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Trade Exposure on International Trade in Indonesia and China

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ABSTRACT

This study aims to analyze the effect of trade exposure, inflation, exchange rate, foreign exchange reserves, and trade balance on economic growth in Indonesia and China during the period 1995–2024. The methods used are the Generalized Method of Moments (GMM) with a First Difference approach and System GMM using dynamic panel data from the World Bank. The results show that trade exposure, exchange rates, and foreign exchange reserves have a significant positive effect on economic growth, while inflation has a significant negative effect. The trade balance does not have a significant effect on economic growth. The previous period's GDP variable has a significant positive effect, indicating the existence of an economic growth inertia effect. The GMM model is declared valid through the Sargan and Arellano–Bond tests. These findings emphasize the importance of macroeconomic stability and trade openness in promoting economic growth in developing countries.

Keywords: Trade Exposure, Inflation, Exchange Rate, Foreign Exchange Reserves, GMM, Economic Growth

INTRODUCTION

Trade openness plays a crucial role in meeting domestic needs and driving economic growth through increased cooperation between countries. In a broader context, economic openness provides opportunities for a country to actively participate in international trade. The more active a country is in international trade, the greater the opportunity to increase national income, create jobs, and drive growth in other economic sectors (Adeyemo, 2023). In addition, the tangible benefits of international trade also include increased state revenue, increased foreign exchange reserves, and increased capital transactions that have an impact on a country's economic growth (Adeyemo, 2023).

International trade openness is a key strategy for enhancing national competitiveness and accelerating economic growth. Indonesia and China have increasingly strong bilateral trade relations, making China Indonesia's main strategic partner. However, Indonesia's trade balance with China tends to be in deficit, indicating a high dependence on imports. In this context, trade exposure is an important indicator for understanding the extent to which trade openness affects economic stability and growth.

Trade exposure is the degree to which a country is exposed to the economic impact of international trade relations. This concept reflects the impact of exports and imports on the domestic economy, both in terms of growth opportunities and external risks (Gnangnon, 2022). (Grossman & Helpman, 1994) state that trade exposure can be measured by the ratio of total exports and

imports to Gross Domestic Product (GDP), or by dependence on major partner countries. The OECD report 2024 shows that global trade dynamics and supply chain disruptions continue to strengthen the sensitivity of countries' economies to changes abroad (OECD, 2024). In the context of bilateral trade, such as between Indonesia and China, trade exposure shows how vulnerable the domestic economy is to changes in prices, demand, and policies of partner countries (Huang et al., 2023).

Developing countries, including Indonesia, are increasingly dependent on trade relations with strategic partner countries. This situation has led to significant exposure of the economy, especially the domestic industrial sector, to increasingly sharp economic inequality and the exploitation of natural resources as a consequence of poorly managed free trade policies (Jorgenson, 2010). Considering the importance of Indonesia-China trade relations and the potential economic exposure they generate, the author is interested in further researching the impact of international trade, particularly between Indonesia and China. Therefore, the title of this research is "International Trade Exposure Model in Indonesia and China".

This study focuses on the impact of international trade on Indonesia's economic stability in the context of trade relations with China. The main variables analyzed include trade exposure, which reflects Indonesia's economic dependence on China as an indicator of the level of economic liberalization, as well as several macroeconomic indicators such as economic growth, inflation, exchange rate, foreign exchange reserves, and trade balance. In this study, Indonesia's economic growth (GDP) is used as the dependent variable, with the aim of examining the extent to which trade exposure and other macroeconomic indicators dynamically affect national economic performance. To capture this relationship and overcome potential endogeneity issues, the Generalized Method of Moments (GMM) is used, which is considered appropriate for analyzing dynamic models based on time series data.

LITERATURE REVIEW

International Trade

International trade is the exchange of goods and services between countries that provides direct benefits in the form of increased national income through production specialization, as well as indirect benefits in the form of technology transfer and increased productivity (Nguyen et al., 2023; Tambunan, 2001). A country's involvement in global trade enables efficient resource allocation and promotes economic growth through increased exports and foreign investment (Rangkuty et al., 2024).

Adam Smith (1776) in his theory of absolute advantage explained that a country will benefit if it is able to produce goods at a lower cost than other countries. Meanwhile, David Ricardo's theory of comparative advantage (1817) emphasizes that a country can still benefit from international trade even if it does not have an absolute advantage, as long as it specializes in producing goods with the lowest opportunity cost. These two theories form the basis for the concepts of trade liberalization and economic openness in modern economies (Siddiqui, 2015).

Economic Growth and Stability

Economic stability is an ideal condition characterized by low inflation, controlled unemployment, and sustainable economic growth (Davoodi et al., 2021). Economic growth is measured by an increase in Gross Domestic Product (GDP), which reflects a country's ability to produce goods and services in aggregate (Samsi, 2017). In the context of globalization, exchange rate stability and inflation control are important components that determine national economic competitiveness (FUKUDA, 2024).

