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THE RELATIONSHIP BETWEEN TRADE OPENNESS, FOREIGN DIRECT INVESTMENT, GOVERNMENT EXPENDITURE, AND ECONOMIC GROWTH IN ASEAN COUNTRIES

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ABSTRACT

The paper attempts to examine the nexus between trade openness, foreign direct investment, government expenditure, and economic growth in nine selected ASEAN countries between 1994 and 2023. A panel dataset for the causality between trade openness, FDI, government expenditure, and economic growth of nine ASEAN countries, namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam between 1994 and 2023 was gathered from the World Development Indicators. Further, the panel regression model was employed to estimate the nexus between these variables in each country both in the short and long run. Results also revealed that the rise in government expenditure may decelerate economic growth in the short run, while trade openness supports the growth of countries in the region in the long run. In terms of the model for each country, the effect of trade openness, foreign direct investment, and government expenditure on economic growth was controversial in specific countries. Findings stated that trade openness may facilitate the growth in Cambodia, the Philippines, and Singapore, and foreign direct investment promotes economic growth in only Thailand, suggesting important differences in structural characteristics and policy transmission mechanisms. However, the rise of government expenditure may discourage the growth of Cambodia, Malaysia, the Philippines, Singapore, and Thailand. The article contributes to propose policies to facilitate economic growth and achieve sustainable development for the region.

Keywords: *economic growth, foreign direct investment, government expenditure, trade openness*

1. INTRODUCTION

While often viewed as a single bloc, the Association of the Southeast Asian Nations (ASEAN) is characterized by significant economic and structural heterogeneity. Its member states range from high-income city-states like Singapore to emerging economies such as Cambodia and Lao PDR. This diversity in development stages, institutional quality, and economic structure presents a complex landscape for analyzing regional growth dynamics. Therefore, assuming uniform effects of key economic drivers across the region can be misleading. This study acknowledges this heterogeneity and seeks to provide a more nuanced analysis. Homogeneous

characteristics and economic conditions of ASEAN include political stability and economic stability, high institutional quality, an abundance of natural resources, and a strong commitment to trade liberalization and regional integration (Albahouth and Tahir, 2024). The key objective of ASEAN is to facilitate cultural development, socioeconomic development, and economic growth in the region. However, economic growth of the ASEAN Member States (AMS) presents distinct levels depending on whether a country is emerging or developing (Aung, 2023).

To respond to adverse effects of the Covid-19 pandemic, AMS have conducted various fiscal stimulus packages, monetary policy, and interventions. For instance, a fiscal packages with US$318.2 billion (10.1 percent of ASEAN GDP in 2019), with a substantial proportion allocated to strengthening the capacity of the health sector and as subsidies to households. Monetary policy was first employed to ensure adequate liquidity and boost confidence in the economy when initial concerns on broken supply chains and travel cancellations emerged (ASEAN, 2020).

Table 1. Growth rate of the regions in the world (%)

Regions	2022	2023	2024	2025(f)
Developing Asia	4.3	5.0	4.9	4.9
Developing Asia excluding PRC	5.5	4.8	5.0	5.3
Caucasus and Central Asia	5.2	5.3	4.3	5.0
East Asia	2.9	4.7	4.5	4.2
South Asia	6.6	6.4	6.3	6.6
Southeast Asia	5.7	4.1	4.6	4.7
The Pacific	7.9	3.5	3.3	4.0

Notes: PRC denotes People's Republic of China; and f means forecast

Source: ADB, 2024

According to calculation of ADB (2024), the growth rate of Southeast Asia dropped by 1.1 percent from 5.7 percent in 2022 to 4.6 percent in 2024. By 2024, the growth of Southeast Asia was lower than that of South Asia, Developing Asia excluding PRC, and Developing Asia, while it was higher than that of the rest of areas. By 2025, the growth rate of Southeast Asia is forecasted to reach 4.7 percent, which is higher than that in East Asia and the Pacific, but it is lower than the growth rate of the rest areas (Table 1).

Macroeconomic stability, inflation control, and economic growth are the essential objectives in terms of implementing fiscal, monetary, and other macro policies of the ASEAN countries in this period. Economic growth of AMS depends not only on internal factors, but also on external determinants, including trade openness, foreign direct investment (FDI), and government expenditure (Muyambiri, 2025). Trade and FDI play essential roles in social and economic development (Lemaallem and Saadi, 2025). Trade encourages capital accumulation, human resources, and technology transferability and consequently, it boosts economic productivity (Frankel and Romer, 1999). FDI not only promotes capital supply, but it also enhances technology transfer, and technology transferability spillovers to develop human capital, constructs a competitive business environment, and facilitates economic growth (Anwar and Nguyen, 2010; and Hobb et al., 2021).

Not only exports and imports of goods and services, but also overall global value chains (GVCs) were interrupted by the Covid-19 pandemic. During the pandemic, disruptions to Global Value Chains (GVCs) affected the forward and backward participation of economies in international trade. These shifts in value-added trade ultimately impacted key macroeconomic variables across the ASEAN region. (ERIA, 2023).

ASEAN has become the leading destination for FDI. For three consecutive years (2020 – 2022),

ASEAN has maintained at the top position of FDI recipients among developing regions. Although FDI inflows decrease in the global level, FDI inflows to ASEAN reached US$230 billion in 2023 (ASEAN, 2024). According to the report of the United Nations Economic and Social Commission for Asia and the Pacific (2023), ASEAN has obtained a remarkable achievement in attracting a massive share of intraregional FDI flows. Among the AMS, FDI inflows to Indonesia, Viet Nam, and Malaysia accounted for US$25, 14.4, and 13.7 billion, respectively (Albahouth and Tahir, 2024).

The relationship between government expenditure and economic growth has been strongly debated in the economic literature since this theme is significant for both developed and developing countries that are facing new obstacles to meet their fiscal requirements. ASEAN countries have own economic characteristics and trade activities, and therefore it is necessary to consider the effect of taxation and government spending on the growth of the region (Nguyen, 2022). Government spending has been known as the vital driver for the growth of a significant fiscal instrument to support expansion of societies in transportation systems, schools and hospitals, social security, especially in the emerging markets like Southeast Asia (Nordin et al., 2024).

