

Albahouth, Abdulrahman A.; Tahir, Muhammad

Article

The relationship between trade openness and FDI inflows: Evidence-based insights from ASEAN region

Economies

Provided in Cooperation with:

MDPI – Multidisciplinary Digital Publishing Institute, Basel

Suggested Citation: Albahouth, Abdulrahman A.; Tahir, Muhammad (2024) : The relationship between trade openness and FDI inflows: Evidence-based insights from ASEAN region, *Economies*, ISSN 2227-7099, MDPI, Basel, Vol. 12, Iss. 8, pp. 1-19, <https://doi.org/10.3390/economies12080208>

This Version is available at:

<https://hdl.handle.net/10419/329134>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.


If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Article

The Relationship between Trade Openness and FDI Inflows: Evidence-Based Insights from ASEAN Region

Abdulrahman A. Albahouth ^{1,*} and Muhammad Tahir ^{2,*} 

¹ Department of Economics, College of Business and Economics, Qassim University, P.O. Box 6640, Buraydah 51452, Saudi Arabia

² Department of Management Sciences, COMSATS University Islamabad, Abbottabad Campus, Abbottabad 22020, Pakistan

* Correspondence: a.albahouth@qu.edu.sa (A.A.A.); tahirm@cuiatd.edu.pk (M.T.)

Abstract: This research paper focuses on figuring out the impact of trade openness on FDI inflows, which has received relatively less attention in the literature, specifically in the context of ASEAN economies. The ASEAN region, which is relatively more open in terms of both trade openness as well as FDI inflows, is chosen as a sample. Annual data are gathered from “World Development Indicators (WDI)” and “World Governance Indicators (WGI)”. Reported results and findings are based on “Fixed Effect (FE) Modeling”, and the “Generalized Least Square (GLS)” is utilized for the robustness check. The results indicated that trade openness matters significantly for attracting FDI inflows. Similarly, institutional quality has also exerted a positive and significant influence on the inflows of FDI. The disaggregated analysis shows that five aspects of institutional quality, such as rule of law, regulatory quality, control of corruption, voice and accountability, and political instability and absence of violence, have positively and significantly impacted the FDI inflows in the case of selected ASEAN economies. The results demonstrated that exchange rate depreciation is harmful for the inflows of FDI. Moreover, FDI inflows responded positively to market size. Furthermore, the results showed that the impact of natural resources and inflation on FDI inflows is insignificant statistically. The present study suggests that the ASEAN policymakers manage their exchange rate effectively, improve the quality of institutions, and adopt vigorous trade liberalization policies to attract more FDI inflows.

Keywords: trade openness; FDI; institutional quality; ASEAN; panel data



Citation: Albahouth, Abdulrahman A., and Muhammad Tahir. 2024. The Relationship between Trade Openness and FDI Inflows: Evidence-Based Insights from ASEAN Region. *Economies* 12: 208. <https://doi.org/10.3390/economies12080208>

Academic Editors: E. M. Ekanayake and Bruce Morley

Received: 7 June 2024

Revised: 8 August 2024

Accepted: 15 August 2024

Published: 19 August 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Foreign Direct Investment (FDI, hereafter) has played a dominant and significant role in uplifting the growth process of numerous economies and regions during the last several decades. FDI inflows have increased in all parts of the world since 1980 enormously (Wang et al. 2022). Following the reopening of the global economy after the COVID pandemic, global FDI flows surged to USD 1815 billion in 2021, marking an impressive increase of nearly 37 percent above the pre-pandemic levels (OECD 2022). Despite economic uncertainties and higher interest rates impacting global investments, recent reports indicate sustained trends in FDI (FDi Markets 2023). The ASEAN region is remarkably successful in attracting FDI inflows. Report by the “United Nations Economic and Social Commission for Asia and the Pacific (UN.ESCAP 2023)” shows that ASEAN is successful in attracting a massive share of intraregional FDI flows. Among the ASEAN members, Indonesia, Vietnam, and Malaysian were successful in attracting 25, 14.4, and 13.7 billion US dollars of FDI, respectively. In 2023 alone, there were significant inflows, including USD 68 billion in India, USD 120 billion in Southeast Asia, and USD 65.1 billion in East and Northeast Asia, specifically for Greenfield investments according to (UN.ESCAP 2023).

Several benefits are associated with the inflows of FDI, particularly for the developing and emerging economies. Dang and Nguyen (2021) documented that FDI inflows promote

competition in the host economy and further generate employment opportunities for the domestic population. FDI inflows also provide access to advanced technologies and essential inputs of production, promote healthy competition among the producers, and further complement domestic investment in the recipient economies. FDI is shown to be a crucial element for enhancing local productivity, stimulating innovations, and maintaining sustainable economic growth, as discussed in (Bergougui and Murshed 2023; Tahir et al. 2019).

The ASEAN economies share several similar characteristics and economic conditions that effectively stimulate international investments. These factors include political stability and economic stability, high institutional quality, an abundance of natural resources, and a strong commitment to trade liberalization and regional integration. Sharma et al. (2022) also documented that ASEAN economies have favorable geographic, economic, and demographic conditions for international investors. Further, the trade war between the US and China has created a lot of opportunities for ASEAN economies. The ASEAN economies also performed well in terms of trade liberalization policies. The ASEAN free-trade agreement was quite successful in promoting the trade liberalization process (Ishikawa 2021). Le et al. (2023) investigated the impact of political stability on FDI inflows in 25 Asia-Pacific countries and show that deterioration on political stability has an adverse effect on FDI inflow. Work by Sabir et al. (2019) evaluated FDI inflows to both developed and developing economies, including ASEAN region countries, and show that indicators of institutional quality, government effectiveness, and political stability have positive and significant impacts on FDI inflow in developing countries. These elements collectively create an attractive and conducive environment for FDI in ASEAN region economies.

The primary question of what fundamentally determines the inflows of FDI still lacks a convincing answer. Prior work has identified various factors responsible for FDI inflows. For instance, the study of Imran and Rashid (2023) and Aziz and Mishra (2016) provided sound evidence behind the positive influence of institutional quality on increased FDI inflows. Similarly, Dua and Garg (2015) demonstrated that the depreciation of currency is vital for attracting FDI inflows, while Ullah and Khan showed that economic size of the host economy matters for attracting FDI inflows. Other studies have reported that trade openness may also impact the inflows of FDI (Ho and Rashid 2011; Rathnayaka Mudiyansele et al. 2021; Aziz and Mishra 2016). Taken together, this work shows that the effect of institutional quality, exchange rate and trade openness is crucial in investigating determinants of FDI variabilities in the ASEAN region economies.

The influence of trade openness is central to work that investigates the determinants of FDI inflows in an economy. Indeed, several works of research were carried out with the prime goal of evaluating the impact of trade openness, in particular on FDI. Sabir et al. (2019) highlighted the importance of trade openness to FDI inflows to both developed and developing economies. Their work shows that a 1% increase in trade openness leads to an approximately 3.7% increase in FDI inflows in “low-income countries”, and nearly a 2.1% increase in “lower-middle-income countries”. Moraghen et al. (2023) also show that FDI grows by nearly one-to-one, with higher level of openness in case of Mauritania. Work by Furceri and Borelli (2008) highlighted the interaction between exchange rate and openness, in which they show that the extent to which exchange rate volatility affects FDI essentially relies on the degree of openness in a country. Empirical evidence on the subject shows that Latin American economies experienced a significant surge in FDI inflows by adopting free-trade agreements, as endorsed by Liargovas and Skandalis (2012). Other studies that emphasized the positive influence of trade openness on FDI include (Asiedu 2002) in sub-Saharan Africa; (Liargovas and Skandalis 2012) in developing economies, (Aziz and Mishra 2016) in the case of Arab economies, (Güriş and Gözgör 2015) for Turkey, and (Donghui et al. 2018) in India, Iran, and Pakistan.

