

THE LINKAGE BETWEEN MACROECONOMIC INDICATORS AND ECONOMIC GROWTH IN MALAYSIA

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Abstract: Economic growth is driven by unemployment rates, inflation, and foreign direct investment (FDI). The demand for experienced workers continues to rise, the price of products and services continues to rise, Malaysia's economic growth has begun to decrease, and the financial crisis had negative effects on the economic growth of the country. This paper focuses on the linkage between the unemployment rate, inflation, and foreign direct investment on economic growth in Malaysia from 1990 to 2019. The autoregressive distributed lag (ARDL) approach was used in this research. This study's main findings show a positive and significant relationship between the unemployment rate and foreign direct investment on economic growth in the long run. Then, in the short run, FDI only has a significant positive relationship with economic growth. The research suggests that governments and policymakers are expanding current fiscal policies that help reduce unemployment rates and increase economic growth.

Keywords: Economic growth, unemployment rate, inflation, foreign direct investment.

Introduction

Economic growth indicates a stable economy. A country's long-term prosperity is important for its economic growth. Economic growth is defined as a rise over a specific period of time in the production of commodities and services. It is an important macroeconomic goal since it allows for improved living standards, increased fiscal levels, and job development. According to the International Monetary Fund (2020), Malaysia's economy is the fourth largest in Southeast Asia. The economy of Malaysia has successfully diversified from agriculture and commodities since its independence in 1957 into an economy that now encompasses powerful products and services, which has led the nation to become a top electricity, component, and part exporter. Malaysia is one of the most open economies in the world, with more than 130% trade-to-GDP ratios since 2010. With more than 40% of Malaysia's export-related jobs, trade and investment openness have played a critical role in creating employment and revenue. Since the 1997 and 1998 Asian financial crises and an average of 5.4% growth since 2010, Malaysia's economy has risen and is expected to transition from high middle income to high revenue by 2024. Several measures to stimulate and improve economic growth were therefore created in Malaysia. The National Economic Advisory Council (NEAC) in 2010 created the New Economic Model (NEM) in order to boost economic growth and alter the highly developed emerging globe by 2020. The aim is to encourage the country's long-term economic growth.

Besides, the reduction of poverty will be helped by the expansion of the economy. As national output increases, households will enjoy more items and services. Economic growth in countries with high levels of poverty can considerably improve the standard of living. Economic growth also involves reducing unemployment. A stable economy is responsible for more unemployment and social discontent. Increased demand is caused by economic growth, and firms tend to add jobs. In order to improve public service, economic growth is equally important. As the economy grows, tax revenues rise. Increased growth, money, and profit help the government. The expansion in economic growth is driven by higher tax incomes. When growth, revenue, and profit increase, the government will receive more tax on income, corporate tax, and spending. This would allow the government to spend more on public services.

The growth in Malaysia from 1990 to 2019 is shown in Figure 1. The graph shows a pattern of fluctuations in Malaysia's GDP growth from 1990 to 2019. The highest GDP growth was achieved in 1996, with 10%, and the second-greatest GDP growth was 9.89% in 1993. Malaysia is a magnet for foreign direct investment with a high level of education and low labour costs. Since 1996, Malaysia's economy has enjoyed an average increase in the rate of GDP that exceeded 8% a year. Therefore, Malaysia faced a very severe negative growth rate of -7.34% during the financial crisis in Asia in 1998. The second lowest growth in 2009 was -1.51% due to the world financial crisis, which led to a significant decline in the 2009 global market economy.

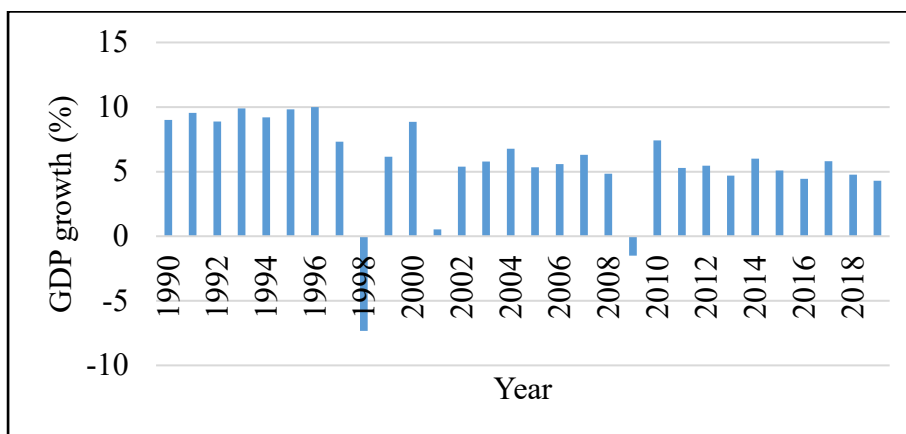


Figure 1: The trend of economic growth in Malaysia, 1990 - 2019

Source: World Bank

The change in the unemployment rate in Malaysia between 2010 and 2019 is shown in Figure 2. The unemployment rate was 3.25% in 2010 and 3.05% in 2011. The unemployment rate in 2012 and 2013 was 3.04% and 3.11%, respectively. In 2014, unemployment was 2.88%, and in 2015, it was 3.1%. The highest unemployment rate in 2016 was 3.44%, while the lowest unemployment rate between 2010 and 2019 was only 2.88% in 2014. After that, unemployment fell by 3.41%, 3.35%, and 3.32% during the next three years, in 2017, 2018, and 2019. High unemployment in Malaysia implies insufficient

economic growth and inactivity in the labour market. In Malaysia, there is comparatively low unemployment and around 3% stability, which implies that the population is roughly fully employed. In 2014, the country attained its lowest level of unemployment, at 2.88%. The thriving economy of Malaysia in Southeast Asia is regarded as one of the strongest.