This study focuses on three critical determinants of economic growth: trade openness, foreign direct investment (FDI), and government expenditure. The selection of these variables is motivated by their central role in the development strategies of ASEAN nations and the ongoing debate in the economic literature regarding their impact, where findings are often contradictory. For instance, while trade and FDI are widely seen as engines of growth through technology spillovers and capital accumulation, their effectiveness is often contingent on host-country characteristics such as human capital and institutional quality, which vary widely across ASEAN. Similarly, government expenditure can either stimulate growth by providing public goods or hinder it through inefficiencies and crowding out private investment (Drakul, 2025). By examining these factors within a heterogeneous panel framework, this paper aims to clarify these complex relationships in the specific context of ASEAN. Tri et al. (2019) found that FDI had a negative relationship with trade openness in ASEAN-3 (Cambodia, Lao PDR, and Viet Nam), while Astot and Sentosa (2021) and Aung (2023) argued that trade openness and FDI had significant and positive influences on the growth of ASEAN countries. A study by Le and Tran (2024) concluded that gross domestic product (GDP) per capita, trade openness, and FDI significantly influence tax revenues in Cambodia, Lao PDR, Myanmar, and Viet Nam. Nguyen et al. (2024) demonstrated that the Covid-19 has a negative effect on trade flow in the ASEAN region. Nordin et al. (2024) claimed that government spending accelerates the growth of ASEAN countries in the long-term. However, none of these evaluates the relationship between trade openness, FDI, government expenditure, and economic growth of nine ASEAN countries, namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam between 1994 and 2023 using the panel regression model. More importantly, policies were recommended to promote economic growth and achieve sustainable development for the region.

The structure of this study is organized as follows. Section 2 presents the literature review. Methods are discussed in section 3. In section 4, we present results and discussion. Finally, the conclusion and policy implications are summarized in section 5.

2. REVIEW OF LITERATURE

2. 1. THEORETICAL BACKGROUND

The relationship between trade openness, FDI, government expenditure, and economic growth has been a central concern in development economics for decades. The neoclassical growth model, initially developed by Solow (1956), offered the first rigorous framework for under-

standing economic growth, though with limited implications for our variables of interest. In this model, long-run growth is exogenously determined, with capital accumulation (potentially enhanced by FDI) affecting only transitional dynamics but not steady-state growth rates.

This limitation catalyzed the emergence of endogenous growth theory, beginning with the seminal contributions of Romer (1990) and Lucas (1988). These models departed from the neoclassical framework by endogenizing technological progress, thereby creating theoretical channels through which policy variables could influence long-run growth rates. This theoretical evolution is particularly pertinent for understanding growth dynamics in developing regions like ASEAN.

Trade openness affects growth through multiple mechanisms that have been formalized in distinct theoretical traditions. The standard Ricardian and Heckscher-Ohlin models emphasize static gains from specialization according to comparative advantage. However, these theories fail to capture the dynamic benefits of trade emphasized by Grossman and Helpman (1993), who demonstrated how international knowledge spillovers through trade in intermediate goods can permanently raise growth rates. Their model shows that countries more open to trade can more readily exploit R&D advances from abroad, a mechanism particularly relevant for developing economies like those in ASEAN.

The empirical patterns we observe in trade and growth across ASEAN countries also align with insights from heterogeneous firm models. Melitz (2003) demonstrated how trade liberalization induces market share reallocations toward more productive firms while forcing less productive enterprises to exit. This compositional change raises aggregate productivity even without technological spillovers. For export-oriented ASEAN economies, this selection effect may be a crucial mechanism underlying the trade-growth nexus.

Regarding FDI, theoretical perspectives have evolved considerably since early factor-proportions models. Borensztein et al. (1998) developed a model where multinational corporations introduce advanced technologies that raise the host country's productivity. However, their model highlights that a country's capacity to absorb these technologies depends critically on its human capital stock. This theoretical insight explains the heterogeneous impacts of FDI we observe empirically across ASEAN countries with varying educational attainments (Bekiros, 2025).

The FDI-growth nexus in developing economies is further elaborated by Markusen and Venables (1999), who formalized how multinationals can stimulate domestic industrial development through vertical linkages. Their model demonstrates that initial FDI entry may create demand for intermediate inputs, potentially catalyzing the growth of domestic supplier industries. This process can eventually lead domestic firms to become viable competitors in final good markets, a phenomenon observed in more industrialized ASEAN members like Thailand and Malaysia.

The theoretical relationship between government expenditure and growth remains more contentious. The foundational contribution by Barro (1990) distinguished between productive government expenditures that enhance private sector returns and unproductive spending that merely enters utility functions. His model yields the crucial prediction that the relationship between government size and growth is non-linear—positive at low levels of government spending but eventually turning negative. This theoretical insight aligns with our empirical findings in the ASEAN context, particularly for countries like Cambodia and Malaysia.

Devarajan et al. (1996) extended Barro's framework by showing that the growth impact of government expenditure depends not just on its level but on its composition. Their model demonstrates that excessive allocation to even nominally productive expenditure categories can become detrimental to growth if taken beyond optimal levels. This perspective helps explain the negative coefficients on government expenditure we observe in our short-run estimates.

Recent theoretical developments have increasingly emphasized the institutional contingency

of growth determinants. Acemoglu and Robinson (2012) argue that the same policies (be they trade liberalization, FDI promotion, or government investments) yield different outcomes depending on the institutional environment in which they operate. This insight is particularly relevant for understanding the heterogeneous growth effects we observe across ASEAN economies with varying institutional qualities.

In synthesizing these theoretical perspectives, we recognize that the relationship between our variables of interest and economic growth in ASEAN likely reflects multiple mechanisms operating simultaneously and with varying importance across countries. Our empirical analysis aims to disentangle these effects while acknowledging the complex theoretical foundations that underlie them.

2. 2. EMPIRICAL RESEARCH

Le (2020) argued that government spending and trade openness had significant and positive influences on the growth of 46 emerging and developing countries between 1990 and 2014. According to Arbia and Sobhi (2024), FDI facilitated economic growth when interacting with transmission channels in four North African countries from 1995 to 2021. Likewise, Liu et al. (2022) found that trade openness had a negative relationship with overall unemployment and youth unemployment in lower-income of the Organization of Islamic Cooperation (OIC) countries, but it positively correlated in the higher-income OIC group, while public expenditure has an inverse association with unemployment in OIC countries overall and higher income OIC countries. Sha (2023) concluded that FDI, financial development, technological innovation, and involvement in trade openness accelerated the growth of G7 countries between 2000 and 2020.

