



Article

# Government Allocation and Economic Growth: An Empirical Evidence from States in Malaysia

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**Abstract:** Academic researchers are still interested in government fiscal management and its economic consequences. The impact of federal government fiscal policy on the economy has gotten a lot of attention. Nonetheless, little is known about state-level fiscal management. The main goal of this research is to investigate the relationship between state government fiscal and economic growth across Malaysia's states. We also investigate the economic impact of the federal government's contribution on each state's budget allocation. We identified disparities in federal funding. We use a panel dataset that spans 13 Malaysian states and ten years, from 2008 to 2017. We found that government spending drives growth in domestic products for most state governments using the panel autoregressive distributed lag (ARDL) model. The Granger causality test reveals that state government spending and federal allocation to states significantly impact Malaysian state economic growth. In general, our empirical evidence backs up Wagner's theory.

**Keywords:** Gross-Domestic Product (GDP), allocation, causal relationship, economic growth, government spending



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## 1. Introduction

Malaysia's GDP and finances have been growing since the dawn of time, but there has also been a decrease due to government spending allocated to the state's economic performance. It is a major concern for the government, as every dollar the government spends should be put to better use, generating revenue for the government and increasing its own GDP. The percentage of the country's GDP has been steadily increasing since 1960, indicating that Malaysia's GDP performance is excellent, but there have been declines in 1998 (27.83 percent), 2009 (12.35 percent), and 2015 (12.33 percent). Despite the government's allocation, the state government has worked hard to implement economic development in the state and create a stable economy.

Overall, the political system and government strategies for determining the amount of spending to generate government revenue benefits society and the government. According to Asri et al., (2015), the state government employs more techniques and strategies in coordinating fiscal policy at a level where the amount of expenditure and revenue are compared. It is because the government's spending and revenue strategies in each state have a very different impact on economic output activities in Malaysia. The current state of the economy is frequently linked to economic growth. This topic has been discussed for quite some time. As a result, the study demonstrates that state

government spending also contributes to economic growth. In Malaysia, government spending plays a significant role in generating and contributing to GDP. Development expenditure and operating expenditure are the two types of government spending (Taha & Loganathan, 2008). This research focuses on how state governments use such spending to spur economic growth in their respective states.

## 2. Literature Review

For Indonesia, Malaysia, Philippines, Singapore, and Thailand, Ahsan et al., (1992) determined the direction of the effect between national income and government spending. The Granger causal test investigated the causal relationship between the two variables. The researchers used time series data from the last four decades. According to this study, the impact of government spending on national income is only found in the Philippines. This hypothesis is unsupported by evidence, and vice versa for other countries.

Asri et al., (2015) motivated by the growing fiscal deficit and the size of the public debt to investigate the causes of fiscal imbalances to make fiscal adjustments and consolidations. They used the aggregate component data and main revenue and expenditure. Their study tested the cointegration (long-run relationship) and the direction between income and expenditure by state governments in Peninsular Malaysia. The cointegration and impact relationship between income expenditure were studied using Autoregressive Distributed Lag (ARDL). According to the findings, most state governments plan revenue collection before making long-term spending decisions. These findings support the income-expenditure hypothesis, which states that revenue collection comes first, followed by expenditure.

Kogid et al., (2010) determined the impact of factors and components such as consumer spending, investment, government spending, and net exports on Malaysia's GDP. Malaysia's Gross Domestic Product (GDP) was chosen as the dependent variable. The study's data spans a period of 24 years, from 1990 to 2014. This study uses a variety of methods to assess the impact of government spending on Malaysia's GDP growth, including the Multiple Regression Method, Correlation Coefficient, Coefficient of Determination (R-square), t-statistic test, and f-statistic test. The study's findings show that all the study's independent variables impact the dependent variable, Malaysia's GDP. This means that all the factors evaluated in this study positively relate to Malaysia's GDP.

From 1970 to 2000, Chamorro-Narvaez & Garavito-Calderon (2019) looked at the long-term relationship and direction of cause and effect between foreign direct investment (FDI) and economic growth in developed and developing countries. The long-run relationship between these variables can be identified using the Johansen cointegration method, while the Vector Error Correction Model (VECM) and the Granger cause and effect test can be used to see the direct relationship of cause-and-effect directions related to those variables. The study's findings show that there is no significant cause and effect relationship between FDI and GDP in selected developed and developing countries.

