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THE IMPACT OF FISCAL POLICY ON ECONOMIC GROWTH: FRESH EVIDENCE FROM MALAYSIA

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Abstract:
Many scholars have researched the connection between fiscal policy and economic growth and how fiscal policy can be a crucial factor for economic development and growth. Despite this, it still remains a critical debate amongst policymakers and scholars. Thus, this study fills the gap by analyzing the impact of fiscal policy on economic growth in Malaysia spanning 1990 to 2022. The secondary data from World Bank Indicators (WDI) is collected. This study examines the impact of fiscal policy (government expenditure) on Malaysia's economic growth by adding more macro factors such as unemployment, tax revenue, and inflation. This study employs the Autoregressive distributed lag (ARDL) model to examine the long-run correlation to meet this objective. Furthermore, various econometric models are employed, including the ARDL bound test and the error correction model (ECM), to check the relationship between the variables. Based on empirical results and findings, the study suggests that there is a strong relationship between GDP and expenditure, unemployment, tax revenue and inflation since the probability value is less than significant in the short-term relationship with constant and unrestricted constant form. Additionally, with the ARDL Model boundary test, government expenditure, unemployment, tax revenue, and inflation have a long-term relationship with GDP in Malaysia, where the F-statistic value is smaller than the lower boundary. Moreover, the Error correction method with restricted constant suggests a long-term link between the expenditure and GDP. Notwithstanding the results, fiscal policymakers must carefully evaluate the efficacy of government expenditure allocation to ensure that it is consistent with the long-term economic growth goals. The potential limitation of this study is its dependency on secondary data from the World Bank Indicators (WDI), which may not capture all relevant nuances of Malaysian fiscal policy and economic dynamics.

Keywords: *Fiscal Policy; Economic Growth; ARDL; ECM; Malaysia*
JEL: H50; O40; E62

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1. Introduction

Macroeconomic policies have an essential role in maintaining and balancing prices and economic growth. In times of crisis, macroeconomic policies are implemented in order to stabilize the economy's growth and pricing. The majority of nations have lowered interest rates and added more cash flow to their budgetary systems in response to crises (Heyzer & Mochida, 2009). Nevertheless, according to (Terrones, Scott, & Kannan, 2009) the consequence of inconsistent government spending may lead to substantial fiscal losses and a considerable level of government shortage. Fiscal policy is the financial policy of the government. It is also recognized as a policy for spending and income of a country's government. Typically, governments utilize the Fiscal policy to implement it during the inflation period, to influence the economy to prevent an economic recession, and to help the economy sustain healthy and consistent growth.

However, according to Keynesian economists, the multiplier effect is a mechanism by which expansionary fiscal policy can increase total consumption and production. It is obvious that a country's government needs to hold an improved plan to comprehend and anticipate the responses of its government to such events if it is to avoid a crisis. Governments should, therefore, immediately consider better policies. By examining the effects of fiscal policy, governments may be given suggestions for enhancing and better putting fiscal policy into practice for economic growth and a more effective response to similar acts and crises. Macek Janku (2015) mentioned in their paper that the primary indicator used to measure a country's success and growth is considered to be economic growth. With the exception of a few nations that regulate their pace of growth, most developed nations have higher economic growth rates, in contrast to those countries that are not developed and have relatively low rates. The significance of economic growth is derived from the favorable impacts on the governmental economy and society, which provides opportunities for new investments, leading to more jobs and increased purchasing power for the community. For decades, the relationship between government expenses and the growth of the economy and how government expenditure impacts economic growth have been discussed. Yet, it has not been specifically and clearly stated.

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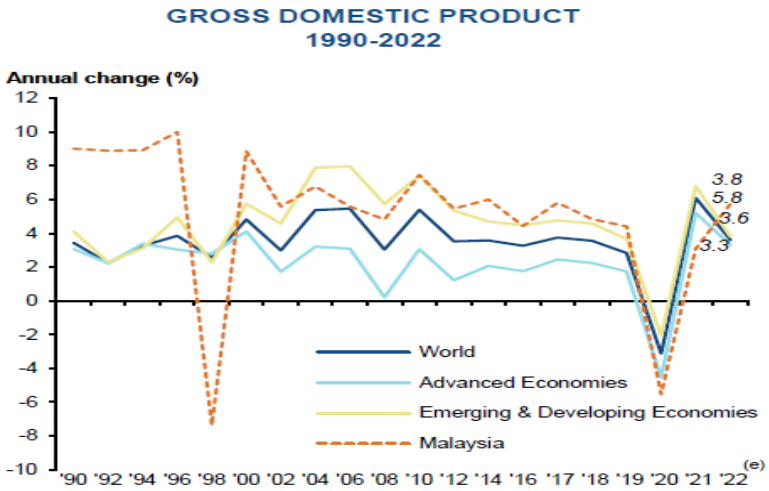
Figure 1: GDP growth and government expenditure in Malaysia (1990-2022)



Source: Statistics Department-Malaysia and IMF World Economic Outlook, 2021

Malaysia has consistently seen some of the world's fastest development rates in previous years. Figure 1 indicates that Malaysia's industrial sector continues to grow quickly. Gross domestic product (GDP) has increased by an average yearly rate of development of over eight percent throughout 1988 (World Bank, 1996). Between 1990 and 2022, a similar upward trajectory in government expenditure and GDP may be seen in the statistics above. Key economic developments that took place in the early 1970s and the 1980s have been important factors in determining a number of noteworthy spikes. The government's spending as a percentage of GDP has been trending upward, demonstrating the government's increased economic importance. The latest data shows that the pattern of continuous expansion is being maintained, however, somewhat subsequently. Potential patterns in the economy that might have been impacted by world events like the COVID-19 epidemic and the 2008 financial crisis. As we can see from Figure 1, the progress of the government expenditure and GDP of Malaysia during the period from 1990 up to 2022. Based on this figure, both Gross Domestic Products and Government Expenditure are not too spikey, and almost both have constant growth during this period.

