

THE EFFECT OF FOREIGN DIRECT INVESTMENT (FDI) AND EXPORT-IMPORT PERFORMANCE ON ECONOMIC GROWTH IN G-20 COUNTRIES: A PANEL DATA ANALYSIS

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Abstract:

This study examines the effect of Foreign Direct Investment (FDI) and export-import performance on economic growth in selected G-20 countries using a panel data approach during the period 2000–2024. Economic growth is an important indicator of economic development because it reflects increases in production capacity, national income, and public welfare. In the era of globalization, foreign investment and international trade have become important determinants of economic performance in both developed and developing countries. This study uses panel data analysis by combining cross-sectional data from selected G-20 countries and time-series data from 2000 to 2024. Economic growth is used as the dependent variable, while Foreign Direct Investment (FDI), trade openness, and institutional indicators consisting of Political Stability (PV), Government Effectiveness (GE), Control of Corruption (CC), Voice and Accountability (VA), Regulatory Quality (RQ), and Rule of Law (RL) are used as independent variables. The results indicate that Foreign Direct Investment (FDI) has a positive and significant effect on economic growth. In addition, institutional quality represented by Control of Corruption (CC) also shows a significant influence on economic performance. Meanwhile, several trade-related variables show varying effects on economic growth. Simultaneously, foreign investment, trade openness, and institutional quality significantly influence economic growth in selected G-20 countries. These findings imply that governments need to strengthen institutional quality, improve investment climates, and formulate effective international trade policies to support sustainable economic growth.

Keywords: Economic Growth; Foreign Direct Investment; Trade Openness; Institutional Quality; Panel Data Analysis

Abstrak

Penelitian ini menganalisis pengaruh Foreign Direct Investment (FDI) dan kinerja ekspor-impor terhadap pertumbuhan ekonomi di negara-negara G-20 terpilih menggunakan pendekatan data panel selama periode 2000–2024. Pertumbuhan ekonomi merupakan indikator penting dalam pembangunan ekonomi karena mencerminkan peningkatan kapasitas produksi, pendapatan nasional, dan kesejahteraan masyarakat. Di era globalisasi, investasi asing dan perdagangan internasional menjadi faktor penting yang memengaruhi kinerja ekonomi negara maju maupun berkembang. Penelitian ini menggunakan analisis data panel dengan menggabungkan data cross-section negara-negara G-20 terpilih dan data time-series dari tahun 2000 hingga 2024. Pertumbuhan ekonomi digunakan sebagai variabel dependen, sedangkan Foreign Direct Investment (FDI), trade openness, serta indikator kelembagaan yang terdiri dari Political Stability (PV), Government Effectiveness (GE), Control of Corruption (CC), Voice and Accountability (VA), Regulatory Quality (RQ), dan Rule of Law (RL) digunakan sebagai variabel independen. Hasil penelitian menunjukkan bahwa Foreign Direct Investment (FDI) berpengaruh positif dan signifikan terhadap pertumbuhan ekonomi. Selain itu, kualitas kelembagaan yang direpresentasikan oleh Control of Corruption (CC) juga menunjukkan pengaruh signifikan terhadap kinerja ekonomi. Sementara itu, beberapa variabel terkait perdagangan menunjukkan pengaruh yang bervariasi terhadap pertumbuhan ekonomi. Secara simultan, investasi asing, trade openness, dan kualitas kelembagaan berpengaruh signifikan terhadap pertumbuhan ekonomi negara-negara G-20 terpilih. Temuan ini menunjukkan pentingnya penguatan kualitas kelembagaan, peningkatan iklim investasi, dan kebijakan

perdagangan internasional yang efektif untuk mendukung pertumbuhan ekonomi berkelanjutan.

Kata Kunci: Pertumbuhan Ekonomi; Foreign Direct Investment; Trade Openness; Kualitas Kelembagaan; Analisis Data Panel

1. Introduction

Economic growth is one of the main indicators used to measure the success of a country's economic development. Economic growth reflects increases in production capacity, national income, employment opportunities, and public welfare within a certain period. Countries with stable and sustainable economic growth generally experience better living standards and stronger economic structures. Therefore, understanding the factors influencing economic growth has become an important issue in economic studies, particularly in the context of globalization and international economic integration.

In the era of globalization, Foreign Direct Investment (FDI) has become one of the important sources of capital inflows for both developed and developing countries. FDI contributes not only financial capital but also technology transfer, managerial expertise, innovation, and international business networks. According to Dunning (1988), foreign investment can stimulate industrial productivity and improve economic efficiency through multinational corporate activities. Countries with higher levels of foreign investment generally experience stronger economic growth because FDI increases production capacity, creates employment opportunities, and supports industrial development.

