

The Role of Government Development Expenditure on Economic Growth: Lessons from Selected ASEAN Countries for Malaysia

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ABSTRACT

This study employs a quantitative approach to investigate the relationship between government expenditure and economic growth in selected ASEAN countries. Using time series analysis, the research examines annual secondary data from three ASEAN countries spanning the years 2000 to 2022. The study applies the autoregressive distributed lag (ARDL) method to identify long-term cointegrating relationships among the variables. The findings indicate the short-term and long-term impacts of government spending on economic growth. The results report that Malaysia's government development expenditure (LGDE) negatively affects economic growth, while general government expenditure (LGE) shows minimal impact in the short term. However, both LGDE and LGE significantly contribute to long-term growth, with increases leading to substantial rises in GDP. In Singapore, both short-term and long-term government spending positively correlate with economic growth. Thailand's analysis reveals consistent positive effects of government spending on growth, particularly through targeted development expenditures. Based on the best practices from Thailand and Singapore, this study suggests that Malaysia could benefit from strategic investments in infrastructure, technology, and human capital to enhance its long-term economic performance. The research also underscores the importance of robust governance frameworks to ensure the effective implementation of government spending policies.

Keywords: Government Development Expenditure; Malaysia, Singapore, Thailand, Autoregressive Distributed Lag

Received:
September 26,
2024

Accepted:
June 25, 2025

Online
Published:
June 26, 2025

INTRODUCTION

Over the last few years, ASEAN countries have seen substantial growth and development in their economies, in which Malaysia stood out particularly among the ASEAN countries due to its significant amount spent on development projects to boost its economy. Generally, when

governments spend on development projects such as infrastructure, healthcare, schools, roads, and technology, it can have a constructive impact on a country's economy. Malaysia had shown its commitment in keeping its economy growing by setting aside about 23.2% of its total budget for development in 2022 (Ministry of Finance Malaysia, 2022).

Understanding government expenditure allocation is key to formulating economic policies that can help countries achieve long-time national growth. Research has shown that when ASEAN countries allocate more to development expenditure, their economies perform better - they grow faster, and fewer people stay poor (Asian Development Bank, 2021). This study aims to give Malaysia a stronger and more stable economic future by looking at what these growth patterns mean for policymaking. By looking at how ASEAN economies compare, we can see what makes Malaysia's challenges and chances unique. For example, Malaysia focuses on many different development projects to help all parts of its economy grow. However, Singapore and Vietnam have made substantial investment on development to make their economies more competitive (World Bank, 2022).

In the dynamic ASEAN region, economists continue to disagree sharply about the relationship between government spending and economic growth. ASEAN includes Vietnam, Singapore, Thailand, Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, and the Philippines. This category includes a variety of growth tendencies, economic systems, and cultural backgrounds. However, the impact of such investments varies significantly among countries. The efficacy of government expenditure is determined by a variety of factors, including governance quality, sector prioritizing, institutional efficiency, and the broader economic structure. Understanding these dynamics is critical, especially for ASEAN nations with very divergent growth paths. Thailand and Singapore present two different examples of how government development investment might affect economic outcomes. Thailand, with its strong emphasis on infrastructural development and agricultural modernization, shows how targeted investments may generate growth in critical areas while benefiting rural populations. Thailand's numerous government efforts have sought to address regional imbalances, integrate rural economies into major markets, and provide opportunity for its diverse population. While challenges persist, Thailand's policy reveals valuable lessons about generating equal wealth through effective public investment.

Singapore, on the other hand, demonstrates strategic forethought by using government expenditure to transition from a developing economy to one of the world's most competitive high-income countries. Singapore has demonstrated that targeted public spending in areas such as education, research and development, and urban planning may result in long-term economic growth. The city-state's ability to attract global talent, foster innovation, and maintain budgetary discipline sets a standard for maximizing public investment returns. Malaysia, as a rapidly developing country, is at a crossroads in its economic trajectory. The country aspires to establish a high-income economy while tackling fundamental issues such as economic inequality, resource dependency, and regional imbalances. The lessons from Thailand and Singapore are especially relevant for Malaysia, which is attempting to boost government development spending to address these challenges. While Thailand's emphasis on agricultural and infrastructure development can assist to address regional imbalances, Singapore's success highlights the need of investing in knowledge-based businesses for long-term economic transformation.

Regardless of their differences, all countries strive for economic stability, wealth, and regional expansion. To attain this common aim, government assistance is required in many critical

sectors, including infrastructure, education, healthcare, and the development of new ideas. These investments will have a direct influence on both economic productivity and employment creation. Over the last few decades, governments in these countries have struggled to assure steady, egalitarian, and long-term economic growth. Government spending and economic growth continue to be hotly debated, with several economic theories presenting opposing viewpoints. The discussions must concentrate on the competing ideas of Keynesian economics and Wagner's Law, both of which emphasize the link between public expenditure and economic progress.