However, empirical findings are not consistent regarding the influence that trade has on FDI inflows, and a body of the literature claims that trade does not stimulate FDI in absolute terms. Rathnayaka Mudiyansele et al. (2021) investigate this question and show that a higher level of trade openness reliefs has a negative impact on FDI inflows,

and it is less likely to attract FDI in the long run. [Erdogan and Unver \(2015\)](#) show that their findings on the influence of openness are mixed based on the model specifications. Indeed, [Kimino et al. \(2007\)](#), assert the same in an earlier work that utilized panel data and conclude that the notion that trade openness has a positive impact on FDI inflows suffers from the unobserved characteristics bias, and the effect of openness on FDI turned out to be insignificant when controlling for these unobserved characteristics. This shows that derived conclusions on the impact of trade openness on FDI inflows remain controversial, which leaves room for further investigations. Therefore, further empirical investigation is needed to establish an explicit relationship between trade openness and FDI inflows. The current study is motivated by the inconsistent and inconclusive findings present in the existing literature.

This research paper contributes to literature in four ways. First, we are investigating the influence of openness to trade openness on FDI inflows. Prior limited literature has provided conflicting results. Second, this work explores the direction of the relationship between trade and FDI, as prior literature has not yet established a consensus on whether higher FDI inflows impact trade openness or vice versa. Third, we also attempt to provide detailed evidence about the role of institutional quality in attracting FDI inflows. To do so, we have considered all dimensions of institutional quality separately reported by “World Governance Indicators (WGI)” to see which aspect is more important for attracting FDI inflows. Fourth, we are focusing on the members of “Association of Southeast Asian Nations (ASEAN)” which are relatively more open in terms of trade and FDI inflows. Although there are studies on the impact of trade openness on growth, the impact of FDI on growth in the context of ASEAN economies has yet to be studied. However, specific studies on the impact of trade openness on FDI are very rare in the context of ASEAN economies. In the ASEAN context, our study will contribute to some new insights in the literature.

We divided the rest of the article into several interconnected sections. Commentary on the relevant literature is shown in Section 2. Section 3 presents key statistics for the ASEAN region as well as individual members of ASEAN. Section 4 includes modeling, data, and estimation methods. Section 5 comprises the Results and Discussion section. The Granger causality findings are shown in Section 6. Section 7 includes the concluding remarks, implications, and limitations.

2. Literature Review

FDI inflows have contributed to the economic performance of numerous economies and regions over the last few decades, as evident from the literature. Theoretically, it is possible that openness to trade may influence the FDI inflows both positively as well as negatively. Looking into the positive impacts of FDI, various researchers have conducted studies to identify what really determines the inflow of FDI. Recent research ([Sarker and Serieux 2023](#)), endorsed that the decision to invest abroad is mainly determined by regional level, country level, and firm level factors. [Anyanwu \(2011\)](#) provided comprehensive evidence about the driving forces of FDI inflows, articulating that FDI inflows positively respond to trade and market size.

The growth-enhancing benefits of trade openness are well documented and researched in the literature. However, the important role of trade openness in attracting FDI inflows is largely ignored by the prior literature. Empirically, [Aziz and Mishra \(2016\)](#), utilized data for Arab economies for the period 1984–2012, demonstrating that economic size measured by GDP has a significant influence on FDI inflows. [Ho and Rashid \(2011\)](#) also demonstrated that trade openness enhances FDI inflows. However, there are some studies where evidence is provided as to the negative impact of trade openness on FDI inflows. For instance, [Kimino et al. \(2007\)](#) showed that trade openness has negatively impacted FDI inflows in the case of Japan. [Dua and Garg \(2015\)](#) have focused on the Indian economy and reported that trade openness has negatively influenced FDI inflows. These findings imply that trade openness and FDI are substitutes for each other instead of complements. [Vijayakumar et al. \(2010\)](#) demonstrated empirically that trade openness is irrelevant in

explaining FDI inflows in the context of BRICS economies. In other words, it is still unclear whether trade openness accelerates or decelerates FDI inflows. These observed differences in the literature about the impact of trade openness on FDI inflows are the prime motivation behind the current study.

Another important factor for the increased FDI inflows is the improved quality of domestic institutions. There is ample empirical evidence which believes that institutional quality explains differences in FDI inflows across countries. Economies with poor institutions are unable to attract FDI inflows, as the cost of doing business in those economies is higher (Sabir et al. 2019; Mengistu and Adhikary 2011). Sabir et al. (2019) highlighted the determinants of FDI inflows and concluded that the quality of institutions matters the most in attracting FDI inflows in the case of developed economies. Busse and Hefeker (2007) endorsed the importance of institutional factors in attracting FDI inflows by focusing on 83 developing countries over the period 1984–2003. Their findings show that institutional factors matter the most in attracting FDI inflows in the case of developing economies. Moreover, Aziz and Mishra (2016) reported empirically that FDI inflows respond positively to improved institutional quality. Similarly, the recent study of Imran and Rashid (2023) also demonstrated that institutional quality enhances FDI inflows in the case of developing countries.

FDI inflows also respond to the level of inflation in the host economies. Frequent ups and downs in prices shatter the confidence of both local and foreign investors (Tahir and Azid 2015). However, a moderate level of inflation, preferably in single digits, may provide some incentives to investors for further investment. Imran and Rashid (2023), using data for 50 developing countries for the period 1990–2018, provided evidence about the positive influence of domestic inflation rate on FDI inflows. Similarly, in the case of Thailand, Ho and Rashid (2011) also showed that inflation rate has improved FDI inflows. Using the data of 74 economies, Agudze and Ibhagui (2021) demonstrated that inflation rate impacts FDI inflows above the threshold level in the case of industrialized economies, while in the case of developing economies, inflation rate hurts FDI inflows even before reaching the threshold level. Sabir et al. (2019) demonstrated that inflation rate negatively impacts FDI inflows in developed economies.

The economic size of economies is generally an important factor for FDI inflows. Using the data of different regions, Ullah and Khan (2017) employed the GMM estimator and provided significant evidence that economic size has played a dominant role in attracting FDI inflows both in South Asia and Central Asian regions. Ayomitunde et al. (2020) provided evidence based on Nigerian data that economic size positively contributes to FDI inflows. Petrović-Randelović et al. (2017) concluded a positive relationship between market size and FDI inflows by focusing on Balkans' economies. However, in the context of ASEAN economies, the findings of Ullah and Khan (2017) indicated that economic size has negatively impacted FDI inflows, which is surprising. These surprising regional results cast doubt on the universal role of market size in attracting FDI inflows.

The exchange rate could also impact inflows of FDI, especially in developing and emerging economies. Using the data of the Indian economy, Dua and Garg (2015) illustrated a positive influence of exchange rate on FDI inflows. Nyarko et al. (2011) concluded no noticeable impact of exchange rate on FDI Inflows by focusing on Ghana. Muhammad et al. (2018) endorsed that the devaluation of exchange rate impacts FDI positively; however, the volatility of exchange rate could reduce FDI inflows. Conversely, some studies have reported that the exchange rate is negatively connected with FDI inflows (Sasana and Fathoni 2019). This implies that a clear relationship between the exchange rate and FDI inflows is yet to be established.

Specifically in the context of ASEAN economies, some researchers have conducted studies to explore the potential determinants of FDI inflows. For instance, Dang and Nguyen (2021) have focused on the ASEAN region and showed that economic institutions have a favorable influence, while political institutions have a worse influence on FDI inflows. Similarly, Sasana and Fathoni (2019) found that the integrity of the government and market size have improved FDI inflows into ASEAN economies. Moreover, the recent

study of Dewi and Septriani (2023) demonstrated that growth, interest rate, and inflation rate have positively impacted the inflows of FDI into ASEAN economies.

In summary, the determinants of FDI have been researched extensively worldwide. However, there are still disagreements among the researchers about the universal determinants of FDI inflows. Very little is known about the potential influence of trade openness on FDI inflows. Specifically, in the ASEAN context, the available research literature is not very rich as far as the relationship between trade openness and FDI inflows is concerned. Similarly, the available literature is also silent on the issue of Granger causality between trade openness and FDI inflows. Therefore, the current study is an attempt to fill the gaps in the literature by assessing the effect of trade on FDI for the ASEAN members.

3. Key Statistics on Selected Variables in ASEAN

Table 1 presents statistics on FDI inflows, trade openness and other macroeconomic variables during the study period (2002–2022). Data are converted to averages for the start year as well as for the end year of the panel. The last column of Table 1 presents the percentage change. The statistics show that FDI inflows have increased by 3.578% between 2002 and 2022. FDI inflows, which were about 2.857% of GDP on average in 2002, have increased to 6.435 percent in 2022. Similarly, openness to trade (trade as % of GDP) has increased by 6.022% on average for the selected ASEAN economies. The trade openness index for ASEAN economies was 141.295%, which is an indication of excellent performance. It is possible that this high degree of trade openness may be responsible for the higher FDI inflows in ASEAN economies.