Keynesian theory emphasizes that government intervention through fiscal and monetary policies can stabilize the economy, especially in the face of crises

(Bonam et al., 2024). The Neo-Keynesian approach then developed this view by emphasizing the importance of coordination between fiscal, monetary, and trade sector policies to maintain macroeconomic balance (Nachane, 2016).

Trade Exposure

Trade exposure reflects the extent to which a country's economy depends on international trade (Arif et al., 2022). The OECD defines trade exposure as the ratio of exports and imports to GDP. The higher the ratio, the greater the external influence on the domestic economy (OECD, 2021).

(Krugman, 2000) asserts that global economic integration promotes efficiency, innovation, and technology transfer. However, excessive openness can also increase vulnerability to external shocks. Therefore, the management of trade openness needs to be balanced with macroprudential policies that maintain exchange rate and balance of payments stability.

Inflation

Inflation is a general increase in the prices of goods and services that reduces the purchasing power of money (Nopirin, 1992). In the context of international trade, high inflation can reduce the competitiveness of exports because production costs increase and domestic product prices become less competitive (Roncaglia de Carvalho et al., 2018).

According to monetarist theory, uncontrolled inflation can reduce investment and economic growth because it creates uncertainty. Therefore, maintaining inflation at a moderate level is an important prerequisite for sustainable economic growth.

Exchange Rate

The exchange rate reflects the relative price between domestic and foreign currencies (Krugman & Obstfeld, 1994). Exchange rate fluctuations have a direct effect on exports and imports, and indirectly affect inflation and international capital flows.

The Keynesian approach views the exchange rate as being influenced by the balance of money supply and demand and the level of national income (Widyastuti et al., 2017). A stable exchange rate promotes trade certainty, while currency depreciation can improve the trade balance in the short term by increasing the competitiveness of exports (Ilmas et al., 2022).

Foreign Exchange Reserves

Foreign exchange reserves are foreign assets owned by the central bank in the form of foreign currency, gold, or securities, which serve to maintain exchange rate stability and support international transactions (Kaphle, 2021). An increase in foreign exchange reserves strengthens market confidence in the country's ability to cope with external shocks (Habib, 2025). In the context of trade, strong foreign exchange reserves enable central banks to intervene in the market to stabilize exchange rates and support pro-growth monetary policies (Kramer et al., 2023).

Balance of Trade

The balance of trade is the difference between a country's exports and imports. A surplus indicates that exports exceed imports, while a deficit indicates dependence on foreign products (Amaliawiati et al., 2021). Based on the theory of exchange rate elasticity, a trade deficit tends to weaken the value of the domestic currency. Conversely, a trade surplus strengthens the exchange rate and increases foreign exchange reserves (Tanjung et al., 2025). Thus, the trade balance is an important indicator in assessing a country's external balance.

MATERIALS & METHODS

Research Approach

The type of research used is descriptive research with a quantitative approach. The quantitative approach provides a basis for examining the trade exposure model of

international trade in Indonesia and China. This approach allows for more structured, systematic, and objective data analysis, so that each finding can be interpreted more clearly and accurately. Thus, the results of the study not only provide a reliable picture, but can also be used as a basis for more accurate and data-driven decision making.

Data Types and Sources Secondary data was obtained from World Bank Open Data for the period 1995–2024, covering two countries: Indonesia and China.

Table 1. The Operational Definition

Variable	Operational Definition	Measurement Unit	Data Source
Gross Domestic Product (GDP)	The total value of goods and services produced by a country within a given year	Constant USD (2015)	World Bank
Trade Exposure (TRX)	The ratio of total exports and imports to GDP, indicating trade openness	% of GDP	World Bank
Inflation (INF)	The general increase in the price level of goods and services over time	% (CPI)	World Bank
Exchange Rate (KURS)	The value of domestic currency per unit of foreign currency (USD)	Local currency per USD	World Bank
Foreign Reserves (CDEV)	The total foreign assets held by the central bank, including foreign currencies and gold	USD (billion)	World Bank
Balance of Trade (BOT)	The difference between a country's export and import values in a given period	USD (billion)	World Bank

Data Collection Technique

The study applies a documentation technique, collecting published secondary data from official international databases and prior studies relevant to the research objectives. All datasets were processed using statistical and econometric tools to estimate a dynamic panel model with robust parameters.

RESULT

Estimation Results of Dynamic Panel Regression

The dynamic panel model was estimated using the Generalized Method of Moments (GMM) with both First-Difference GMM (FD-GMM) and System GMM (SYS-GMM) approaches to address potential endogeneity and serial correlation.