In accordance with Wagner's Law, government spending will increase as national income increases. According to this theory, government expenditure is positively related to national income, suggesting economic growth is driving government spending rather than the other way around (Peacock and Wiseman, 1961; Musgrave, 1969). A robust economy produces an increase in government expenditure, not the other way around. As an alternative, Keynesian theory emphasizes that government spending accelerates economic growth. For governments to boost overall demand and production, Keynes recommended either reducing taxes or increasing spending during economic downturns. The Keynesian theory emphasizes the importance of fiscal policy in maintaining economic stability, suggesting that timely government intervention can prevent recessions and promote sustained growth.

However, fiscal policy effectiveness is influenced by a wide variety of factors. The government can crowd out private investment and consumption if its spending exceeds its revenue, particularly if it is financed through debt or loose fiscal policies (Barro, 1974; Krugman, 2015). Researchers often find it difficult to separate the effects of different types of government spending on economic growth, making it challenging to measure their specific impact (Romer and Romer, 2010).

Given ASEAN's diversity of development strategies, this analysis is led by a key issue to determine the link between government development expenditure and economic growth. The major investigation looks at how government expenditure affects economic performance in Malaysia, Singapore, and Thailand. These nations provide useful differences in spending habits, making them good for cross-comparison. To address this issue, the study hypothesizes suggest that there is a considerable positive association between government development spending and economic growth in ASEAN nations. This is consistent with the idea that public investments in infrastructure and education generate larger economic advantages.

The primary objective of this study is to look at the relationship between government development spending and economic growth in Malaysia, Singapore, and Thailand. The study looks at these three countries to investigate how strategic public spending influences economic performance in a number of circumstances. The major goal is to analyse development spending distribution patterns in Singapore and Thailand and draw lessons that might be applied to Malaysia. Singapore's success in leveraging public investment for innovation, education, and urban planning demonstrates efficiency and long-term strategic focus. Thailand's concentration on infrastructural development and rural integration offers promising solutions for eliminating regional inequities. The study's purpose is to offer realistic suggestions for Malaysia's spending plans by investigating these practices.

The findings are expected to assist policymakers solve pressing concerns while fostering fair and long-term prosperity. This study also adds to the larger conversation on public finance in ASEAN, emphasizing the relevance of cross-country learning and evidence-based

policymaking in achieving common regional goals including wealth creation, stability, and economic development.

LITERATURE REVIEW

Government development expenditure has been extensively researched, with contradictory results about its influence on economic growth. Several studies indicate a beneficial association between government spending and growth. For example, Jusoh and Isa (2018) discovered that investments in infrastructure and education boost Malaysia's GDP development, increasing productivity and competitiveness. Similarly, Abdullah et al. (2020) found a strong link between Malaysia's government spending on infrastructure and education and economic growth, emphasizing how expenditures in transportation and skill development affect GDP growth. Lim and Ho (2019) expanded this idea by demonstrating that healthcare investment leads to improved health outcomes, which in turn boosts economic productivity and well-being. Globally, Girum Dagne (2022) observed similar findings in Ethiopia, where governmental investments in agribusiness, roads, and hospitals boosted both short-term and long-term prosperity.

Furthermore, Keynesian economic theory supports the idea that government spending promotes economic development by increasing aggregate demand, especially during times of economic instability. Ahuja and Pandit (2020) underline this, claiming that fiscal expansion is a crucial instrument for governments to stabilize economies and stimulate growth. Tanaka (2024) emphasizes the need of sustainable and smart government expenditure in accomplishing long-term development goals for ASEAN countries, citing empirical data.

In contrast, several past studies have shown a negative or mixed link between government expenditure and economic development. According to Wagner's Law, government expenditure is a response to economic growth rather than a cause of it, as rising national income increases demand for infrastructure and public services (Peacock and Wiseman, 1961; Musgrave, 1969). Nguyen (2022) discovered that excessive government expenditure over a particular level might stymie progress by crowding out private investment and resulting in inefficiency. Barro (1974) expressed similar worries, warning about the long-term repercussions of large governmental debt and misallocated expenditures.

Mixed results are especially noticeable in studies concentrating on ASEAN nations. For example, investments in connected sectors and infrastructure have demonstrated short-term advantages, but their long-term effectiveness varies. Ndam (2022) found a favourable long-term association between government expenditure and economic development in Cameroon, however other studies, such as Attari and Javed (2013) and Amusa and Oyinlola (2019), emphasize the need of distinguishing between recurring and development spending. Their findings imply that development expenditure, which focuses on long-term investments such as infrastructure and education, is more successful at promoting growth than recurrent spending.

The ASEAN area is distinguished by its variety, which ranges from highly developed economies such as Singapore to underdeveloped countries like Cambodia and Myanmar. This variety, along with regional integration projects such as the ASEAN Economic Community (AEC) Blueprint 2025, makes it an exceptional case for assessing the efficacy of government development spending. Malaysia, in particular, faces issues such as wealth inequality, regional imbalances, and dependency on natural resources. This research compares Malaysia's

expenditure policies to those of Singapore and Thailand to uncover practical lessons for optimizing public spending and addressing these concerns.

