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Analysis of the effect of foreign investment, domestic investment and inflation on economic growth in Indonesia 2000-2022

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ABSTRACT
This study analyzes the impact of Domestic Investment (PMDN), Inflation (INF), and Foreign Investment (FDI) on Indonesia's economic growth using the Error Correction Model (ECM). The results of the analysis show that PMDN has a significant effect on FDI in the short term, while INF has no significant effect. In the long run, INF has a significant impact on FDI, while PMDN does not play a significant role. The diagnosis test shows that the estimated model fits the ECM criteria, but the linearity test requires improvement. This study highlights the importance of creating a conducive environment and policy stability to attract foreign investment, and emphasizes the strategic role of FDI in economic development. The conclusions provide insights for policy makers to enhance foreign investment attraction and sustainable economic growth.

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INTRODUCTION

Indonesia itself is embroiled in its own external debt problems. For 25 years, external debt has made a considerable contribution to Indonesia's development, even though it is the main source of government budget deficits (APBN) and has the same economic, political, social and cultural characteristics and problems as other developing countries. Ultimately, it has the ability to drive economic growth. To re-stabilize the Indonesian economy, the government has implemented economic policies and lending by countries and international financial institutions.

One important measure of the success of economic development is economic growth (1), which means that the economy grows when the amount of goods and services increases. This is indicated by the value of gross domestic product (GDP), which is a percentage measure of a country's economic growth. Theoretically, GDP should be high and sustainable as this is important for sustained economic growth and improvement in people's welfare. Since high prosperity allows people to spend more money, it helps the country's economic growth.Based on Figure 1.1 Economic Growth in Indonesia, over the last 10 years.

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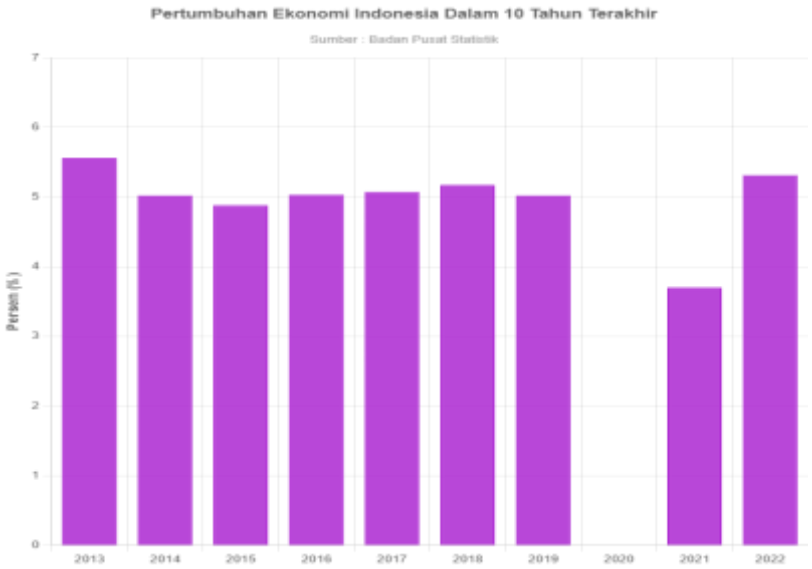

Figure 1 Economic Growth in Indonesia, over the last 10 years.
source: central statistics agency

Due to the economic recovery after COVID-19 and rising commodity prices, Indonesia is projected to experience strong growth of 5.2 percent in 2022. In the medium term, growth is expected to remain at an average of 4.9 percent from 2023 to 2025. Macroeconomic factors such as inflation, investment, labor, and others greatly affect Indonesia's economic growth. Whether or not a country succeeds in increasing its economic growth determines the welfare of the Indonesian people. Gross domestic production (GDP) is a measure of the total value of a product that can be felt directly and indirectly by a country during a certain period of time. The production process determines the economic growth of a country.

According to the latest edition of Indonesia Economic Prospects, Indonesia's economic conditions remain stable amid global shocks. Although inflation has picked up, reaching 5.7% year-on-year in October and food prices increasing 7.9% year-on-year in September, inflation is projected to peak in 2023 at 4.5% and remain at Bank Indonesia's average upper bound rate of 3.5% in 2024 and 2025. Private consumption increased rapidly after mobility restrictions were lifted, and fiscal consolidation was boosted by increased revenues from COVID-related measures and lower commodity revenues. However, the impact of this growth was partly offset by an increased energy subsidy bill and interest costs. By 2023, the fiscal deficit is expected to remain below 3% of GDP.