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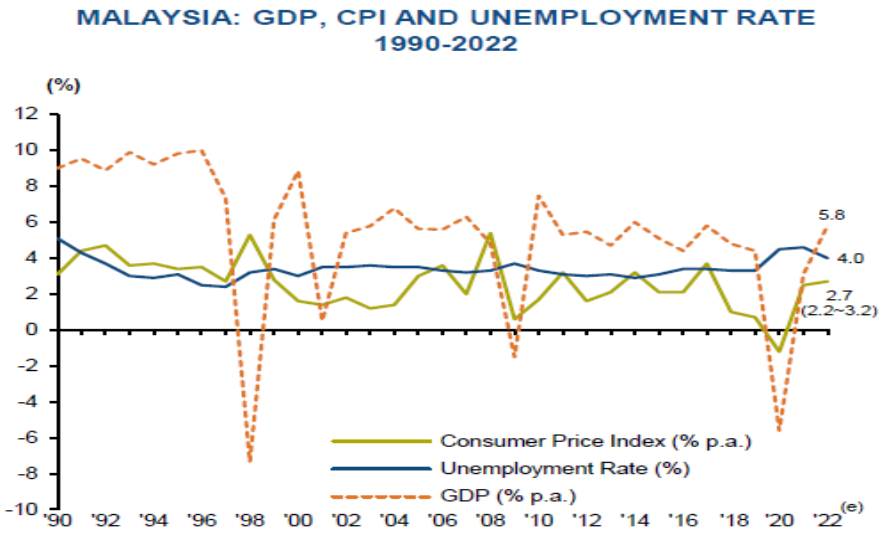
Figure 2: Malaysia's economic trend from 1990-2022



Source: Bank Negara Malaysia

Figure 2 indicates that starting from 1990 up to 2022, tax revenue, as a percentage of GDP, shows variation but mostly shows a significant, sustained level of taxation within the economy. In addition, the unemployment rates fluctuate but, in most cases, remain notably low, implying labor market stability. The government expenditure shows an increase, demonstrating more and more investments in various areas. Simultaneously, GDP per capita displays steady growth, which indicates that economic prosperity is improving. Inflation rates vary over the years but remain stable, providing a steady purchasing power (World Report, 2022).

To avoid an unforeseen event, a nation needs greater planning to comprehend and predict how its government will react to this kind of circumstance. Although previous studies have examined the impact of fiscal policy and how fiscal policy affects economic growth in Malaysia, such as (Sinha, 1998; Chandran, 2011; Hasnul, 2015; Abdullah & Rusdarti, 2017). Nevertheless, this study fills the gap by studying the impact of fiscal policy on economic growth in Malaysia for a longer period from 1990 up to 2021 and adding some other macroeconomic factors such as unemployment, tax revenue, and inflation to reach a more reliable conclusion. This research could assist governments' guidance should comparable events arise in subsequent years by examining the effects of the fiscal policies.

This study aims to investigate how Malaysia's fiscal policies have affected economic growth. Understanding how this policy has impacted the economy can help policymakers develop future policies. Thus, this study answers the question: What are fiscal policy's effects, and how does it lead to sustainable economic growth? The remaining parts of this study include the following sections: a literature review to understand historical investigation by time and the association

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between the independent and dependent factors of the study, and a conceptual framework for the study. Then, the research methodology section thoroughly explained the data collection methods, model specification, and econometric analysis techniques. Afterward, the empirical results and discussion present the study findings and the discussion with previous studies. Lastly, the conclusion and recommendation parts conclude the study findings and are based on the results suggesting some policy recommendations.

2. Literature Review

For a long time, that how Fiscal policy can influence the growth of the economy, especially in the economy of developing countries, remains a crucial issue in literature and theory of economy. Numerous researchers have conducted research to evaluate the connection between fiscal policy and economic growth. Mixed outcomes have been obtained by utilizing a variety of ideas and research methodologies. Many researchers declare that Fiscal policy has a significant impact on economic growth. In contrast, if we review the empirical studies about the relationship of fiscal policy with economic growth, we find that the outcome of the studies shows it does not have any substantial impact on economic growth. This paper contributes to the body of empirical research on the impact of fiscal policy on economic growth. It highlights the importance of this strategy for governments seeking to run more effectively and respond to economic crises. The following are some previous research studies we quoted for more clarification.

Speaking of emerging nations, Attari & Javed (2013) investigated the connection between the inflation rate, the economy's expansion, and government spending in Pakistan, one of Asia's emerging economies. They divided government spending into two categories in their study: government development spending and government current spending. Several statistical methodologies were applied to the time series data collected between 1980 and 2010 in order to conduct the analysis. The findings indicated that whereas government development spending has an extremely substantial impact, government current spending has a statistically negligible coefficient. It demonstrates how government spending results in beneficial links and externalities. In the near term, government spending impacts economic growth more than the inflation rate.

When Singapore and Sri Lanka were compared, it became clear that government spending, tax income, and investment spending had a long-term, considerable, and favorable impact on both countries' economies (Sriyalatha & Torii, 2019). As per the economic scholar John Maynard Keynes's model, there is a relationship between fiscal policy and economic growth, which can positively affect a country's economy, and by applying fiscal policy tools, the government can speed up economic growth.

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According to the research done by Chaudhry (2017) about the impact of fiscal policy on economic growth in Pakistan, the consequences show that there is a positive relationship between fiscal policy implementation and distortionary taxes, as well as non-discriminatory taxation in the short term. Based on their findings, they recommended that the Pakistan government should control a comprehensive fiscal strategy to reach a successful conclusion regarding Pakistan's GDP growth. The main findings of Easterly & Rebelo (1993) in their empirical research are: First, the degree of development and the budgetary structure are closely related: While income taxes are only significant in industrialized economies, underdeveloped countries substantially rely on them. Second, the market's growth, as determined by its population, affects fiscal policy. Third, while investments in transportation and communication are consistently connected with growth, Investments in communication and transportation correlate with growth; however, it is challenging to determine the effects of taxation statistically.

The English economist "John Maynard Keynes" discussed the general theory of interest and Money. He explains the correlation and impact of government expenditure on economic growth. Concerning the Keynesian theory, he illustrates that if the government expenditure rises, it leads to an increase in the economy's growth through an expansionary fiscal. In the case of rises in government expenditure, the output also increases, improving aggregate demand; consequently, it positively impacts the gross domestic product growth. Therefore, assuming everything else is equal, output grows if government spending rises. Much research has examined the connection of government expenditure to economic growth. However, the results differ from one government to another country, and some show the positive impact of economic growth by government expenditure.