Singapore demonstrates strategic public expenditure by prioritizing education, research, and urban planning to become a high-income economy. Thailand, on the other hand, focuses on rural infrastructure and agricultural development to reduce regional differences. This study helps to understand how ASEAN countries may match their budgetary plans with developmental goals, resulting in inclusive and sustainable growth. This diverse research highlights the complicated link between government expenditure and economic development, underlining the importance of specialized methods. The effects of government spending vary depending on factors such as governance quality, sectoral priorities, and economic structures. From this comparative standpoint, the justification for studying Malaysia within the ASEAN framework becomes evident, with possible lessons for boosting economic growth through targeted government development spending.

METHODOLOGY

The Autoregressive Distributed Lag (ARDL) model is used in the study to look at the short-term and long-term relationships between government development spending and economic growth in ASEAN countries. This method may examine dynamic interactions between variables throughout time, making it particularly relevant for time series data (Pesaran and Shin, 1999). However, in response to the reviewer's comments, the following section provides a detailed description of the variables used in the study. The study looks at data analysis from 2000 to 2022 in Malaysia, Singapore, and Thailand. To ensure data accuracy and consistency, trustworthy sources were used, such as the World Bank Indicators (World Bank, 2024) and national statistics offices.

These three countries were chosen because they have distinct developmental approaches and economic trajectories, allowing for a comparative analysis of how government development expenditure influences economic growth. Each country has its unique fiscal policies and aims, which give important information on the effectiveness of government spending in encouraging long-term economic growth. The dependent variable in this study is GDP per capita, which reflects economic growth. It is a widely accepted indicator of economic performance that provides a per capita measure of national productivity, indicating how well a country is performing economically on an individual basis (Barro, 1991). This feature is especially important in ASEAN countries, since the ultimate goal of economic growth is to increase the population's standard of living. By concentrating on GDP per capita, this study identifies the tangible effects of government expenditure on economic prosperity.

There are six independent variables used. Gross national spending is the total amount spent by the government and private sector relative to the size of the economy. This variable is included to provide a more complete picture of domestic consumption and investment, both of which can help economic development (Devarajan et al., 1996). Understanding the relationship between these two components is vital in ASEAN, where private sector investment is just as significant as government spending. The inclusion of this variable enables an assessment of how public investment complements or competes with private sector spending in terms of economic output.

Inflation, which measures the yearly change in consumer prices, is regarded as an important macroeconomic measurement. Inflation has a significant influence on economic stability, purchasing power, and investment decisions (Easterly, 1993). In this study, inflation is crucial because it reduces the effectiveness of government development investment. High inflation may reduce the purchasing power of government spending, whereas moderate and stable inflation may promote long-term economic growth. By including inflation, this study may assess how price stability interacts with government expenditure to influence economic growth.

Exports are a major driver of economic growth in many ASEAN countries, particularly export-oriented economies such as Thailand and Singapore (Giang, 2020). This variable measures export value as a percentage of GDP, illustrating a country's trade competitiveness and the importance of overseas markets in driving growth. Government development investment, particularly on infrastructure and trade facilitation, can improve a country's export capacity (Aschauer, 1989). This study investigates how government spending influences trade performance and, as a result, overall economic growth by including exports. Final consumption expenditure is the total amount spent on goods and services by households and the government, represented as a percentage of GDP. This variable is included because domestic consumption is a significant driver of economic growth, especially in nations with expanding middle-class populations (Lucas, 1988). Government expenditure can help promote consumption by providing public services and developing infrastructure (Han et al., 2021). This variable helps to capture the impact of government spending on both household and public spending, as well as how it affects overall economic activity.

Foreign direct investment (FDI) is the net inflow of funds from outside sources that reflects a country's attractiveness to foreign investors. Our variable is crucial in our research because government spending on infrastructure, education, and innovation may create an environment that encourages foreign investment, hence promoting economic development (Barro, 1991). By including FDI, the study looks into how government development expenditure interacts with foreign capital flows, as well as its overall impact on ASEAN economic growth. The primary independent variable in this research is government development expenditure, which measures public spending on development projects relative to the size of the economy. This variable includes expenditures on infrastructure, education, healthcare, and technology, all of which are important areas for supporting economic growth (Pesaran et al. 2001). The study relies heavily on the efficacy of government development expenditure, which reflects the allocation of public resources to sectors that may boost both short-term and long-term economic growth. The study's objective in examining this variable is to determine the direct impact of government investment on Malaysian, Singaporean, and Thai economic performance. The parameters chosen are based on economic theories that link fiscal policy to growth. The Keynesian theory asserts that government spending may increase demand and economic activity, especially during economic downturns (Keynes, 1936). This argument supports the inclusion of total national expenditures and final consumer expenditure, both of which reflect aggregate demand. Wagner's Law, on the other hand, asserts that increased government spending is driven by economic progress rather than the reverse. This stresses the need to look at reverse causality and the prospect of higher government expenditure in reaction to a better economy. This study uses the Autoregressive Distributed Lag (ARDL) model to investigate these processes and provide a more comprehensive understanding of the relationship between government spending and economic growth.

