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The Nexus Between Foreign Direct Investment and Economic Growth in Malaysia

Chong Siew Huay[1*], Najaa Aqilah Arabi[2], Chuah Soo Cheng[1]
[1]Department of Economics and Financial Studies, Faculty of Business and Management,
Universiti Teknologi MARA (UiTM), Puncak Alam Selangor, Malaysia
[2]Ernst & Young Tax Consultants Sdn Bhd, Malaysia
*siewhuaychong@uitm.edu.my
Corresponding Author: Chong Siew Huay

Abstract: In recent decades, Foreign Direct Investment (FDI) has become a significant factor in promoting economic growth. Recent years have witnessed significant discourse regarding the relationship between foreign direct investment and economic growth. This research employed the Autoregressive Distributed Lag (ARDL) methodology to analyze the long-run and short-run relationships between foreign direct investment and economic growth in Malaysia over the period from 1990 to 2022. The findings indicate that foreign direct investment has a positive impact on economic growth in both the short and long term. This aligns with the fundamental principles of endogenous growth theory, which posits that foreign direct investment enhances the transfer of skills that enrich the knowledge base of the host country in both the short and long term. The study provides policymakers with insights regarding the relationship between economic growth and foreign direct investment (FDI).

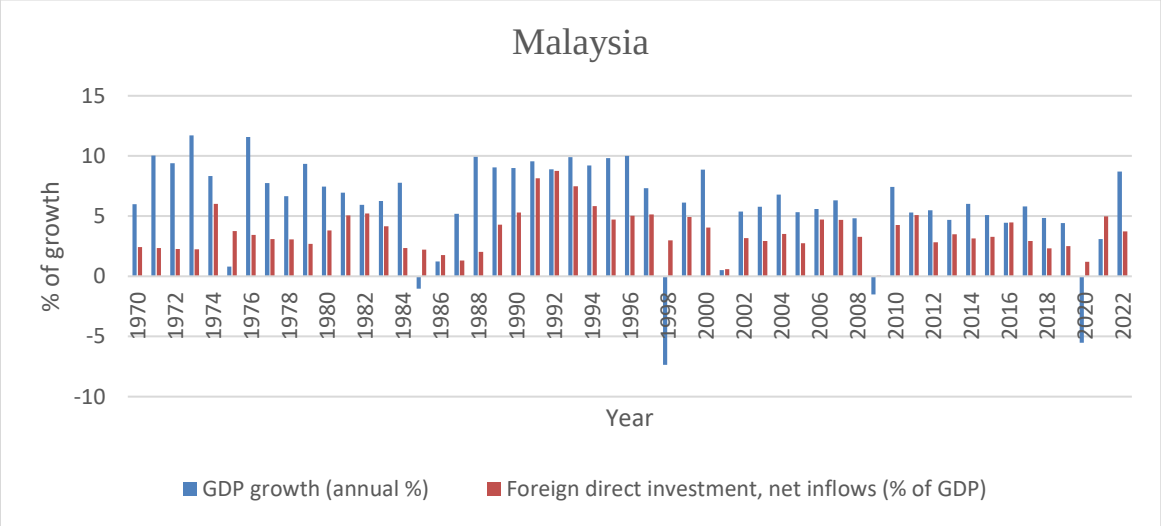
Keywords: *Foreign Direct Investment, Economic Growth, ARDL, Malaysia*

1. Introduction and Background

FDI is a global business approach wherein companies establish a physical appearance in foreign countries by acquiring a productive asset. In simpler terms, FDI occurs when the investor makes an investment in foreign countries to increase their returns, diversify the market for their products, and benefit from economies of scale. The importance of FDI can be seen from various aspects such as technological transfer, introduction of new skills and production techniques, increased competitiveness among domestic and international producers, both import and export including economic growth (Levine, 1997; Borensztein et al., 1998). Regardless of the pattern of FDI that has slightly changed over time, the FDI plays a crucial role in boosting economic growth in the majority of nations. In 2002, the UN's Organization for Economic Co-operation and Development (OECD) highlighted that nations with weaker economies regard foreign direct investment (FDI) as a crucial source of growth and economic modernization. Consequently, governments in developing countries are elected to attract foreign capital (Carkovic & Levine, 2002). Hansen & Rand (2004) assert that foreign direct investment (FDI) significantly enhances short-term economic growth, particularly in 31 developing countries.

