \\ L\ K_t \\ L\ M2_t \\ T_t \\ B\ R_t \\ G_t \\ L\ In_t \end{vmatrix} + \begin{vmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \\ \varepsilon_{7t} \\ \varepsilon_{8t} \end{vmatrix}$$

Based on equations (1) and (2), then the applied VECM equation to observed GDP as the main objection in this research is

$$G_t = a_1 + \sum b_{1e} G_{t-e} + \sum c_{1e} In_{t-e} + \sum d_{1e} L\ K_{t-e} + \sum e_{1e} L\ M2_{t-e} + \sum f_{1e} T_{t-e} + \sum g_{1e} B_{t-e} + \sum h_{1e} G_{t-e} + \sum g_{1e} L\ In_{t-e} + \varepsilon_1 \quad \text{..... (3)}$$

The notation of a, b, c, d, e, f, g is the coefficient of endogenous variable, and $_{t-e}$ represents the according time observation. At the same time, ε_1 is the error term vector GDP.

In econometric factors, the endogenous and exogenous factors have a possibility for the relationship. A causality test could be performed to perform the analysis. The function of the causality test is to determine the relationship among variables. The causality test aims to analyse the effect of variables in the long term and short term. If an event of the endogenous variable occurs before the exogenous variable, then there is a possibility that the endogenous variable affects the exogenous variable, but it is not possible otherwise; this is the idea in applying the Granger causality test. The basic equation is

$$Y_t = \sum_{i=1}^{m} \alpha_i Y_{t-1} + \sum_{i=1}^{m} \beta_i X_{t-1} + \varepsilon_t \quad \text{..... (4)}$$

Notations explain that Z represents the variable response, and Y represents the other observation variable. α β is the coefficient, and ε_t is the error term, while ^{m} and $_t$ are the period observation. The Causality Hypothesis Test are First; if $\sum_{i=1}^{m} \alpha_i Y_{t-1} \neq 0$ or $\sum_{i=1}^{m} \beta_i X_{t-1} = 0$, then there is a causality relationship in one way (unidirectional causality) from Y to Z. Second, if $\sum_{i=1}^{m} \alpha_i Y_{t-1} = 0$ or $\sum_{i=1}^{m} \beta_i X_{t-1} = 0$ then there is causality relationship in one way (unidirectional causality) from Z to Y. Third; if $\sum_{i=1}^{m} \alpha_i Y_{t-1} = 0$ or $\sum_{i=1}^{m} \beta_i X_{t-1} = 0$ then there is not a causality relationship (independence or insignificantly) between Y and Z. Fourth; if $\sum_{i=1}^{m} \alpha_i Y_{t-1} \neq 0$ or $\sum_{i=1}^{m} \beta_i X_{t-1} = 0$ then there is a causality relationship between Y and Z (feedback or bilateral causality). In this research, the causality test was conducted on all variables to determine their causal relationship.

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RESULT

Unit Root Test. The first step in VAR/VECM is based on **Figure 2.** Is conducted stationary test. The result of the stationery test by performing the Unit Root Test - ADF Test is shown in **Table 2.** At this level, the MacKinnon Critical values are lower than the ADF t-statistic, in which there is no stationery in all variables, and the probability is higher than α of 5.000 per cent. Since there is no level stationery, the model is not VAR in level form.

Table 2. Result of Unit Root Test in Level

Variable	ADF t-statistic	Prob	MacKinnon Critical Values			Remark
			1 per cent	5 per cent	10 per cent	
Inflation	-1.694	0.431	-3.481	-2.883	-2.578	No Stationery
Ln_Kurs	-1.444	0.558	-3.480	-2.883	-2.578	No Stationery
Ln_M2	-1.771	0.393	-3.481	-2.883	-2.578	No Stationery
Tax	-2.289	0.176	-3.480	-2.883	-2.578	No Stationery
BI_Rate	-0.798	0.815	-3.481	-2.883	-2.578	No Stationery
GDP	-0.966	0.763	-3.486	-2.885	-2.579	No Stationery
GovExp	-2.302	0.172	-3.480	-2.883	-2.578	No Stationery
Ln_IDX	-2.000	0.286	-4.803	-3.403	-2.841	No Stationery

Source: Data Processed – EViews Software, 2022

All variables become stationary after conducting the ADF Test in the second level, as shown in **Table 3**, in which all probability is lower than 5.000 per cent.