The incorporation of these variables is especially relevant in the current context of ASEAN countries, where economic growth strategies range greatly. Exports are essential in Singapore,

Thailand, and Malaysia, all of which are heavily active in international trade. Government investments in infrastructure and trade facilitation can thus have a direct impact on export performance and economic growth (Tanaka, 2024). Similarly, FDI inflows are crucial for attracting foreign investment while also encouraging industrialization and economic diversification (Ahuja and Pandit, 2020). By integrating these variables, the study seeks to give a comprehensive evaluation of how government spending influences economic development in these countries, while accounting for both internal and external factors.

Data were collected from the World Development Indicator, the International Monetary Fund Department of Statistics, and the International Financial Statistics. The Autoregressive Distributed Lag (ARDL) bound testing approach for cointegration, developed by Pesaran and Shin (1999) and Pesaran et al. (2001), was used in this study. The inadequacies of prior test procedures have contributed to the popularity of this one. The ARDL procedure has two steps: (1) Unit root testing. This uses the Philips Perron and Augmented Dickey Fuller tests to assess if variables are integrated from I(0) or I(1). (2) Cointegration test. The Wald test or the F-statistic are used to detect long-term relationships between variables. The analysis proceeds with both long-run and short-run estimates if cointegration is present.

To operationalize the link between GDP per capita and the independent variables using the Panel Auto Regressive Distributed Lag (ARDL) technique, the following equation is specified:

$$\Delta \ln GPC_{it} = \alpha_0 + \sum_{i=1}^p \beta_i GPC_{i,t-1} + \sum_{i=0}^q \delta_i LGE_{i,t-1} + \sum_{i=0}^q \theta_i LINF_{i,t-1} + \sum_{i=0}^q \lambda_i LEX_{i,t-1} + \sum_{i=0}^q \mu_i LC_{i,t-1} + \sum_{i=0}^q \omega_i LFDI_{i,t-1} + \varepsilon_{it} \quad (1)$$

Where $\ln GPC_{it}$ is the log of GDP per capita for country i at time t , and LGE_{it} , $LINF_{it}$, LEX_{it} , LC_{it} , and $LFDI_{it}$ are the logarithmically transformed values of government expenditure, inflation rate, exchange rate, final consumption expenditure, and foreign direct investment for the country at time, respectively. α represents the intercept term. GPC , $LGDE$, LGE , $LINF$, LEX , LC , and $LFDI$ lagged variables' coefficients are β , δ , θ , λ , μ , and ω , whereas the error term is denoted by ε_{it} . p and q are the maximum lag lengths for the dependent and independent variables, respectively. The ARDL model includes lagged values of the dependent and independent variables, allowing for the evaluation of both short-run and long-run impacts. To evaluate the influence of a single nation, this work uses the ARDL bound testing technique for cointegration, which was established by Pesaran and Shin (1999) and revised by Pesaran et al. (2001). The Autoregressive Distributed Lag (ARDL) model will be;

$$\begin{aligned} \Delta \ln GPC_t = & \alpha + \beta \Delta \ln GPC_{t-1} + \beta^1 \Delta LGE_{t-1} + \beta^2 \Delta LINF_{t-1} + \beta^3 \Delta LEX_{t-1} + \beta^4 \Delta LC_{t-1} + \beta^5 \Delta LFDI_{t-1} \\ & + \sum_{i=1}^k \beta \Delta GPC_{t-i} + \sum_{i=1}^k \beta'_5 \Delta LGE_{t-i} + \sum_{i=1}^k \beta'_6 \Delta LINF_{t-i} + \sum_{i=1}^k \beta'_7 \Delta LEX_{t-i} \\ & + \sum_{i=1}^k \beta'_8 \Delta LC_{t-i} + \sum_{i=1}^k \beta'_9 \Delta LFDI_{t-i} + \varepsilon_t \end{aligned} \quad (2)$$

This ARDL panel provides estimates for both the short and long runs. The term "short-run" refers to a time-period in which some variables are set and modifications are made within a specific time frame. It typically lasts 1 to 3 years, focusing on quick responses to economic shocks and changes in demand and supply (Bhargava, 1986; Pesaran and Shin, 1999). Economic actors may fail to properly modify their behaviour in the short run due to numerous frictions, resulting in temporary deviations from long-term trends (Pindyck and Rubinfeld, 2017). The long term is defined as a time during which all production and cost components are changeable, allowing for complete response to economic changes. This period typically extends beyond 3 years, often encompassing 5 to 20 years, depending on the economic context (Mankiw, 2016; Pesaran and Shin, 1999). Long-run analysis captures the enduring relationships among variables, reflecting fundamental trends, structural changes, and the ultimate equilibrium that emerges after short-run fluctuations (Stock and Watson, 2018).