Further, Hao (2023) claimed that trade openness, FDI, and capital formation had positive impacts on industrial economic growth in China for the period 1990-2021. Similarly, Zhao et al. (2024) found that trade liberalization and the degree of trade openness promote economic growth of China from 2001 to 2018. A study by Dai et al. (2025) demonstrated that trade openness and FDI contribute to enhancing urban green transformation in China between 2005 and 2021. Kumari et al. (2021) concluded that there is a bi-directional causality between FDI and economic growth, but there is no bi-directional causality existed between trade openness and economic growth in India for the period 1985-2018. FDI inflows may generate environmental degradation in Pakistan between 1980 and 2017 (Liu et al., 2022). Dutta et al. (2017) found that there is a unidirectional causality running from FDI to the growth, domestic investment to trade openness, the growth to trade openness, and bidirectional causality between domestic investment and the growth and FDI, and domestic investment in Bangladesh from 1976 to 2014.

Some previous studies investigated the relationship between trade openness, FDI, government expenditure, and economic growth in ASEAN countries. Albahouth and Tahir (2024) concluded that trade openness encourages more FDI inflows to ASEAN. Likewise, Astot and Sentosa (2021) and Aung (2023) found that trade openness, FDI, and inflation had positive and significant effects on economic growth in ASEAN countries. A study by Le and Tran (2024) indicated that the influence of GDP per capita, trade openness, and FDI on tax revenue of ASEAN countries is positive and significant. According to Nguyen (2022), if government spending exceeds 26.82 percent of GDP, then it may reduce economic growth of ASEAN countries for the period 2000-2020. The findings in a study by Nordin et al. (2024) argued that government spending has a significant and positive influence on the growth of ASEAN countries in the long-term, however its effect in the short-term is negligible. Tri et al. (2019) found that FDI may accelerate market size and infrastructure facility, but it has a negative relationship with labour cost and trade openness in Cambodia, Lao PDR, and Viet Nam between 1996 and 2016.

Besides, results in the research of Solarin and Shahbaz (2015) stated that natural gas consumption, FDI, capital formation and trade openness have positive impacts on economic growth in

Malaysia for the period 1971-2012. Saragih et al. (2020) argued that the relationship between FDI and trade openness was statistically significant in the short run, however the association between gross fixed capital formation and government development expenditure was insignificant in Thailand between 1976 and 2018. Lastly, Thanh et al. (2019) concluded that FDI inflow and trade openness have a combined effect on economic growth, and economic institutions significantly affect the combined effects of FDI with trade openness in Viet Nam from 2005 to 2015.

3. METHODOLOGY

3. 1. DATA AND SOURCES

A panel dataset for the causality between trade openness, FDI, government expenditure, and economic growth of nine ASEAN countries, namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam between 1994 and 2023 was gathered from the World Development Indicators (WDI). This period was chosen for the study since it covers the Asian financial crisis in 1997, the global financial crisis in 2008, and the Covid-19 pandemic that have influences on economic growth of ASEAN countries. Only nine ASEAN countries were selected for this research due to inapplicable data in Myanmar. Therefore, a total of 270 observations was entered for data analysis. The panel data is used for this research because of the following reasons. First, it obtains a large sample, gives more degree of freedom, more information, and less multi-collinearity among variables. Second, it may overcome constraints related to control individual or time heterogeneity faced by the cross-sectional data (Hsiao, 2014).

3. 2. MODEL SPECIFICATION

We employed a panel data regression to estimate the short- and long-run relationships between trade openness, FDI, government expenditure, and economic growth. Our analysis covers nine ASEAN countries from 1994 to 2023. In this paper, the Pooled Mean Group (PMG) technique was used because its estimator allows the intercepts, short-run coefficients, and error variances to differ freely across groups, but the long-run coefficients are constrained to be the same, and therefore it is a good reason to expect the long-run equilibrium relationships between variables is homogeneous across groups (Pesaran et al., 1999).

The procedure of the panel data regression includes four steps as follows. First, the panel unit root tests were performed by Levin-Lin-Chu (2002) and Breitung (2000) tests. Both techniques were begun with the null hypothesis of non-stationary. Second, Kao (1999) and Pedroni tests were used to examine the existence of the long-term relationship between variables. Both techniques were carried out with the null hypothesis of no cointegration. Third, the Pesaran (2007) CD test was used to examine the cross-sectional dependence of variables across nine ASEAN countries in the study with a hypothesis of no cross-sectional dependence. Finally, the PMG technique was applied to estimate the relationship among variables in both short and long run.

The model was specified based on the work of Dutta et al. (2017) as follows:

$$GDP_t = f(TO_t, FDI_t, GE_t) \quad (1)$$

Where: GDP_t is the dependent variable which denotes the annual GDP growth rate (%); the explanatory variables include TO_t that presents trade openness (% of GDP); FDI_t means net inflows foreign direct investment (% of GDP); and GE_t presents government expenditure (% of GDP).

After transforming the functional form of Equation 1, we obtain the following model:

$$LnGDP_t = \beta_0 + \beta_1 lnTO_t + \beta_2 lnFDI_t + \beta_3 lnGE_t + \varepsilon_t \quad (2)$$

Where: $\ln GDP_t$, $\ln TR_t$, $\ln FDI_t$, and $\ln GE_t$ denote the natural logarithms of the annual GDP growth rate, trade openness, FDI net inflows, and government expenditure; β_0 is the intercept; (β_1,…,β_3) are parameters to be estimated; and ε_t presents the error term.

Variables of the model were referred from previous studies as in Table 2.