Besides foreign investment, international trade also plays an important role in economic growth. International trade allows countries to expand market access, increase production efficiency, and improve competitiveness in global markets. Export activities contribute positively to economic growth through increased foreign exchange earnings, industrial production, and employment opportunities. Meanwhile, imports may support domestic industries through the availability of raw materials, capital goods, and advanced technologies needed in production activities. According to Ricardo (1817), countries benefit from international trade through specialization based on comparative advantage, allowing countries to produce goods more efficiently and increase economic welfare.

In addition to investment and trade activities, institutional quality is also considered an important factor influencing economic growth. Countries with stable political conditions, effective governance, low corruption levels, and strong legal systems tend to attract more foreign investment and maintain sustainable economic performance. According to Douglass North, institutions function as “the rules of the game” that reduce uncertainty and support economic transactions. Institutional quality indicators such as Political Stability (PV), Government Effectiveness (GE), Control of Corruption (CC), Voice and Accountability (VA), Regulatory Quality (RQ), and Rule of Law (RL) are important in supporting investment activities and international trade.

The G-20 countries represent the world's major economies that contribute significantly to global GDP, trade flows, and international investment activities. However, economic growth among G-20 countries differs considerably because of variations in investment climate, trade openness, institutional quality, and macroeconomic stability. Some countries experience rapid economic growth due to strong investment and effective institutions, while others face slower growth because of institutional weaknesses, political instability, and trade imbalances.

Several previous studies have analyzed the relationship between Foreign Direct Investment (FDI), trade openness, institutional quality, and economic growth. Stanišić (2016) found that FDI positively affects economic growth through increased productivity and industrial development. Prasetyo et al. (2022) explained that international trade contributes positively to economic growth through export expansion and increased competitiveness. Meanwhile, Kurniawati et al. (2021) stated that institutional quality plays an important role in supporting sustainable economic growth by creating stable economic conditions and reducing uncertainty in economic activities.

Based on these explanations, this study aims to analyze the effect of Foreign Direct Investment (FDI), export-import performance, and institutional quality on economic growth in selected G-20 countries during the period 2000–2024 using panel data analysis. This study is expected to provide broader insights regarding the relationship between investment, international trade, institutional quality, and economic growth in selected G-20 countries.

2. Literature Review

Economic growth is one of the main indicators used to measure the success of a country's economic development. Economic growth refers to the increase in the production of goods and services within a certain period and is generally measured through Gross Domestic Product (GDP). According to Solow (1956), economic growth is influenced by capital accumulation, labor force growth, and

technological progress. In the era of globalization, investment and international trade become important drivers of economic expansion because they increase productivity and production capacity. Countries with stable macroeconomic conditions and effective economic policies generally experience better economic performance and sustainable growth. Therefore, understanding the determinants of economic growth becomes an important issue in economic studies, especially among G-20 countries with different economic structures and development levels.

Foreign Direct Investment (FDI) refers to investment activities conducted by foreign individuals, companies, or governments in productive sectors of another country. FDI contributes not only financial capital but also technology transfer, innovation, managerial expertise, and international business networks (Dunning, 1988). According to Dunning's Eclectic Paradigm Theory, multinational corporations invest abroad because they possess ownership, location, and internalization advantages. FDI positively influences economic growth through capital accumulation, industrial productivity, and employment creation. In addition, foreign investment supports technological advancement and industrial efficiency in host countries. However, the impact of FDI may differ depending on institutional quality, political stability, and government regulations. Therefore, supportive economic policies and effective institutions are essential in maximizing the benefits of foreign investment (North, 1990).

Trade openness represents the level of international trade activities conducted by a country. International trade plays an important role in economic growth because it expands market access, increases foreign exchange earnings, and improves production efficiency. Ricardo (1817) explained through the theory of comparative advantage that countries benefit from specialization and international trade. Trade openness positively contributes to economic growth by encouraging industrial production and increasing competitiveness in global markets (Prasetyo et al., 2022). Meanwhile, imports can support domestic production through capital goods, raw materials, and advanced technologies (Rahman et al., 2021). However, excessive imports of consumer goods may weaken domestic industries and increase dependency on foreign products.

Institutional economics emphasizes the importance of institutions in influencing economic activities and development outcomes. According to Douglass North, institutions are "the rules of the game" that shape economic behavior and reduce uncertainty in economic transactions. Strong institutions encourage investment and trade activities by providing legal certainty, protecting property rights, and reducing transaction costs. Countries with transparent regulations, political stability, and effective governance are generally more successful in attracting foreign investment and maintaining sustainable economic growth (Kurniawati et al., 2021). Institutional quality in this study is measured using World Governance Indicators (WGI), including Political Stability (PV), Government Effectiveness (GE), Control of Corruption (CC), Voice and Accountability (VA), Regulatory Quality (RQ), and Rule of Law (RL).