Malaysia's economic strategies and policies serve as a yardstick for guiding its developmental journey, steering the nation's economy according to its distinct contours (Ibrahim, 2022). Starting from 1970, Malaysia has witnessed remarkable economic expansion which was accompanied by the adjustment in trade policies to lure FDI into the nation. The inflow of FDI to Malaysia has experienced a substantial increase from 4,453 million (USD) in 1980 to its highest 15,119 million (USD) in 2011 (Rasiah et al., 2017). FDI has evolved into a crucial component as part of the development strategies in the Malaysia Plan. Figure 1 shows that FDI has had a volatile movement and inconsistent trend since the year 1970 and will make unpredictable movements in the future. The graph also shows an inconsistent relationship between FDI and economic growth. The increase of FDI does not contribute to the increase of GDP. The decrease or inconsistent trend of FDI to Malaysia was primarily due to inadequate human capital, corruption, and low level of technological capacity (Abidin, 2010). Moreover, the financial impact of the COVID-19 pandemic outbreak on global economies has made Malaysia’s inflow of FDI decrease from RM32.4billion in 2019 to RM13.3billion in 2020, according to the annual statistics of FDI in Malaysia from the Department of Statistics Malaysia (DOSM).

Figure 1: GDP growth and FDI inflows in Malaysia



Source: The World Bank (2023)

The 1990s marked a period of global economic liberalization and the emergence of economic blocs fostering free trade zones, a trend that extended to Malaysia. The country's engagement with these economic blocs is aimed at establishing a foothold and expanding its presence in the fiercely competitive global market. This involvement is expected to support Malaysia's economy by fostering the growth of local industries and products, avoiding direct competition on a global scale (Ibrahim, 2022). Foreign investments from countries like Japan and Taiwan have helped Malaysia's economy grow, especially when trade with Western countries slowed down (William, 1991).

The relationship between foreign direct investment (FDI) growth and countries has been a subject of being carried out academic debate for several decades. Recent research conducted by Azam et al. (2017) and Mustafa et al. (2021) demonstrates a positive and significant effect of foreign direct investment (FDI) on economic growth. Amyra and Siti (2022) found a negative correlation between FDI and economic growth. The inconsistent findings highlight the complexity of the relationship between foreign direct investment (FDI) and economic growth, suggesting that the impact of foreign investment on an economy is shaped by numerous influences and dynamics. Therefore, identifying the determinants of foreign direct investment (FDI) across various countries is essential.

The objective of this paper is to investigate the short-run and long-run relationship between FDI and economic growth, thus contributing to the existing literature that examines the Malaysian experience from 1990 to 2022. This paper begins with a literature review, followed by the research methodology, findings, and conclusion. The last section of this study will discuss the policy implications and recommendations.

2. Literature Review

According to De Jager (2004), FDI has the potential to increase labor and capital productivity through the introduction of new technologies, which results in more significant returns on investment and external labor growth. Among the others, Barro and Sala-I-Martin (1995) Illustrate a positive relationship between capital accumulation and production, however recent research by Herzer et al. (2008) establishes FDI's role in encouraging economic growth by boosting domestic investment.

Within the exogenous or neo-classical growth model, foreign direct investment (FDI) facilitates economic growth through capital accumulation and the incorporation of foreign technologies and inputs into the production processes of the host country. The neo-classical growth model highlights the role of foreign direct

investment (FDI) in enhancing both the volume and efficiency of investment in the host country, thereby facilitating economic growth. Unlike neoclassical growth models that view technological progress as an external factor, new growth models identify two primary drivers of economic growth: the accumulation of human capital and advancements in technology (Romer P., 1986, 1990; 1994; Lucas Jr, 1988). Nair-Reichert and Weinhold (2001) assert that long-term growth stemming from technological advancements is incorporated into contemporary endogenous growth models. The above-mentioned models provide a framework for FDI to constantly increase the host country's rate of economic growth by facilitating the diffusion, spillover, and transfer of technology. While both endogenous and exogenous growth theories emphasize the significance of capital accumulation for economic growth, they diverge in their approach to addressing technological progress. The first theory relates to the technological advancement as external to the model, whereas the second contends that advancements in technology occur naturally as a result of increased knowledge and innovation (Borensztein et al., 1998; De Mello, 1999; Elboiashi, 2011; Al Naseer, 2010).