Wah (1997) identified the variables that impact Malaysia's manufacturing sector's output change. The least squares method (OLS) was employed to determine the variables. Then, construct the next Regression model using both the T-statistic and the F-statistic. The study's findings show that local labour has a greater influence on the manufacturing sector's output production. The study's findings also revealed that all the variables are positively related to manufacturing sector production.

Iskandar et al., (2020) determined the nature of development economics in Indonesia. Important aspects, such as variables that influence economic development in a city as a result of government allocation, are also considered. Then they look at how far a country's economy has progressed in terms of different sectors. The method is geared toward discussion only, with no data required, and is more focused on theory and observation. Their study found that human resources, natural resources, science and technology, culture, and capital resources all impact development.

Pinto (2013) investigated the long-term direct relationship between economic growth performance and foreign direct investment (FDI), domestic investment (DI), and government-supplied allocations. The states of Sarawak and Sabah are the focus of this research. The presence of long-run relationships was determined using the cointegration method, including the distributed lattice boundary test or autoregression (ARDL). The study's findings revealed that the dependent variables and independent variables studied in the study have a long-term relationship. It is consistent with government spending on economic development. FDI and DI, or domestic investment, on the other hand, had a positive but insignificant impact on Sabah and Sarawak's economic growth.

According to Asri et al., (2015), the size of the current and future fiscal budgets is influenced by the behaviour and direction of the relationship between government revenue and expenditure over time. As a result, this research examines three hypotheses about the dynamics of the revenue-to-public-spending relationship: the tax-spending hypothesis, tax-spending, and fiscal adjustment. Specifically, this research investigates whether revenue and expenditure have the same or different decision-making power at the legislative level for elected state governments. To verify the existence of a long-run relationship between national income and the amount and components of aggregate expenditure, the Vector Error Correction Model (VECM) Panel was used. The study's findings show that most state governments practice more fiscal adjustment strategies at the total revenue and expenditure level compared to the components.

Using aggregate data and by component for state government cases in Peninsular Malaysia, Asri et al., (2015) identified the long-run relationship (cointegration) between revenue and expenditure. Autoregressive distributed lag (ARDL) methods and models were used to achieve the study's objectives, which included determining the existence of such long-run relationships (cointegration). Granger's short and long-term direction of cause and effect is also used to assess the relationship between public revenue and expenditure. The study's findings also show that the state government in Peninsular Malaysia is a revenue and expenditure hypothesis in the long run. This means that, at all income levels, the next government will determine the revenue collected before incurring any expenditure.

Mehmood & Sadiq (2010) studied the causal relationship of Granger between certain selected variables namely government expenditure with tax revenue collection. Time series econometric methods such as cointegration test, Granger causality test, variance decomposition method and reaction function are applied in this study. The findings of the study show that for state governments in Malaysia, empirical results show the direction of bi-directional causality between revenue and expenditure which supports 'the fiscal synchronization hypotheses. In addition, the country's GDP growth also influences the growth of federal and state government spending, which supports Wagner's theory.

### 3. Materials and Methods

The World Bank website, book journals, articles, theses, Bank Negara Malaysia, Department of Statistics and Economic Reporting Malaysia, and the International Monetary Fund were all used to collect data for this study. The information gathered from the above sources is reliable because it has undergone research and analysis before being displayed. According to Cowton (1998), secondary data is information gathered by other researchers that can be used as a reference in new research studies. From 2008 to 2017, the data was collected from 13 Malaysian states (10 years). It means that a total of 130 study observations were used in the study.

#### 3.1 Measurement of Variables

GDP is the dependent variable in this study, while government expenditure, investment, and state revenue in Malaysia are the independent variables. In this study, the independent variables were government expenditures, such as development and operating expenditures. However, in this context, government spending is made up entirely of state spending. Government operating expenditure is a recurring expenditure that pays for government management and administration costs. It is one of the largest government expenditures at the state level. Meanwhile, development spending is the government's long-term investment in national economic development projects. In the meantime, state government development spending is critical for long-term economic resource generation. This is because the physical characteristics of a country will influence the level of labour employment as well as the calculation of a state's GDP. Development expenditure, unlike operating expenditure, is one-time.