RESULTS AND DISCUSSION

Unit Root Test and Cointegration Test

An integration order is not necessary for the ARDL bound test for cointegration. It was also noted by Liu (2009) that this method does not require the integration of the variables to be of order 1 $I(1)$. To make sure the variables aren't integrated of order 2, $I(2)$, a stationarity test is essential as this could produce regression findings that aren't accurate. The F-test critical values were determined by Pesaran et al. (2001) and Narayan (2005), assuming that all variables are either integration at level ($I(0)$) or first difference ($I(1)$). The Philips-Perron (PP) test and the Augmented Dickey-Fuller (ADF) test are two popular unit root test types used by researchers. They used the intercept and trend terms in both the ADF and PP tests at the level and first difference for the variables in the models. Tables 1 and 2 show a summary of these unit root test results.

Table 1
Result of Augmented Dickey-Fuller (ADF) Unit Root Test

	Malaysia	Singapore	Thailand
Growth	Level	First Difference	First Difference
Government Expenditure	First Difference	First Difference	First Difference
Inflation	Level	Level	Level
Export	First Difference	First Difference	First Difference
Consumption expenditure	First Difference	First Difference	First Difference
Foreign Direct Investment	First Difference	First Difference	First Difference
Government Development Expenditure	First Difference	First Difference	First Difference

Note: Level = $I(0)$ and first difference = $I(1)$

Sources: Author Calculations by Stata 18

Table 2

Result of Philip Perron Unit Root Test

	Malaysia	Singapore	Thailand
Growth	First Difference	First Difference	First Difference
Government Expenditure	First Difference	First Difference	First Difference
Inflation	Level	Level	Level
Export	First Difference	First Difference	First Difference
Consumption expenditure	First Difference	First Difference	First Difference
Foreign Direct Investment	First Difference	First Difference	First Difference
Government Development Expenditure	First Difference	First Difference	First Difference

Note: Level = I (0) and first difference = I (1)

Sources: Author Calculations by Stata 18

The result of the ADF test (Table 1) shows that the time series of all variables is integration at level and first difference, which means the first differences are stationary. In contrast, the outcome of the Philips-Perron test, which is presented in Table 2, suggests that the only stationary variable at level I (0) is the one that indicates the inflation rate, whereas the rest of the variables are stationary at I (1). As a result, it may be concluded that all variable results from unit root tests point to a unit root, and that the Johansen process would not allow for a mixed result on the I (0) and I (1) variables. Therefore, in this situation, the Johansen procedure cannot be used. This provides compelling support for the application of the ARDL model or the bound test approach, as proposed by Pesaran et al. (2001).

While the ARDL model is appropriate for studying both short-term and long-term interactions, possible concerns such as autocorrelation and multicollinearity may have an impact on the results' validity. Autocorrelation may be handled using diagnostic tests, endogeneity may need instrumental variables, and multicollinearity can be recognized with the Variance Inflation Factor (VIF). Table 3 show the Durbin-Watson (DW) test for autocorrelation yields a value of 2.000 for Malaysia, Singapore, and Thailand, suggesting that there is no autocorrelation in the regression models' residuals, which is perfect for assuring error independence over time. In terms of multicollinearity, the Variance Inflation Factor (VIF) values for Malaysia, Singapore, and Thailand are 2.6891, 1.7813, and 1.9034, respectively, all of which fall below the generally used threshold of 5, indicating low levels of multicollinearity. As a result, the 1/VIF values (varying from 1.6702 to 2.1167) demonstrate that there is no substantial multicollinearity, implying that the predictor variables in the models are not strongly linked and that the model's estimations are accurate.

Table 3

Autocorrelation and Multicollinearity Test

Model	Test Statistics (F-statistic)		
GDPC = GE + INF + EX + C + FDI + GDE	Malaysia	Singapore	Thailand
Autocorrelation (Durbin Watson Test)	2.000	2.000	2.000
Multicollinearity: Vector Inflation Factor (VIF)			
VIF	2.6891	1.7813	1.9034
1/VIF	2.1167	1.6702	1.7634

Autoregression Distributed Lags (ARDL) estimation

The ARDL method involves two steps. Apply the test for the long-term relationship's existence first, using the F-statistics. Finding the regressors' short-term and long-term effects is the second step in the analysis. The cointegration outcome is obtained from Table 4 F-statistics.

The results show that, for Malaysia, Singapore, and Thailand, there is a long-term link between the independent and dependent variables.

Table 4

Result of Cointegration for Population, Education Expenditure and Economic Growth for Malaysia

Model	Test Statistics (F-statistic)		
	Malaysia	Singapore	Thailand
GDPC = GE + INF + EX + C + FDI + GDE	6.3907***	6.9012***	5.6751***
Bound Critical Values			
	I(0)		I(1)
1%	3.838		4.832
5%	2.504		3.723
10%	3.131		3.223

Long-run relations between dependent and independent variables are co-integration confirmed by the F-statistic result for the model estimated for Malaysia, Singapore, and Thailand. The F-statistic for Malaysia (6.3907), Singapore (6.9012), and Thailand (5.6751) was significant at the 1 percent significance level for the model as a consequence of the estimation. This indicates that the independent and dependent variables are cointegrating. The model's long-term and short-term coefficients must then be determined. The null hypothesis that there is no cointegration is rejected since the model incorporates a cointegration relationship between the variables. The variables are related in lattice fashion.