The existing theories analyze the role of FDI and economic growth emphasizing the capacity of FDI to promote economic growth through direct and indirect channels. Most of the existing theories are consistent with endogenous growth theory where FDI can enhance the host country's economy by facilitating capital accumulation and the introduction of new products and foreign technologies (Edress, 2017). Furthermore, FDI also contributes to the concept of endogenous growth which facilitates the transfer of skills that improve the knowledge base of the host country (Elboiashi, 2011). Among the others, Herzer et al. (2008) emphasize the significance of FDI for the economic development of host countries through the enhancement of investable capital and the promotion of technology spillovers. Cahyadin and Sarmidi (2019) analyzed the interactions of foreign direct investment, labor, and external debt, emphasizing their individual effects on economic growth in Indonesia and Malaysia. Their research demonstrates a significant connection between labor, external debt, and economic growth. This connection indicates a comparable outcome in both nations. To enhance their efforts for economic growth, they propose two distinct solutions. The initial phase is the creation of a coordinated initiative to draw foreign direct investment inflows. The second aim is to cultivate a highly skilled workforce and human capital while effectively controlling external debt. According to the findings of Ajibola et al. (2018), the only factor that had a substantial positive influence on the economic growth of Nigeria was foreign direct investment in the communication industry. This was demonstrated by using data spanning from 1986 to 2017. The findings indicate that the only significant factor positively impacting Nigeria's economic growth was foreign direct investment in the transportation and communication sector.

A study conducted from 1990 to 2014 examined the relationship between foreign direct investment (FDI) and gross domestic product (GDP) in India, Malaysia, Bangladesh, and Indonesia indicates a persistent relationship between FDI and gross domestic product (GDP), while their Granger causality test yielded inconclusive results. The empirical study conducted by Masturah and Siti (2020) examined the influence of foreign direct investment (FDI) on Malaysia's economic growth from 1975 to 2015, utilizing the ARDL methodology. Their empirical findings demonstrate that foreign direct investment (FDI) has a positive and significant effect on the growth of Malaysia's economy. The conclusion supports the endogenous hypothesis, suggesting that foreign direct investment (FDI) inflows can enhance the economic development of a host nation by generating a spillover effect from foreign investment (Mohamed et al., 2013).

In contrast, an opposing viewpoint asserts that there might not be a long-term equilibrium relationship between FDI and economic growth (Vlatka, 2019). Vlatka (2019) suggested that a surge in foreign investors could potentially lead to slower economic growth due to the advantageous outcomes gained by foreign countries, potentially undermining the nation's competitive edge (Meivitawanli, 2021; Sharma et al., 2020).

3. Research Methodology

This study employs Autoregressive Distributed Lag (ARDL) cointegration to look into the connection between foreign direct investment (FDI) and economic development in both short and long-run relationships from the year 1990 to the year 2022. The ARDL cointegration method is employed to ascertain the presence of a long-term and short-term relationship between foreign direct investment and economic growth. Table 1 provides an overview of the variables used to achieve the objective of the study. Both the results of the tests and the output of the estimations were achieved with the application of Eviews 12.

Eq(1) is presented in ARDL to investigate the long-run model:

$$\Delta \text{InGDP} = \alpha + \sum_{i=0}^{k} \phi \Delta InGDP_{t-i} + \sum_{j=0}^{1} \beta_j X_{t-j} + \mu_t$$

While Eq(2)

$$\Delta \text{InGDP} = \alpha + \sum_{i=0}^{k} \phi In\Delta GDP_{t-i} + \sum_{j=0}^{1} \beta_j X_{t-j} + \psi ECT_{t-1} + \xi_t$$

Where GDP is the dependent variable measured by GDP per capita and ψ is the coefficient of error correction term (ECT), where it shows the convergence of the variables to equilibrium. Table 1 shows the variables used from the theoretical framework by Romer (1986) and Lucas (1988).