Table 3. Result of Unit Root Test in Level 2

Variable	ADF t-statistic	Prob	MacKinnon Critical Values			Remark
			1 per cent	5 per cent	10 per cent	
Inflation	-8.582	0	-3.481	-2.883	-2.578	Stationery
Ln_Kurs	-12.110	0	-5.604	-3.694	-2.982	Stationery
Ln_M2	-15.204	0	-5.604	-3.694	-2.982	Stationery
Tax	-11.318	0	-5.604	-3.694	-2.982	Stationery
BI_Rate	-7.643	0	-3.481	-2.883	-2.578	Stationery
GDP	-6.932	0	-3.486	-2.885	-2.579	Stationery
GovExp	-11.405	0	-3.481	-2.883	-2.578	Stationery
Ln_IDX	-10.137	0	-3.481	-2.883	-2.578	Stationery

Source: Data Processed – EViews Software, 2022

Cointegration Test. The second step was to conduct a Cointegration Test to check whether there is cointegration in the long run and whether it needs error correction. **Table**

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4 shows three cointegrations at rate of 5.000 per cent (probability less than 5.000 per cent). Since there is cointegration, then the model of research is VECM.

Table 4. Result of the Cointegration Test

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.749	352.6125	187.470	0.000
At most 1 *	0.346	174.129	150.558	0.001
At most 2 *	0.294	119.308	117.708	0.039
At most 3	0.185	74.280	88.803	0.348
At most 4	0.146	47.741	63.876	0.517
At most 5	0.098	27.281	42.915	0.664
At most 6	0.063	13.894	25.872	0.666
At most 7	0.041	5.437	12.517	0.534

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level (*)
Source: Data Processed – EViews Software, 2022

Vector Error Correction Model. The equation of VECM for an extended period is shown in **Table 5**. Almost all of the variables have negative coefficients for economic growth except the growth of government income of Tax and Capital Market Index. For an extended period, the increase in inflation, money exchange, number of broad-money, Interest Rate, and government expenditure will impact the decrease of economic growth. In contrast, the increasing growth of government income from tax and capital market indexes will impact economic growth.

Table 5. Equation of VECM in a long period

Variable	Coefficient	Standard Error	t- Statistic
Inflation	-0.057	-0.061	0.936
Ln_Kurs	-3.943	-1.533	2.571
Ln_M2	-2.266	-1.301	1.741
Tax	22.937	-1.069	-21.437
BI_Rate	-0.063	-0.102	0.617
GovExp	-0.160	-0.021	7.576
Ln_IDX	4.451	-0.787	-5.655

Source: Data Processed – EViews Software, 2022

Variance Decomposition of Economic Growth. The percentage contribution of all variables at the beginning of the 10th month is shown in **Table 6.** For a short time, such as in the second month, the change in economic growth (GDP) contributed 85.929 per cent of GDP itself and 7.915 per cent of the exchange rate, while in the fourth month, it contributed 46.275 per cent of the growth of Income Tax, 34.749 per cent GDP and 8.912 per cent exchange rate. Maintaining the exchange rate and income tax growth significantly contributes to the change of GDP besides GDP itself. For a long time, starting in the seventh month, the majority contributed were a capital market index of 10.220 per cent, growth of income tax of 58.102 per cent and GDP of 21.241 per cent and in the 10th-month cont,

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attributed to the growth of income Tax of 54.893 per cent, GDP of 20.611 per cent and 12.614 per cent capital market index.