Previous studies also indicate that the simultaneous relationship between FDI, trade openness, institutional quality, and economic growth is significant, especially in countries with strong institutions and stable macroeconomic conditions (Stanišić, 2016). Several empirical studies found that FDI positively affects economic growth because it contributes to capital accumulation, industrial productivity, and employment creation. International trade also contributes positively to economic growth through increased exports, foreign exchange earnings, and industrial competitiveness. Therefore, this study assumes that FDI, trade openness, and institutional quality influence economic growth in selected G-20 countries during the period 2000–2024.

3. Research Methods

3.1. Object, Time and Place

This study uses a quantitative research design with a panel data approach to analyze the effect of Foreign Direct Investment (FDI) and export-import performance on economic growth in selected G-20 countries. The quantitative approach is used to measure and analyze numerical data statistically in order to identify the relationship between variables. Panel data analysis is considered appropriate because it combines cross-sectional data across countries and time-series data across years simultaneously (Gujarati & Porter, 2009).

The observation period in this study covers annual data from 2000 to 2024. The countries included in this study are Australia, Brazil, Canada, China, France, India, Indonesia, Japan, South Korea, Russia, Saudi Arabia, South Africa, and Türkiye. These countries were selected based on the availability and completeness of data during the observation period. The selected countries represent both developed and developing economies with different levels of economic growth, trade openness, investment attractiveness, and institutional quality.

3.2. Data Collection Techniques

This study uses secondary data obtained from international institutions and official databases. The main data sources include the World Bank Development Indicators (WDI), International Monetary Fund (IMF), UNCTAD Statistics, and World Governance Indicators (WGI). The data used consist of annual data on economic growth, Foreign Direct Investment (FDI), trade openness, and institutional quality indicators in selected G-20 countries during the period 2000–2024.

Economic growth is measured using Gross Domestic Product (GDP) growth rates, while Foreign Direct Investment (FDI) and trade openness are measured as percentages of GDP. Institutional quality variables consist of Political Stability (PV), Government Effectiveness (GE), Control of Corruption (CC), Voice and Accountability (VA), Regulatory Quality (RQ), and Rule of Law (RL). Data collection is conducted using documentation techniques by accessing official publications and electronic databases from related institutions. The collected data are organized systematically and processed using statistical software to support panel data analysis.

3.3. Data Analysis Techniques

This study uses multiple linear regression analysis with robust standard errors to examine the effect of Foreign Direct Investment (FDI), trade openness, and institutional quality interactions on economic growth in selected G-20 countries. The robust estimation method is applied to overcome potential heteroscedasticity problems and to produce more reliable and valid statistical estimations.

The use of robust standard errors is supported by Ahmad and Nayan (2019), who stated that “heteroskedastic and autocorrelation robust standard error can easily be enforced” in regression estimation by adding the robust command in STATA (Ahmad & Nayan, 2019, p. 572). Furthermore, robust standard errors are commonly applied to overcome heteroscedasticity issues in regression estimations (Ahmad & Nayan, 2019, p. 574).

The regression model used in this study is expressed as follows:

$$GDP_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 TRADE_{it} + \beta_3 PV_{it} + \beta_4 GE_{it} + \beta_5 CC_{it} + \beta_6 VA_{it} + \beta_7 RQ_{it} + \beta_8 RL_{it} + \beta_9 (FDI \times PV)_{it} + \beta_{10} (FDI \times GE)_{it} + \beta_{11} (FDI \times CC)_{it} + \beta_{12} (FDI \times VA)_{it} + \beta_{13} (FDI \times RQ)_{it} + \beta_{14} (FDI \times RL)_{it} + \beta_{15} (TRADE \times PV)_{it} + \beta_{16} (TRADE \times GE)_{it} + \beta_{17} (TRADE \times CC)_{it} + \beta_{18} (TRADE \times VA)_{it} + \beta_{19} (TRADE \times RQ)_{it} + \beta_{20} (TRADE \times RL)_{it} + \epsilon_{it}$$

Description:

- GDP : Gross Domestic Product
- FDI : Foreign Direct Investment
- TRADE : International Trade Openness
- PV : Political Stability
- GE : Government Effectiveness
- CC : Control of Corruption
- VA : Voice and Accountability
- RQ : Regulatory Quality
- RL : Rule of Law
- I : country
- T : year
- E : error term

The analysis was conducted using Stata 17 software. The regression results are interpreted using coefficient analysis, t-test, F-test, and coefficient of determination (R-squared) to evaluate the relationship between independent variables and economic growth.

4. Results and Discussion

This study analyzes the effect of Foreign Direct Investment (FDI), trade openness, and institutional quality interactions on economic growth in selected G-20 countries during the period 2000–2024. The analysis was conducted using multiple linear regression with robust standard errors to obtain more reliable and consistent estimation results.