Table 1: Research Variables and Source of Data

Variable	Variable Abbreviation	Description	Source
Economic growth	lnGDP	GDP per capita (constant 2015 US$)	WDI
Foreign direct investment	lnFDI	Foreign direct investment, net inflows (BoP, current US$)	WDI
Exports	lnEX	Exports of goods and services (% of GDP)	WDI
Gross fixed capital formation	lnGFCF	Gross fixed capital formation (current LCU)	WDI
Labor force (labor force participation rate as proxy)	lnLFPR	Labor force participation rate, total (% of total population ages 15+) (modeled ILO estimate)	WDI

The theoretical frameworks have been proposed to explain the relationship between FDI and economic growth in the endogenous growth model. Because of some constraints in Solow's exogenous model, Romer (1986) and Lucas (1988) brought in the endogenous growth theory. They introduced this theory as an additional framework to the neoclassical growth model, to give a better and more relevant understanding of growth origins. The endogenous growth model is seen as better for explaining growth drivers. This growth model begins with a basic structure that includes three main components: output (Y), labor (L), capital (K), and technology (A).

We also include export as one of the control variables following the export-led growth theory (Gokmenoglu et al., 2015; Quaicoe et al., 2017; Meyer & Sanusi, 2019). The export-led theory draws its foundations from classical and neoclassical economic perspectives. According to this theory, economic growth is primarily driven by exports. This concept posits that an increase in exports triggers a rise in employment within export-oriented industries, subsequently elevating productivity. This enhanced productivity, in turn, propels economic growth. While the export-led growth theory gained prominence around the turn of the millennium, it has not entirely lost relevance, as ongoing scholarly investigations continue to explore the impact of exports on economic growth.

As the overall productivity factor significantly influences total output which is GDP, it is contingent on both technological advancement and efficiency enhancements for promoting output growth, which follows that the impact of FDI on economic growth could be assessed through the total productivity factor, facilitated by the infusion of capital into host country (Fosu & Mangus, 2006; Yousaf et al., 2011). Therefore, the labor force is included as one of the proxies to measure of productivity factor in the study (Hsu ., 2017).

4. Results and Discussion

This section provides results concerning the relationship between FDI and economic growth in Malaysia. Diagnostic tests were conducted for this model. Table 2 presents the outcomes of the Normality Test, Serial Correlation Test, and Heteroscedasticity Test.

Table 2: Diagnostic Test

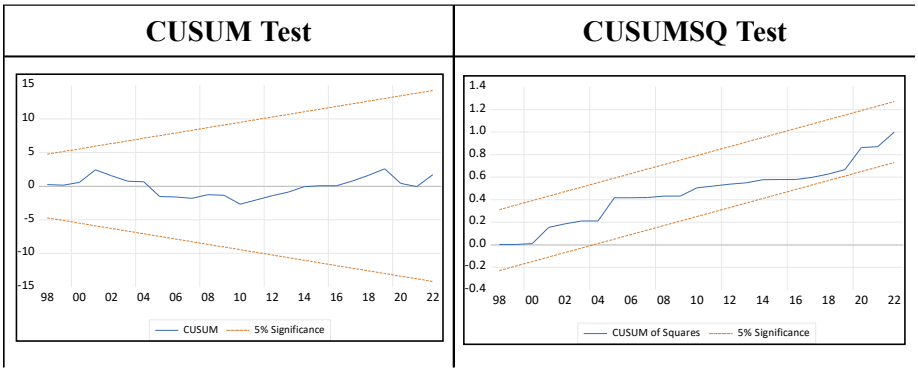
Country	Normality x^2 (p-value)	Serial correlation x^2 (p-value)	Heteroscedasticity x^2 (p-value)
Malaysia	0.5552 (0.7576)	1.4225 (0.2684)	0.8502 (0.5977)

Note: The value in bracket () is the p-value

Based on the results of the histogram normality test, it may be concluded that the residuals, which are the differences between the values that were observed and those that were predicted, adhere to a normal distribution. It appears from this that the assumption of normality is supported, and the residuals of the model are distributed in the direction that was expected. Following this, we carry out the Breusch-Godfrey Serial Correlation LM test to determine if the variables exhibit a serial correlation within the data. Given the observation that the probability of Chi-Square is 0.2684, which is greater than 0.05, the results of the analysis indicate that the data do not exhibit any serial correlation. The homoscedasticity of the residuals is assessed using the Breusch-Pagan-Godfrey test. This indicates that the residuals' variance remains constant during the duration of the test. A p-value of 0.5977, exceeding 0.05, confirms the hypothesis of homoscedasticity in the residuals. The test also indicates that the residuals' variability remains consistent over the range of independent variables.

The blue line in Figure 1 demonstrates that it has consistently remained within the thresholds, signifying that the model's performance has been constant from 1990 to 2022.