Table 2. GMM Estimation Results

Variable	Coefficient	Std. Error	z-stat	p-value	Interpretation
GDP (t-1)	0.5156	0.0973	5.30	0.000	Positive and significant
Trade Exposure	0.1898	0.0059	32.01	0.000	Positive and significant
Inflation (INF)	-0.2497	0.0077	-32.54	0.000	Negative and significant
Exchange Rate (KURS)	0.0516	0.0065	7.96	0.002	Positive and significant
Foreign Reserves (CDEV)	0.0061	0.0021	2.93	0.003	Positive and significant
Balance of Trade (BOT)	-0.1575	0.0889	-1.77	0.076	Negative but not significant
Constant	-2.6657	0.7831	-3.40	0.042	Significant
Wald Chi^2 (p)	28.09 (0.000)				Jointly significant
Sargan Test (p)	0.3038				Instruments valid
AR (2) Test (p)	0.157				No autocorrelation

Model Validity Tests

To ensure that the model is statistically valid and free from endogeneity or specification bias, several diagnostic tests were conducted:

- Sargan Test: p-value = 0.3038 (> 0.05) indicates that the instruments used are valid and the model is not over-identified.
- Arellano–Bond AR (1) and AR (2): p-values = 0.158 and 0.157 (> 0.05), showing that there is no second-order autocorrelation in the residuals.
- Wald Chi² = 165.41 (p = 0.000): confirms that all explanatory variables jointly have a significant effect on GDP.

Thus, the dynamic panel model using GMM is statistically robust, unbiased, and consistent.

DISCUSSION

The empirical estimation using the Generalized Method of Moments (GMM) reveals that trade exposure, inflation, exchange rate, and foreign reserves significantly affect economic growth in Indonesia and China, while the balance of trade does not. This finding highlights the importance of trade openness and macroeconomic stability in shaping long-term economic performance in emerging economies.

The positive and significant relationship between trade exposure and economic growth indicates that higher integration with global trade stimulates economic expansion. Increased trade exposure enhances market access, promotes technology transfer, and encourages production efficiency. This result supports endogenous growth theory, which posits that external openness contributes to productivity improvement through innovation and learning-by-exporting mechanisms. The finding also aligns with (Krugman, 2000), who emphasized that participation in international trade enables developing economies to achieve sustainable productivity growth through specialization and competitiveness.

In contrast, inflation shows a negative and significant relationship with economic growth, implying that price instability undermines macroeconomic performance. Rising inflation erodes household purchasing power, increases production costs, and reduces the incentives for investment. This finding is consistent with (Barro, 1996) and (Mankiw, 2021), who argue that maintaining low and stable inflation is a precondition for sustainable economic expansion. For both Indonesia and China, inflation control remains a key aspect of monetary policy to safeguard real income and promote investment confidence.

The exchange rate also exhibits a positive and significant effect on economic growth, suggesting that exchange rate stability strengthens export performance and foreign investor confidence. A competitive yet stable exchange rate can enhance trade flows by keeping export prices attractive in global markets. This supports the findings of (Napitupulu et al., 2024), who concluded that exchange rate management plays a strategic role in maintaining external balance and encouraging capital inflows in developing economies. In the context of Indonesia and China, effective exchange rate policies contribute to maintaining macroeconomic resilience amid global financial fluctuations.

Similarly, foreign reserves positively and significantly influence economic growth. Higher reserves reflect a stronger ability of the central bank to intervene in the foreign exchange market, maintain currency stability, and provide a safety buffer against external shocks. This reinforces (Krugman et al., 2018) argument that sufficient foreign reserves promote investor confidence and reduce vulnerability to capital outflows. Both Indonesia and China have benefited from growing reserves that support their external positions and foster overall macroeconomic stability.

Meanwhile, the balance of trade has a negative but statistically insignificant effect on growth. This suggests that short-term trade surpluses or deficits do not necessarily determine economic performance. In Indonesia, persistent trade deficits may reflect structural dependency on imported intermediate goods, while China's trade

surpluses are often driven by export-oriented industrial policies. Hence, trade balance fluctuations alone do not capture the broader dynamics of productivity, capital accumulation, or domestic consumption. This finding is consistent with (Tanjung et al., 2025), who found that changes in trade balance have limited short-term effects on GDP growth due to global demand volatility and export composition differences.

Finally, the strong positive and significant coefficient of lagged GDP (GDP t–1) indicates that past economic performance significantly influences current growth. This "growth inertia" suggests that investment, productivity, and technological progress achieved in previous years continue to sustain economic expansion in subsequent periods. The result supports the endogenous growth framework proposed by (Juhro & Trisnanto, 2018), which argues that internal factors such as capital accumulation and innovation are self-reinforcing and vital to maintaining steady economic growth.

Overall, the discussion highlights that trade openness and macroeconomic management are key drivers of economic development in both Indonesia and China. While trade integration enhances efficiency and competitiveness, maintaining inflation stability, exchange rate equilibrium, and adequate reserves are equally essential to ensure that growth remains sustainable in the long term.

CONCLUSION

This study found that trade exposure, exchange rates, and foreign exchange reserves have a significant positive effect on economic growth in Indonesia and China, while inflation has a significant negative effect. The trade balance has no significant effect on economic growth. These results indicate that economic openness and macroeconomic stability management are key factors in promoting sustainable growth. The government is expected to strengthen trade and exchange rate stability policies and keep inflation under control in order to improve national economic competitiveness.

Declaration by Authors

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