Al-Masaeed and Tsaregorodtsev (2018) found that government expenditure, imports, and export revenue significantly affect the GDP growth of Jordan; however, the external public debt shows that it does not have a positive relation on Jordanian economic growth, but it is not significant. In contrast, some other researchers, such as (YUSOF & BUKHARI, 2014) and (Hasnul A. , 2015) in their findings they mention that government expenditure and the real GDP does not have any significant correlation with each other and that government expenditure does not impact economic growth. Their findings were corroborated by (Ramayandi, 2003), who claimed that increased government expenditure might lead to increased tax revenue, which would put additional pressure on the economy's productive sector.

Based on Macek and Junku (2015) evaluation, they have assessed fiscal policy's impacts on economic growth based on the condition of institutions in the OECD. Their examination found an opposite relationship between governments with lower and higher fiscal transparency. There is a positive relationship with economic growth in countries with low fiscal transparency, while, in reverse, there is a negative correlation with higher fiscal transparency.

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As per the findings (Simon, 2012), his research shows that real investment is highly and positively connected with real GDP growth in Asian nations, but both government spending and tax income are unlikely to have any effect on the region's real GDP growth. Relying on the findings of a study about the Impact of Fiscal Policy on Economic Growth in the Romanian Economy implies that the effect of government spending and profit shocks on economic growth is still minor. Thus, budgetary policy measures are insubstantial in an economy similar to Romania (Bobasu, 2016).

The findings of Zulkifli et al. (2022), which utilized the ARDL method for estimation, show that the economy of Malaysia is positively affected by government expenditure. On the contrary, another study by (Hasnul A. , 2015), the findings show that for the past 45 years, there has been a negative relationship between government spending and economic growth in Malaysia. Additionally, according to the classification of government spending, the only sectors that significantly contribute to slower economic growth are those related to housing and development. There is no evidence of its influence on economic growth in education, defense, healthcare, and operating spending. (Khare & Adhikari, 2021) evaluate the link between government expenditure and economic growth for the government of Nepal for the period of 1990 up to 2019. In their study, they found that government spending has had a substantial or negligible influence on Nepal's economic growth over the research period, and attention should be given to increasing capital expenditure mobilization for the expansion of development activities in a sensible way.

Furthermore, research carried out by (Rahimi, 2021) investigated how fiscal policy implementation impacts GDP growth in Afghanistan using the Autoregressive Distributed Lags (ARDL) econometrics techniques. The evaluation results show that government expenditure considerably impacts and establishes a long-term connection with Afghan economic growth. Even while the estimation results support the claim that the fiscal policy has a major impact on the nation's economic growth, the effect is just 5 percent, meaning that if the Afghan government boosts spending by one percent, GDP growth will increase by an additional five percent. Additionally, the research findings (Barlas, 2020) demonstrate that government expenditure as an independent variable and Gross Domestic Product as a dependent variable have a long-term relationship.

Besides, Ngiik et al. (2021) explored the link between government expenditure, unemployment, and exchange rates. This study found that all the variables in the model indicate cointegration, demonstrating a long-term relationship. Also, based on the model of Vector Error Correction (VECM), it illustrated a short-term, unidirectional causal relationship between government expenditures and economic growth, expansion of the economy and unemployment, unemployment and exchange rates, and unemployment and government expenditure. On the

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contrary, the study in Kenya on unemployment and economic growth have revealed that despite government efforts to control unemployment through expansionary fiscal policies such as higher government expenditure, the country continues to experience very high unemployment levels, especially among the youth. While the national unemployment rate was 11 percent in 2008, the youth unemployment increased to 23.86 percent by 2014.

Nevertheless, the study suggests that fiscal policies have not significantly reduced the unemployment level. Also, the research reveals that fiscal policy has not significantly affected growth in Kenya. Consequently, the results indicate that policymakers need to find different mechanisms to achieve both job creation and the growth of the economy Gachari, J. M., & Korir, J. K. (2020).

Moreover, the inflation rate in Malaysia is believed to have a positive long-run effect on economic development. However, the long-run relationship between these variables is not evident. Besides, based on the Toda-Yamamoto causality test, a unidirectional causal correlation between economic growth and the unemployment rate has been found (Impin & Kok, 2021).

H1: Government expenditure and economic growth have a significant positive relationship.

H2: Inflation and economic growth have a positive relationship, and inflation can positively impact economic growth.

H3: Tax revenue has either a positive or neutral impact on economic growth, varying with the tax measures and how they are implemented.

H4: There is a negative impact between unemployment and economic growth. Higher unemployment rates can negatively impact economic growth.

Figure 3. Conceptual Framework of the Study

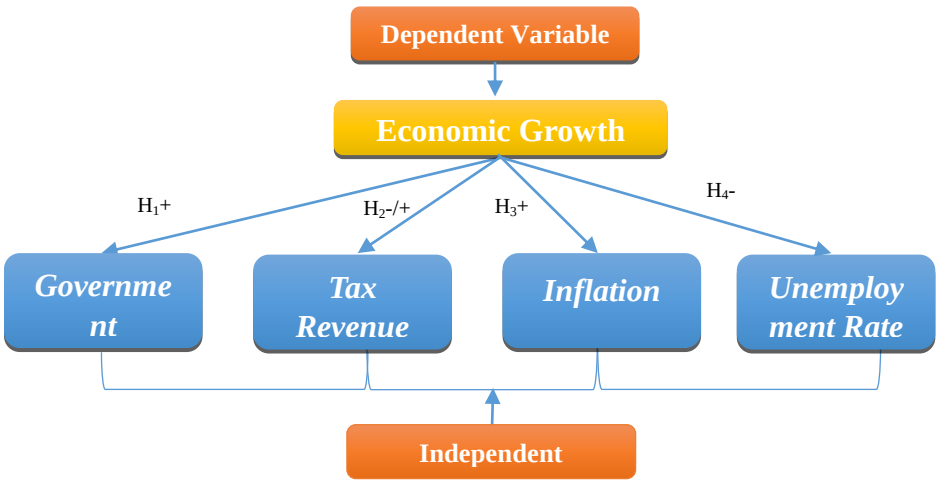

Figure 3. Illustrates the study's conceptual structure. This conceptual framework accurately depicts the relationship between the independent and dependent variables in the study. This

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allows the researcher to comprehend the potential impact of variations in independent factors on dependent factors. The framework also helps locate potential confounding variables that could impact the study's findings. A positive sign denotes a favorable association involving independent and dependent variables in the framework used to convey the suggested hypothesis. At the same time, the negative symbol denotes a lousy connection. With this framework, researchers can quickly interpret the direction of the association between variables.

