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Determinants of Foreign Direct Investment in Indonesia Using Autoregressive Distributed Lag Modeling

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Abstract

This study aims to analyze the influence of trade openness, institutional quality, and the exchange rate on Foreign Direct Investment (FDI) in Indonesia. The approach used is an ARDL regression analysis of time-series data from 2003 to 2023. The study's findings reveal that, in the short term, only trade openness has a significant positive effect on FDI. In contrast, in the long term, none of the other variables is substantial. These results highlight the importance of strengthening institutional improvements and maintaining trade policy stability to increase FDI attraction over the longer term.

INTRODUCTION

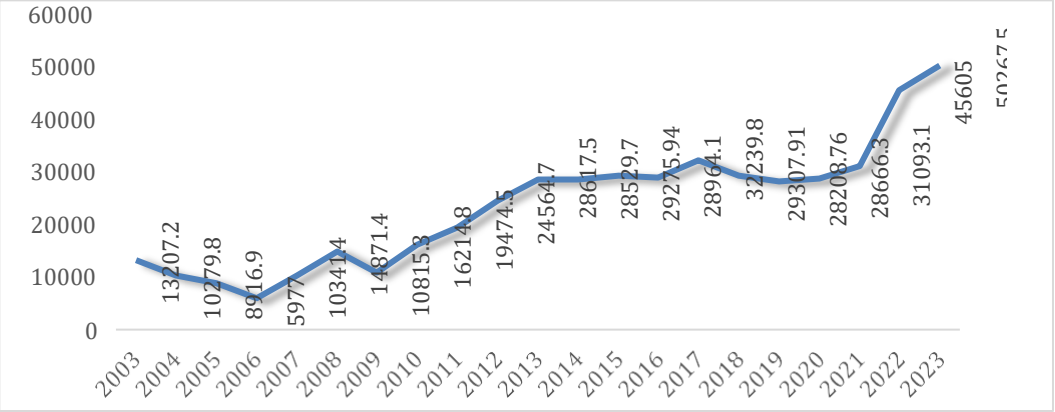
Indonesia is a developing country with an open economic system, where, in its economic activities, the Indonesian government cannot avoid intervention from both domestic and foreign sources to maintain and contribute to stabilizing its economic growth. Therefore, Indonesia certainly requires sufficient funds or financing to build an equitable and prosperous economy for its people, as emphasized in the Preamble to the 1945 Constitution (Amrullah et al., 2024). Problems in the economic sector regarding the issue of economic equality. In this case, the government, as the owner of the highest power in the country, is expected to be able to resolve the problem of economic inequality so that economic development is created (Anam & Wijoyo, 2023). In the era of globalization, the flow of international trade and investment is increasingly free. This phenomenon creates opportunities for Indonesia to obtain foreign investment as one of the main drivers of national development. The dynamics of the world economy, marked by geopolitical tensions and trade wars between major countries, have encouraged foreign investors to seek new, more stable and prospective places. This could be an opportunity for Indonesia to strengthen its position as a destination for foreign direct investment. Foreign direct investment (FDI) is an investment activity by foreign investors in a country like Indonesia. FDI is superior because its impacts are clear: the transfer of knowledge and modern technology, improved work skills, job creation, additional capital, and industrial growth in the destination country. FDI is a primary choice for countries with unrestricted investment and high economic growth opportunities. This investment is crucial for bridging the investment-savings gap in developing countries. Compared to

other forms of capital, FDI is long-term and relatively stable against economic fluctuations.

Various previous studies have examined the drivers influencing foreign direct investment (FDI), but the results remain mixed, particularly regarding trade openness, institutional quality, and exchange rates. A study conducted by (Purwono & Hayati, 2024) shows that variables indicating institutional quality, such as Political Stability and Government Effectiveness, have a positive and significant impact on foreign direct investment (FDI) in the ASEAN region. Furthermore, Trade Openness also has a positive and significant impact on FDI inflows to ASEAN countries. Meanwhile, research (Agustin et al., 2023) states that *Trade Openness* has no significant impact on Foreign Direct Investment in Singapore. Conversely, research (Ritonga & Syafri, 2023) found that the fiscal capacity index and the effectiveness of crime resolution showed no impact on foreign investment, while the incidence of theft had a negative impact on foreign investment. Meanwhile, research (Putriyanti, 2022) The study revealed that exports and the exchange rate had a positive and significant influence on foreign direct investment in Indonesia. In the long term, inflation, exports, and interest rates showed a negative and insignificant influence. In contrast, the exchange rate had a positive but insignificant influence on foreign direct investment in Indonesia.