According to the Law of the Republic of Indonesia Number 25 of 2007 concerning investment, foreign capital is capital owned by foreign countries, foreign citizens, foreign business entities, foreign legal entities, or Indonesian legal entities that are partially or wholly owned by foreign parties.Putra (2018) points out that Foreign Direct Investment (FDI) has more lasting advantages, and some of them are that they facilitate the spread of technology, transfer of management, and creation of new jobs....

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Domestic investment is very important for a country's economic growth because it plays an important role in achieving economic development (Bakari, 2017). According to Putra (2018, p139), domestic investment has a very important role in increasing national income. This is because PMDN has the ability to utilize the wealth owned by the country.

According to Asnawi and Fitria (2018), inflation is an increase in the price of goods and services over a long period of time. Low and stable inflation is a requirement for sustainable economic growth that ultimately improves people's welfare. The importance of controlling inflation is based on the fact that high and unstable inflation has a negative impact on the socioeconomic conditions of the community, especially on people's real income (www.bi.go.id).

For decades, economic growth has been discussed and studied. Many studies have attempted to find out how to increase the country's economic growth by studying what factors drive economic growth. One of the factors that drive economic growth is foreign investment (FDI), which is achieved through increasing production capacity through investment. Therefore, this study aims to determine the effect of economic growth on foreign investment (FDI), domestic investment (DDI), and inflation. It is hoped that this research will add insight to the wider community about economic growth and assist the government in determining policies that can affect Indonesia's economic growth.

METHODS

In this study, to analyze the effect of Foreign Investment, Domestic Investment and Inflation on Economic Growth in Indonesia, regression analysis of the Error Correction Model (ECM) is used. The long-run estimator model is as follows:$\mathrm{In}(GROWTH_t) = \beta_0 + \beta_1(INF_t) + \beta_2 ln(PMA_t) + \beta_3 \mathrm{In}(PMDN_t) + \varepsilon_t$

GROWTH	: Economic Growth
PMA	: Foreign Investment
PMDN	: Domestic Investment
INF	: Inflation
In	: Natural Logarithm Operator
β_0	: Long-term Constant
β_{1-3}	: Long-term regression coefficient of PMA, PMDN, INF
ε	: Error element (error trem)
t	: research time period (2000-2022)

Following the approach of Domowitz and Elbadawi (1987), the partial adjustment behavior of the ECM is obtained by minimizing a single quadratic cost function. The minimization process, its structuring and parameterization), yields the standard short-run equation of the ECM as follows:

$\Delta \ln(\text{GROWTH}) = \alpha_1(PMA_t) + \alpha_2 \Delta PMDN_t + \alpha_3 \Delta \ln(INF_t) - \lambda(\ln(GROWTH^*_{t-1}) - \beta_0 - \beta_1(PMA_{t-1}) - \beta_2 PMDN_{t-1} - \beta_3 \ln(INF_{t-1}) + u_t$

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where :
Δ = Differencing operator
α_{1-3} = Short-term regression coefficient of FDI, PMDN and INF
λ = Adjustment coefficient
U = Error term

Structuring and parameterizing the standard ECM short-run equation, will result in the following ECM short-run estimator model:

$\Delta \ln(GROWTH_t) = \gamma_0 + \gamma_1 \Delta \ln(PMA_t) + \gamma_2 \Delta PMDN_t + \gamma_3 \Delta \ln(INF_t) - \gamma_4 (\ln(PMA_{t-1}) + \gamma_5 PMDN_{t-1} + \gamma_6 \ln(INV_{t-1}) + \gamma_7 \text{ ECT} + w_t$

where:

ECT = Error Correction Term
$(ECT_t) = logPMA_{t-1} + PMDN_{t-1} + \log INF_{t-1} - \log GROWTH_{t-1}$
$\gamma_7 = \lambda$
$\gamma_1, \gamma_2, \gamma_3 = \lambda\beta_0$
$\gamma_4 = -\lambda(1-\beta_1)$
$\gamma_5 = -\lambda(1-\beta_2)$
$\gamma_6 = -\lambda(1-\beta_3)$
ω = error term

The data used is annual time series data from the period 2000-2022, which will be obtained from the Central Bureau of Statistics (BPS).

RESULT AND DISCUSSION

The estimation results of the short-run ECM estimator model in advance along with its complementary tests are summarized in Table 2.