Table 6. Variance Decomposition of GDP

Period	GDP	LN KURS	TAX	INFLATION	GOV EXP	BI RATE	LN IDX	LN_M2
1	100.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2	85.929	7.915	2.645	0.184	0.108	0.814	0.960	1.442
3	71.258	15.479	4.847	0.226	0.245	1.808	4.911	1.223
4	34.749	8.912	46.275	0.505	2.650	1.075	5.300	0.531
5	25.028	5.531	57.980	0.303	3.727	0.662	6.445	0.319
6	21.602	4.299	59.872	0.713	4.114	0.662	8.473	0.262
7	21.241	4.038	58.102	1.175	4.223	0.760	10.220	0.237
8	21.069	4.202	56.354	1.358	4.401	0.923	11.442	0.246
9	20.920	4.357	55.290	1.381	4.552	1.034	12.203	0.258
10	20.611	4.448	54.893	1.348	4.694	1.121	12.614	0.269

Source: Data Processed – EViews Software, 2022

Impulse Response Analysis. Based on Impulse Response analysis, the response of economic growth to the shock of variables at the beginning of 10 months is shown in **Figure 3.** At the beginning of 3 months, economic growth will respond positively to the shock of economic growth, growth of tax income, and capital market index. It will respond negatively to the shock of money exchange and interest rate, while economic growth has yet to respond to the shock in inflation, broad money, and government expenditure. The impulse responses enrich the result of variance decomposition analysis in **Table 6.** The highest impacted variables to maintain economic growth were income tax and capital market index growth, and the negative impact was exchange money and government expenditure.

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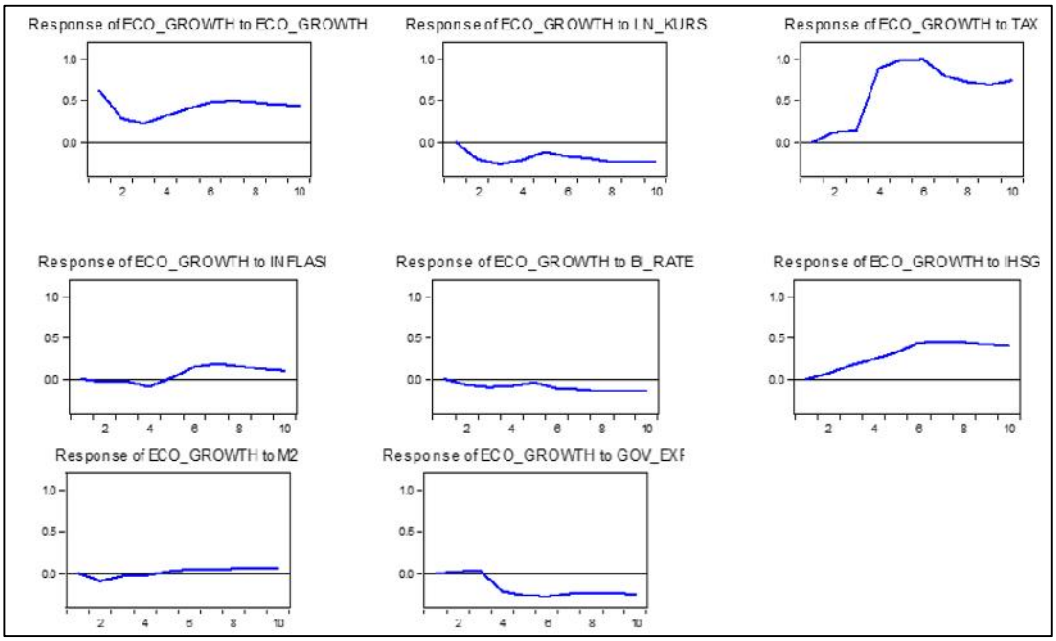

Figure 3. Impulse Response to Economic Growth
Source: Data Processed – EViews Software, 2022

Granger Causality Analysis. Granger's causality analysis in **Table 7** results in the hypothesis that there is no causality effect between the two variables in this research because there are no available probabilities less than 0.050. Meanwhile, a probability less than 0.050 was available in the income of tax and government expenditure to GDP, which means tax and government expenditure have a causal effect on GDP.

Table 8. Granger Causality Analysis

Variable	Prob
LN_KURS does not Granger cause GDP	0.980
GDP does not Granger cause LN_KURS	0.116
TAX does not Granger cause GDP	0.000
GDP does not Granger cause TAX	0.867
Inflation does not Granger cause GDP	0.824
GDP does not Granger cause Inflation	0.355
BI_Rate does not Granger cause GDP	0.628
GDP does not Granger cause BI Rate	0.409
Ln_IDX does not Granger cause GDP	0.872
GDP does not Granger cause Ln_IDX	0.600
Ln_M2 does not Granger cause GDP	0.474
GDP does not Granger cause Ln_M2	0.083
Gov_Exp does not Granger cause GDP	0.000
GDP does not Granger cause Gov_Exp	0.697