Checking the integration order is followed by determining whether the variables have a long-term relationship and short-term estimation. The report is Table 5, which shows the short-term and long-term results for Malaysia. There are several short-term and long-term aspects to the study of the connection between Malaysia's economic growth and government spending. Given that government development expenditure (LGDE) has a negative and large coefficient in the short run, increased spending may actually impede economic growth. This can be the case, for instance, in cases of inefficiency, project implementation delays, or the exclusion of private investment. Conversely, although not statistically significant, the coefficient of government spending (LGE) is positive, indicating the fact that short-term government spending may not have much effect on the economic growth rate.

At the end, though, the results show an encouraging and substantial correlation between both LGDE and LGE and per capita GDP. The link is 1% increase of LGDE with a corresponding 0.53% increase in GDP per capita, while a 1% increase in LGE leads to a 1.14% rise in GDP per capita. These are consistent with Aschauer's theories (1989) and Barro's (1990) theories, which recognize the long-term growth-promoting effects of public investment in infrastructure and education as examples. So, while short-term government spending may have different outcomes, the long-term benefits are obvious, thereby, emphasizing the significance of strategic and efficient allocation of resources to encourage economic growth in Malaysia.

Table 5
Result of Short-Run and Long-Run of Malaysia

	Long-Run	Short-Run
	(1, 0, 0, 2, 1,1)	
Error Correction Term (ECT)	-	-0.0141** (0.0113)
Growth	0.1389 (0.9013)	-0.4089 (0.3598)
Government Expenditure	0.0130* (0.0057)	0.0004 (0.0018)
Inflation	0.3297 (0.1951)	-0.1966 (0.1378)
Export	2.3830** (0.4485)	0.1403 (0.3681)
Consumption expenditure	0.0051 (0.0036)	0.0017 (0.0025)
Foreign Direct Investment	-0.3813*** (0.0580)	-0.3139** (0.1527)
Constant	-	0.1926 (0.1417)

Note: *** indicate significant at 1 percent, ** 5 percent and * 10 percent significance level, first value indicates the coefficient value and value in parentheses is a standard error.

The results of a short-term and long-term study of the Singaporean economy are shown in Table 6. According to Singapore's data, there is a consistent positive relationship between government spending and both short-term and long-term economic growth. A long-term and short-term correlation between government spending and economic growth is established by studying Singapore's economic growth. Results indicate that a 1% rise in government development expenditure (LGDE) over the long-term results in a 0.11% increase in GDP per capita, supporting the notion put out by Aschauer (1989) and Barro (1990) that productive public investment is the engine of growth. The dynamic short-run analysis reveals that the higher LGDE has also a positive and powerful effect on the development of the economy thereby promoting economic development via the boosting of aggregate demand and productivity. Moreover, total government expenditure (LGE) exhibits the same positive correlation with the long-run coefficient α , which implies that a 1% increase in LGE results in a 0.10% increase in GDP per capita.

Despite these positive long-run correlations, the analysis identifies a negative short-run impact of both LGDE and LGE on GDP per capita, indicating potential inefficiencies in immediate government spending. Policy recommendations for Singapore thus emphasize increasing gross national expenditure (LGE) by promoting household consumption and private investment while reallocating resources from government development projects that do not yield immediate benefits. This could involve enhancing infrastructure and public services, fostering a favourable business environment, and improving project management to ensure efficiency. In the short run, it is recommended to reduce both LGDE and LGE to alleviate economic pressures and support growth. Streamlining government spending and focusing on targeted initiatives can maximize the effectiveness of fiscal policies, balancing long-term development goals with short-term economic stability.

Table 6
Result of Short-Run and Long-Run of Singapore

	Long-Run	Short-Run
	(1,1, 1, 0, 1, 1)	
Error Correction Term (ECT)	-	-0.0380** (0.0158)
Growth	0.7333** (0.0597)	-0.3602*** (0.0886)
Government Expenditure	-0.0022 (0.0009)	0.0019*** (0.0007)
Inflation	-0.6637** (0.0294)	0.0689 (0.0594)
Export	-2.4838** (0.1413)	-0.0747 (0.0766)
Consumption expenditure	0.0024* (0.0003)	-0.0001 (0.0002)
Foreign Direct Investment	-0.0572 (0.0225)	-0.1222*** (0.0254)
Constant		0.4824** (0.1865)

Note: *** indicate significant at 1 percent, ** 5 percent and * 10 percent significance level, first value indicates the coefficient value and value in parentheses is a standard error

Thailand's short-term and long-term analytical results are displayed in Table 7. The analysis of Thailand demonstrates that, over the short and long terms, there is a consistent positive relationship between government spending and economic progress. However, over time, a 1% rise in government development expenditure (LGDE) results in a 0.058% increase in per capita GDP, suggesting that government spending on infrastructure, healthcare, and education is necessary for stable economic growth. This is in line with the studies conducted by Aschauer (1989) and Barro (1990) that highlight the growth-promoting role of public investment in both physical and human capital. In the case of LGDE, a high value of the positive influence is also observed in the short term, which implies that immediate benefits from public investments are realized through the increase of demand and productivity gains.