FDI can bring several benefits to the host country; thus, today it is seen as a crucial element in driving economic development and an effective alternative to address the problem of insufficient capital accumulation, particularly in developing countries. The influx of FDI investment can provide a boost for host countries to achieve various benefits, such as increased production efficiency, accelerated technological innovation through the transfer of technical knowledge, the creation of more job opportunities, reduced unemployment rates, and the potential to drive overall economic expansion (Purwono & Hayati, 2024).

Figure 1Foreign Investment Level in Indonesia



Source: BPS, 2025

The Eclectic Paradigm (OLI) proposed by John Dunning offers a comprehensive analytical framework through three fundamental variables—Ownership Advantage, Location, and Internalization—to analyze the development of Foreign Direct Investment (FDI) in Indonesia during the period 2003-2023. The FDI trend shows a

consistent increase from US$12,207.2 million in 2003 to US$50,267.5 million in 2023, despite experiencing a significant decline in 2007. This stable growth pattern reflects the attractiveness of Indonesia's location, supported by its rich natural resources, vast domestic market potential, and increasingly conducive government policies. At the same time, fluctuations are mainly influenced by domestic factors such as bureaucratic complexity and regulatory inconsistencies. Thus, Indonesia's integration into global trade not only strengthens its economic fundamentals but also confirms its position as a strategic investment destination in the Southeast Asian region.

Every country benefits from open trade, with varying patterns and scales. In his work, The Wealth of Nations, Adam Smith stated that a country can achieve high growth rates over a long period if it is able to implement trade freedom and strives to realize capital accumulation effectively. Trade openness policies implemented by developing countries generally aim to facilitate the dissemination of the latest technology, so that the domestic industrial sector can achieve varying levels of productivity increases, ultimately driving a surplus in the trade balance and, in turn, accelerating economic growth at the national level (Khoiriyah et al., 2016).

The implementation of trade openness policies, especially for developing countries, can serve as an important element in encouraging sustainable economic development, because the power used in trade routes will be adjusted to the domestic economic framework (Khoiriyah et al., 2016). Trade openness also serves as an entry point for international capital flows, especially *Foreign Direct Investment (FDI)*. The greater the involvement of a country in export and import activities, the higher its attractiveness in the eyes of foreign investors. This is due to increased market access, ease of integration of global supply chains, and opportunities for production efficiency, which are the main considerations for multinational companies in investing.

High-quality institutions can attract foreign direct investment (FDI) through three main mechanisms. First, superior institutions are able to attract capital, thereby increasing productivity levels. Second, good institutions can reduce transaction costs during the investment and business operations stages. Third, solid institutions strengthen the security of ownership rights for multinational companies investing in a country. Consequently, institutions with strong regulations, a stable political climate, efficient administration, and minimal corruption are more likely to encourage investment inflows into the country, where these investments serve as a source of development financing to achieve economic growth goals. (Widianatasari & Purwanti, 2021) .

In institutional theory, as proposed by John W. Meyer, organizations often adopt certain formal structures and policies solely to gain legitimacy, not to substantially improve performance. In this context, corruption eradication in Indonesia can be understood as a symbolic response to external pressure, whether from the public, the media, or international institutions (Partiah et al., 2025). Therefore, although the government has carried out various institutional reforms and regulatory improvements, the effectiveness of corruption eradication efforts will be a key factor for the sustainability of foreign investment in the future.

According to North (1990), Effective institutions influence economic activity in various ways, such as reducing transaction, manufacturing, and production costs. Furthermore, quality institutions can help reduce the cost of doing business, which in turn increases profits. On the other hand, markets with flawed institutions require more time and resources to monitor. When property rights are poorly protected and contracts are difficult to enforce, risks are high, and economic activity declines. Global investors are reluctant to invest in such risky and unfavorable environments. On the other hand, a low-risk environment is ideal for sending countries, and strong institutions also provide better opportunities for foreign direct investment (Sabir et al., 2019).