Source: Data Processed – EViews Software, 2022

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DISCUSSION

The result of this study has come out with the critical point of the regulator creating the synergy condition between monetary policy and fiscal policy, as well as the impact of other macroeconomic factors such as inflation, money exchange rate, and capital market index, in order to aim for the sustainability of economic growth. Based on the VECM analysis, in the long term, the regulator must consider that negative factors will decrease economic growth, a monetary policy that increases the amount of broad money and interest rates. The same result has been reported by (Paksi, 2021), which mentions inflation as a negative factor for economic growth. The higher the inflation impact on higher prices in the market and reduce product demand and impact on production, the lower the production and buying products in the market will decrease economic growth. (Tan et al., 2020) obtained the same result that the interest rate hurt economic growth. The results differ from those of (Paksi, 2021), who states that the interest rate has no significant impact on economic growth. (Arintoko & Kadarwati, 2022) Show that interest rates respond positively to unexpected GDP changes. There are different results for the interest rate and inflation because the interest rate is a government tool to control higher inflation. The Government will increase the interest rate to reduce inflation in the market. However, this policy should consider that the effect of increasing the interest rate is not favoured by industry and impacts the decline of economic growth.

Research on fiscal policy has revealed a negative impact of government expenditures on economic growth. (Tan et al., 2020) found that government spending hindered economic growth in Malaysia and Singapore but had a positive effect in Thailand. Government spending could be the engine to increase economic growth if the portion of spending is the majority for the production and investment sectors. Fund sources of government budget to support government spending come from income tax, if better than government debt. The fund sources come from government debt such as obligation/Sukuk; foreign financing will incur high costs because the interest rate, in the long run, will impact high economic costs and inflation.

Macroeconomic conditions, such as increased money exchange, can also be dangerous for economic growth. Monetary and fiscal policies can control macroeconomic conditions. Despite its use as a countercyclical tool to stimulate economic growth, monetary policy can also lead to an increase in prices due to an increase in money supply. This outcome is consistent with the findings of previous studies (Arintoko & Kadarwati, 2022; Nyumuah, 2018; Abbasinejad et al., 2018; Sethi et al., 2019; Mandel et al., 2019; Arintoko, 2021; Tai Nguyen et al., 2022).

This is an example of how Indonesia formulated monetary and fiscal policies during the three periods of financial crisis. Indonesia faced a financial crisis from 1997 to 1998 due to the monetary crisis of 2008 due to subprime mortgages in the USA. It impacted the capital market in 2020 due to the social and economic crisis initiated by the Covid-19 pandemic. During the crisis, Bank Indonesia implemented a mix of monetary policy measures to stabilise the Rupiah and restore economic confidence during the financial crisis in Indonesia. Some of the critical policies released by Bank Indonesia are as follows: first, Bank Indonesia increased interest rates to combat inflation and stabilise the Rupiah; second, monetary stimulus, which Bank Indonesia conducted an accommodative policy mix amid low inflationary pressures, including monetary stimulus through interest rates

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and monetary easing; third, exchange rate floating, which is Bank Indonesia, floated the exchange rate to help stabilise Rupiah vs. US Dollar.

After the Covid-19 pandemic was resolved, most countries faced increased inflation. To decrease inflation, it is common for the Central Bank to use monetary policy to reduce the negative consequences of the pandemic by improving consumption and investment. During the COVID-19 pandemic, Indonesia's inflation gradually increased from an average of 1.550 per cent in 2021 to 5.510 per cent in December 2022. Bank Indonesia's monetary policy increases the BI Rate to attract investors to invest money in financial institutions and capital markets. An Increase in the BI Rate hurts the industry because the lending rate automatically increases and causes a high cost of capital. It is not favoured in the production sector. However, the choice to increase interest rates has been taken as a policy to control high inflation in almost all countries in this era, such as the USA, by increasing the FED rate nine times after the Covid-19 pandemic became 5.100 per cent in 2023 and gradually planned to decrease the FED rate (Jerome Powell – FED Governor, 2023).