Figure 1: Stability test



These diagnostic test results offer evidence to support the reliability and validity of the model utilized in the research. The normality of residuals, homoscedasticity of residuals, and absence of serial correlation indicate that the model is a suitable representation of the relationship between the variables under investigation. These findings contribute to the credibility of the research results and provide a solid basis for drawing meaningful conclusions.

The fundamental objective of the initial phase of the ARDL technique is to ascertain the existence of long-term correlation among the variables. This is referred to as the cointegration bound test. Establishing a suitable lag interval is crucial in this stage. This study employed the Akaike Information Criterion (AIC) to ascertain the lag length. The conditional ARDL model was designated a maximum lag order of two. Meanwhile, the Wald test, referred to as the bound test, was utilized to assess the overall significance of the coefficients.

Table 2: Cointegration bound test result

Country	Maximum lag	Lag order	K	F-statistic
Malaysia	(2,2)	(2,2,0,1,2)	4	7.2167
	Critical values for F-statistics		Lower [I(0)]	Upper [I(1)]
		10%	2.2	3.09
		5%	2.56	3.49
		2.50%	2.88	3.87
		1%	3.29	4.37

The results of the bound test are presented in Table 2. The calculated F-statistic for the growth model in the bound test was 7.2167, exceeding the upper bound critical value of 4.37% at a 1% significance level. The null hypothesis, which posits the absence of cointegration, was rejected at the 1% significance level. The findings indicate that a stable long-term relationship is present among Malaysia's GDP per capita, FDI, exports, GFCF, and labor force participation rate within the chosen time frame.

Cointegration tests are performed to investigate the existence of both short-term and long-term relationships among more than one non-stationary time series variable. The bound test was initially introduced within the framework of ARDL by Pesaran et al. (2001) to ascertain the presence of a long-term correlation among variables.

Table 3: Short-Run and Long-Run Cointegration Result

Country/ ARDL	Malaysia (2,2,0,1,2)
	Short-run elasticities
Δ INFDI	0.0079* (0.0025) [3.2007]
Δ INEX$_{-1}$	0.1423* (0.0458) [3.1080]
Δ INGFCF	0.2155* (0.0232) [9.3025]
Δ INLFPR$_{-1}$	0.0806 (0.4578) [0.1759]
	Long-run elasticities
INFDI	0.0463*** (0.0247) [1.8780]
INDEX	0.2209*** (0.1155) [1.9124]
INGFCF	0.3593* (0.0477) [7.5399]
INLFPR	1.8893*** (1.0076) [1.8750]

C	-10.0593** (3.9644) [-2.5374]
ECM_{t-1}	-0.5750** (0.2679) [-2.1463]

Note: Standard error in ( ) and t-statistic in [ ]. * shows significance at the 1% level, ** significance at the 5% level and *** shows significance at the 10% level.

Table 3 displays the estimation results related to the relationship between foreign direct investment (FDI) and economic growth, employing the error correction model. The ARDL estimation indicates a significant and positive short-run relationship among FDI, exports, GFCF, and GDP. The ECM coefficient is notably negative at the 5% significance level, suggesting that the shock disequilibrium from the previous year will converge to long-run equilibrium at an annual rate of 57.5%. The long-run coefficients for Malaysia, presented in Table 4, indicate that FDI, exports, GFCF, and the labor force participation rate provide evidence to reject the null hypothesis at both the 1% and 10% significance levels. The results demonstrate that a 1% rise in InGDP corresponds to increases of 0.05%, 0.22%, 0.36%, and 1.89% in FDI, exports, GFCF, and the labor force, respectively.

The findings reveal that FDI has a positive and long-term as well as short-term Masturah relationship with economic growth, a trend mirrored in the studies by Etale and Etale (2016), Alzaidy et al. (2017), & Siti (2020), and Halizam et al. (2021). FDI carries a notable and constructive influence on a country's economic development, in alignment with the ideas proposed by the endogenous theory. This theory shows that FDI inflows can boost the economic progress of a host country. The ECT is negative and significant. Similarly, our study also shows a significant and positive relationship between exports and economic growth, a sentiment echoed by Haseeb et al. (2014), Etale and Etale (2016), and Norsilawati et al. (2021). Notably, Norsilawati et al. (2021) highlight the positive contributions of Malaysia's exports, envisioning a brighter economic landscape that extends benefits to its citizens. Shifting focus to GFCF, our findings show that there is a significant relationship, spanning both the long term and the short term, with economic growth. These results echo the sentiments expressed by Halizam et al. (2021) and Masturah & Siti (2020), who indicated a robust and significant relationship between GFCF and the trajectory of economic growth.