Various factors, including the foreign exchange rate, can influence the inflow of foreign direct investment (FDI) into a country. The exchange rate can be defined as the amount of local currency required to obtain one unit of another country's currency. The exchange rate is a key macroeconomic variable influencing FDI flows, as changes in it can impact a country's competitiveness and influence foreign investors' perceptions and investment decisions. Exchange rate stability is considered an attractive factor for FDI because it reduces uncertainty regarding investment returns. Extreme exchange rate fluctuations can increase exchange rate risk, potentially hindering foreign investment flows (Rizalihadi & Setyadharma, 2025) .

An exchange rate is the price of one currency when valued against another country's currency. Understanding exchange rates allows us to compare the costs of all products and services produced by different countries. If a country's exchange rate strengthens relative to another country's currency, the price of that country's products for foreign consumers will increase. Conversely, if a country's exchange rate weakens relative to another currency, goods from that country will become more affordable for foreign buyers. From this explanation, we can conclude that continuous and inconsistent exchange rate fluctuations can harm a country's economic condition, making foreign investors less interested in investing there (Tambunan, 2015).

Research on foreign direct investment (FDI) in Indonesia generally focuses on macroeconomic factors. However, this study has limited simultaneous investigation of the influence of trade openness, institutional quality, and the exchange rate. Furthermore, the 2003-2023 period, which encompasses the global crisis and the COVID-19 pandemic, has not been extensively analyzed using the ARDL method to examine the short- and long-term relationships between these variables. Therefore, this study combines these three variables in a single ARDL analysis model to gain a deeper understanding of the factors influencing foreign direct investment in Indonesia during this period.

Considering these global and domestic dynamics, it is important to analyze the extent to which trade openness, institutional quality, and exchange rates influence foreign direct investment (FDI) flows in Indonesia. This study will examine the relationship between these three variables and FDI in the 2003–2023 period using the *Autoregressive Distributed Lag* (ARDL) approach, which is considered appropriate for analyzing short-term and long-term relationships. ARDL is also relevant in the context of limited data periods and considers the lag dynamics of each variable. The

purpose of this study is to determine the short-term and long-term effects. The results are expected to provide empirical evidence that can be used as a basis for policy recommendations to increase the attractiveness of foreign investment and maintain macroeconomic stability in the short and long term.

RESEARCH METHODS

The type of quantitative data in this study is secondary data. Secondary data is data obtained indirectly from the research object. Secondary data is obtained from an internet site or from a reference similar to what is being researched by the author (Sari & Zefri, 2019). This study uses secondary data obtained through articles and official websites such as the Central Statistics Agency, Bank Indonesia, the World Bank, and other official sources.

A population is a group or groups of objects that are the target of research. The population in this study is all Indonesian macroeconomic data related to FDI, and the sample is part of the population that is deliberately selected by researchers to be observed, so that the sample size is smaller than the population and functions as a representative of the population (Mushofa et al., 2024) Sample selection is carried out using saturated samples, which means the entire population is used as a research sample. The sample consists of dependent variables in the form of foreign investment in Indonesia and independent variables consisting of trade openness, institutional quality and exchange rates in 2003-2023.

The study examines the relationship between trade openness, institutional quality, and exchange rates on foreign direct investment in Indonesia from 2003 to 2023. The ARDL model is used to analyze research data with the aim of drawing conclusions. The analytical approach used in this study is the ARDL (*Auto Regressive Distributed Lag*) model. The ARDL model combines *the Autoregressive* (AR) and *Distributed Lag* (DL) approaches.
The following are the stages of the ARDL method:

Stationary Test

Stationarity is one of the main requirements of an econometric model for time series data. Stationary data indicates that the data remains the same at all times when it is formed, thus making the time series model more stable. Stationarity testing is performed to ensure that the data is stationary at the level or *first* difference. *The Augmented Dickey-Fuller Test* (ADF) is a standard procedure for measuring the stability of regression data trends. If the P-value is
<0.05, the data is stationary.

Cointegration test

The cointegration test consists of two stages: the Johansen Cointegration Test (initial stage) and the ARDL Bound Test Cointegration. The Johansen Test determines the suitability of the ARDL model based on the P-value; if the P-value
> 0.05, there is no cointegration. If the dependent and independent variables are stationary without initial cointegration, the ARDL model is suitable.

Determination of the optimum lag of the lag test

Optimization is a methodological procedure for determining the best lag in an ARDL model, allowing for a more accurate understanding of temporal dynamics. Model excellence is evaluated by minimizing an information criterion, which reflects empirical efficiency and precision.