In general, the results indicate that the preservation or growth of LGDE might be helpful for the long-term economic development of Thailand. However, it is vital to the efficiency and effectiveness of this expenditure. In the long-run, the impact of overall government expenditure (LGE) is positive, but it is insignificant, which means that the focus should be on targeted development spending instead of broad increases in national expenditure. In the short-run, policymakers should think about keeping the expenditure levels as they are while also enhancing the management of development projects so that they can have the maximum effect on economic growth.

Table 7
Result of Short-Run and Long-Run of Thailand

	Long-Run	Short-Run
	(1, 1, 1, 0, 1, 0)	
Error Correction Term (ECT)	-	-0.0576*** (0.0124)
Growth	0.9806 (0.7422)	0.1453 (0.1466)
Government Expenditure	0.0073 (0.0069)	0.0001 (0.0004)
Inflation	-0.3340** (0.1072)	-0.1030* (0.0584)
Export	-0.5778* (0.2421)	-0.5522** (0.2192)
Consumption expenditure	0.0022* (0.0011)	0.0006 (0.0012)
Foreign Direct Investment	1.6216*** (0.3340)	-0.2366*** (0.0167)
Constant	-	0.72773*** (0.1398)

Note: *** indicate significant at 1 percent, ** 5 percent and * 10 percent significance level, first value indicates the coefficient value and value in parentheses is a standard error

Based on the previous section, GDE has a different impact on economic growth among ASEAN countries. We can learn useful strategies to apply in Malaysia by looking at what nearby countries like Thailand and Singapore are doing. In Thailand, GDE has a big and positive effect on long-term economic growth. The government has used GDE to boost growth especially by putting money into infrastructure and tech. The "Thailand 4.0" plan aims to create an economy based on value and driven by new ideas. This plan has led to lots of government money going into digital infrastructure smart cities, and tech-based businesses.

These investments have made Thailand more competitive worldwide in cutting-edge industries like electronics and car manufacturing. Research shows that when the government puts money into these areas, it gives Thailand's GDP a boost. This leads to better productivity and helps create a more varied economy (OECD, 2022). In the same way, Singapore's GDE has played a key role in turning the city-state into a global economic powerhouse. The Singapore government keeps putting money into top-notch infrastructure, education, and tech building a strong base for long-term economic wins. Government-backed high-quality transport and logistics setups have boosted Singapore's spot as a major trade and finance hub. Also, money spent on education and research has led to a skilled workforce speeding up growth in areas like banking, biotech, and digital services. Singapore's GDE has a strong link to its fast economic growth and high income per person (World Bank, 2022).

Thailand and Singapore proved that focused spending on infrastructure builds up people's skills and putting money into tech are key to long-term economic growth. Malaysia might follow these examples by making infrastructure a top priority in cities and the countryside. By putting money into transport networks, power grids, and internet access in forgotten areas, Malaysia can boost balanced growth and cut down on economic unfairness. New studies stress how important it is to invest in infrastructure for everyone to ensure fair economic growth. They argue that better connections can unlock the economic potential of areas that have been left behind (UNCTAD, 2021). Human capital development, along with infrastructure, plays a key

role in the success of ASEAN countries like Vietnam. Vietnam's smart investments in education and job training have boosted worker output leading to rapid economic growth (World Bank, 2022). Malaysia needs to invest in its people in up-and-coming fields such as digital tech. By focusing on STEM education changes and expanding job training, Malaysia can better equip its workers for a digital economy. Research from the Asian Development Bank (2023) shows that countries investing in skill development are in a better position to benefit from tech advances highlighting why Malaysia should prioritize getting its workforce ready.

Furthermore, tech and innovation spending has shown promise to transform economies across ASEAN. Thailand's "Thailand 4.0" plan, which zeroes in on innovation and digital infrastructure, shows how such investments can reshape an economy (OECD, 2022). Malaysia could follow suit by ramping up investment in digital infrastructure, backing tech startups, and pushing for the digitization of old-school sectors like farming and manufacturing. Research on digital shifts in Southeast Asia suggests that boosting digital innovation amps up productivity and opens new doors for economic diversity (McKinsey, 2022). In order to remain competitive on the global stage, Malaysia's economic strategy should prioritize growing its digital economy. Sustainable development has emerged as a major area of attention for governments as they attempt to establish a balance between environmental preservation and economic growth. Take Indonesia as an example. It is important to note that the nation has achieved significant progress in promoting renewable energy initiatives and preserving the environment. As a result, growth will align with the development goals of the company for the long run (Liu, 2023). The growth strategy of Malaysia could be influenced by Indonesia and make sure that sustainability is woven into it. In addition to promoting renewable energy and helping green businesses, this plan should also ensure infrastructure projects are thoroughly inspected for environmental impact. The UNEP 2023 report shows that sustainable development policies help make economies more resilient to climate change and environmental damage.