Table 1. ASEAN statistics.

VARIABLES	2002	2022	CHANGE
FDI	2.857	6.435	3.578
OPEN	135.487	141.509	6.022
NR	6.649	4.295	−2.354
EXR	4295.673	6261.67	45.766%
INF	3.232	6.749	3.517
GDP	1.39×10^{11}	3.51×10^{11}	151.989%
INSTQ	−0.113	0.063	156.45%

Note: Authors calculations using WDI and WGI Data.

The statistics further highlighted that the reliance on natural resources has decreased by −2.354%. The observed decrease in natural resources rents, measured in GDP, is an indication that the ASEAN economies have found new sources of income for the long-term growth process. It is an undeniable fact that natural resources will deplete soon. Therefore, economic diversification is a rational policy for achieving long-term growth. Economic diversification is the right way forward for resource-rich economies to achieve and maintain their growth performance. Moreover, the exchange rate figures show that the currency of selected ASEAN economies has depreciated by 45%. The depreciation of the domestic currency normally reduces the inflow of FDI due to an increased production cost and higher volatility. Hence, the observed depreciation may have some undesirable repercussions as far as the inflows of FDI are concerned. The inflation rate has increased by 3.517% between 2002 and 2022. However, the inflation rate is still stable and well managed, as it is still 6.749% on average. It is generally believed that moderate inflation, preferably in single digits, is important for growth, as it provides positive signals to potential investors (Tahir and Azid 2015).

In terms of GDP, the ASEAN economies have performed well over the years. The statistics show that the GDP of ASEAN economies have increased by almost 151 percent between 2002 and 2022. This remarkable improvement in GDP has helped the region

to save millions of people from poverty. Finally, the institutional quality has improved significantly over the years. The institutional quality index based on the six indicators has shown remarkable improvement between 2002 and 2022. This improved institutional quality could be one of the reasons behind overall improved macroeconomic variables in ASEAN economies.

Country-Wise Statistics of ASEAN

Country-wise statistics for the selected variables are displayed in Table A1 (Appendix A). The statistics show that FDI inflows have increased in all ASEAN economies except Brunei and Thailand. According to the statistics, Brunei witnessed a decline of -0.949% in FDI inflows, while the economy of Thailand experienced a reduction of -0.430% in FDI inflows between 2002 and 2022. Both these economies need to re-think their existing policies, as a decline in FDI is associated with numerous adverse consequences, including unemployment and industrial production.

The highest increase in FDI inflows is recorded by the economy of Singapore among the ASEAN members. The statistics show that FDI inflows has increased by 23.520% for the economy of Singapore. The current statistics show that FDI inflows are still highest in Singapore, among the ASEAN members. Similarly, FDI inflows have increased in Cambodia by 9.073% , while the economy of Laos witnessed an increase of 3.161% . All the other economies of the ASEAN region have also shown an improvement in FDI inflows.

The country-related statistics of trade openness are mixed. For some economies like Brunei, Cambodia, Thailand, Vietnam and Laos, the degree of trade openness has increased significantly. The highest increase in trade openness is experienced by Vietnam (69.034%), followed by Brunei (38.226%) and Thailand (18.907%). Laos recorded an increase of 15.223% , while Cambodia witnessed a marginal increase of 3.495% . On the other hand, the trade openness index declined for Malaysia (-52.693%), Indonesia (-13.686%), Singapore (-12.884%) and Philippines (-11.428%). The statistics of 2022 show that Singapore is the most open economy in ASEAN, as its openness index is (336.863%), followed by Vietnam (185.730%), Brunei (146.974%), Malaysia (146.663%). Indonesia is the most closed economy among the ASEAN economies, as its degree of trade openness is only 45.393% . Overall, the ASEAN economies are much more open compared to the developing countries as well as the South Asian economies.

In term of natural resources, the statistics show that the contribution of natural resources towards GDP has decreased for all the selected economies except the Philippines. The contribution of natural resources has decreased by (-5.982%) for Brunei, (-5.139%) for Vietnam, (-3.929%) for Malaysia, (-3.675%) for Indonesia, (-1.766%) for Cambodia, (-1.042%) for Laos, (-0.265%) for Thailand and (-0.0003%) for Singapore. The statistics of 2022 show that the contribution of natural resources towards GDP is highest in Brunei (19.627%) and lowest in Singapore (0.0001%).

The statistics for the exchange rate show that some of the currencies have appreciated against the USD, while others depreciated during the study period. For example, the currency of Brunei, Singapore and Thailand have appreciated significantly against the USD. The currency of Singapore appreciated by 23.004% , and the currency of Brunei appreciated by 22.988% , while the currency of Thailand appreciated by 18.386% against the USD. On the other hand, the Indonesian currency lost its value by 59.483% , followed by Vietnam, where a reduction of 52.303% is observed. Further, the currency of Laos depreciated by 39.303% , while the currencies of Malaysia, Philippines and Cambodia marginally depreciated between 2002 and 2022.

As far as inflation is concerned in ASEAN, the statistics presented in Table A1 show some mixed evidence. Among the ASEAN members, inflation declined in Indonesia by -7.691% and by -0.674% in Vietnam. Inflation in all other economies increased, as evident from the statistics provided. The highest rise in inflation of 12.325% is observed in Laos, followed by Singapore, where an increase of 6.512% is recorded between 2002 and 2022. In the case of Brunei, inflation also rose by 5.996% , followed by Thailand, where an increase of

5.380% is observed. The current statistics show that among the ASEAN members, Laos has the highest inflation rate (22.956%) while Vietnam has the lowest inflation rate (3.156%).

The market size statistics show that all countries have done well in improving the size of their economies. Among the ASEAN economies, Cambodia achieved the highest rise in GDP (266.220%), followed by Laos, where an increase of (250.729%) is witnessed in GDP. Similarly, the GDP of Vietnam has increased by 239.899%, followed by Philippines (167.129%), Indonesia (162.323%), Singapore (162.305%), Malaysia (146.301%), and Thailand (85.114%). Brunei showed the lowest increase in GDP between 2002 and 2022, which is slightly above 7%.

Finally, the statistics on institutional quality shows that except Thailand, the quality of institutions has improved in all ASEAN members. The institutional quality has worsened by 186.001 percent in Thailand, which is indeed surprising. The quality of institutions has increased by 94.633% in Indonesia, 68.486% in Brunei, 42.944% in Vietnam, 27.870% in Laos, 21.504% in Malaysia, 13.001% in Philippines, 11.687% in Singapore and 2.263% in Cambodia. The statistics of 2022 show that the quality of institutions is stronger in Singapore, followed by Brunei. Finally, among the ASEAN economies, Cambodia has the lowest quality of institutions.

4. Modeling and Estimation

4.1. The Modeling

In this section, we specify the model. Our proposed modeling framework is based on the seminal work of [Liargovas and Skandalis \(2012\)](#), who assessed the influence of trade openness on FDI inflows by focusing on developing economies. FDI inflows to the ASEAN region could be influenced by several determinants, including trade openness. For instance, the size of the domestic market measured by GDP plays an important role in attracting FDI inflows ([Mottaleb and Kalirajan 2010](#)). Similarly, using the data of Arab economies, [Aziz and Mishra \(2016\)](#) showed that institutional quality plays a decisive role in attracting FDI inflows. Natural resources, inflation rate and exchange rate are also included among the independent variables based on prior literature ([Anyanwu 2011](#); [Dua and Garg 2015](#); [Dewi and Septriani 2023](#)). Expression (1) represents the functional form specified for building the model.

$$FDI = F(\text{OPEN}, \text{MSIZE}, \text{NRS}, \text{EXGR}, \text{INFL}, \text{INSTQ}) \quad (1)$$

The function form presented by Expression (1) indicated that FDI inflows are explained by the degree of trade openness, the size of the market, natural resources, exchange rate, inflation rate and institutional quality. Assuming the potential non-linearities, we transform Expression (1) as shown below.

$$FDI_{it} = \beta_0 + \beta_1 \text{LNOPEN}_{it} + \beta_2 \text{MSIZE}_{it} + \beta_3 \text{NRES}_{it} + \beta_4 \text{EXGR}_{it} + \beta_5 \text{INFL}_{it} + \beta_6 \text{INSTQ}_{it} + U_{it} \quad (2)$$

In Model 2, “FDI inflows as a % of GDP” are used for the measurement of dependent variable. Trade openness is captured through “trade as % of GDP” while for market size, real GDP is used. Natural resources rent as % of GDP is taken for measuring the influence of natural resources on FDI inflows. For approximating inflation, the present study used “the annual growth of the consumer price index”, while the exchange rate is measured by taking “local currency units per US \$”. Finally, for measuring institutional quality, we used the average value of six dimensions of institutional quality published by WGI. In addition, we have also considered the individual dimension of institutional quality to provide comprehensive evidence about the influence of institutional quality on FDI inflows. Table 2 includes information about variables.