The robust standard error method was applied to minimize heteroscedasticity problems in the regression model. This approach is supported by Ahmad and Nayan (2019), who stated that “heteroskedastic and autocorrelation robust standard error can easily be enforced” in estimation procedures by adding the robust command in Stata (Ahmad & Nayan, 2019, p. 572). In addition, Ahmad and Nayan (2019) also explained that “robust standard errors are enforced across all panel fixed effect

estimations to overcome heterokedasticity issue” (p. 574). Therefore, the use of robust estimation in this study aims to improve the validity and reliability of statistical inference.

Table 1. Results of Robust Regression Analysis

Linear regression		Number of obs	=	375		
		F(14, 360)	=	8.88		
		Prob > F	=	0.0000		
		R-squared	=	0.2277		
		Root MSE	=	.80277		
gdpln	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
fdi	.1547484	.0581628	2.66	0.008	.0403668	.26913
trade	.0017094	.0046763	0.37	0.715	-.0074869	.0109057
fdipv	.0136727	.0617478	0.22	0.825	-.107759	.1351043
fdige	.0274683	.1202882	0.23	0.820	-.2090876	.2640242
fdicc	.3003952	.1394645	2.15	0.032	.0261278	.5746626
fdiva	-.0852749	.0448307	-1.90	0.058	-.1734377	.002888
fdirq	-.1737575	.1138827	-1.53	0.128	-.3977163	.0502014
fdirl	-.1370694	.1589081	-0.86	0.389	-.449574	.1754353
tradevp	-.005733	.0031818	-1.80	0.072	-.0119902	.0005241
tradege	.0014576	.0056812	0.26	0.798	-.0097149	.01263
tradecc	-.0174019	.0048561	-3.58	0.000	-.0269518	-.0078521
tradeva	-.0015003	.0019346	-0.78	0.439	-.0053049	.0023043
traderq	.0066903	.0065567	1.02	0.308	-.006204	.0195846
traderl	.009374	.0057787	1.62	0.106	-.0019903	.0207383
_cons	.7275995	.1809045	4.02	0.000	.3718371	1.083362

Sources: Processed data using Stata 17.

Based on Table 1, the regression results indicate that FDI has a positive and statistically significant effect on economic growth with a coefficient value of 0.1547484 and a probability value of 0.008. This finding implies that an increase in foreign direct investment contributes positively to economic growth in selected G-20 countries.

Meanwhile, trade openness shows a positive but statistically insignificant effect on economic growth, with a probability value of 0.715. This result suggests that trade activities alone may not directly stimulate economic growth without adequate institutional support and economic stability.

Several interaction variables also produce significant results. The FDICC variable has a positive and significant effect on economic growth with a coefficient value of 0.3003952 and a probability value of 0.032. This indicates that control of corruption strengthens the positive contribution of FDI to economic growth. On the other hand, the TRADECC variable has a negative and significant coefficient of -0.0174019 with a probability value of 0.000, indicating that weak institutional quality related to corruption may reduce the effectiveness of trade openness in promoting economic growth.

The regression model is statistically significant as indicated by the Prob > F value of 0.0000. In addition, the R-squared value of 0.2277 shows that approximately 22.77% of the variation in economic growth can be explained by the independent variables included in the model, while the remaining variation is influenced by other factors outside the regression model.

5. Conclusion

This study analyzes the effect of Foreign Direct Investment (FDI), trade openness, and institutional quality interactions on economic growth in selected G-20 countries during the period 2000–2024 using multiple linear regression with robust standard errors. The regression results show that Foreign Direct Investment (FDI) has a positive and statistically significant effect on economic growth. This finding indicates that foreign investment contributes positively to economic performance through capital accumulation, technology transfer, productivity improvement, and employment creation.

Trade openness shows a positive but statistically insignificant effect on economic growth. This result suggests that international trade alone may not be sufficient to stimulate economic growth without adequate institutional support and stable economic conditions. The effectiveness of trade openness may vary depending on the quality of governance and economic structure in each country.

The interaction variables demonstrate that institutional quality plays an important role in influencing economic growth. The FDICC variable shows a positive and significant effect, indicating that better control of corruption strengthens the positive impact of FDI on economic growth. Meanwhile, the TRADECC variable has a negative and significant effect, implying that weak institutional quality

related to corruption may reduce the effectiveness of trade openness in promoting economic development.

Overall, this study concludes that Foreign Direct Investment (FDI), trade openness, and institutional quality are important factors affecting economic growth in selected G-20 countries. Institutional quality particularly plays a strategic role in maximizing the benefits of foreign investment and international trade in supporting sustainable economic growth.

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