Table 2. Covariates of the model

Variable definition	Unit	Source	Previous references
Annual GDP growth rate	%	WDI	Dutta et al. (2017); Liu et al. (2022); and Aung (2023).
Trade openness	% of GDP	WDI	Astot and Sentosa (2021); Liu et al. (2022); Aung (2023); Hao (2023); and Dai et al. (2025).
FDI net inflows	% of GDP	WDI	Dutta et al. (2017); Astot and Sentosa (2021); Liu et al. (2022); Nguyen (2022); Aung (2023); Hao (2023); and Arbia and Sobhi (2024).
Government expenditure	% of GDP	WDI	Astot and Sentosa (2021); Nguyen (2022); and Arbia and Sobhi (2024).

Source: Own author, 2025

The relationship between trade openness, FDI net inflows, government expenditure, and economic growth in nine selected ASEAN countries was examined with three following hypotheses:

H_1: Trade openness has a positive effect on economic growth

H_2: FDI net inflows have a positive effect on economic growth

H_3: Government expenditure has a positive effect on economic growth

4. RESULTS AND DISCUSSION

4. 1. ECONOMIC GROWTH, TRADE OPENNESS, FDI, AND GOVERNMENT EXPENDITURE IN ASEAN COUNTRIES: AN OVERVIEW

Table 3. Characteristics of economic growth, trade openness, FDI, and government expenditure in nine selected ASEAN countries between 1994 and 2023

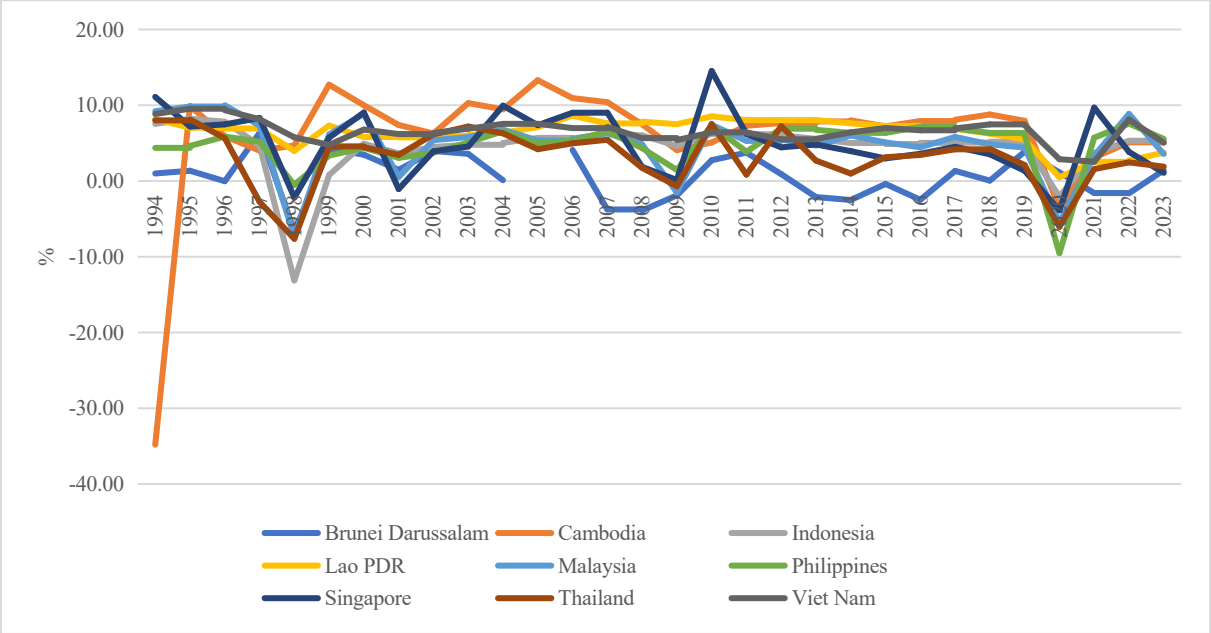
Variable	Mean	SD	Min	Max
Annual GDP growth rate	4.63	4.45	-34.81	14.52
Trade openness	129.09	90.42	0	437.33
FDI net inflows	5.20	6.24	-2.76	34.95
Government expenditure	10.87	5.47	0	29.58

Note: SD denotes standard deviation

Source: Author's calculation, 2025

As seen in Table 3, the average annual GDP growth rate of nine selected ASEAN countries accounts for 4.6 percent between 1994 and 2023. Trade openness, FDI net inflows, and government spending of these countries account for about 129 percent, 5.2 percent, and 10.8 percent, respectively, on average (Table 3).

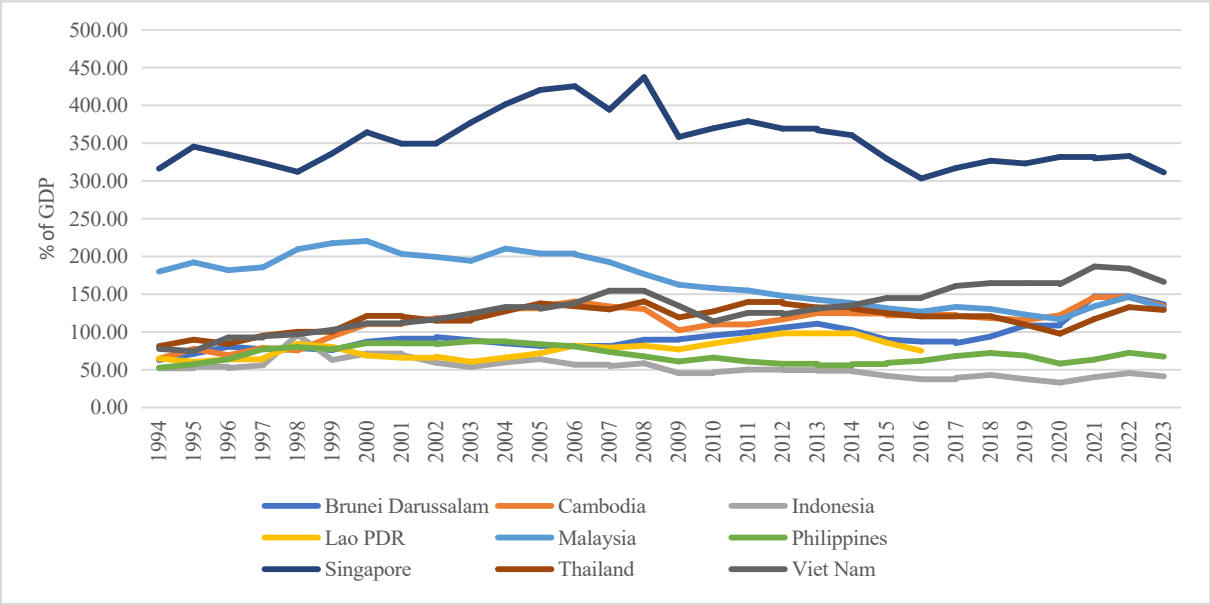
Figure 1. Annual GDP growth rate of nine selected ASEAN countries between 1994 and 2023