Investment is the second independent variable. Investment is a payment made by investors in development projects as part of economic activity. It serves as a platform for investors to assess the strength and stability of an economy before investing in the hopes of making a profit in the future. Long-term and short-term investments are the two main types of investments. However, the study will investigate both goals in this context. Because an investor's confidence is based on a company's financial strength, a good investment indicates that an economy is very strong and stable. This study looks at how the state government collects revenue while also carrying out economic activities, resulting in a state's economic performance in Malaysia.

The state results are the next variable. Tax revenue, non-tax revenue, and non-revenue receipts are the three components of state revenue. These three have been noted in each state's Auditor General's Report. The revenue is then combined into a Consolidated Revenue Account. Although the tax rate in Malaysia is the same, the payment and revenue from the tax can increase economic generation, and the government will use a portion of the tax revenue to improve living standards, whether for the welfare of the people or social development or to improve the quality of environmental services.

#### 3.2. Econometric Model

This study proposed two econometric models, which can be seen as follows:

Model 1:

$$GDP_t = a + \beta_1 GEXP_t + \beta_2 CTRL_t + e_t \quad (1)$$

Model 2:

$$GDP_t = a + \beta_1 GEXP_t + \beta_2 OEXP_t + \beta_3 INV_t + \beta_4 SRV_t + e_t \quad (2)$$

### 3.3. Panel Data Analysis

The panel data approach was used to conduct this research. This method combines time series and cross-sectional data, with observations repeated for each unit of the cross-section in each time period. The advantage of using this panel data is that data and information can be displayed more clearly and accurately. Furthermore, the panel data has the advantage of providing a higher degree of freedom in this study. Panel data can also reduce "bias" caused by discarded variables and "bias" generated by regression due to too many units or observations. Finally, the data panel detected the presence of unidentifiable heterogeneity in the study. This research uses a ten-year time series and includes 13 Malaysian states.

#### 3.3.1. Unit Root Test

This unit's source panel test determines whether the data obtained is stationary or not. Because the time series is the unit root in this study, the data is not stationary. Unit root testing is necessary to prevent researchers from creating "spurious regression" regressions. The Augmented Dickey Fuller test was also used to check for the presence of unit causes. This study, however, uses annual data: lag = 1 because the data includes ten years.

#### 3.3.2. Autoregressive Distributed Lag (ARDL)

The lowest squared standard technique is commonly used to estimate ARDL models. The ARDL model has a general form in which the variable  $y$  is a function of itself (in levels or differences left over) to the variable  $x$ , either at the same level and levels of differences, contemporaries, or differences left behind, in levels or differences left over. This research will also look at the impact of government spending on long and short-term economic growth.

#### 3.3.3. Granger Causality Test

Cause-and-effect relationship of Granger The F-statistic value, which is the coefficient in the equation, and certain similarities between the variables used, such as GDP dependent variables and independent variables such as government expenditure, investment, and state government revenues, can be used to measure the Granger cause and effect test, which is a short-run test.

## 4. Results

This chapter presents the study's findings from relevant sources using the proposed methodology. The results and objectives of the study, as stated in chapter 2, were obtained using EViews10 software. The study covers 13 Malaysian states and spans a period of ten years, from 2008 to 2017.

### 4.1. Descriptive Analysis

#### 4.1.1. Gross Domestic Product (GDP)

Using the data from Malaysia's Department of Statistics and Economic Reporting, the trends for 13 Malaysian states over 10 years as seen as follows:

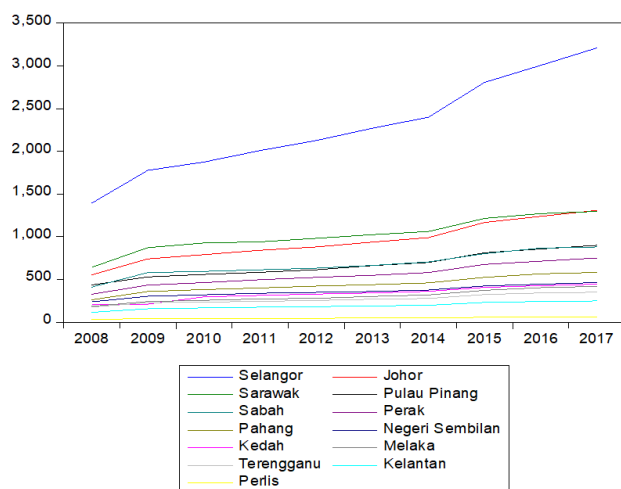


Figure 1. Result of GDP Trend for 13 Malaysia States.