Initially, we considered all members of ASEAN. However, at a later stage, we dropped the economy of Myanmar, due to its inconsistent data on several variables, including trade openness. A list of ASEAN members is provided in Table A2 (Appendix A).

Table 2. Variables and data.

Variables	Def.	“Source”
FDI _{it}	“Foreign direct investment, net inflows (% of GDP)”	“WDI”
OPEN _{it}	“Trade (% of GDP)”	“WDI”
NRES _{it}	“Total natural resources rents (% of GDP)”	“WDI”
EXGR _{it}	“Official exchange rate (LCU per US\$, period average)”	“WDI”
INFL _{it}	“Inflation, consumer prices (annual %)”	“WDI”
MSIZE _{it}	“GDP (constant 2015 US\$)”	“WDI”
INSTQ _{it}	“Six components of institutional quality (−2.5 to 2.5)”	“WGI”

4.2. Estimation Methods

To extract results from the data, we have sourced panels from credible sources, as discussed earlier. The data is constructed using a panel structure, with both cross-country and time dimensions. Over the years, researchers have suggested several relevant econometric tools for panel data. The “Fixed Effects (FE)” and “Random Effects (RE)” tools have received significant recognition from researchers due to their efficiency in handling panel data (Dewan and Hussein 2001; Tahir et al. 2019; Burki and Tahir 2022). According to Tahir and Azid (2015), the FE modeling is superior, as it can effectively address the problem of most likely serial correlation. RE modeling is effective in taking care of time-invariant factors. However, the RE modeling is ineffective in addressing the problem of serial correlation. The typical forms of FE and RE could be represented by the following expressions, (3) and (4) (Park 2011; Tahir et al. 2019).

$$z_{it} = (\alpha + u_i) + X'_{it}\beta + v_{it} \quad (3)$$

$$z_{it} = \alpha + X'_{it}\beta + (u_i + v_{it}) \quad (4)$$

The FE and RE modeling are used in numerous research studies. The choice between the FE and RE could be made by employing the Hausman test (1980). This test is specifically designed to adopt the most suitable estimator. The Hausman test procedure is presented by the following expressions, (5) and (6).

$$L.M = (\beta_{LSDV} - \beta_{RandomL})W^{-1}(\beta_{LSDV} - \beta_{RandomL}) \sim \chi^2(k) \quad (5)$$

$$\hat{W} = \text{Var}[(\beta_{LSDV} - \beta_{RandomL})] = \text{Var}(\beta_{LSDV}) - \text{Var}(\beta_{RandomL}) \quad (6)$$

To provide robust results, we have also used the “Generalized Least Square (GLS, hereafter)” for the estimation purpose. In the literature, the GLS estimator is used by researchers to address the robustness of findings (Burki and Tahir 2022; Tahir and Alam 2022; Chen and Gupta 2009). Therefore, we also used the GLS technique.

4.3. Preliminary Testing

In the first step, we have conducted the Hausman test. The results of the Hausman test are provided in Appendix A, Table A3. The results rejected the use of RE model for all specifications, as the probability values are less than five percent for all specifications. Therefore, models are estimated by employing the FE estimator. The results of the cross-sectional dependency tests provided in Table A4 (Appendix A) confirmed the cross-sectional independence, as the *p*-values exceed 10 percent for all tests considered. The cross-sectional independence test is the most important test, as it leads researchers to select the appropriate estimating tool (Tugcu 2018). Finally, the correlation matrix confirmed the absence of a strong correlation among the independent variables (Table A5). Most of the variables are moderately correlated with each other. Finally, the results of the “variance inflation factor (VIF)” reported in Table A6 (Appendix A) confirmed the absence of multicollinearity.

5. Results and Discussion

The regression findings are shown in Table 3. In column 2, results are displayed for the model where the aggregate measure of institutional quality is used. In columns 3–8, results are presented where the disaggregated measures of institutional quality are used. The results confirmed the positive and significant influence that trade has on FDI inflows ($\beta_1 = 0.686$, $S.E = 0.333$, $p < 0.005$). Our results are supported by previous research studies (Liargovas and Skandalis 2012; Bhatt 2008). However, our results do not support the findings of Rathnayaka Mudiyanse et al. (2021), who showed that trade openness is detrimental for the inflows of FDI. Therefore, the policy of aggressive trade liberalization is the way forward for ASEAN economies. Increased trade liberalization in the form of reduction in tariffs and other trade restrictions would help the ASEAN members to attract more FDI inflows.

Table 3. Main regression findings.

Variables	"M.1"	"M.2"	"M.3"	"M.4"	"M.5"	"M.6"	"M.7"
	"Coef."	"Coef."	"Coef."	"Coef."	"Coef."	"Coef."	"Coef."
$TOPEN_{it}$	0.686 ** (0.333)	0.674 ** (0.348)	0.810 ** (0.338)	0.764 ** (0.320)	0.816 ** (0.356)	0.638 ** (0.330)	0.459 (0.327)
$ZGDP_{it}$	0.615 *** (0.166)	0.920 *** (0.154)	0.680 *** (0.176)	0.724 *** (0.145)	1.054 *** (0.175)	0.854 *** (0.173)	0.673 *** (0.132)
NRS_{it}	−0.002 (0.049)	0.006 (0.051)	−0.007 (0.030)	0.002 (0.030)	−0.009 (0.030)	−0.004 (0.031)	0.004 (0.032)
EXR_{it}	−1.117 *** (0.378)	−0.827 ** (0.387)	−0.931 *** (0.293)	−0.820 *** (0.304)	−1.150 *** (0.320)	−0.755 *** (0.261)	−0.943 *** (0.220)
$INFL_{it}$	0.005 (0.013)	−0.002 (0.013)	0.003 (0.011)	−0.002 (0.012)	−0.001 (0.011)	−0.003 (0.013)	0.003 (0.010)
$INSTQ_{it}$	1.635 *** (0.383)						
CC_{it}		0.456 * (0.280)					
RQ_{it}			1.048 ** (0.411)				
PS_{it}				0.509 *** (0.129)			
VA_{it}					0.849 *** (0.250)		
GE_{it}						0.252 (0.242)	
ROL_{it}							1.016 *** (0.348)
Constant	11.696 (5.211)	−20.942 (4.861)	−15.188 (4.931)	−16.488 (4.164)	−22.859 (4.746)	−19.588 (5.013)	−13.041 (3.675)
Diagnostics Testing	"R ² Adj: 0.689"	"R ² Adj: 0.661"	"R ² Adj: 0.678"	"R ² Adj: 0.677"	"R ² Adj: 0.677"	"R ² : 0.683" "R ² Adj: 0.657"	"R ² : 0.697" "R ² Adj: 0.672"
	"S.E.R: 0.575"	"S.E.R: 0.600"	"S.E.R: 0.585"	"S.E.R: 0.589"	"S.E.R: 0.586"	"S.E.R: 0.603"	"S.E.R: 0.590"
	"F-Test": 30.174 ***	F-Test: 26.777 ***	"F-Test": 28.674 ***	"F-Test": 28.633 ***	"F-Test": 28.594 ***	"F-Test": 26.254 ***	"F-Test": 28.022 ***

Note: The dependent variable is FDI inflows. The significance of variables is shown by the asterisks (***, 1%), (**, 5%) and (*, 10%).