Source: World Bank, 2025

As seen in Figure 1, the average annual GDP growth rate of nine selected ASEAN countries fluctuated between 1994 and 2023. Countries had positive growth rates, that range from about more than 1 percent to below 10 percent in three years (2021-2023), except Brunei Darussalam. By 2023, the highest growth rate was dominated by the Philippines with 5.5 percent, followed by Indonesia and Viet Nam (more than 5 percent), Cambodia (4.9 percent), and the lowest growth rate belonged to Singapore with about 1 percent (Figure 1).

Figure 2. Trade openness of nine selected ASEAN countries between 1994 and 2023

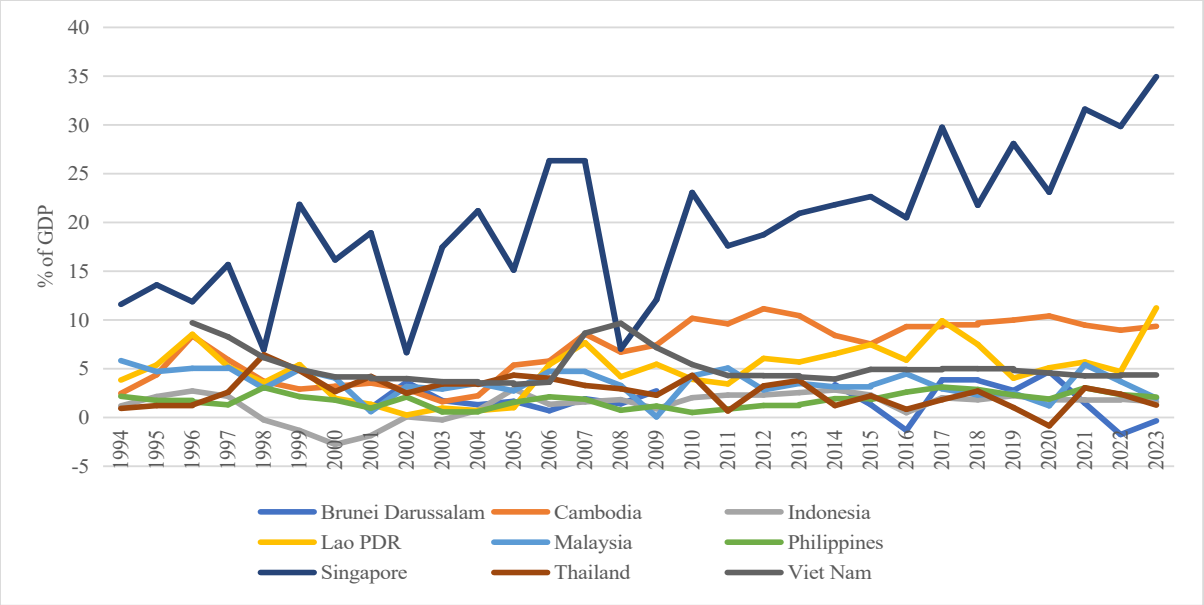


Source: World Bank, 2025

In contrast to the annual GDP growth rate, trade openness in the region was dominated by Singapore, followed by Malaysia, Viet Nam, and Indonesia had the lowest trade openness from 1994 to 2023. However, Viet Nam has overcome Malaysia to stand at the second position in

terms of trade openness. For instance, by 2023, trade openness of Singapore reached more than 311 percent of GDP, followed by Viet Nam (more than 166 percent), Malaysia (about 132 percent), and Indonesia was ranked at the last position with about 41 percent (Figure 2).

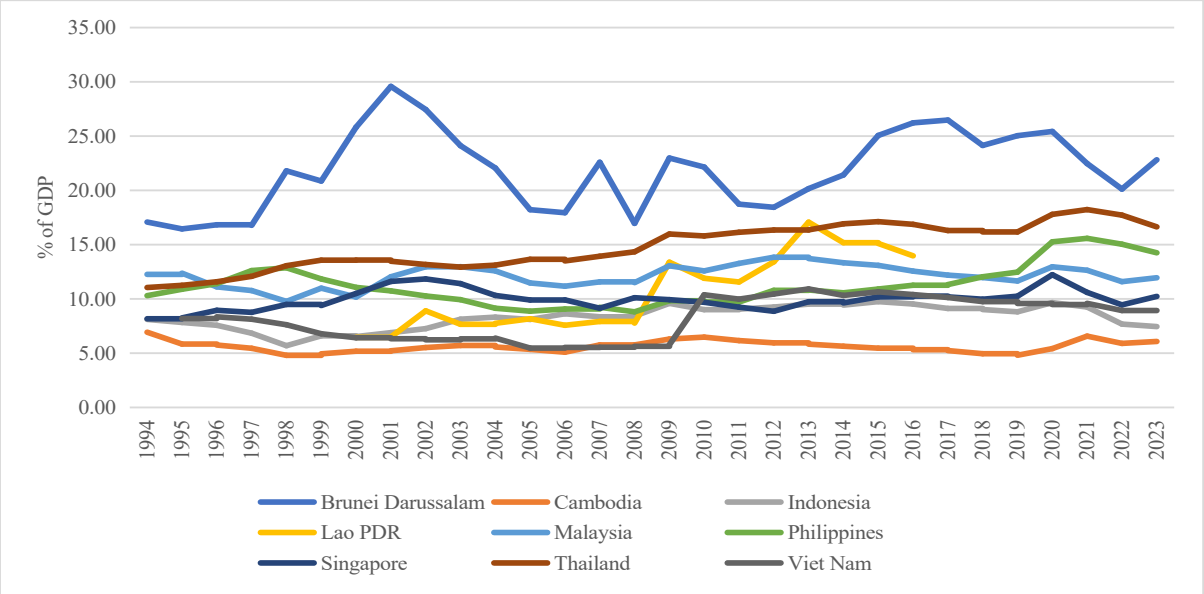
Figure 3. FDI net inflows of nine selected ASEAN countries between 1994 and 2023



Source: World Bank, 2025

FDI net inflows presented a huge fluctuation for the last three decades (1994-2023). Like the trend of trade openness, Singapore has become the leading country in terms of attracting FDI inwards. For example, FDI net inflows of this country reached nearly 35 percent of GDP in 2023, followed by Lao PDR (about 11.2 percent), Cambodia (9.3 percent), Viet Nam (4.3 percent), while Brunei Darussalam had a negative rate of FDI inflows (Figure 3).