Figure 1 shows that Selangor has the highest and most consistent annual increase. Other states, on the other hand, have similar trends but with different numbers. Other states are increasing at the same rate, as most state governments only follow the same policy in response to current economic conditions. While the state of Perlis has the lowest trend, this is due to the state government's focus on the primary sector, which is agriculture.

### 4.1.2. Government Expenditure

The Selangor state government has seen a significant increase in development expenditure over the last ten years. The New Economic Policy introduced by the fourth Prime Minister, e.g. Tun Dr Mahathir, has significantly impacted the state of Selangor. Many infrastructure development projects are not lagging behind other states that showed a steady improvement rather than a sharp decline (see Figure 2). The state government engages in economic activities by periodically renewing infrastructure and meeting consumer needs.

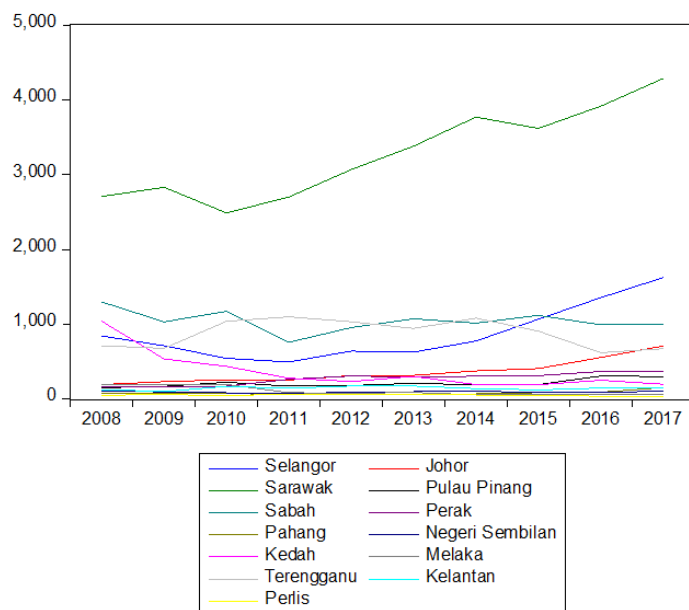


Figure 2. Result of Government Spending Trend for 13 Malaysia States.

### 4.1.3. Operating Expenses

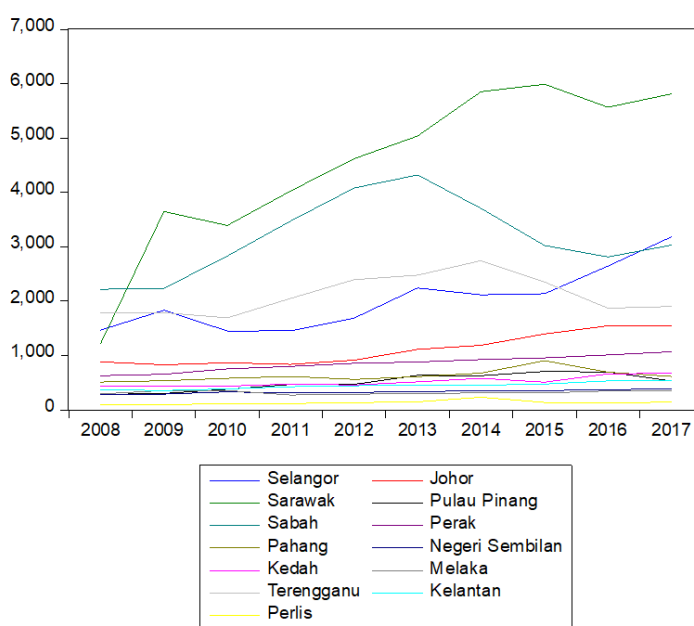


Figure 3. Result of Operating Expenses Trend for 13 Malaysia States.