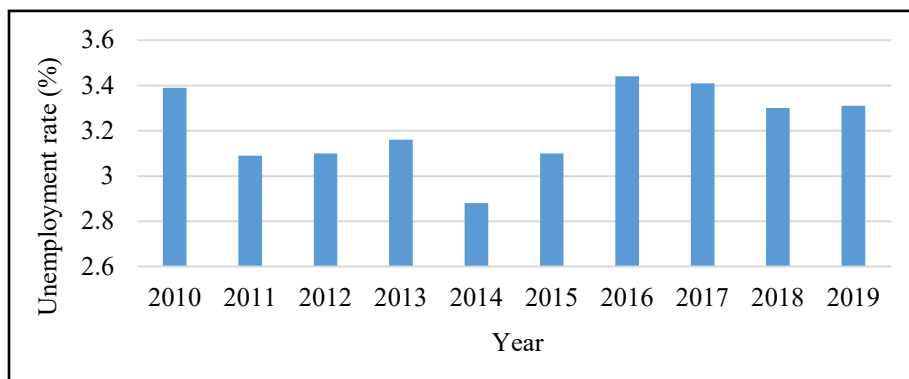


Figure 2: The unemployment rate of Malaysia, 2010 - 2019

Source: World Bank

In Malaysia, the unemployment rate is rising due to poor job selection. Nowadays, many people, especially recently graduated students and the younger generation, are demanding regarding jobs. This is because they are looking for jobs with a high salary based on their degree. In addition, demand is strong for skilled employees compared to new graduates. The growth in the unemployment rate is also one of the concerns. Employers prefer skilled employees to new graduates, making it difficult for graduates to obtain positions. As a consequence, many young graduates with high academic marks and skills account for most of the unemployment rate of 3.4% and are passed over due to a lack of expertise and experience.

According to economists, extremely high inflation and hyperinflation are harmful. And it is because the money supply was expanding. In terms of what components are determining low to moderate inflation, there are many differing points of view. The variations in real demand for products and services as well as changes in supply, such as during shortages, may lead to low and moderate inflation. The prevalent idea is that long-term inflation results from expanding money supplies faster than the growth rate.

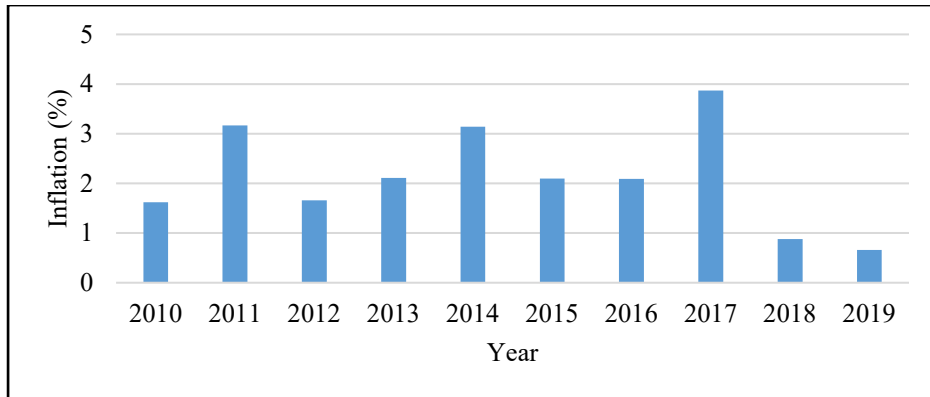


Figure 3: The inflation of Malaysia from 2010 until 2019

Source: World Bank

Figure 3 illustrates the inflation rate in Malaysia from 2010 to 2019. The inflation shows the fluctuation trend from 2010 to 2019. In 2017, the inflation rate was the highest at 3.87%, while it was the lowest at 0.66% in 2019. The reason for the highest inflation rate in 2017 is that Malaysia is a net oil exporter, but rising oil prices are becoming the main factor contributing to high inflation. Then, the lowest inflation rate shows Malaysia's economy is slowly recovering. Inflation occurs at a time when the prices of most products and services are growing (Amadeo, 2012). The cost of living might decrease since we have to pay a lot of money to acquire the same quantity of goods and services. Taxes are excessive, and the tax money is unproductive. However, the problem is that although inflation is low, the cost of living is still high.