Market size, which is approximated by real GDP, showed a positive and significant influence in the model ($\beta_2 = 0.615$, $S.E = 0.166$, $p < 0.001$). It implies that foreign investors

mostly target economies with a larger economic size. Our results have confirmed that higher economic size has played a decisive role in attracting FDI inflows in the case of ASEAN economies. Larger economic size normally ensures greater demand potential and absorptive capacity, and hence, it acts as a signal for foreign investors. The previous literature has also shown evidence that market size impacts FDI inflows positively (Tri et al. 2019; Ullah and Khan 2017; Aziz and Mishra 2016). The ASEAN region is rich in terms of market size, as it includes some giant economies such as Indonesia, Singapore, Malaysia, and Thailand. Consequently, the higher economic size has played an expected role in attracting FDI inflows.

The impact of exchange rate on FDI inflows is in line with the perception hypothesized. The coefficient of exchange rate is negative and significant statistically ($\beta_4 = -0.117$, $S.E = 0.378$, $p < 0.001$). It implies that a 1% depreciation of local currency against the US \$ reduces FDI inflows by 1.117%, which is alarming. It appears that the depreciation of currency is an undesirable phenomenon, as it discourages FDI inflows. Our findings are consistent with Crowley and Lee (2003). However, some researchers demonstrated a positive impact of the devaluation of Chinese currency in terms of Japanese currency on FDI inflows into China. The devaluation of currency normally generates risk, and hence, potential foreign investors avoid investing in such markets. Therefore, a stable exchange rate over the years is important for attracting FDI inflows.

The results further showed that inflation rate has not had the desirable significant influence on the inflows of FDI. The coefficient of inflation rate is positive but insignificant ($\beta_5 = 0.005$, $S.E = 0.013$, $p > 0.10$). The descriptive statistics presented earlier in Tables 1 and 2 have shown that the ASEAN economies have maintained a relatively stable inflation rate over the years. Thus, this stable inflation rate has therefore not impacted FDI inflows. It is also possible that other factors may be more important than inflation in attracting FDI inflows. Moreover, natural resources also have not played a significant role in attracting FDI inflows. The coefficient of natural resource variable is negative but insignificant ($\beta_3 = -0.002$, $S.E = 0.049$, $p > 0.10$). Peres et al. (2018) commented that traditional determinants of FDI such as labor cost and the availability of natural resources are becoming less important in modern times, while the non-traditional factors are becoming more important. One of the potential reasons behind this insignificant influence of the natural resource sector on the inflow of FDI could be that the natural resource sector of ASEAN sector is not very rich. Moreover, the contribution of natural resource sector towards the GDP declined for the majority of the ASEAN region during the study period.

Finally, the results revealed that the quality of institutions matters a lot for attracting FDI inflows. The coefficient of institutional quality is positive as well as significant ($\beta_3 = 1.635$, $S.E = 0.383$, $p < 0.001$). Our results are well supported by previous research literature (Ullah and Khan 2017; Masron and Abdullah 2010; Buchanan et al. 2012; Peres et al. 2018). The ASEAN economies have performed better in improving their institutional quality over the years, as evident from the descriptive statistics reported in Tables 1 and 2. Consequently, improved institutional quality has therefore helped them in encouraging FDI inflows. As a policy suggestion, the ASEAN members are encouraged to pay more attention to improving their institutional quality further to attract more FDI inflows.

The disaggregated analysis shows that the components of institutional quality also matter for attracting FDI inflows. Control of corruption (Model 2), regulatory quality (Model 3), political stability and absence of violence (Model 4), voice and accountability (Model 5) and rule of law (Model 7), were all correlated to estimated models positively and significantly. Only government effectiveness is insignificant, although it also carries a positive coefficient ($\beta_3 = 0.252$, $S.E = 0.242$, $p > 0.10$). In general, the results confirmed the positive effects of institutional quality on FDI.

The estimated models possess strong explanatory power, which is desirable. The “adjusted R-Squared” value is ranging from 0.657 to 0.689 for different models, which is the confirmation of excellent explanatory power. Finally, the F-test has proved the overall fitness of the estimated models.

Robustness Analysis

In this section, we attempted to address the robustness problem of the main results presented and discussed in the last section. The GLS estimator is adopted for the purpose of estimation. The results are shown in the following Table 4. The findings obtained using the GLS method also proved that trade openness, market size, and institutional quality are the main determinants of FDI inflows into ASEAN economies. The disaggregated analysis shows that four out of six aspects of institutional quality are positively and significantly linked with FDI inflows. These results are consistent with the prior results. Similarly, like the earlier results, the depreciation of exchange rate is harmful for the inflows of FDI. Again, we found evidence that both inflation rate and natural resource sectors are unable to explain the inflows of FDI into ASEAN economies, as both are insignificant statistically.

Table 4. Results of robustness analysis.

Variables	"M.8"	"M.9"	"M.10"	"M.11"	"M.12"	"M.13"	"M.14"
	"Coef."	"Coef."	"Coef."	"Coef."	"Coef."	"Coef."	"Coef."
$TOPEN_{it}$	2.270 *** (0.782)	2.158 *** (0.766)	2.360 *** (0.786)	2.368 *** (0.716)	2.247 *** (0.796)	2.070 *** (0.767)	1.992 *** (0.763)
$ZGDP_{it}$	2.307 *** (0.467)	2.932 *** (0.468)	2.125 *** (0.526)	2.398 *** (0.411)	3.037 *** (0.447)	2.942 *** (0.470)	2.625 *** (0.430)
NRS_{it}	0.023 (0.261)	−0.043 (0.272)	−0.068 (0.269)	0.043 (0.254)	0.052 (0.266)	0.030 (0.276)	0.058 (0.259)
EXR_{it}	−3.145 *** (0.797)	−2.445 *** (0.773)	−3.125 *** (0.808)	−2.672 *** (0.687)	−2.767 *** (0.709)	−2.257 *** (0.788)	−2.749 *** (0.768)
$INFL_{it}$	0.052 (0.047)	0.013 (0.051)	0.050 (0.047)	0.045 (0.048)	0.031 (0.047)	0.022 (0.050)	0.038 (0.048)
$INSTQ_{it}$	2.387 *** (0.873)						
CC_{it}		0.228 (0.779)					
RQ_{it}			2.085 *** (0.794)				
PS_{it}				1.088 *** (0.248)			
VA_{it}					1.543 *** (0.573)		
GE_{it}						0.133 (0.627)	
ROL_{it}							1.646 ** (0.804)
Constant	−47.441 (14.027)	−66.436 (13.023)	−43.779 (15.362)	−52.824 (12.033)	−66.947 (12.832)	−67.311 (13.379)	−56.288 (13.302)
Diagnostics Testing	"R ² Adj: 0.765"	"R ² Adj: 0.760"	"R ² Adj: 0.760"	"R ² Adj: 0.767"	"R ² Adj: 0.761"	"R ² Adj: 0.758"	"R ² Adj: 0.765"
	"S.E.R: 2.401"	"S.E.R: 2.418"	"S.E.R: 2.397"	"S.E.R: 2.402"	"S.E.R: 2.401"	"S.E.R: 2.435"	"S.E.R: 2.406"
	"F-Test": 44.745 ***	"F-Test": 43.572 ***	"F-Test": 43.613 ***	"F-Test": 45.442 ***	"F-Test": 43.955 ***	"F-Test": 43.122 ***	"F-Test": 44.807 ***

Note: The dependent variable is FDI inflows. The significance of variables is shown by the asterisks (***, 1%) and (**, 5%).

6. Causality Findings

To figure out the direction of relationship among the variables, we have carried out the pairwise Granger causality testing proposed by Dumitrescu and Hurlin (2012). The

proposed test is utilized in recent research studies owing to its benefits (Tahir et al. 2024; Burki and Tahir 2022). The proposed test “allows us to take into account both dimensions of the heterogeneity present in this context: the heterogeneity of the causal relationships and the heterogeneity of the regression model used so as to test for Granger causality” (Dumitrescu and Hurlin 2012). The results are shown in Table 5. Based on the findings, we found several one-way causal relationships between the variables. Similarly, some two-way causal relationships are also observed. We found evidence that FDI inflows, in terms of Granger causality, are linked with natural resources and inflation rate, while trade openness is unilaterally linked with FDI inflows. Real GDP is connected unilaterally with trade openness, FDI, natural resources and institutional quality. Furthermore, the exchange rate, in terms of Granger causality, is linked with natural resources, institutional quality, and inflation rate.