When there are numerous national development projects and activities or development expenditures, a large portion of the operating expenditure component, such as employee salaries, will be spent. Figure 3 shows that many residents in Perlis only take daily salaries rather than pensions and gratuities. The Selangor state government has the highest operating expenses, while Perlis is the state government with the lowest operating expenses. Operating expenses have the greatest indirect impact on government spending. According to Wagner's theory, economic development's performance is proportional to public development's growth. These findings support his claim that every Malaysian state government spends much money on public development and public spending to carry out economic activities.

#### 4.1.4. Investment

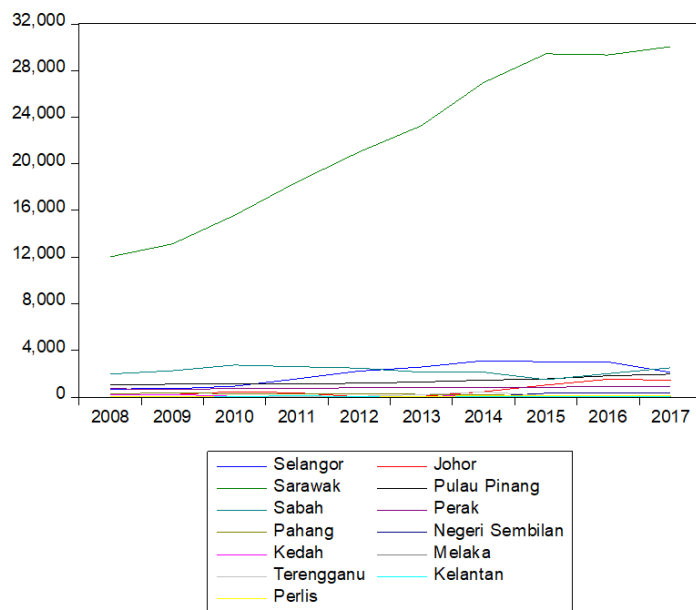


Figure 4. Result of Investment Trend for 13 Malaysia States.

The value of investments recorded in the Malaysian Economic Report is shown in Figure 4. The state government of Sarawak has made the most investment. Sarawak, according to Deputy Chief Minister Datuk Amar Awang Tengah Ali Hasan, offers many advantages to investors. Sarawak has always welcomed local and foreign investors, prioritising industries that employ cutting-edge technology. Over the last five years, numerous new programs and projects have existed. While investment in other states is consistent yearly, only the Perlis state government shows less investment.

#### 4.2 Descriptive Analysis

Table 1. Result of Statistical Summary of Variables

	GDP	GEXP	OEXP	INV	SRV
Mean	622.45	597.35	1280.8	2268.74	1509.28
Median	434.7	229.01	657.56	228.68	648.58
Maximum	3210.69	4288.76	5988.71	30035.23	8766.3
Minimum	31.66	35.74	90.12	0.00	77.44
Std. Dev.	586.78	870.25	1362.73	6037.69	1812.06
Observations	130	130	130	130	130

Table 1 displays the results of the descriptive statistics analysis. This study descriptively reported GDP, operating expenditure, development expenditure, investment, and state government revenue. Descriptive analysis generally determines each variable's mean, median, maximum, and minimum values. 130 data points were used in the analysis. The average value for the operating expenditure variable is 622.45, while the median is 434.7. The maximum GDP value is 3210.69, while the lowest value is 31.66.

The average development expenditure was 597.35, while the median was 229.01. The total data's maximum and minimum values are 4288.76 and 35.74, respectively. The investment variables' average and median values are 2268.74 and 228.68, respectively. The maximum investment value is 30035.23, while the minimum investment value is zero. The average and median total government revenue are 1509.28 and 648.58, respectively. The government revenue variables have maximum and minimum values of 8766.30 and 77.44, respectively.