ARDL Estimation

Autoregressive Distributed Lag (ARDL) is a model often used in time series data. This model can include several past values of both dependent and independent variables. . The ARDL model has a dynamic nature by explicitly involving the role of time. Thus, this ARDL model can be compared to distinguish the responses that occur in the short and long term of the independent variable to the dependent variable. In testing the ARDL model, the lag formed is flexible and can obtain estimates in the short or long term at the same time, so that it can avoid autocorrelation problems. (Faudzi & Asmara, 2023)

$$\Delta FDI_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta OP_{t-i} + \sum_{i=1}^{n} \alpha_{2i} \Delta IQ_{t-i} + \sum_{i=1}^{n} \alpha_{3i} \Delta EXC_{t-i} + \theta_1 OP_{t-1} + \theta_2 IQ_{t-1} + \theta_3 EXC_{t-1} + e\_t \quad (1)$$

The symbol Δ indicates the lag or change of a variable from the previous period. The parameters α_{1i} to α_{3i} describe the dynamic relationship in the short term, while θ_1 to θ_4 represent the long-term relationship between the variables. FDI stands for foreign direct investment, OP indicates trade openness, IQ refers to the quality of institutions, EXC stands for the exchange rate, and e is an error term that functions as a disturbance factor outside the model.

Classical assumption test

In general, in applying the ARDL model, it is only necessary or necessary to pass at least three classical assumption tests, namely:

Normality test

The normality test aims to verify whether the model residuals are normally distributed. In a QQ plot, normality is met if the data are spread around the diagonal line. The Jarque-Bera test is used with the following criteria: if the p- value > 0.05, the residuals are normal; if < 0.05, they are not normal. Abnormality can invalidate the model, especially in small samples, requiring model correction.

Autocorrelation test

Autocorrelation was detected using the Breusch-Godfrey test. A p-value above 0.05 indicates no autocorrelation, while a p-value below 0.05 confirms its presence, requiring model correction.

Heteroskodasticity test

The heteroscedasticity test detects inequality in the residual variances of a model. With the Breusch-Pagan-Godfrey test, a probability value >0.05 indicates no heteroscedasticity problem. Conversely, a probability value <0.05 indicates a

problem that could inaccurate the regression results.

RESULTS AND DISCUSSION

RESULTS

Stationary test

To determine the most appropriate model, a sequence of tests is carried out, namely the stationary test, cointegration test, classical assumption test, long and short term estimation, ARDL coefficient and stability test.

Stationary Test and Its Implementation

Table 1Results of the Stationary Test of FDI (Y) at the Level

Series	Prob.	Lag	Max Lag	Obs	Information
Y	0.8877	0	4	20	Non-Stationary
X1	0.4377	2	4	18	Non-Stationary
X2	0.3262	0	4	20	Non-Stationary
X3	0.8039	0	4	20	Non-Stationary

Based on the test results at the level, all research variables, Y, X1, X2, and X3, showed probability values above 0.05. This condition indicates that the four variables are not yet stationary at the level because they still contain a unit root. Therefore, the analysis continued to the first difference stage to determine whether the variables became stationary after the first difference was performed.

Table 2. Results of the Simultaneous Stationary Test at the First Difference Level

Variables	Prob	Lag	Max Lag	Obs	Information
D(Y)	0.0021	0	4	19	Stationary
D(X1)	0.0002	1	4	18	Stationary
D(X2)	0.0054	0	4	19	Stationary
D(X3)	0.0249	0	4	19	Stationary

Based on the ADF stationarity test, the probability value for all variables D(FDI) is 0.0021, D(OP) is 0.0002, D(IQ) is 0.0054 and D(EXC) is 0.0249, smaller than alpha 0.05. Thus, it can be concluded that all variables are stationary at the first difference level, so the use of the ARDL model is more appropriate for analysis compared to models that require stationary data at the original level.