Figure 4. Government expenditure of nine selected ASEAN countries between 1994 and 2023



Source: World Bank, 2025

Unlike trade openness and FDI inflows, Brunei Darussalam has become the leading country in government spending in the region, and the next position belonged to Thailand, the Philippines,

Malaysia, and Cambodia was ranked at the last position. For instance, by 2023, the rate of government spending of Brunei Darussalam accounted for more than 22 percent, followed by Thailand (more than 16 percent), the Philippines (more than 14 percent), and Cambodia had the lowest spending with about 6 percent of GDP (Figure 4).

4. 2. THE RELATIONSHIP BETWEEN TRADE OPENNESS, FDI NET INFLOWS, GOVERNMENT EXPENDITURE, AND ECONOMIC GROWTH IN ASEAN COUNTRIES

4. 2. 1. THE PANEL UNIT ROOT TEST

The Levin-Lin-Chu (LLC) and Breitung tests were employed to examine the unit root of all variables in the model with the hypotheses as follows:

Null hypothesis (H_o): Panels contain unit roots

Alternative hypothesis (H_a): Panels are stationary

Table 4. The unit root test of variables in the model

Variables	LLC test		Breitung test	
	Level	1st difference	Level	1st difference
Annual GDP growth rate	-5.57***	-10.74***	-6.37***	-8.35***
Trade openness	-1.53*	-5.24***	-0.61	-6.42***
FDI net inflows	-5.91***	-9.91***	-4.81***	-9.98***
Government expenditure	1.07	-0.61	-0.13	-4.23***

Notes: Both LLC and Breitung tests were carried out with the intercept and trend

*** and * denote statistical significance at 1% and 10%, respectively

Source: Author's calculation, 2025

Results in Table 4 show that government expenditure is not stationary for the LLC test and trade openness is not stationary for the Breitung test at the level, and therefore both tests were performed in the 1st differences. Results of both tests demonstrated that all variables are statistically significant at 1%, except government expenditure in the LLC test, and the null hypothesis should be rejected, and we can conclude that all variables are stationary at the 1st difference.

4. 2. 2. THE COINTEGRATION TEST

The Kao and Pedroni tests were used to check the existence of the long-term relationship between trade openness, FDI net inflows, government expenditure, and economic growth of nine selected ASEAN countries with the following hypotheses:

Null hypothesis (H_o): No cointegration

Alternative hypothesis (H_a): All panels are cointegrated

Table 5. Results of Kao and Pedroni cointegration tests

Types of cointegration tests	Criteria	F-Statistics	P-value
Kao test	Modified Dickey-Fuller t	-4.42	0.000
	Dickey-Fuller t	-7.17	0.000
	Augmented Dickey-Fuller t	-4.93	0.000
	Unadjusted modified Dickey-Fuller t	-22.33	0.000
	Unadjusted Dickey-Fuller t	-12.97	0.000
Pedroni test	Modified Phillips-Perron t	-4.01	0.000
	Phillips-Perron t	-9.59	0.000
	Augmented Dickey-Fuller t	-9.78	0.000

Source: Author's calculation, 2025

P-values of both Kao and Pedroni tests are less than 0.05, and this implies that the null hypothesis should be rejected, and therefore we can conclude that all panels are cointegrated.

4. 2. 3. THE CROSS-SECTIONAL DEPENDENCE TEST

The Pesaran (2007) CD test was employed to examine the cross-sectional dependence of variables across nine ASEAN countries in the study with the hypotheses as follows:

Null hypothesis (H_o): No cross-sectional dependence

Alternative hypothesis (H_a): Cross-sectional dependence

Pesaran's test of cross-sectional independence is equal to 11.74 and P-value is equal to 0.000 which less than 0.05, and therefore the null hypothesis should be rejected reflecting that cross-sectional dependence exists across nine ASEAN countries in the study.

4. 2. 4. ESTIMATION OF THE RELATIONSHIP BETWEEN VARIABLES BOTH IN THE SHORT AND LONG RUN

The purpose of this stage is to estimate the nexus between trade openness, FDI net inflows, government expenditure, and economic growth of nine selected ASEAN countries both in the short and long run. Thus, both the overall and specific models were run for all countries and each country in the region.

Results of the PMG regression for all countries are illustrated in Table 6.

Table 6. The PMG regression for all countries

Variables	Coefficient	Std. Error	z	P-value
Short run				
Error correction term (ECT)	-0.84***	0.06	-13.52	0.000
LnTrade openness D1	0.97	1.00	0.97	0.333
LnFDI net inflows D1	0.08	0.06	1.34	0.179
LnGovernment expenditure D1	-2.91***	1.08	-2.69	0.007
Constant	0.22	0.16	1.39	0.166
Long run				
LnTrade openness	0.19***	0.05	3.59	0.000
LnFDI net inflows	0.07	0.07	1.03	0.302
LnGovernment expenditure	0.04	0.08	0.48	0.628
Number of obs.	261			
Number of groups	9			
Observations per groups:				
Min	29			
Average	29.0			
Max	29			
Log Likelihood	-189.48			

Note: *** denotes statistical significance at 1%

Source: Author's calculation, 2025

As seen in Table 6, the error correction term is negative and statistically significant (ECT = -0.84) implying that although the effect of shocks and uncertainties in the short run, the speed of convergence of economic growth in the long run equilibrium accounts for 84 percent. Further, the increase of government spending may discourage economic growth of nine selected ASEAN countries in the short run (Table 6).