3. Research Methodology

3.1 Data Collection

Based on the availability of data, we used annual time series data of Malaysia over the period from 1990 to 2022. The study includes GDP (GDP) as dependent and Government Expenditure (GEXP) as a core independent variable; further, we also included inflation (INF), tax revenue (TAXR), and Unemployment (UNEP) as independent variable to make this study more robust by investigating the impact of fiscal policy on economic growth from many perspectives. Data collection from the most reliable source is crucial for any study; thus, we have obtained the data from the World Bank for this analysis. The variables GDP and government expenditures are calculated in current US$, while inflation is taken as an annual percentage of consumer price. In addition, the independent variables tax revenue is measured as a percentage of GDP, and unemployment is counted as a percentage of the total labor force (modeled ILO estimate). The more detailed description can be seen in Table 1.

Table 1: Descriptive statistics of utilized variable in the study

No	Variables	Measurement	Unit	Source
Dependent Variables				
1	GDP	Gross Domestic Products per capita	Current US$	WDI
Independent Variable				
2	Gov Expenditure	General government expenditure	Constant US$	WDI
3	Inflation	Consumer Prices	Annual Percentage	WDI
4	Tax Revenue	% of GDP	% of GDP	WDI
5	Unemployment	% of total labor force (modeled ILO estimate)	% of total labor force	WDI

3.2 Model Specification

This study employed the well-known methodology, which is the autoregressive distributed lag (ARDL) approach. The ARDL model is a standard least squares regression in which the independent and dependent variables' lags are regressors. A variety of cointegration techniques are used in economic literature. According to Nkoro and Uko (2016), "cointegration" is a term used in econometrics to denote the existence of a long-run equilibrium among economic variables that converges over time. The ARDL approach is one of the most recent

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cointegration techniques used to examine dynamic and equilibrium relationships between dependent and independent variables. In the situation of stationary variables at I(0) or integrated of order I(1), the ARDL model is regarded as the best econometric technique. Pesaran et al. (1999) asserted that altering the sequence may resolve the parallel correlation and endogenous regression problems simultaneously. Based on the study's goals, this model is superior to others in capturing both independent variables' short- and long-term effects (Abonazel & Elnabawy, 2020).

The ARDL test can be utilized to perform an econometric model to experimentally evaluate the relationship between macroeconomic variables, whether the regression coefficients are stationary at their level, incorporated of order one, or a combination of the two. The benefit of adopting the ARDL model is that it is built on a single equation framework, allowing it to accept a suitable number of lags and lead the data creation process in a generalized to a particular modeling approach, based on (Pesaran & Shin, 1999) The ARDL model (p, q1, qk) represents the autoregressive distributed lags model (ARDL), where qk is the number of lags of the k-th explanatory variable and p is the number of lags of the dependent variable. The ARDL model is a least squares analysis with lags for the dependent and independent variables. The equation is represented by:

$$y_t = \alpha \sum_{i=1}^{p} \gamma_i y_{t-i} + \sum_{j=1}^{k} \sum_{i=0}^{qj} X_{j,i-1}\, \beta_{j,i} + \varepsilon_t \qquad (1)$$

Some factors, such as the explanatory variables, are known as static or fixed repressors. x_j with no lag terms in the model $q_j = 0$. The dynamic repressors are the explanatory variables with at least one lag. Before an ARDL equation can be established, the appropriate number of lags for each variable must be decided. The best part is that simple model selection techniques may determine these lag lengths. Since an ARDL method can be assessed using least squares regression, standard Akaike, Schwarz, and Hannan-Quinn information criteria could be used for model selection. The multiple least squares regressions modified from R^2 could be used as an alternative. Since an ARDL model predicts the static correlation with the dependent and explanatory variables, it is likely to convert the model into a long-run representation, showing the dependent variable's reaction over time to a change in the explanatory variables. In this paper, we will analyze the impact of Fiscal Policy on economic growth in Malaysia using Gross Domestic Product (GDP) as our dependent variable. We applied a growth model for this study, with GDP growth modeled at government expenditure (GEXP), inflation (INF), tax revenue (TAXR), and unemployment (UNEP).

$$lnGDP_t = \beta_0 + \beta_1 lnGDP_{t-1} + \beta_2 lnGEXP_t + \beta_3 INF_t + \beta_4 TAXR_t + \beta_5 UNEP_t + \varepsilon_t \qquad (2)$$

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Where:
$lnGDP_t$ is a dependent variable that represents the Gross Domestic Product per capita log at time *t.*
$lnGEXP_t$the log of the general government expenditure rate at time t is an independent variable.
INF_t represents an independent variable, which means the inflation rate of consumer prices at the time *t.*
$TAXR_t$ is also an independent variable, representing tax revenue as a percentage at time *t.*
$UNEP_t$ indicates the unemployment rate as a percentage of the total labor force at time *t.*
β_0 is the intercept.
$\beta_1$represent the coefficient of the lagged dependent variable.
$\beta_2, \beta_3, \beta_4, \beta_5$ are the coefficients of the independent variables.
ε_t is the error term.
This above ARDL model for this study captures the potential short-run and long-run association between the dependent variable (GDP) and independent variables, including lnGDP as lag, lnGEXP, INF, TAXR, and UNEP, considering lagged effects of GDP as well as the contemporaneous impact of independent variables. The methodological framework for the econometric procedure is shown in the figure 4.