Although poorly executed monetary policy can persistently impede economic growth, its effect of monetary policy on actual economic activity is limited and temporary. Fiscal policy involves using government spending and taxation to influence the economy to promote solid and sustainable growth while reducing poverty. However, implementing an expansionary fiscal policy can lead to various negative consequences, including rising interest rates, growing trade deficits, and accelerating inflation, particularly if not accompanied by a monetary policy that offsets its effects. By contrast, the most immediate effect of fiscal policy is to change the aggregate demand for goods and services. A fiscal expansion raises aggregate demand through one of two channels: increasing government purchases while keeping taxes constant or increasing transfer payments to households. The Indonesian Regulator implemented fiscal policies during the financial crises of 1997 and 2008 to mitigate the adverse effects on the economy and restore confidence in the financial system. The policies included fiscal retrenchment, standby credit from the IMF, fiscal stimuli, and discretionary spending. In the financial crisis of 1997, the regulator implemented fiscal policies to reduce the budget deficit and restore confidence in the economy. The International Monetary Fund (IMF) approved a standby credit for Indonesia to help stabilise the economy. In the financial crisis 2008, the regulator implemented a fiscal stimulus package to boost the economy during the global financial crisis and implemented discretionary spending to support and maintain financial markets.

In the Covid-19 pandemic, some fiscal policies have been implemented by regulators, such as first tax incentives, which incentivise businesses to encourage investment and boost the economy. Second, social safety net programs and regulators implemented programs to support vulnerable groups affected by the pandemic. Third, the expansive fiscal policy and Economic Stimulus package pursued an expansive fiscal policy, regulators expanding the deficit and increasing budget financing in 2020. Fourth, the regulator provided debt restructuring for businesses affected by the pandemic to help them stay afloat. Debt Restructuring is a new fiscal policy that was not implemented during the financial crises of 1997 and 2008. The policy of debt restructuring helps businesses struggle with their debt obligations. The pandemic caused the cessation of community business activities, which increased the risk of non-performing loans in the financial system. Legal practitioners and bankers expected the debt restructuring policy to be a

solution for Covid-19 by legal practitioners and bankers. The policy regulated credit restructuring, which allowed the quality of restructured loans to be determined smoothly if given to the debtors identified. The Government restructured debt for businesses affected by the pandemic to help them stay afloat. The loan forbearance regulations were extended to some sectors that have yet to recover from the impact of the COVID-19 pandemic beyond the March 2023 deadline. A debt restructuring policy was implemented to mitigate the adverse effects of the pandemic on the economy and restore confidence in the financial system.

CONCLUSION

According to this study using the VECM Method, it was shown in impulse response analysis that to control economic growth, the regulator should maintain the growth of income tax and capital market index and be careful with the adverse impact of exchange rate and government expenditure. Optimising income tax could be done in some alternatives, such as subsidising the programs for fuel and electricity, which must be recalculated and selected for the poor citizens. Taxes for luxury items, mainly imported goods, should be supervised. For the capital market, the regulator can increase the safety level of risk, tighten for those who manipulated financial reports or mark up the value in Initial Public Offering, and punish those facilitated or benefit from symmetric information; retail investors will be protected and feel convenient to invest in the capital market.

For an extended period, the regulator should consider the increase in inflation, money exchange, number of broad-money, interest rates, and government expenditures will impact the decrease of economic growth, and another side, the increase of growth of government income of tax and capital market Index will impact to increasing of economic growth. Central Bank or Bank Indonesia must control financial sustainability by actively monitoring the implementation of monetary policy. Cooperate with Policy and Judge to mitigate those who stock abnormal items for personal benefit because it can cause inflation and high costs in public.

Limitations. This study has some limitations. The first limitation is several endogenous (independent) consisting of 8 variables, which is the maximum number of endogenous (independent) in the VECM method using EVIEWS; the second is the period of observation includes one of the financial crises included, 2019 up to 2021 which is the crisis causes by Covid -19 and impact to the world while the financial crisis in 1997 and 2008 were excluded. The economic growth in those three crises should be included because they were affected by the monetary and fiscal policy adopted by the regulator during the financial crisis period. Regulators use monetary and fiscal policy to recover the economic condition during the COVID-19 pandemic, which is different from the previous financial crisis because the COVID-19 pandemic is a social, health and financial crisis.

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