### 4.3 Unit Root Test

**Table 2.** Result of Stationary Testing using Augmented Dickey Fuller (ADF)

At Level, I(0)					
	LN_GDP	LN_GEXP	LN_OEXP	LN_INV	LN_SRV
t-statistic	0.0845	0.9334	0.1507	0.176	0.3618
Prob	0.5734	0.5996	0.349	0.9965	0.5108
		NO	NO	NO	NO
t-statistic	0.3046	0.0278	0.9765	0.9961	0.4914
Prob	0.089	0.3939	0.9993	0.9144	0.9259
	*	NO	NO	NO	NO
t-statistic	0.9901	0.9728	0.9859	0.8121	0.6693
Prob	0.9995	0.9024	0.9173	0.9997	0.9199
	NO	NO	NO	NO	NO
At First Differences, I(1)					
	d(LN_GDP)	d(LN_GEXP)	d(LN_OEXP)	D(LN_INV)	d(LN_SRV)
t-statistic	0.0019	0.1431	0.6713	0.7181	0.0317
Prob	0.0099	0.033	0.4283	0.3252	0.2065
	***	**	NO	NO	NO
t-statistic	0.0244	0.2904	0.0001	0.1472	0.2573
Prob	0.0619	0.0279	0.1543	0.1055	0.274
	*	**	NO	NO	NO
t-statistic	0.0005	0.0499	0.188	0.3396	0.002
prob	0.0253	0.0078	0.0968	0.7232	0.061
	**	***	*	NO	*

Notes: a:(\*) Significant at the 10%;(\*\*) Significant at the 1% and (no) Not Significant; b: Lag Length based on SIC; c: probability based on MacKinnon(1996) one sided p-values

The unit root test was used in this study as one of the methodologies for studying data stationery. In Table 2 , the Augmented Dickey-Fuller method was used to examine the stationary in terms of the order in which the data was examined. This method is critical for determining a variable's stationary and the relationship between variables. The results show that the GDP variable is stationary at 0.05 percent at the first level. In the meantime, development spending remained unchanged at 0.01 percent. The state government revenue and operating expenditure variables were both flat at 0.1 percent. In the first stage of the unit root test, the investment variable did not show any signs of stationery. These findings indicate that the hypothesis does not reject the null hypothesis. This demonstrates that the data obtained are stationary regarding the variables' order.

### 4.4 Regression Analysis

**Table 3.** Result of Hypothesis Testing

Variable	Coeffi- cient	Std. Error	t-Statistic	Prob.
C	2.073	0.417	4.973	0.000
LN_GEXP	-0.334	0.108	-3.097	0.002
LN_OEXP	0.201	0.278	0.724	0.471
LN_INV	0.111	0.029	3.880	0.0002
LN_SRV	0.586	0.273	2.142	0.034
R-squared	0.611	Mean dependent var		6.057

Adjusted R-squared	0.599	S.D. dependent var	0.929
F-statistic	49.165	Durbin-Watson stat	0.141
Prob(F-statistic)	0.000		

Regression analysis is known as the process of creating a mathematical model or function that can be used to predict or determine one variable through another. Table 3 displays the result of the regression analysis. The F test is used to determine overall significance. The F-statistic has a value of 49.17. The F-statistic is the ratio of two quantities that are expected to equal the null hypothesis in general. The adjusted R-squared value is 0.599, and the R-squared value is 0.611. The R-squared value determines the independent variable's impact on the dependent variable. The Durbin-Watson value is critical in regression analysis because it is a test that is used to detect autocorrelations in the residual values of a regression analysis. The Durbin-Watson value was used to test the value of this autocorrelation. The value indicates 0.141, with autocorrelation ranging from 0 to 2. As a result, the variables have an autocorrelation relationship.

**Table 4.** Result of Panel Autoregressive Distributed Lag (Panel ARDL)

Variable	Coefficient	Std. Error	T-Statistic	Prob.*
<b>Long Run Equation</b>				
LN_GEXP	-0.222	0.041	-5.391	0.000
LN_OEXP	0.962	0.084	11.381	0.000
LN_INV	0.045	0.003	14.833	0.000
LN_SRV	-0.538	0.087	-6.208	0.000
<b>Short Run Equation</b>				
COINTEQ01	-0.335	0.045	-7.438	0.000
D(LN_GEXP)	0.059	0.483	1.223	0.228
D(LN_OEXP)	-0.410	0.333	-1.23	0.224
D(LN_INV)	-0.131	0.137	-0.96	0.342
D(LN_SRV)	0.311	0.260	1.20	0.237
C	1.471	0.190	7.75	0.000

The relationship between independent and dependent variables in the long and short run was investigated using Autoregressive Distributed Lag (ARDL) regression. In other words, the study will compare the coefficient values for long-term and short-term studies. According to studies, development spending is negatively related to the country's GDP, whereas operating and investment spending is positively related (refer to Table 4). It implies that operating costs and investments contribute to economic growth. The government revenue, however, has a negative coefficient value. Development expenditure has a positive value in the short-run relationship. This means that development spending significantly impacts the state's revenue and economic growth in the short term. In the short term, operating expenses and investments have a negative value. This is because operating expenses and investments often take a long time to pay off. It is demonstrated by the positive and statistically significant values of the operating expense coefficients (0.962) and investment (0.045) in long-term results. A positive relationship in the short run indicates that the data obtained are significant for the government revenue variable. This suggests that government revenue variables influence state GDP growth in Malaysia.