In the study, it is crucial to present a concise and clear picture of each part the author will do. The methodological framework or procedure that will be done in the next section is clearly presented in Figure 4. The author initially applied two crucial unit root tests named Augmented Dicky Fuller (ADF) and Phillip Perron (PP) tests to ensure that data has no unit root at first difference. Afterward, the Johnsen cointegration test is performed to ascertain stationarity and then to ascertain if the variables are associated. Moreover, the author employed the ARDL model after considering that the data for this study is stationary at level, and further, this model fulfills the criteria of this study. The next section presents the empirical findings and discusses the previous studies.

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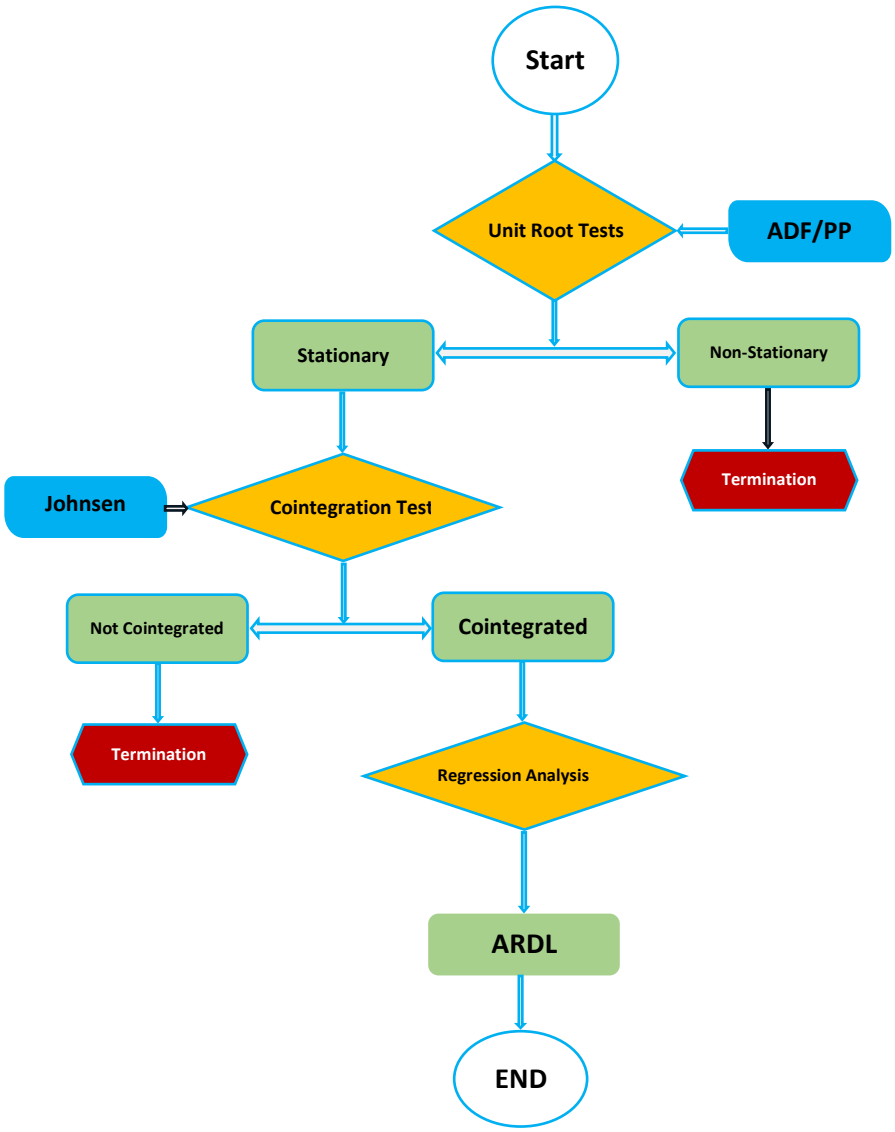
Figure 4. Methodological foundation of the study



4. Empirical Estimation and Discussions

4.1 Descriptive Statistics

A descriptive statistic of the study's variables is shown in Table 2. A descriptive statistic elaborates how variables are distributed and vary across the dataset by providing information about their central tendency and dispersion (Gujrati, 2021). In the Table, GDP indicates the 17 observations in the dataset. The maximum and minimum values of the Natural Logarithm of GDP (LnGDP) are 4.08 and 3.40, which shows GDP variability across the observations. Likewise, the maximum and minimum values of LnGEXP are 10.68 and 9.78, respectively,

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representing the different levels of spending by the governments. Tax revenue (TAXR) is a wide range from 10.88 to 19.75, reflecting varying levels of taxation. The central tendencies of LnGDP, LnGEXP, and TAXR are stated as 3.79, 10.29, and 14.89, respectively, from the dataset. The unemployment rate (UNEMP) has a mean of around 3.40%, with an underlying distribution that moves from 2.45% to 4.54%.

Table 2. Descriptive Statistics

	Mean	Median	Maximum	Minimum	Observations
LnGDP	3.791396	3.787967	4.078935	3.400234	33
LnGEXP	10.28866	10.25933	10.67635	9.783381	33
TAXR	14.89037	14.84079	19.75337	10.88467	33
UNEMP	3.395182	3.410000	4.540000	2.450000	33
INF	2.562646	2.617801	5.440782	-1.138.702	33

Given that our data is a time series, it is crucial, and the initial step is to apply a unit root test to understand or identify the data's properties and ensure that the model this study will employ will be robust and properly chosen. The next section explained the thorough process and tests important, tests type for the study.

4.2 Unit Root Test

The validity of estimate findings and the most effective analysis method are both determined by the unit root test, which is widely used. The unit root test is used to confirm the stationarity of the data. The data set must be regarded as stationary for level I(0), the first difference I(1), and the second deference I(2). Each exam has weaknesses. So that we could obtain more accurate and acceptable findings, we performed the Augmented Dicky-Fuller (ADF) and Phillip Perron (PP) unit root tests to ensure that our variables were stationary. The ADF test was initially introduced by Dickey and Fuller in 1979, and according to Johansen and Juselius (2009), the null hypothesis is that the data series have a unit root and are not stationary. With the same null hypothesis as the ADF test, Phillips and Perron's PP demonstrated that the series has a unit root (data are not stationary). The unit root test's null hypothesis must be rejected to show that the series or data are stationary. Table 3 presents the results of ADF and PP unit root tests.