Cointegration Test and Its Implementation

Table 3. Results of the Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	trace statistics	0.05 Critical Value	Prob.** Critical Value
None *	0.734237	63.29164	47.85613	0.0010
At most 1 *	0.692324	38.11377	29.79707	0.0044
At most 2 *	0.544675	15.71831	15.49471	0.0463
At most 3	0.039726	0.770189	3.841465	0.3802

Unrestricted Cointegration Rank Test (Max-eigenvalue)				
Hypothesized No. of CE(s)	**Eigenvalue**	**Max-Eigen Statistics**	**0.05 Critical Value**	**Prob.**Critical Value**
None	0.734237	25.17787	27.58434	0.0985
At most 1 *	0.692324	22.39546	21.13162	0.0331
At most 2 *	0.544675	14.94812	14.26460	0.0389
At most 3	0.039726	0.770189	3.841465	0.3802

The Johansen cointegration test results show a Trace Statistic of 63.29, which exceeds the critical value of 47.85 at 5% significance, and the Max-Eigen Statistic is significant up to the "at most 2" hypothesis but not at "at most 3", indicating three cointegration vectors between FDI, trade openness, institutional quality, and the exchange rate. This concludes a stable long-term relationship between these variables during 2003–2023, thus supporting the application of the ARDL model to analyze the long-term and short-term dynamics of foreign direct investment in Indonesia.

Table 4. Cointegration Test (Bound Test)

Test Statistics			**Value**			
F-statistic			6.28103			
	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
30	2,676	3,586	3,272	4,306	4,614	5,966
Asymptotic	2,370	3,200	2,790	3,670	3,650	4,660

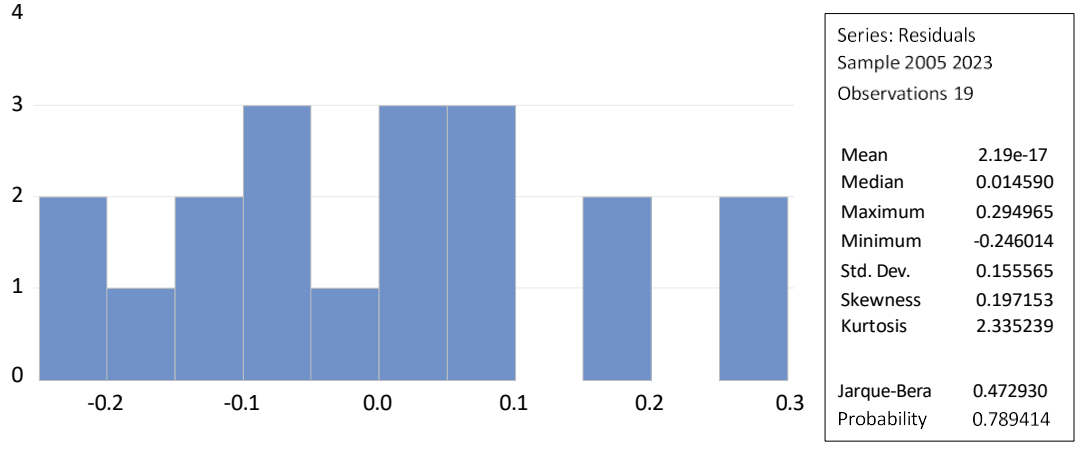
The results of the Johansen cointegration test show that the Trace Statistic is 6.28, which is more than the lower and upper limits at a significance level of 5%, so there is cointegration and a long-term relationship.

Classical assumption test

Classical assumption tests include tests for normality, heteroscedasticity, and autocorrelation:

Normality Test and Its Interpretation

Figure 2. Normality Test Results



The normality test results in the figure show a Jarque-Bera probability of 0.789414, which exceeds the 0.05 significance threshold. This indicates that the residuals of the ARDL model are normally distributed, which is crucial for ensuring valid and bias-free parameter estimates in econometric analysis. The skewness value of 0.197 and kurtosis of 2.335 also confirm that the residual distribution closely matches a normal distribution. Therefore, this research model meets the classical assumptions, making the analysis reliable for accurate empirical conclusions.

Heteroscedasticity Test and Its Interpretation

Table 5. Results of the Heteroscedasticity Test

F-statistic	1.463439	Prob. F (5,13)	0.2672
Obs*R-squared	6.842810	Chi-Square Prob. (5)	0.2326
Scaled explained SS	2.138666	Chi-Square Prob. (5)	0.8296

Based on the heteroscedasticity test results, the Chi-Square probability value of 0.232 is greater than the alpha value of 0.05, indicating that the model does not experience heteroscedasticity. In other words, the error variance is constant (homogeneous) across the data. This condition indicates that the variability of trade openness, institutional quality, and exchange rate data on FDI does not disrupt the stability of the residual variance. Therefore, the relationship between the variables can be estimated consistently, and the ARDL estimation results can be trusted to explain economic phenomena in Indonesia during the study period.