Table 2. Estimation Results of the ECM Short-Term Estimator Model

log *FDIt* = 2.284080 - (-1.026686) log *PMDNt* + 0.011 *INFt* + 2.284080	
(0.029)** (0.209) (0,128)***	
1.184340, log FDI-1 2.378583 *PMDNt* -1 - (-2.849060 log *INFt* -1 + 2.430766 *ECTt*	
(3.0226) (1.394)* (0.237)* (0.27)*	
R^2 = 0.649572; DW-Stat. = 2.245771; F-Stat. = 3.823; Prob. F-Stat. = 0.038	
(1) Residual Normality (Jarque Bera)	
JB(3) = 1.449781; Prob. JB(3) = 0.484378	
(2) Autocorrelation (Breusch Godfrey)	
c2(3) =5.194231; Prob. c2(3) = 0.1581	
(3) Heteroscedasticity (White)	
c2(14) =11.09259; Prob. c2(14) = 0.6787	

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(4) Linearity (Ramsey Reset)
F = 3.323255; Prob. F = 0.0782
(5) Multicollinearity (VIF)
log FDIt = 2.367; logPMDNt = 2.075; log INFt = 2.826;
log PMAt-1 = 12.371; log PMDNt-1 = 9.84; log INVF-1 = 3.264;
ECTt = 6.728

Source: : *Significant at a = 0.01;** Significant at a = 0.05; ***Significant at a = 0.10.

The number in parentheses is the empirical probability (p-value) of the t-statistic. The coefficient of change, or ECT regression coefficient, has a value of 0.6795 from the table, which indicates that it is qualified as 0 to 1. In addition, this coefficient has an empirical t-statistic probability (significance) value of 0.0317, which indicates that the coefficient of change is significant at α = 0.05. These two conditions indicate that the estimated ECM model actually exists. Therefore, the long-run theoretical equilibrium relationship between the independent variable and the dependent variable specified in the econometric model will be achieved through the error correction mechanism.

The diagnosis test shows the empirical probability values of statistics for the normal residual value test, autocorrelation, heteroscedasticity, and linearity are 0.484378 (more than 0.10), 0.1581 (more than 0.10), and 0.0782 (less than 0.10), respectively. This indicates that the estimated model has a normal residual distribution without autocorrelation and heteroscedasticity problems. However, in the remsey reset test, the probability value of F is 0.0782 (less than 0.10), so it can be concluded. For VIF, the results are (INF) = 2.826, LOG(FDI) = 2.367, LOG(PMDN) = 2.075, INF(-1) = 3.264, LOG(FDI(-1) = 12.371, LOG(PMDN(-1)) = 9.84, and ECT = 6.728. With data lower than 10.0, it can be concluded that multicollinearity symptoms do not occur or the multicollinearity test assumptions have been met.

The goodness of fit statistics show that the model exists, as seen from the empirical probability value of the *F* statistic, which is 0.038074 (<0.05), with a moderate R^2 or predictive power, which is 0, .649572. Domestic Investment Variable (PMDN) has no significant influence on Foreign Investment (FDI) in the short term, but Inflation Variable (INF) has no significant influence on FDI in the long term. In the short term, the variable Domestic Investment (PMDN) has a regression coefficient of -1.026686, the pattern of the relationship between this variable and the variable Foreign Investment (FDI) is log-log. This means that if in the period of Domestic Investment (PMDN) increases by 1%, Foreign Investment (FDI) will decrease by 1.026686%, conversely if in the period of Domestic Investment (PMDN) decreases by 1%, Foreign Investment (FDI) will increase by 1.026686%. In the long run, the Gross Regional Domestic Product (GRDP) variable has no significant effect. In the short run, Inflation (INF) variable has no significant effect on Foreign Direct Investment (FDI); in the long run, this variable has a regression coefficient of -2.284080. The pattern of relationship between this variable and the variable of Labor Absorption (PTK) in the agricultural sector is log-lin. This means that if in the long run Inflation (INF) rises by 1%, Foreign Direct Investment (FDI) in the agricultural sector will fall

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by 2.2840x100 = 2.28%; conversely if in the long run Inflation (INF) falls by 1%, Foreign Direct Investment (FDI) will rise by 2.28%. Inflation variable in the short term has no significant influence on FDI in the long term this variable has a regression coefficient of 0.0105. The relationship pattern of this variable with the FDI variable is log-log. This means that if in the long run INF increases by 1%, FDI will also increase by 0.0105%. Conversely, if in the long run INF falls by 1%, FDI will also fall by 0.0105%.