Table 3. Unit Root Test

	Variable	ADF Unit Root Test		PP Unit Root Test	
		Statistics	Probability	Statistics	Probability
Level I(0)	GDP	2.3870	0.9948	2.2853	0.4890
	GEXP	2.9474	0.9987	2.7595	0.9979
	INF	-1.6772	0.0879	-1.3994	0.1473
	TAXR	-0.8289	0.3485	-1.4369	0.1379
	UNEP	-0.2190	0.5995	0.0991*	0.7071

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First Difference I(1)	GDP	-4.3595***	0.0001	-4.9283***	0.0004
	GEXP	-3.9460***	0.0003	-4.6537***	0.0008
	INF	-8.8113***	0.0000	-12.4682***	0.0000
	TAXR	-5.8983***	0.0000	-5.4661***	0.0001
	UNEP	-5.1255***	0.0000	-8.0158***	0.0000

H_0: A unit root exists in the series, and data are not stationary.
*** Null Hypothesis Rejection at 1% (P < 0.01),
** Null Hypotheses Rejection at 5% (P < 0.05),
* Null Hypothesis at 10% (P < 0.10).

Table 3 summarizes the results of the PP and ADF unit root testing. At this level, most variables are not stationary, except unemployment, which indicates that they are stationary at 10% significance at a level in the PP test but not stationary in the ADF test. All variables became stationary after taking the first difference through ADF and PP tests. Consequently, the author concludes that, except for one variable, the variable sequence is not stable at level I(0). However, after applying the first I(1) difference to the remaining variables, the data became stationary. The next step can be used to investigate the relationships between the variables.

4.3 Correlation

The correlation matrix in Table 3 shows a reciprocal or complimentary relationship between the variables. Each matrix cell displays the correlation coefficients between the relevant variables. Three correlation coefficients exist, though: ideal opposition. The numbers -1, 1, and 0 signify correlation, whereas 1 denotes a complete positive correlation. Table 4 shows the correlation matrix of the study variable; the author can identify the relationship between the variables.

Table 4. Correlation Matrix

Variables	LNGDP1	LNGEXPED1	TAXR1	UNEMP1	INF1
LnGDP	1	-	-	-	-
LnGEXPED	0.83830	1	-	-	-
TAXR	0.21326	0.30642	1	-	-
UNEMP	-0.64424	-0.34907	-0.30875	1	-
INF	0.15613	-0.11114	0.04580	-0.24399	1

The results of the correlation matrix suggest a strong positive correlation between the lnGDP and lnGEXPED, which indicates that general government expenditure tends to increase in parallel with the GDP. Further, the positive moderate correlation between TAXR INF and lnGDP can be seen in the Table above. It suggests a linear positive correlation that tends to increase simultaneously with the GDP. While according to the results, a strong negative correlation occurred between UNEM and lnGDP. The correlation provides useful information about the potential relationship between the independent and dependent variables, which can help the author conduct further analysis in the study.

4.4 Cointegration Test

This section discusses cointegration, a statistical term describing the long-run equilibrium relationship between non-stationary time series. The Johansen approach and Engle-Granger test are widely used cointegration procedures developed by Sren Johansen and Robert Engle and

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Clive Granger, respectively (Gujarati, 2021). The cointegration test results determine the number of cointegrating equations (CE) needed to describe the relationship between variables.

Table 5. Johansen Cointegration Test results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.794568	124.0872	69.81889	0.0000
At most 1 *	0.718255	76.60797	47.85613	0.0000
At most 2 *	0.507172	38.60543	29.79707	0.0038
At most 3 *	0.341830	17.37757	15.49471	0.0257
At most 4 *	0.148675	4.828824	3.841465	0.0280

Table 5 shows the results of the Johansen cointegration test, which shows that the cointegration of all variables rejects the null hypothesis of no cointegration between the variables. As a result, we conclude that all research variables have long-term connections and correlations.

4.5 Autocorrelation and Partial Correlation Test

Partial and autocorrelation findings in Table 6 indicate that the dataset may include serial correlation patterns. However, autocorrelation assesses the correlation between variables at various lags, whereas partial correlation considers the influence of intermediary variables. The significance of these correlations can give information on how the variables under consideration interact over time (Kassens, 2019).

Table 6. Autocorrelation and Partial Correlation test results

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |*** |	. |*** |	1	0.241	0.432	7.1483	0.007
. |*. |	. |. |	2	0.182	-0.014	8.5258	0.016
. |. |	. |. |	3	0.031	-0.062	8.5919	0.034
. |. |	. |. |	4	-0.043	-0.064	8.3440	0.075
. *|. |	. |. |	5	-0.032	-0.068	8.6055	0.116
***|. |	***|. |	6	-0.244	-0.322	13.777	0.032
***|. |	. *|. |	7	-0.443	-0.169	21.352	0.004
***|. |	. *|. |	8	-0.262	-0.125	27.707	0.002
.**|. |	. |. |	9	-0.239	-0.056	29.705	0.000
.**|. |	. *|. |	10	-0.311	-0.124	32.149	0.000
. *|. |	. |. |	11	-0.130	-0.020	32.987	0.003
. |. |	. *|. |	12	-0.024	-0.086	32.697	0.002
. |*. |	. |. |	13	0.112	-0.063	33.303	0.003
. |*. |	.**|. |	14	0.073	-0.240	33.719	0.002
. |** |	. |*. |	15	0.287	0.152	36.751	0.002
. |*. |	. *|. |	16	0.108	-0.122	39.408	0.002

Table 6 shows that the variables have a modest level of correlation with their lag values; in the first noteworthy observation, we can find significant positive autocorrelation at lag 1 (AC=0.442, PAC=0.442), with a probability value less than 0.05. We conclude that these findings reflect a pattern in the data. Furthermore, for lags 6, 7, and 8, the negative partial correlation (PAC= -

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0.352, -0.189, -0.115) can be observed. Thus, it appears that the variables' current values have a probable association with their 6, 7, and 8 lag periods, respectively. This pattern suggests a cyclical and oscillatory activity focused on these times (Gujrat, 2021).