Autocorrelation Test and Its Interpretation

Table 6. Autocorrelation Test Results

F-statistic	0.085583	Prob. F(2,11)	0.9186
Obs*R-squared	0.291120	Chi-Square Prob.(2)	0.8645

Based on the autocorrelation test shown in the table, the Chi-Square probability value reached 0.86, which is higher than the 0.05 significance level. This indicates that the applied model is stable and suitable for both short-term and long-term analysis. The obtained coefficient results are more reliable, and the interpretation of the influence of independent variables on FDI can be carried out accurately without being affected by autocorrelation issues.

Short-Term Estimates and Their Interpretation

Table 7. Short-Term Estimation Test Results

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	0.028214	0.052626	0.536129	0.6009
D(Y(-1))	0.141885	0.186944	0.758971	0.4614
D(X1)	0.017396	0.009627	1.80703	0.0939
D(X1(-1))	-0.022671	0.010379	-2.184208	0.0479
D(X2)	0.000139	0.000099	1.405014	0.1835
D(X3)	-1.34292	0.75113	-1.787866	0.0971
CointEq(-1)*	-0.858115	0.133904	-6.408451	0.0000

Here is a short-term model:

$$D(Y) = 0.028214 + 0.141885 \times D(Y(-1))\ 0.017396\ D(-0.022671 \times D(X1(-1) + 0.000139 \times D(X2) - 1.342920 \times D(X3) - 0.858115 \times CointEq(-1) \quad (2)$$

The variable D(X1) and its lag show opposite effects, where the lag of D(X1) has a negative and significant effect, indicating that past changes in X1 tend to decrease D(Y). Meanwhile, the variable D(X3) has a fairly strong negative impact on D(Y) in the short term. In addition, the negative and significant coefficient on CointEq(-1) indicates that if there is a deviation from long-term equilibrium and has not shown a significant effect in the short term.

The results of the short-term estimation test indicate that the Error Correction Term (ECT) or CointEq has a negative coefficient and a significant probability (<0.05), validating the existence of an adjustment mechanism towards long-term equilibrium, with an estimated correction time of 8.5 years. Partially, only the previous period's trade openness variable D(X1(-1)) has a significant effect on FDI (Prob. 0.047), with a negative direction (coefficient - 0.022) indicating a decrease in FDI in the current period due to an increase in openness in the previous period. Meanwhile, the previous period's FDI variable D(Y(-1)), institutional quality D(X2), and exchange rate D(X3) all show probabilities above 0.05 (Prob. 0.461, 0.183, and 0.097, respectively), so it is concluded that they do not have a significant effect on FDI in the short term. This finding confirms that in the short term, changes in FDI in Indonesia are only significantly influenced by the dynamics of trade openness in the previous period.

Long-Term Estimates and Their Interpretation

Table 8. Long-Term Estimation Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X1)	-0.006146	0.015978	-0.384664	0.7067
D(X2)	0.000162	0.000126	1.284355	0.2214
D(X3)	-1.564965	0.937027	-1.670139	0.1188
C	0.032879	0.059539	0.552232	0.5902

Here is the long-term model:

$$CE = D(Y(-1)) - (-0.006146 \times D(X1(-1)) + 0.000162 \times D(X2) - 1.564965 \times D(X3) + 0.032879) \quad (3)$$

The calculation shows that increasing economic openness tends to reduce FDI inflows, although the effect is relatively small, as indicated by a coefficient of -0.006146. Meanwhile, institutional quality has a positive relationship with FDI, where its increase has the potential to encourage an increase in foreign investment, although with a not too large effect, as indicated by a coefficient of 0.000162. Conversely, the exchange rate has a negative coefficient of -1.564965, which indicates that appreciation or fluctuations in the exchange rate can suppress FDI inflows because exchange rate instability makes foreign investors more cautious. The constant value

of 0.032879 describes the basic equilibrium level of FDI when all independent variables are in constant conditions.

Long-term model analysis shows that no independent variables have a statistically significant effect on Foreign Direct Investment (FDI) flows in Indonesia (Prob. >0.05). Specifically, trade openness (X1) is recorded with a negative coefficient of -0.0061 (Prob. 0.706). Meanwhile, although institutional quality (X2) shows a positive relationship with a coefficient of 0.000162, this variable remains statistically insignificant (Prob. 0.221). Similarly, although the exchange rate (X3) has a substantial negative coefficient (-1.564), its effect is also not proven to be significant (Prob. 0.118).