In terms of the long run, trade openness facilitates the growth of countries in the region, however the effect of FDI net inflows and government expenditure on economic growth is insignificant (Table 6).

Table 7 shows results of the PMG regression for each country.

Table 7. The PMG regression for each country

Variables	Coefficient	Std. Error	z	P-value
Short run				
Brunei Darussalam				
Error correction term (ECT)	-1.13***	0.18	-5.99	0.000
LnTrade openness D1	-0.50	2.31	-0.22	0.828
LnFDI net inflows D1	-0.13	0.31	-0.43	0.669
LnGovernment expenditure D1	0.76	1.45	0.53	0.598
Constant	-0.86**	0.35	-2.41	0.016
Cambodia				
Error correction term (ECT)	-0.65***	0.13	-4.73	0.000
LnTrade openness D1	1.68*	0.92	1.83	0.067
LnFDI net inflows D1	0.24	0.25	0.99	0.323
LnGovernment expenditure D1	-2.86***	1.04	-2.74	0.006
Constant	0.45**	0.22	2.03	0.042
Indonesia				
Error correction term (ECT)	-0.62***	0.16	-3.78	0.000
LnTrade openness D1	-0.80	0.89	-0.90	0.367
LnFDI net inflows D1	0.09	0.10	0.90	0.370
LnGovernment expenditure D1	-2.19	1.95	-1.12	0.262
Constant	0.35**	0.17	2.01	0.045
Lao PDR				
Error correction term (ECT)	-0.96***	0.17	-5.59	0.000
LnTrade openness D1	-0.13	0.15	-0.89	0.374
LnFDI net inflows D1	-0.04	0.12	-0.35	0.726
LnGovernment expenditure D1	-0.09	0.20	-0.44	0.658
Constant	0.88***	0.25	3.46	0.001
Malaysia				
Error correction term (ECT)	-1.01***	0.22	-4.59	0.000
LnTrade openness D1	-1.02	1.92	-0.54	0.592
LnFDI net inflows D1	0.18	0.13	1.40	0.163
LnGovernment expenditure D1	-4.28**	2.00	-2.13	0.033
Constant	0.30	0.27	1.10	0.270
Philippines				
Error correction term (ECT)	-0.77***	0.16	-4.78	0.000
LnTrade openness D1	2.44**	1.07	2.27	0.023
LnFDI net inflows D1	-0.15	0.17	-0.94	0.349
LnGovernment expenditure D1	-2.79**	1.37	-2.03	0.042
Constant	0.45**	0.20	2.24	0.025
Singapore				
Error correction term (ECT)	-1.00***	0.14	-7.06	0.000
LnTrade openness D1	8.34***	2.06	4.05	0.000
LnFDI net inflows D1	0.02	0.29	0.08	0.936
LnGovernment expenditure D1	-5.35***	1.94	-2.76	0.006
Constant	-0.10	0.38	-0.27	0.791
Thailand				
Error correction term (ECT)	-0.76***	0.15	-5.06	0.000
LnTrade openness D1	-1.24	1.28	-0.97	0.333
LnFDI net inflows D1	0.39**	0.16	2.49	0.013
LnGovernment expenditure D1	-9.61***	2.82	-3.40	0.001
Constant	0.12	0.21	0.58	0.565

Variables	Coefficient	Std. Error	z	P-value
Viet Nam				
Error correction term (ECT)	-0.66***	0.16	-3.96	0.000
LnTrade openness D1	0.04	0.80	0.06	0.953
LnFDI net inflows D1	0.12	0.13	0.92	0.357
LnGovernment expenditure D1	0.21	0.13	1.58	0.114
Constant	0.41*	0.21	1.91	0.056
Long run				
LnTrade openness	0.19***	0.05	3.59	0.000
LnFDI net inflows	0.07	0.07	1.03	0.302
LnGovernment expenditure	0.04	0.08	0.48	0.628

Note: *** , ** and * denote statistical significance at 1%, 5%, and 10%, respectively

Source: Author's calculation, 2025

As seen in Table 7, the error correction terms in all countries are negative and statistically significant and these reveal that although the effect of shocks and uncertainties in the short run, the speed of convergence of economic growth in the long run equilibrium of Brunei Darussalam is 113 percent; 65 percent for Cambodia; 62 percent for Indonesia; 96 percent for Lao PDR; 101 percent for Malaysia; 77 percent for the Philippines; 100 percent for Singapore; 76 percent for Thailand; and 66 percent for Viet Nam (Table 7).

Moreover, our empirical results in Table 7 show that trade openness accelerates short-run growth in Cambodia, the Philippines, and Singapore. However, its influence is statistically insignificant in the other countries studied. Results also revealed that FDI net inflows promote economic growth only in Thailand, and its effect on economic growth in other countries is negligible (Table 7). Results addressed that the increase of government expenditure may generate the decline in economic growth in the short run in Cambodia, Malaysia, the Philippines, Singapore, and Thailand (Table 7).

4. 3. DISCUSSION

For the overall model, it has been empirically found that the rise of government spending may reduce economic growth of nine ASEAN countries in the short run, while the expansion of trade openness promotes the growth of these nations in the long run. Our findings are consistent with the arguments of Astot and Sentosa (2021) and Aung (2023) who concluded that trade openness may support the growth in ASEAN countries. Our results are also relevant to the conclusion of Nguyen (2022) who claimed that if government spending exceeds 26.82 percent, then it may decrease economic growth in ASEAN countries. However, Astot and Sentosa (2021) and Aung (2023) argued that FDI facilitates economic growth, and Nordin et al. (2024) found that the rise of government expenditure may encourage economic growth of ASEAN countries in the long run, while our findings demonstrated that the effect of FDI on the growth is insignificant, and the increase of government spending may reduce the growth of ASEAN countries.

In terms of the model for each country, our results stated that the influences of trade openness and FDI on the growth of Malaysia and Viet Nam are insignificant, while Solarin and Shahbaz (2015) and Thanh et al. (2019) concluded that FDI and trade openness may enhance economic growth of Malaysia and Viet Nam.