4.2 Diagnostic Results

This study uses several diagnostic tests before using the ARDL model. Diagnostic tests help to understand the durability and conformity of the data with the model. Thus, the diagnostics test results can be seen in Table 7.

Table 7. Diagnostics Tests Results

Diagnostic Test	Problem	Prob. value	Decision
Jarque-Bera	Normality	0.0100	The distribution of residuals is normal
Breusch-Pagan-Godfrey	Heteroscedasticity	0.0851	There is no heteroscedasticity
VIF	Multicollinearity	0.0121	No multicollinearity exists.

*** Significance level at the 1% threshold (P < 0.01)
*** Significance level at the 5% threshold (P < 0.05),
*** Significance level at the 10% threshold (P < 0.10).

The stated p-value for the Breusch-Pagan-Godfrey tests is 0.0851, showing that our model lacks heteroscedasticity. Furthermore, the Jarque-Bera test result of 0.0100 suggests that the residuals are well dispersed. We have accurately represented our model by using a statistically significant number. The variance inflation factor (VIF) of 0.0121 indicates that this research model does not exhibit multicollinearity. Table 7 provides evidence that all of the coefficients in our models are stable.

4.2 Regression Estimation

4.2.1 Short-term Relationship

The ARDL regression results are shown in Table 8, indicating the short-term relationship between the dependent (LNGDP) and independent variables (LNGEXPED, TAXR, UNEMP, and INF) utilized in this study.

Table 8. ARDL Short-term Relationship with restricted constant.

Variable	Restricted Constant Test				Unrestricted Constant Test			
	Coefficient	Std. Error	t-Statistic	Prob.*	Coefficient	Std. Error	t-Statistic	Prob.*
LnGDP (-1)	0.086*	0.094	0.908	0.072	0.086*	0.094	0.908	0.072
LnGEXPED	0.756***	0.071	10.641	0.000	0.756***	0.071	10.641	0.000
TAXR	-0.009***	0.003	-3.018	0.005	-0.009***	0.003	-3.018	0.005
UNEMP	-0.048***	0.009	-5.250	0.000	-0.048***	0.009	-5.250	0.000
UNEMP (-1)	-0.014804	0.011	-1.278	0.213	-0.014	0.011	-1.278	0.213
INF	0.005**	0.001	2.677	0.013	0.005**	0.001	2.677	0.013
C	-0.002**	0.004	-0.556	0.022	-0.002**	0.004	-0.556	0.022

*Note: * p-value incompatible with t-Bounds distribution, ** Variable interpreted as Z = Z(-1) + D(Z).*

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Table 8 demonstrates that GDP as a lag statistically impacts the current GDP, suggesting that if the current will increase by 1%, the lag GDP will contribute with the 0.086 coefficient. These findings are aligned with these authors (Narayan, 2012; Mohsen et al., 2021). In contrast, government expenditure indicates strong statistical significance at a 1% level, indicating a high positive impact on economic growth as the P-value is 0.0000. Therefore, with a 1% increase in expenditure, GDP will increase by 0.756. Conversely, as presented in the Table, the (TAXR) shows a strong negative statistically significant impact on the GDP, the relationship between the tax rate (TAXR) and the GDP with the coefficient of -0.009 (p = 0.0059) indicating that by every unit rise of the tax rate, the GDP is estimated to decrease by approximately 0.009 units. Likewise, the findings of these authors (Gürdal et al., 2020; Ahuja & Pandit, 2020; Tan et al., 2020).

Furthermore, unemployment strongly negatively affects the GDP, which suggests that if there is a 1% change in increment in unemployment, this will cause a decrease in the GDP by (0.048), as mentioned via the ARDL model. Also, the p-value is less than 0.01, suggesting a strong negative association. Thus, the author found these findings similar to the previously published studies (Panigrahi, 2020; Ramzan, 2021). On the other hand, unemployment is insignificant, with a lag value in GDP, as evidenced by the p-value (0.212), which is more than the significant levels of 1%, 5%, and 10%. Whereas inflation (INF) illustrates a moderate positive impact on the GDP whereby coefficients (0.005) and p-value (0.0132) suggest that for every 1-unit increase to inflation, GDP increases by 0.005 units. These results are aligned with those (Adaramola & Dada, 2020; Ahmmed et al., 2020; Ramzan, 2021b). Overall, based on the findings from the ARDL model, we conclude that the variables (LNGEXPED, TAXR, UNEMP, and INF) have significant short-term relationships with GDP in Malaysia. Meanwhile, lag unemployment does not have a significant short-term relationship. Thus, this estimation and its results present the intricate inter-dependent relationship between dependent and independent variables, suggesting that economic decisions and policymaking analysis can be more influential for economic development.

The boundary test is more important in modeling ARDL because this test can help authors verify the correctness of the model specification, ensure the presence of cointegration among the variables, facilitate correct inference, validate the model, and also to improve the reliability of the policy implications that derived from the findings of the model results (Masiha et al. 2021). The following section presents the results of the boundary test.

4.2.2 ARDL Model Boundary Test

The ARDL boundary test, conducted with and without constant term, is an effective tool for empirical econometric examination and is particularly crucial to identifying the long-term relationship between variables in the model. This model, including the constant term, permits the

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analysis to examine whether the variables collectively impact each other sustainably over time without any influence from external factors. However, the constant term test aims to investigate whether the relationships among the variables show some stability that does not depend on the influence of the external elements. These tests are the main drivers of empirical studies since they give information on the interrelationships of variables and the presence of cointegration that can lead to more sophisticated econometric models, thus providing a solid background for policy recommendations. Table 9 presents the results of the ARDL model boundary tests, which are used to determine the order of integration (I(0) or I(1)) of the variables in the Autoregressive Distributed Lag (ARDL) model.