Table 9. ARDL Model Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
D(Y(-1))	0.141885	0.186944	0.758971	0.4614
D(X1)	0.017396	0.009627	1.80703	0.0939
D(X1(-1))	-0.022671	0.010379	-2.18421	0.0479
D(X2)	0.000139	9.88E-05	1.405014	0.1835
D(X3)	-1.34292	0.75113	-1.78787	0.0971
C	0.028214	0.052626	0.536129	0.6009
R-squared	0.582068	Mean dependent var		0.08354
Adjusted R-squared	0.421325	SD dependent var		0.24064
SE of regression	0.183053	Akaike info criterion		-0.306
Sum of squared residuals	0.43561	Schwarz criterion		-0.0077
Log likelihood	8.906919	Hannan-Quinn criterion.		-0.2555
F-statistic	3.621104	Durbin-Watson stat		1.8553
Prob(F-statistic)	0.028503			

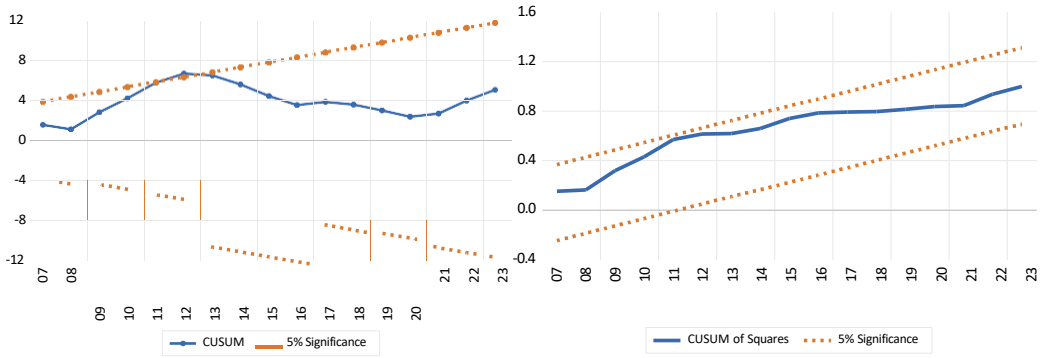
Here is the ARDL formula:

$$\Delta Y_t = 0.028214 + 0.141885\,\Delta Y_{t-1} + 0.017396\,\Delta X1_t - 0.022671\,\Delta X1_{t-1} + 0.000139\,\Delta X2_t - 1.342920\,\Delta X3_t + \varepsilon_t] \quad (4)$$

The ARDL model as a whole is proven to significantly influence FDI (Prob. F-statistic 0.028 <0.05), with the ability to explain 58.2% of the variation in the dependent variable, R-squared of 0.582. Although the model is feasible, the partial test results show that only the previous period trade openness D(X1(-1)) has a significant effect on FDI (Prob. 0.047). The effect is negative (coefficient -0.022), indicating that increased trade openness in the previous period actually suppresses investment flows. Other variables, namely current period openness, institutional quality, and exchange rate, are all insignificant (Prob. > 0.05), confirming that only the lagged effect of trade openness plays an important role in FDI.

Stability test

Figure 3. Cusum Test and Cusum of Squared Test



Model stability evaluation was carried out using CUSUM and CUSUMQ, which rely on the cumulative accumulation of the initial recursive residuals. When the CUSUM or CUSUMQ Statistics graph remains within the 5% significance limit, the model created can be considered stable. Referring to the stability evaluation graph using CUSUM and CUSUMQ as shown above, it can be concluded that the model developed in this study is stable, which indicates that the interactions between the variables in the model remain consistent and do not experience structural changes during the duration of the study.

Discussion

Short-Term Effects of Trade Openness, Institutional Quality and Exchange Rate on FDI

The short-term estimation results show that only trade openness in the previous period had a significant and negative effect on FDI flows. This is in line with research. (Amrullah et al., 2024) which found that increasing openness too rapidly can actually create uncertainty, causing investors to delay investment until conditions stabilize. Meanwhile, trade openness in the current period did not have a significant effect, a finding consistent with research (Agustin et al., 2023) which found that trade openness had no significant effect on foreign direct investment in Singapore. Other variables, such as institutional quality, were also insignificant, corroborating the findings (Septiantoro et al., 2020) which stated that institutional quality did not affect FDI inflows. Similarly, the exchange rate did not have a significant impact, in line with research (Handoko & Utomo, 2024) which stated that the exchange rate (RUR) was found to have no effect on foreign direct investment in ASEAN for the 2018-2022 period. The insignificance of these variables is the result of external shocks such as the global crisis and pandemic, which create a high-risk environment, forcing investors to adopt a wait-and-see approach, rendering investment-attracting factors ineffective in the short term.