Moreover, the labor force contributes positively to the long-term relationship of economic growth. The finding is aligned with export-led theory and a recent study made by Cahyadin & Sarmidi (2019), affirming that a larger labor force can catalyze stimulating Malaysia's economic expansion. Similarly, Rambeli, Hashim, & Affizah (2016) also, substantiate the enduring positive relationship between the labor force and economic growth. These results indicate that an increase in the labor force will lead to an indirect rise in FDI, as both variables positively contribute to economic growth.

In summary, our study has revealed the positive and significant relationship between FDI and economic growth. The estimated findings on the positive relationship between FDI and economic growth are consistent with recent literature by Malik (2024). The estimated findings of other control variables, namely exports, labor force participation rate, GFCF are also consistent with the existing findings. We also found both long-term and short-term associations between FDI and economic growth. ECM coefficient is negatively significant at a 5% significance level, implying that the shock disequilibrium from the previous year will adjust to long-run equilibrium at a high speed of convergence, namely 57.5% per year. Long-run coefficients for Malaysia presented in Table 4, indicate that FDI, export, GFCF and labor force participation rate indicate that the null hypothesis can be rejected at 1% and 10% of significance level.

5. Policy Implications and Recommendations

Based on the estimations and discussion of this study, several recommendations can be put forth to guide policy and decision-making in Malaysia's pursuit of sustainable economic development. Firstly, with the positive and significant connection between FDI and economic growth, policymakers should prioritize initiatives that

generate and facilitate the inflow of FDI including fostering a conducive environment for investors, easing regulatory procedures, and providing incentives for strategic alliances and partnerships. If Malaysia offers attractive incentives with transparent rules and regulations, investors will feel secure making investments. Furthermore, collaboration between domestic and international companies can promote talent development and knowledge, both of which are important for long-term economic development. It can contribute to the creation of new markets and industries, employment opportunities, and higher productivity.

Secondly, given the demonstrated positive impact of exports on economic growth, fostering a conducive trade environment is essential. Diversifying export markets, supporting local industries with export potential, and investing in trade infrastructure can bolster the nation's export capabilities and contribute to overall economic expansion. Malaysia attracts more foreign investors while it invests in trade infrastructure and diversifies its export markets. A robust trade environment shows stability and opportunities, which encourages foreign investors to invest in Malaysia. In turn, by focusing on fostering a conducive trade environment, Malaysia can enhance its attractiveness to foreign investors, stimulate economic growth, and create long-term prosperity for the country. Policymakers must prioritize enhancing infrastructure investment and developing human capital by recognizing the critical importance of Gross Fixed Capital Formation (GFCF) and labor force participation, including the improvement of education and skills training programs. These efforts have the potential to improve the workforce and increase economic output. Nonetheless, the prioritization of infrastructure development, especially in energy, transportation, and technology is important to encourage substantial capital accumulation and sustainable economic growth. Companies seeking reliable infrastructure to support their operations will find Malaysia an appealing destination for foreign direct investment (FDI), as the nation increasingly evolves into a more conducive environment for businesses, hence reducing costs and improving efficiency.

Conclusion

This study experimentally investigates the correlation between foreign direct investment (FDI) and economic growth, alongside other control variables including exports, gross fixed capital formation (GFCF), and labor force. According to the findings, there is a statistically significant positive link between FDI and economic growth in both the short-term and the long-term., a pattern consistent with the research conducted by Etale and Etale (2016), Alzaidy et al. (2017), Masturah & Siti (2020) & Halizam et al. (2021). The significant and beneficial impact of FDO on a nation's economic development is consistent with the principles of endogenous theory. The endogenous theory demonstrates that FDI inflows promote the economic development of a host country.

This study shows that a combination of various macroeconomic variables contributes collectively to the overall relationship in the long term. The utilization of the ARDL model reveals the importance of all macroeconomic variables in the long-term relationship, whereas FDI, exports, and GFCF are identified as significant variables in the short-term association with economic growth. Policy recommendations for emerging nations should concentrate on enhancing the investment environment for all types of capital, including domestic capital and international capital to minimize the potential risks of FDI.

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