In terms of two-way causal relationships, the results show that trade openness is bidirectionally related with natural resources, exchange rate, institutional quality, and inflation rate in the case of ASEAN economies. Finally, the results show that inflation rate and exchange rate are also connected bidirectionally.

Table 5. The causality results.

“Null Hypothesis”	Zbar-Stat.	Prob.
$OPEN_{it} \rightarrow FDI_{it}$	3.36286 ***	0.0008
$FDI_{it} \rightarrow OPEN_{it}$	−0.58726	0.5570
$MSIZE_{it} \rightarrow FDI_{it}$	2.34867 **	0.0188
$FDI_{it} \rightarrow MSIZE_{it}$	−0.57549	0.5650
$NRES_{it} \rightarrow FDI_{it}$	−0.68644	0.4924
$FDI_{it} \rightarrow NRES_{it}$	1.65247 *	0.0984
$EXGR_{it} \rightarrow FDI_{it}$	−0.18637	0.8522
$FDI_{it} \rightarrow EXGR_{it}$	1.51424	0.1300
$INSTQ_{it} \rightarrow FDI_{it}$	1.93425 *	0.0531
$FDI_{it} \rightarrow IINSTQ_{it}$	0.38079	0.7034
$INFL_{it} \rightarrow FDI_{it}$	1.36249	0.1730
$FDI_{it} \rightarrow INFL_{it}$	1.69409 *	0.0902
$MSIZE_{it} \rightarrow OPEN_{it}$	4.54734 ***	0.000005
$OPEN_{it} \rightarrow MSIZE_{it}$	0.94674	0.3438
$NRES_{it} \rightarrow OPEN_{it}$	2.07533 **	0.0380
$OPEN_{it} \rightarrow NRES_{it}$	3.00073 ***	0.0027
$EXGR_{it} \rightarrow OPEN_{it}$	2.61978 ***	0.0088
$OPEN_{it} \rightarrow EXGR_{it}$	4.27044 ***	0.000002
$INSTQ_{it} \rightarrow OPEN_{it}$	3.79054 ***	0.0002
$OPEN_{it} \rightarrow INSTQ_{it}$	4.44255 ***	0.000009
$INFL_{it} \rightarrow OPEN_{it}$	4.44083 ***	0.000009
$OPEN_{it} \rightarrow INFL_{it}$	4.40651 ***	0.00001
$NRES_{it} \rightarrow MSIZE_{it}$	−1.32181	0.1862
$MSIZE_{it} \rightarrow NRES_{it}$	5.49737 ***	0.000004
$EXGR_{it} \rightarrow MSIZE_{it}$	−0.45708	0.6476
$MSIZE_{it} \rightarrow EXGR_{it}$	0.27991	0.7795
$INSTQ_{it} \rightarrow MSIZE_{it}$	0.42960	0.6675

Table 5. Cont.

“Null Hypothesis”	Zbar-Stat.	Prob.
$MSIZE_{it} \rightarrow INSTQ_{it}$	2.34799 **	0.0189
$INFL_{it} \rightarrow MSIZE_{it}$	−0.91924	0.3580
$MSIZE_{it} \rightarrow INFL_{it}$	1.17283	0.2409
$EXGR_{it} \rightarrow NRES_{it}$	4.26044 ***	0.000002
$NRES_{it} \rightarrow EXGR_{it}$	1.38361	0.1665
$INSTQ_{it} \rightarrow NRES_{it}$	1.39161	0.1640
$NRES_{it} \rightarrow INSTQ_{it}$	0.68178	0.4954
$INFL_{it} \rightarrow NRES_{it}$	1.58134	0.1138
$NRES_{it} \rightarrow INFL_{it}$	0.53148	0.5951
$INSTQ_{it} \rightarrow EXGR_{it}$	1.29463	0.1954
$EXGR_{it} \rightarrow INSTQ_{it}$	1.47541	0.1401
$INFL_{it} \rightarrow EXGR_{it}$	3.58204 ***	0.0003
$EXGR_{it} \rightarrow INFL_{it}$	1.72076 *	0.0853
$INFL_{it} \rightarrow INSTQ_{it}$	−0.04814	0.9616
$INSTQ_{it} \rightarrow INFL_{it}$	5.72638 ***	0.0002

Note: The asterisk (***), (**), (*) shows significance level at 1, 5, and 10 percent levels.

7. Conclusions and Implications

This article aimed to provide detailed fresh evidence about the causal relationship between openness to trade and FDI inflows, which has received less attention in the empirical literature. For this purpose, the study focused on the emerging ASEAN economies and utilized data for the period 2002–2022.

The major finding of the study is that trade openness matters significantly, while attracting FDI inflows. The results show that trade openness has played a significant role in attracting FDI inflows to the ASEAN economies. This means that the liberalized policies of ASEAN have not only helped them in achieving higher growth rates but have also helped them in achieving higher FDI inflows. Market size has also enormously contributed to the FDI inflows in ASEAN economies. Besides market size and trade openness, we found that institutional quality has also positively contributed to FDI inflows. The disaggregated analysis shows that “rule of law, regulatory quality, control of corruption, political stability and absence of violence and voice and accountability” have also positively and significantly impacted FDI inflows. Moreover, the exchange rate has negatively impacted FDI inflows. Finally, inflation rate and natural resource sector are irrelevant in explaining FDI inflows in ASEAN economies.

7.1. Implications of Findings

In this segment of the paper, we suggest several key points for consideration to formulate appropriate policies. These points are outlined as provided below.

- (1) The ASEAN region is suggested to focus on the policy of an aggressive trade liberalization process to attract more FDI inflows. This includes the reduction in both taxes and non-tax barriers on trade. Increased FDI inflows with the channel of trade openness process will accelerate the growth process of ASEAN economies enormously.
- (2) Institutional factors appeared to be important for the attraction of FDI inflows. Therefore, to attract more FDI inflows, the ASEAN economies need to pay significant attention to further improving the quality of institutions.
- (3) Monitoring the exchange rate is important, as devaluation appeared to be harmful for FDI inflows. Depreciation has so many adverse consequences for the domestic economy, including increased debt burden, rising prices and less FDI inflows. Therefore,

the depreciation of currency needs to be monitored strictly to minimize its adverse consequences.

7.2. Limitations of Research and Future Research Avenues

In this segment we document the unavoidable limitations of the current study.

- (1) The study is restricted to only a few determinants of FDI inflows due to the short cross-sectional dimension of the panel. The purpose of not including other determinants was to avoid the problem associated with the degree of freedom and provide consistent and robust results.
- (2) Our analysis is based on the FE and GLS estimators. Advanced panel techniques such as GMM, 2SLS and panel cointegration tools are not considered. Future studies could consider the mentioned advanced tools and provide more in-depth analysis.
- (3) The results of the study could be generalized on a limited basis, and the ASEAN economies have specific characteristics. Future studies should focus on comparing different regions by estimating the models in the current study. This will provide more consistent and robust evidence about the determinants of FDI inflows.

Author Contributions: Conceptualization, A.A.A.; methodology, M.T.; software, A.A.A.; validation, A.A.A.; formal analysis, M.T.; investigation, A.A.A.; resources, A.A.A.; data curation, M.T.; writing—original draft preparation, M.T.; writing—review and editing, A.A.A.; visualization, A.A.A.; supervision, A.A.A.; project administration, M.T.; funding acquisition, A.A.A. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data will be provided upon receiving suitable request.

Acknowledgments: The Researchers would like to thank the Deanship of Graduate Studies and Scientific Research at Qassim University for financial support (QU-APC-2024-9/1).

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Country-wise statistics.

Country	Variables	2002	2022	Change
Brunei	FDI	3.930	2.981	−0.949
	OPEN	108.748	146.974	38.226
	NR	25.609	19.627	−5.982
	EXR	1.790	1.378	−22.988%
	INF	−2.314	3.682	5.996
	GDP	1.21×10^{10}	1.3×10^{10}	7.3382%
Cambodia	INSTQ	0.498	0.839	68.486%
	FDI	3.056	12.129	9.073
	OPEN	119.692	123.187	3.495
	NR	2.595	0.829	−1.766
	EXR	3912.083	4102.038	4.855%
	INF	0.211	5.343	5.132
	GDP	6.82×10^9	2.5×10^{10}	266.220%
	INSTQ	−0.769	−0.752	2.263%

Table A1. Cont.