Table 9: ARDL Model boundary test

Test Statistic	ARDL Model boundary test				ARDL Model boundary Test without constant			
	Value	Signif.	I(0)	I(1)	Value	Signif.	I(0)	I(1)
F-statistic	46.93036	10%	2.45	3.52	39.1331	10%	2.2	3.09
k	4	5%	2.86	4.01	4	5%	2.56	3.49
		2.5%	3.25	4.49		2.5%	2.88	3.87
		1%	3.74	5.06		1%	3.29	4.37
Actual Sample Size	31		Finite Sample: n=35		31		Finite Sample: n=35	
		10%	2.696	3.898		10%	2.46	3.46
		5%	3.276	4.63		5%	2.947	4.088
		1%	4.59	6.368		1%	4.093	5.532
			Finite Sample: n=30				Finite Sample: n=30	
		10%	2.752	3.994		10%	2.525	3.56
		5%	3.354	4.774		5%	3.058	4.223
		1%	4.768	6.67		1%	4.28	5.84

Null hypothesis: No levels of relationship

Table 9 shows the results of the ARDL Model boundary tests without Constant and unrestricted constant terms lead to the conclusion of the presence of a long-term relationship between the dependent variable (GDP) and the independent variables, including government expenditure (LnGEXP), tax rates (TAXR), unemployment rates (UNEMP), and inflation rates (INF). For both the tests, the obtained F-statistic values, which are 46.93036 and 39.1331 higher than the lower boundary at 5%, exceeded the critical values at different significance levels, rejecting the null hypothesis of no level relationship. The above results suggest that different variables, such as a change in government expenditure, tax rates, unemployment rates, and inflation rates, can significantly impact GDP in the long run. These results highlight the essential correlation of such economic variables and add relevance to their long-term relationships in policy formation, economic forecasting, and modeling processes.

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4.2.3 Error Correction Method

The ARDL models are more powerful methods to analyze non-stationary time series data, which capture long-term relationships while employing an error correction method (ECM) in conjunction with ARDL to enhance the analysis through explicitly modeling that adjusts the process to equilibrium and also addressing potential shortcomings such as endogeneity and omitted variables. Table 10 suggests the results of ECM with restricted constant and no trend. Also, the same Table shows the results for the unrestricted constant and unrestricted trend. However, the magnitude of the error correction coefficient is -0.048, which is between 0 and -1, and its P-value is 0.000, which is greater than lower than the significant level of 1%. Therefore, we can conclude from the results that there is a strong long-term association between the independent variable and dependent variable in the Error correction form, both restricted constant and unrestricted constant and trend.

Table 10. Error Correction method results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Restricted Constant and No Trend				
D(UNEMP1)	-0.048161	0.005198	-9.266136	0.0000
CointEq(-1)*	-0.913962	0.054261	-16.84386	0.0000
Unrestricted Constant and Unrestricted Trend				
C	-0.003912	0.006255	-0.625341	0.5379
@TREND	8.23E-05	0.000326	0.252631	0.8028
D(UNEMP1)	-0.048335	0.005381	-8.983133	0.0000
CointEq(-1)*	-0.911922	0.056062	-16.26628	0.0000

The restricted model appears to have more significant exploratory power for the dependent variable (GDP) than the unrestricted model. Thus, in both specifications, changes in unemployment and the lagged cointegration equation substantially impact the dependent variable. However, the significance of the constant and trend variables varies between the models. Additionally, the unrestricted model indicates that the constant and trend variables may not be significant predictors of the dependent variable because the p-value is insignificant at 1%, 5%, and 10%, respectively. Thus, we can conclude from the results that government expenditure, unemployment, tax revenue, and inflation have strong long-term and short-term relationships, as the author found this association from both models.

5. Conclusion and Recommendations

Fiscal policy is crucial for every government to act and stand against economic recession. The fiscal policy also entails the utilization of taxes and government spending, such as earnings for workers in government-run industries, as well as payments for facilities like water, energy, and utility services overall, as well as aid provided to other nations, to affect economic activity and

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quality, boost total production, and create jobs to obtain macroeconomic growth. This study delves deeper into the impact of Fiscal policy on economic growth in Malaysia during the period of 1990 up to 2022 using the Auto Regressive Distributed lag (ARDL) Method. Previously, some other studies also examined the relationship between these two variables (government expenditure and Fiscal policy) for different periods, and some of the results showed a long-term and short-term connection between fiscal policy and economic growth. However, little research indicated that fiscal policy does not impact economic growth, showing a negative relationship.

In this study, we added more variables to check for strong associations. The impact of government expenditure as an independent variable on economic growth to examine the long-run and short-run correlation. We also added the tax revenue, unemployment, and inflation as independent variables because these are also associated with GPD and fiscal policy. Furthermore, some econometric models, such as the ARDL bound test and error correction model, are applied to check the relationship. Our empirical results and findings illustrate that there is a relationship between dependent variable (GDP) and independent variables (government spending, tax revenue, unemployment, and inflation) in the short-term relationship with constant and unrestricted constant form.

Additionally, with the ARDL Model boundary test, government spending, tax revenue, unemployment, and inflation have a long-term relationship with GDP in Malaysia. Moreover, in the Error correction method with restricted constant, there is a long-term link between the independent and dependent variables because our results indicate that the magnitude of the error correction coefficient is between 0 and -1, and its P-value is less than 0.01, 0.05, and 0.10, respectively. Thus, there is a long-term link between the independent variables and dependent variable (GDP) in the Error correction form with and without constant.

Financial and economic studies are very interested in the relationship between fiscal policy and economic growth, which immediately impacts the economy's growth over time. The effect of government expenditure, particularly on long-term economic growth, has received much attention in the discussion of the connection between fiscal policy and economic growth. This study also makes notice that there is no single research that can be used to compare all of these political and economic structures because economic situations vary from one country's Government to another country depending on the dominant system of the country in each government.

The study also discovered that the role of economic policies on economic growth is a crucial and contentious topic in macroeconomic analysis since fiscal policy allows the government to intervene in times of economic slump. The government implements an economic policy dependent on the framework and development of the state economy to attain economic goals like raising the economic growth rate or reaching full employment. Understanding how

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fiscal policy affects economic growth is crucial because opinions among economists, decision-makers, and growth models have varied on the subject. Additionally, not all nations and circumstances have a consistent relationship between fiscal policy and economic growth. Fiscal policy may not always be sufficient to generate economic growth; in some cases, the effect of fiscal policy on long-term economic growth is greater than that on short-term growth; in other instances, the reverse of this may occur.

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