Based on the overall analysis, the diagnosis test in the table shows that the estimated model has a normal residual distribution, free from autocorrelation and heteroscedasticity problems, but one of the linearity tests is not met. The effect of PMDN and INF variables on FDI in the short term and long term. The test results show that in the short term, the PMDN variable significantly affects FDI, while the INF variable has no significant effect. However, in the long run, the INF variable has a significant effect on FDI, while the PMDN variable has no effect. In the short term, the relationship between PMDN and FDI is log-log, with a regression coefficient of -1.026686. This means that if PMDN increases by 1%, then FDI will decrease by 1.026686%, and vice versa. Meanwhile, in the long run, the relationship between INF and FDI is log-log, with a regression coefficient of -2.28408. If INF increases by 1%, then FDI will decrease by 2.28%, and vice versa. While the effect of Inflation variable in the short term is not significant on FDI, but in the long term it has a significant effect with a regression coefficient of 0.0105. The goodness of fit statistics show that the regression model used fits the observed data, with a p value of less than 0.05 and R2 which shows moderate predictive power. This provides an overview of how the PMDN and INF variables affect FDI in the short and long term. All analytical results are obtained from observed data and measured using regression statistics.

The results of the analysis show that the Domestic Investment variable has a significant effect on Foreign Direct Investment (FDI) in the short term, while the Inflation Variable (INF) does not have a significant effect. In the long run, the most significant variable on FDI is Inflation INF, while Domestic Investment (PMDN) variable does not have a significant effect. Foreign Direct Investment (FDI) is a component that drives economic growth, which achieves economic development through increasing production capacity through investment. In the short term, the negative effects of domestic investment may result in reduced economic growth, reduced employment, and reduced production. Such negative effects can be compounded by things such as changes in government policy, political uncertainty, or unstable market situations. Inflation is the main factor affecting foreign investment in the long run. While these factors do not affect FDI significantly in the short term, inflation can impact the economy gradually in the long term. High long-term inflation can affect people's purchasing power, the value of money, and the allocation of economic resources. Nonetheless, the domestic investment variable (PMDN) does not have a significant influence on foreign investment, either in the short or long run. On the contrary, foreign investment itself is the main component that drives economic growth. With FDI investment, economic development can be achieved through increased production capacity. Negative impacts of domestic investment, such as policy uncertainty or unstable market conditions, can reduce the attractiveness of foreign investment. Foreign investors tend to

look for a stable environment with good prospects for long-term investment. If domestic conditions are not conducive, it can reduce the interest and confidence of foreign investors, and affect capital inflows into the country.

Inflation can impact the economy gradually in the long run, but not significantly in the short run. In the long run, inflation can hurt people's purchasing power, reduce the value of money, and affect the allocation of economic resources. In the short term, other factors may be more dominant, so inflation is not as pronounced or impactful. Foreign investment plays a strategic role in a country's economic growth. Factors that can affect FDI growth include domestic investment and inflation. If there are poor domestic conditions such as policy uncertainty or unstable market conditions, then foreign capital flows may be hampered. Therefore, meeting the criteria for conducive domestic conditions, along with economic and political stability, should be prioritized to attract foreign investment into a country.

CONCLUSIONS

Based on the analysis results, it can be concluded that the econometric model used-the Error Correction Model (ECM)-works well to explain the relationship between the observed variables. As indicated by the adjustment coefficient (λ) of 0.6795 and p-value of 0.0317, the model meets the criteria of the ECM model and has an error correction mechanism that can achieve theoretical equilibrium in the long run. The diagnosis test shows that the estimated model has a normal residual distribution and does not show autocorrelation and heteroscedasticity, but the linearity test is not completely successful. This suggests that the model specification may need to be improved. In analyzing the impact of variables on Foreign Direct Investment (FDI), it is seen that Domestic Direct Investment (DDI) has a significant influence on FDI in the short run, while Inflation (INF) has no significant influence. However, in the long run, PMDN does not play a significant role, and the INF variable has a significant influence on FDI. The relationship between PMDN and FDI in the short run is log-log, which suggests that they are quite responsive to changes. On the other hand, the relationship between INF and FDI in the long run is also log-log, which indicates a slower economic impact. In such a situation, inflation is an important component in the long run, but domestic policy uncertainty and unstable market conditions can affect economic growth in the short run. As a result, it is important to create an enabling environment for foreign investment by ensuring domestic policies and markets are stable. This conclusion shows how Foreign Direct Investment (FDI) plays a strategic role in economic development and what needs to be considered to attract sustainable foreign investment.

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