Country	Variables	2002	2022	Change
Indonesia	FDI	0.074	1.624	1.550
	OPEN	59.079	45.393	−13.686
	NR	7.285	3.610	−3.675
	EXR	9311.192	14,849.85	59.483%
	INF	11.900	4.209	−7.691
	GDP	4.28×10^{11}	1.12×10^{12}	162.323%
	INSTQ	−0.865	−0.046	94.633%
Malaysia	FDI	3.166	3.617	0.451
	OPEN	199.356	146.663	−52.693
	NR	9.815	5.886	−3.929
	EXR	3.8	4.401	15.817%
	INF	1.807	3.378	1.571
	GDP	1.57×10^{11}	3.87×10^{11}	146.301%
	INSTQ	0.354	0.431	21.504%
Philippines	FDI	2.098	2.275	0.177
	OPEN	83.844	72.416	−11.428
	NR	0.559	1.174	0.615
	EXR	51.603	54.477	5.569%
	INF	2.722	5.821	3.099
	GDP	1.53×10^{11}	4.08×10^{11}	167.129%
	INSTQ	−0.325	−0.283	13.001%
Singapore	FDI	6.653	30.173	23.520
	OPEN	349.746	336.862	−12.884
	NR	0.0004	0.0001	−0.0003
	EXR	1.790	1.378	−23.004%
	INF	−0.391	6.121	6.512
	GDP	1.44×10^{11}	3.810×10^{11}	162.805%
	INSTQ	1.439	1.607	11.687%
Thailand	FDI	2.488	2.058	−0.430
	OPEN	114.969	133.876	18.907
	NR	1.744	1.479	−0.265
	EXR	42.960	35.061	−18.386%
	INF	0.697	6.077	5.380
	GDP	2.43×10^{11}	4.5×10^{11}	85.114%
	INSTQ	0.212	−0.182	−186.001%

Table A1. *Cont.*

Country	Variables	2002	2022	Change
Vietnam	FDI	3.992	4.378	0.386
	OPEN	116.696	185.73	69.034
	NR	7.425	2.286	−5.139
	EXR	15,279.5	23,271.21	52.303%
	INF	3.830	3.156	−0.674
	GDP	1.06×10^{11}	3.59×10^{11}	239.899%
	INSTQ	−0.589	−0.336	42.944%
Laos PDR	FDI	0.253	3.414	3.161
	OPEN	67.254	82.477	15.223
	NR	4.810	3.768	−1.042
	EXR	10,056.33	14,035.23	39.566%
	INF	10.631	22.956	12.325
	GDP	5.58×10^9	1.96×10^{10}	250.729%
	INSTQ	−0.972	−0.701	27.870%

Note: Authors' own calculation using WDI and WGI data.

Table A2. List of countries.

Brunei Darussalam	Malaysia	Philippines
Cambodia	Laos PDR	Thailand
Indonesia	Singapore	Vietnam

Table A3. Hausman test results.

Models	Chi-Sq	Decision
"Model-1"	62.499 ***	"The FE is preferred"
"Model-2"	56.218 ***	"The FE is preferred"
"Model-3"	51.617 ***	"The FE is preferred"
"Model-4"	43.001 ***	"The FE is preferred"
"Model-5"	50.216 ***	"The FE is preferred"
"Model-6"	54.183 ***	"The FE is preferred"
"Model-7"	78.831 ***	"The FE is preferred"

Note: (***) represent 1 % significance level.

Table A4. CD testing.

Test	Value	d.f.	<i>p</i>
"Breusch-Pagan LM"	42.32888	36	0.2166
"Pesaran scaled LM"	0.745865		0.4557
"Bias-corrected scaled LM"	0.520865		0.6025
"Pesaran CD"	0.527156		0.5981

Table A5. Correlation analysis.

	FDI _{it}	OPEN _{it}	MSIZE _{it}	NRES _{it}	EXGR _{it}	INSTQ _{it}	INFL _{it}
FDI _{it}	1	0.774	−0.130	−0.329	−0.147	0.529	−0.113
OPEN _{it}	0.774	1	−0.131	−0.246	−0.246	0.758	−0.192
MSIZE _{it}	−0.130	−0.131	1	−0.328	0.198	0.082	0.023
NRES _{it}	−0.329	−0.246	−0.328	1	−0.064	0.105	−0.072
EXGR _{it}	−0.147	−0.246	0.198	−0.064	1	−0.464	0.421
INSTQ _{it}	0.529	0.758	0.082	0.105	−0.464	1	−0.422
INFL _{it}	−0.113	−0.192	0.0231	−0.072	0.421	−0.422	1

Table A6. “Multicollinearity Testing (VIF)”.

“Variables”	“Coefficient”	“Centered”
	“Variance”	“VIF”
OPEN _{it}	0.111399	1.062062
MSIZE _{it}	0.027707	1.479360
NRES _{it}	0.002436	1.223110
EXGR _{it}	0.142912	1.226806
INFL _{it}	0.000175	1.145815
INSTQ _{it}	0.147069	1.549798
C	27.16155	NA

References

- Agudze, Komla, and Oyakhilome Ibhagui. 2021. Inflation and FDI in industrialized and developing economies. *International Review of Applied Economics* 35: 749–64. [\[CrossRef\]](#)
- Anyanwu, John Chukwudi. 2011. *Determinants of Foreign Direct Investment Inflows to Africa, 1980–2007*. Abidjan: African Development Bank Group, pp. 1–32.
- Asiedu, Elizabeth. 2002. On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development* 30: 107–19. [\[CrossRef\]](#)
- Ayomitunde, Aderemi Timothy, Adeniran Busari Ganiyu, Gbenro Matthew Sokunbi, and Bako Yusuf Adebola. 2020. The determinants of foreign direct investment inflows in Nigeria: An empirical investigation. *Acta Universitatis Danubius. Œconomica* 16: 131–42.
- Aziz, Omar G., and Anil V. Mishra. 2016. Determinants of FDI inflows to Arab economies. *The Journal of International Trade & Economic Development* 25: 325–56.
- Bergougui, Brahim, and Syed Mansoor Murshed. 2023. Spillover effects of FDI inflows on output growth: An analysis of aggregate and disaggregated FDI inflows of 13 MENA economies. *Australian Economic Papers* 62: 668–92. [\[CrossRef\]](#)
- Bhatt, Padmanabha Ramachandra. 2008. Determinants of foreign direct investment in ASEAN. *Foreign Trade Review* 43: 21–51. [\[CrossRef\]](#)
- Buchanan, Bonnie G., Quan V. Le, and Meenakshi Rishi. 2012. Foreign direct investment and institutional quality: Some empirical evidence. *International Review of Financial Analysis* 21: 81–89. [\[CrossRef\]](#)
- Burki, Umar, and Muhammad Tahir. 2022. Determinants of environmental degradation: Evidenced-based insights from ASEAN economies. *Journal of Environmental Management* 306: 114506. [\[CrossRef\]](#) [\[PubMed\]](#)
- Busse, Matthias, and Carsten Hefeker. 2007. Political risk, institutions and foreign direct investment. *European Journal of Political Economy* 23: 397–415. [\[CrossRef\]](#)
- Chen, Pei-pei, and Rangan Gupta. 2009. An investigation of openness and economic growth using panel estimation. *Indian Journal of Economics* 89: 483.
- Crowley, Patrick, and Jim Lee. 2003. Exchange rate volatility and foreign investment: International evidence. *The International Trade Journal* 17: 227–52. [\[CrossRef\]](#)
- Dang, Van Cuong, and Quang Khai Nguyen. 2021. Determinants of FDI attractiveness: Evidence from ASEAN-7 countries. *Cogent Social Sciences* 7: 2004676. [\[CrossRef\]](#)
- Dewan, Edwin, and Shajehan Hussein. 2001. *Determinants of Economic Growth (Panel Data Approach)*. Suva Fiji: Economics Department, Reserve Bank of Fiji.