Our results can be interpreted as the following reasons. First, government spending can enhance demand in the short run, but it is very difficult to promote economic development for the long run unless it facilitates the economy's productivity. Further, bureaucratic delays and administrative inefficiencies in distributing government funds can diminish the immediate effect of

spending on economic growth (Nordin et al., 2024). If government expenditure exceeds certain levels (found in this study to be 26,82 percent), then it will cause more taxes and increase public debt (Nguyen, 2022). Therefore, the increase of government spending may harm the growth of ASEAN countries in the short run. Second, according to the World Trade Organization (WTO), the purpose of investment facilitation is to ease the conduct of business and investments of domestic and foreign investors through making the business climate more transparent, efficient and predictable. AMS are members of the WTO Trade Facilitation Agreement (TFA) and therefore participation of AMS in the WTO TFA will be obtained technical and financial support from the WTO TFA in terms of implementing ASEAN commitments in trade facilitation (Yean, 2017). For instance, during the last two decades, ASEAN total merchandise trade has multiplied by almost 3.5 times, reaching over US$2.6 trillion in 2020. Both exports and imports of goods were in increasing trend until 2019. Intra-ASEAN trade has continuously accounted for the largest share of ASEAN total trade (ASEAN, 2021). Thus, ASEAN countries should capture opportunities in global economic integration to boost government tax revenue and enhance the economy's growth rate (Le and Tran, 2024). Lastly, our results found that the effect of FDI on economic growth was not statistically significant. The national innovation system; science, technology and innovation policy; human resources and social capital formation in relation to FDI should be considered by Southeast Asian countries. The essential role of multinational enterprises and FDI-inflows and their linkages to domestic investment can contribute to success of Southeast Asian development (Bartels, 2005).

5. CONCLUSION AND POLICY IMPLICATIONS

The article aims to investigate the nexus between trade openness, FDI, government expenditure, and economic growth in nine selected ASEAN countries between 1994 and 2023 using the panel regression model. In the overall model, findings addressed that although the effect of shocks and uncertainties in the short run, the speed of convergence of economic growth to the long run equilibrium accounts for 84 percent. Results also indicated that the rise in government expenditure may harm economic growth in the short run, while trade openness promotes the growth of countries in the region in the long run. In terms of the model for each country, the effect of trade openness, FDI, and government expenditure on economic growth was controversial in specific countries. Findings stated that trade openness may facilitate the growth in Cambodia, the Philippines, and Singapore, and FDI promotes economic growth only in Thailand. However, the rise of government expenditure may discourage the growth of Cambodia, Malaysia, the Philippines, Singapore, and Thailand.

Our analysis reveals notable differences in adjustment speeds across ASEAN economies. For instance, Brunei, Malaysia, and Singapore show remarkably rapid convergence to equilibrium. This finding is somewhat concerning from an econometric perspective, as error correction coefficients exceeding unity can indicate potential model misspecification. Meanwhile, Indonesia and Cambodia demonstrate more moderate adjustment patterns. Such variation likely reflects underlying structural differences among these economies, particularly in terms of market flexibility and policy transmission mechanisms.

The negative relationship we observed between government expenditure and short-run growth confirms empirical work by Devarajan et al. (1996). Their research demonstrated that developing economies frequently misallocate public resources toward less productive activities. Our findings suggest that the quality of government spending matters considerably more than quantity. Infrastructure investment and human capital development appear more growth-enhancing than current expenditures, which often create inefficiencies and displace private sector activity.

Trade openness exhibits markedly different effects across the region. Singapore's strong positive

coefficient is unsurprising given its entrenched position in global services trade and advanced logistics infrastructure. Cambodia's positive growth response likely stems from its preferential market access arrangements for textile exports. These contrasting examples suggest that trade volume alone matters less than strategic positioning within global value chains.

Thailand stands out as the sole country deriving significant growth benefits from FDI. This exceptional position warrants closer examination and likely reflects Thailand's deliberately constructed industrial policies that foster meaningful connections between foreign capital and domestic production networks. Other ASEAN members appear less successful in this regard, possibly because their FDI remains concentrated in extractive industries or export processing zones with minimal domestic linkages.

Policies are proposed to facilitate economic growth and achieve sustainable development for the region. First, trade openness should be encouraged by exploiting chances from the Free Trade Agreements and international economic integration since it boosts economic growth of ASEAN countries. Countries should look beyond simple tariff reduction to develop complementary capabilities that enhance their position within regional and global production networks. Special attention should be given to reducing non-tariff barriers within ASEAN to deepen regional integration. Second, the quality of government spending must take precedence over its quantity. Our results show that increased government expenditure has a negative short-run effect on growth in several countries, including Cambodia, Malaysia, and the Philippines. This aligns with the work of Devarajan et al. (1996) and suggests that public funds may be misallocated to unproductive areas. Therefore, these countries should urgently reform their public expenditure frameworks. We recommend a critical shift from current expenditures towards productive, long-term investments in infrastructure and human capital. Implementing performance-based budgeting and medium-term expenditure frameworks could enhance fiscal discipline and ensure that public spending genuinely supports sustainable growth rather than hindering it. Public expenditure frameworks require substantial reform in most ASEAN economies. Governments should critically evaluate their spending patterns, shifting emphasis from consumption to productive investments. We recommend implementing medium-term expenditure frameworks and performance-based budgeting to enhance fiscal discipline and effectiveness. Our findings indicate that a one-size-fits-all FDI policy is ineffective for the ASEAN region. Thailand is the only country in our sample where FDI significantly promotes growth, suggesting its policies successfully create linkages between foreign capital and domestic industries. Other ASEAN members should therefore move beyond general investment promotion and learn from the Thai model. For example, instead of relying solely on broad tax incentives, governments in countries like Malaysia and Vietnam could implement targeted policies that encourage technology transfer and local supplier development. This could involve linking incentives to firms' investment in local R&D or mandating joint ventures with domestic partners in strategic sectors to ensure FDI contributes meaningfully to the host economy's productive capacity. For FDI policy, Thailand's approach offers valuable lessons. Other ASEAN members would benefit from developing more targeted investment promotion strategies that emphasize domestic linkage development. Specific mechanisms might include carefully designed local content requirements, technology transfer provisions, and supplier development initiatives, rather than relying primarily on tax incentives that create few spillovers. Given the heterogeneous results across our sample, ASEAN's economic integration agenda should proceed with sensitivity to members' varying developmental stages and structural characteristics.

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