## 5. Discussion

This study has completed several tests and analyses that are required to align the study's objectives. The results of the tests were analysed in this study showed that state government allocation has an impact on economic growth to some extent. State government expenditure is very important in enhancing the state's economic growth in the long and short term, according to the state government's policy implications (Devarajan et al., 1996). Granger's cause and effect test also revealed that the state government's own spending is responsible for the state's economic growth. The study's findings suggest that Keynesian theory holds in the long run in Malaysia, implying that total government expenditure impacts the dominant national income (Aschauer, 1989; Blanchard & Perotti, 2002; Devarajan et al., 1996). This scenario demonstrates the critical role of federal government spending in generating long-term economic growth, particularly through infrastructure projects that will benefit all Malaysian states. However, because such projects typically take a long time to implement, two factors must be considered. First, experts and professionals must meticulously plan these projects, particularly in terms of cost allocation, which must consider market price fluctuations. Project selection should be based on priorities, with priority given to projects considered "critical".



Second, once a project has been implemented, it should be overseen by a committee of experts and professionals who will track its progress until it is completed successfully and benefits the target group. It is important to note that the failure of government-funded development projects will harm many parties because the failure of the project to be completed means that the expenditure allocated to the project will automatically become unproductive, even if the sector is productive. The government has implemented numerous policies and studies, but our country remains in a group of developing countries. The government has implemented a number of policies, including fiscal policy, which aims to collect and spend national revenue to meet economic needs. Aspects of the previous study are very important for this study to be conducted because it can be used as a new reference for learning about previous research or analysing the results to achieve the study's objectives. In other words, previous research has yielded some useful opinions and theories about government spending and economic growth.

Most of this research focuses on positive outcomes, specifically a positive relationship between the selected variables of consumer spending, government spending, investment, and revenue for each Malaysian state (Ansari, 2002). As a result, many previous studies on (GDP) have inspired the researcher to continue this research. Hopefully, this study will aid researchers in learning more about government spending and economic growth in the future, so that future generations are more concerned about Malaysia's economic growth and can help Malaysia become a developed country.

## 6. Conclusions

Overall, based on empirical methods, the study's findings show that Keynesian theory exists in the long run in Malaysia, while Wagner's theory exists in the short run. Economic spending is in line with economic growth when the use of the Autoregressive Distributed Lag (ARDL) method. Granger's method of causation is also closely related, with the state government's expenditure having the effect that the government's allocation is the primary cause of economic growth in Malaysia. For the 13 states studied, the study's findings revealed a positive relationship between the two variables. Where Wagner's law exists in the short term, this evidence strongly supports it. In the long term, Keynesian theory is present in Malaysia's long-term system, which is said to be dominated and influenced by government spending. One way for the government to improve the economy is to implement infrastructure and construction projects in Malaysia, which will benefit all of Malaysia's states.

The findings of this study generally support the study's hypothesis, demonstrating that the study's main goal of examining the direct relationship between government spending and GDP growth in each Malaysian state has been met. Selangor, in particular, is one of the states that receives the most government funding. Furthermore, the state is designated as the state that contributes the most to Malaysia's economy, as development expenditure in the state is the highest among all states. Perlis is Malaysia's last state in terms of economic contribution because it contributes significantly to the first sector, agriculture. The study discovered that the second and third sectors play an important role in Malaysia's economic activities because they contribute significantly to the economy. There are some limitations to the research. One of its flaws is that the empirical evidence used is limited. Because some state governments do not fully disclose current revenue and allocation data and statistics, the data and resources obtained are limited. There are two types of government allocations: federal and state government allocations. The second limitation is that the amount of data obtained is limited. Because the Malaysian Economic Report only provides data and reports by state until 2017, this is the case. The Malaysian Economic Report does not have data for each of Malaysia's federal territories.

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