Ultimately, building strong rules and capable organizations is key for carrying out policies on how to spend money for development. Research shows that strong governance structures and see-through institutions play a key role in making sure public money is spent right and development goals are reached (IMF, 2022). Malaysia can make its governance frameworks better by boosting its ability to implement policies and encouraging teamwork between public and private sectors. This helps ensure that money put into infrastructure, education, and tech gives the economic results we expect, while cutting down on waste and corruption.

Besides learning from other ASEAN countries, Malaysia needs to put into action key practices that came up in focus group discussions. Clear steady policies should guide spending on development, which will help ensure growth over time. Better planning keeping track, and checking results will boost GDE outcomes. To avoid doing the same activities twice, agencies within the government must work together. Government accountability will rise with openness and citizen involvement. By implementing these best practices and tailoring them to Malaysia's unique political and economic framework, the country may raise GDPE and produce long-term, inclusive growth. Table 8 summarized the best practices for Malaysia from Singapore and Thailand.

Table 8
Best Practices for Malaysia from Singapore and Thailand

Focus Area	Best Practice	Source	Application in Malaysia	Supporting Citations
Infrastructure Investments	Prioritize digital infrastructure (e.g., broadband, smart cities).	Thailand (Thailand 4.0)	Invest in transport networks, rural broadband access, and smart urban infrastructure to enhance	OECD (2022); McKinsey (2022)
Human Capital Development	Invest in STEM education and skills training to prepare the workforce for emerging industries.	Singapore	Reform education and expand vocational training in digital technologies, biotech, and green industries.	World Bank (2022); Asian Development Bank (2023)
Innovation and Technology	Focus on R&D, tech startups, and the digitization of traditional industries.	Thailand	Increase funding for R&D, foster a tech-driven ecosystem, and encourage digital transformation in key sectors.	OECD (2022); McKinsey (2022)
Efficient Public Spending	Emphasize effective resource allocation, transparency, and reducing delays in project implementation.	Singapore & Thailand	Strengthen governance frameworks, ensure accountability, and minimize inefficiencies in development spending.	IMF (2022); UNEP (2023)
Private Sector Collaboration	Promote public-private partnerships for infrastructure and innovation projects.	Singapore	Engage private stakeholders to attract investment, share risks, and improve economic initiatives.	World Bank (2022); Asian Development Bank (2023)

CONCLUSION

The panel ARDL estimation study highlights the short-term and long-term effects of various economic factors on GDP per capita in ASEAN, emphasizing the need for strategic government spending. Although the short-term impact of such expenditures may be limited, they significantly contribute to long-term economic growth. Sustained development in ASEAN countries depends on key policy strategies aimed at fostering resilience and promoting sustainable growth. Significant investments in technology, infrastructure, and human capital are essential for long-term economic growth, as demonstrated by Thailand and Singapore. These countries exemplify how strategic public investment can accelerate economic development. For instance, Singapore's rise as a global economic powerhouse stems from its investments in a highly skilled labor force and world-class infrastructure (Lee and Liew, 2016; Lim, 2018). Similarly, Thailand has achieved consistent economic growth by prioritizing healthcare and education, enhancing living standards and productivity (Pholphirul, 2010; Vongprasert, 2019). These examples underline that effective and efficient government spending, rather than simply large expenditures, is crucial for sustained economic progress.

Malaysia has also reaped benefits from its investments in transportation and public utilities. However, there is room for improvement in sectors like internal security, healthcare, and education (Hassan, 2020). To stay competitive within ASEAN, Malaysia must focus on projects that enhance infrastructure, technology, and education by streamlining government initiatives, reducing inefficiencies, and directing public funds toward high-impact sectors (Zulkifly, 2021). Adopting a more systematic and deliberate spending approach, akin to Singapore and Thailand, could ensure Malaysia's public expenditures effectively support genuine economic expansion. In particular, increased investments in digital technologies,

energy, and transportation infrastructure would strengthen the economy while reducing inequalities and fostering regional balance (Khalid and Abdul Aziz, 2019). This approach would better prepare Malaysia to navigate global economic challenges while sustaining long-term development.

Key policy recommendations emerge from these insights. First, Malaysia should enhance the efficiency of its public development spending by optimizing processes, minimizing waste, and making targeted investments in infrastructure, technology, and education (Ahmad and Kadir, 2022). Second, by learning from Singapore and Thailand's successful programs, Malaysia could emphasize investments in digital technologies, transportation, and energy-related smart infrastructure. These initiatives could reduce regional disparities, promote balanced growth, and increase overall economic productivity (Hassan and Ghani, 2020).

In conclusion, ASEAN's long-term economic growth depends on a comprehensive strategy that includes sustained investments in infrastructure and human capital, efficient public spending, fiscal sustainability, and the promotion of foreign direct investment (FDI). Strategic investments aligned with national development goals would help ASEAN countries overcome short-term challenges, enhance living standards, and build resilient economies capable of withstanding global uncertainties.

ACKNOWLEDGEMENT

The authors would like to thank the National Accounting Institute, Accountant General's Department of Malaysia, for awarding a research grant and providing invaluable support throughout the research process.

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