Long-term effects of trade openness, institutional quality and exchange rates on FDI

Based on the long-term estimation results, the variables of trade openness (X1), institutional quality (X2), and exchange rate (X3) were proven to have no significant

effect on FDI in Indonesia. The negative direction of the coefficient indicates that

increasing trade openness has not been able to encourage foreign investment flows. This may be because Indonesia's trade activities are still dominated by raw commodity exports, which have a low correlation with long-term foreign investment, according to research (Benabdennour et al., 2024) that the short-term effect of trade openness on FDI for all samples is insignificant. This indicates that trade activities that are still dominated by raw commodity exports have not been able to attract long-term foreign investment. Although not significant, institutional quality has a positive relationship, which is in line with research (Jurčić et al., 2020) that CC does not affect FDI inflows, but signals that improved governance has the potential to increase investor interest in the future. Meanwhile, the negative and insignificant effect of the exchange rate strengthens the findings (Utama et al., 2025) which show that this variable has a negative and insignificant effect on FDI, which means that currency exchange rate fluctuations do not have a significant impact on foreign direct investment decisions in countries in the ASEAN-5 region.

Long-term estimation results indicate that trade openness and exchange rates are negatively related to FDI, while institutional quality exhibits a positive effect. Although none of these variables are statistically significant, the direction of this relationship aligns with economic theory, which emphasizes the importance of exchange rate stability and improved institutional governance. Therefore, exchange rate stabilization and institutional strengthening remain strategic steps to increase the attractiveness of FDI to Indonesia in the long term.

CONCLUSION

This study aims to analyze the influence of trade openness, institutional quality, and the exchange rate on foreign direct investment (FDI) in Indonesia during the period 2003–2023 using the Autoregressive Distributed Lag (ARDL) approach. Based on the estimation results, it was found that in the short term, only the trade openness variable in the previous period had a significant effect on FDI inflows. This indicates that the effect of trade openness on investment is not immediate, but requires adjustment time for its impact to be felt by foreign investors. Meanwhile, the institutional quality and exchange rate variables have not shown a significant influence in the short term, which means that these two factors are not yet primary considerations for investors in determining investment decisions in Indonesia.

In the long term, the research results indicate that the three independent variables do not significantly influence FDI. However, the direction of the relationship is consistent with economic theory, where improvements in institutional quality tend to encourage FDI flows. At the same time, exchange rate fluctuations and excessive trade openness can actually discourage foreign investor interest. This situation reflects the need for structural strengthening and more stable policies to create an attractive and sustainable investment climate. Factors such as legal certainty, bureaucratic effectiveness, and political and monetary stability are crucial elements in building foreign investor confidence.

Empirically, this research's findings confirm that trade openness plays a crucial role in driving global economic integration. However, its benefits to FDI will only be optimal if supported by strong institutions and a stable exchange rate.

Therefore, the government needs to strengthen economic governance, maintain exchange rate stability, and increase the transparency and accountability of public institutions to create a conducive investment climate.

The novelty of this research lies in the extended analysis period to 2023, encompassing the post-COVID-19 pandemic period, and the use of the Autoregressive Distributed Lag (ARDL) model, a model rarely used in research on foreign direct investment (FDI) in Indonesia. This approach allows the research to explain in more detail how the short- and long-term relationships between trade openness, institutional quality, and exchange rate stability influence FDI flows.

The results obtained provide a new picture of the condition of the Indonesian economy post-pandemic, while complementing previous research that was generally limited to the pre-pandemic period and used simpler analytical methods. Meanwhile, limitations of this study lie in the limited number of variables and the observation period, which is not long enough to reflect long-term structural changes. Therefore, future research is expected to add other variables such as inflation rates, interest rates, political factors, and infrastructure conditions, so that the results obtained are more comprehensive and able to describe the factors that influence FDI inflows in Indonesia more clearly.

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