- Dewi, Ferra Destiana, and Septriani Septriani. 2023. Analysis of factors affecting foreign direct investment in ASEAN countries. *ISAR Journal of Economics and Business Management* 1: 36–40.
- Donghui, Zhang, Ghulam Yasin, Shah Zaman, and Muhammad Imran. 2018. Trade openness and FDI inflows: A comparative study of Asian countries. *European Online Journal of Natural and Social Sciences* 7: 386.
- Dua, Pami, and Reetika Garg. 2015. Macroeconomic determinants of foreign direct investment: Evidence from India. *The Journal of Developing Areas* 49: 133–55. [CrossRef]
- Dumitrescu, Elena-Ivona, and Christophe Hurlin. 2012. Testing for Granger non-causality in heterogeneous panels. *Economic Modelling* 29: 1450–60. [CrossRef]
- Erdogan, Mahmut, and Mustafa Unver. 2015. Determinants of foreign direct investments: Dynamic panel data evidence. *International Journal of Economics and Finance* 7: 82. [CrossRef]
- fDi Markets. 2023. Available online: <https://fdimarkets.com> (accessed on 5 June 2024).
- Furceri, Davide, and Sara Borelli. 2008. Foreign direct investments and exchange rate volatility in the EMU neighborhood countries. *Journal of International and Global Economic Studies* 1: 42–59.
- Güriş, Selahattin, and Kutay Gözgor. 2015. Trade openness and FDI inflows in Turkey. *Applied Econometrics and International Development* 15: 53–62.
- Ho, Catherine S., and Ahmad Husni Mohd Rashid. 2011. Macroeconomic and country specific determinants of FDI. *The Business Review* 18: 219–26.
- Imran, Muhammad, and Abdul Rashid. 2023. The empirical determinants of foreign direct investment episodes. *Global Journal of Emerging Market Economies* 15: 409–35. [CrossRef]
- Ishikawa, Koichi. 2021. The ASEAN Economic Community and ASEAN economic integration. *Journal of Contemporary East Asia Studies* 10: 24–41. [CrossRef]
- Kimino, Satomi, David S. Saal, and Nigel Driffield. 2007. Macro determinants of FDI inflows to Japan: An analysis of source country characteristics. *World Economy* 30: 446–69. [CrossRef]
- Le, Ai Ngoc Nhan, Ha Pham, Dung Thi Ngoc Pham, and Khoa Dang Duong. 2023. Political stability and foreign direct investment inflows in 25 Asia-Pacific countries: The moderating role of trade openness. *Humanities and Social Sciences Communications* 10: 1–9. [CrossRef]
- Liargovas, Panagiotis G., and Konstantinos S. Skandalis. 2012. Foreign direct investment and trade openness: The case of developing economies. *Social Indicators Research* 106: 323–31. [CrossRef]
- Masron, Tajul Ariffin, and Hussin Abdullah. 2010. Institutional quality as a determinant for FDI inflows: Evidence from ASEAN. *World Journal of Management* 2: 115–28.
- Mengistu, Alemu Aye, and Bishnu Kumar Adhikary. 2011. Does good governance matter for FDI inflows? Evidence from Asian economies. *Asia Pacific Business Review* 17: 281–99. [CrossRef]
- Moraghen, Warren, Boopen Seetanah, and Noor Ul Haq Sookia. 2023. The impact of exchange rate and exchange rate volatility on Mauritius foreign direct investment: A sector-wise analysis. *International Journal of Finance & Economics* 28: 208–24.
- Mottaleb, Khondoker Abdul, and Kaliappa Kalirajan. 2010. Determinants of foreign direct investment in developing countries: A comparative analysis. *Margin: The Journal of Applied Economic Research* 4: 369–404. [CrossRef]
- Muhammad, Saidu D., Nnanna P. Azu, and Ngozi F. Oko. 2018. Influence of real exchange rate and volatility on FDI inflow in Nigeria. *International Business Research* 11: 73–82. [CrossRef]
- Nyarko, Philip Asiamah, Edward Nketiah-Amponsah, and Charles Barnor. 2011. Effects of exchange rate regimes on FDI inflows in Ghana. *International Journal of Economics and Finance* 3: 277–86. [CrossRef]
- OECD. 2022. *FDI in Figures*. Paris: Organisation for European Economic Cooperation.
- Park, Hun Myoung. 2011. *Practical Guides to Panel Data Modeling: A Step by Step Analysis Using Stata*. Niigata: Public Management and Policy Analysis Program, Graduate School of International Relations, International University of Japan, pp. 1–52.
- Peres, Mihaela, Waqar Ameer, and Helian Xu. 2018. The impact of institutional quality on foreign direct investment inflows: Evidence for developed and developing countries. *Economic Research-Ekonomska Istraživanja* 31: 626–44. [CrossRef]
- Petrović-Randelović, Marija, Vesna Janković-Milić, and Ivana Kostadinović. 2017. *Market Size as a Determinant of the Foreign Direct Investment Inflows in the Western Balkans Countries*. Facta Universitatis, Series: Economics and Organization. Niš: University of Niš, pp. 93–104.
- Rathnayaka Mudiyansele, Malsha Mayoshi, Gheorghe Epuran, and Bianca Tescaşiu. 2021. Causal links between trade openness and foreign direct investment in Romania. *Journal of Risk and Financial Management* 14: 90. [CrossRef]
- Sabir, Samina, Anum Rafique, and Kamran Abbas. 2019. Institutions and FDI: Evidence from developed and developing countries. *Financial Innovation* 5: 1–20. [CrossRef]
- Sarker, Bibhuti, and John Serieux. 2023. Multilevel determinants of FDI: A regional comparative analysis. *Economic Systems* 47: 101095. [CrossRef]
- Sasana, Hadi, and Salman Fathoni. 2019. Determinant of foreign direct investment inflows in ASEAN Countries. *Jejak* 12: 253–66. [CrossRef]
- Sharma, Somesh, Manmohan Bansal, and Ashish Kumar Saxena. 2022. A Study of FDI Inflow to ASEAN Economies (2022–2030). Paper presented at 2022 International Conference on Data Analytics for Business and Industry (ICDABI), Virtual Conference, October 25–26; Piscataway: IEEE, pp. 320–25.

- Tahir, Muhammad, Abdulrahman A. Albahouth, Mohammed Jaboob, and Umar Burki. 2024. The Consumption of Natural Resources and its Effects on Environmental Quality: Evidence from the OECD Countries. *Sustainable Futures* 8: 100248. [\[CrossRef\]](#)
- Tahir, Muhammad, and Md Badrul Alam. 2022. Does well banking performance attract FDI? Empirical evidence from the SAARC economies. *International Journal of Emerging Markets* 17: 413–32. [\[CrossRef\]](#)
- Tahir, Muhammad, and Toseef Azid. 2015. The relationship between international trade openness and economic growth in the developing economies: Some new dimensions. *Journal of Chinese Economic and Foreign Trade Studies* 8: 123–39. [\[CrossRef\]](#)
- Tahir, Muhammad, Munshi Naser Ibne Afzal, Muhammad Asim Afridi, Imran Naseem, and Bilal Bin Saeed. 2019. Terrorism and its determinants in the sub-Saharan Africa region: Some new insights. *African Development Review* 31: 393–406. [\[CrossRef\]](#)
- Tri, Ho Thanh, Vo Thi Nga, and Vu Hoang Duong. 2019. The determinants of foreign direct investment in ASEAN: New evidence from financial integration factor. *Business and Economic Horizons* 15: 292–303.
- Tugcu, Can T. 2018. Panel data analysis in the energy-growth nexus (EGN). In *The Economics and Econometrics of the Energy-Growth Nexus*. Cambridge, MA: Academic Press, pp. 255–71.
- Ullah, Irfan, and Muhammad Arshad Khan. 2017. Institutional quality and foreign direct investment inflows: Evidence from Asian countries. *Journal of Economic Studies* 44: 1030–50. [\[CrossRef\]](#)
- UN.ESCAP. 2023. *Foreign Direct Investment Trends and Outlook in Asia and the Pacific 2023/2024*. Bangkok: United Nations Economic and Social Commission for Asia and the Pacific.
- Vijayakumar, Narayanamurthy, Perumal Sridharan, and Kode Chandra Sekhara Rao. 2010. Determinants of FDI in BRICS Countries: A panel analysis. *International Journal of Business Science & Applied Management (IJBSAM)* 5: 1–13.
- Wang, Xinxin, Zeshui Xu, Yong Qin, and Marinko Skare. 2022. Foreign direct investment and economic growth: A dynamic study of measurement approaches and results. *Economic Research-Ekonomska Istraživanja* 35: 1011–34. [\[CrossRef\]](#)

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.