With the participation of foreign direct investment, Malaysia's economic growth has begun to slow. Abidin (2010) stated that the fall in foreign direct investment in Malaysia was mainly attributable to a shortage of human capital, corruption, and technical skills. In addition, Malaysia's foreign direct investment inflow declined in 2008 and 2009 as a result of the global financial crisis. Malaysia was one of Southeast Asia's most successful FDI countries. It has always been hard to maintain competitive FDI determinants such as legal infrastructure. There have been several policy mechanisms in place. The Government of Malaysia has improved the value of current drivers and developed new FDI-attractive strategies.

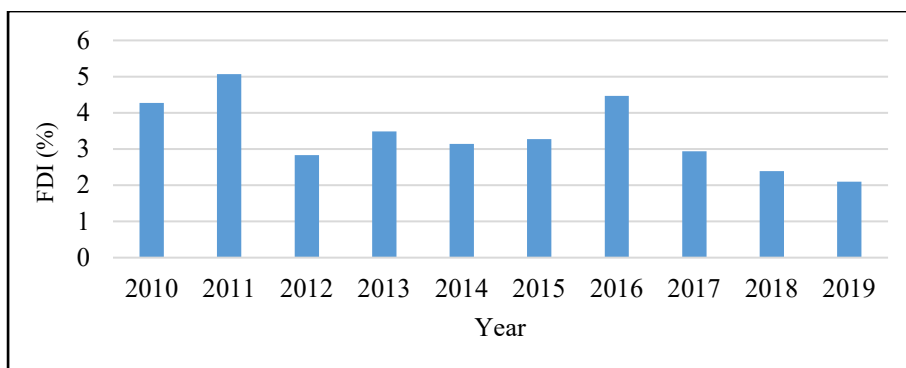


Figure 4: Foreign direct investment of Malaysia from 2010 until 2019

Source: World Bank

Based on Figure 4, the FDI in Malaysia from 2010 until 2019, the graph depicts the fluctuation trend of FDI in Malaysia from 2010 to 2019. The FDI showed the highest level in 2011, with 5.07%. FDI fell directly for three years from 2017 to 2019, with the lowest showing in 2019 at 2.1%. Political instability is the cause of Malaysia's falling FDI.

Numerous past studies have explored the relationship between macroeconomic indicators and economic growth in Malaysia. However, this study seeks to distinguish itself by addressing the following research gap: The limited examination of the pre-2010 period, a critical timeframe for understanding long-term trends, and policy implications. By extending the analysis back to 1990, this research aims to provide a more comprehensive and nuanced perspective on the dynamics between macroeconomic indicators and economic growth in Malaysia. Furthermore, developing the ARDL method can elucidate the linkage between macroeconomic indicators and economic growth, revealing findings in both the short and long run. Therefore, this study can improve upon previous research regarding the linkage between macroeconomic indicators and Malaysia's economic growth by utilising the ARDL model approach. Additionally, this study has the potential to contribute to the enhancement of existing policies aimed at expanding aggregate demand and economic growth rates. Through fiscal policy, the government might effectively reduce unemployment. Moreover, the primary focus of this study is on the linkage between macroeconomic indicators and economic growth in Malaysia. The study is structured into five main sections. The second section will delve into past studies, the discussion on methodology is presented in the third part of this study, the fourth part reveals the study results, and the final section concludes the study.

Literature Review

There is a long-term association between unemployment and economic growth in Nigeria (Enejoh & Tsauni, 2017). The unemployment rate had a positive and considerable long-term influence on economic growth (Kuso & Gachunga, 2019). Ditimi and Ifeakachukwu (2013) used time series data from 1986 to 2010 to investigate the influence of unemployment on Nigerian productivity development. The findings demonstrate that unemployment has a positive influence on economic growth. Aliyu (2012) supported the

finding that there is a positive link between unemployment and economic growth, while Soylyu *et al.* (2018) used panel data to study the connection between economic growth and unemployment in Eastern European countries. This demonstrates the positive effect of unemployment on economic growth. Furthermore, Banda (2016) found that the relationship between Africa's GDP and unemployment was positive in South Africa from 1994 to 2012. This study also supports the finding that unemployment and the labour force positively impact Malaysia's GDP (Ramlan, 2022).

In contrast, Abu (2016) discovered that high unemployment has negatively influenced Nigeria's long-term economic performance. According to Al-Sawaie (2020), studies show that Okun's law coefficient results indicate a negative relationship between unemployment and real GDP. The outcome indicates both negative and considerable economic growth (Khaliq *et al.*, 2014). This finding was supported by the negative relationship between unemployment and economic development in Ogueze and Odim (2015) and Bayar (2014). According to Makaringe and Khobai (2018), the unemployment rate in both the long and short run has a negative and substantial link with economic growth.

In addition, a study conducted by Fung and Nga (2023) explores the impact of youth unemployment on Malaysia's economic growth from 1991 to 2019. Their findings reveal a positive association between youth unemployment and economic growth; however, this correlation lacks statistical significance in Malaysia. The results suggest that the influence of youth unemployment on economic growth is on the rise.

In addition, the relationship between inflation and the real exchange rate significantly influences economic growth negatively (2020). This output is supported by Svigir *et al.* (2017), who looked at the relationship between economic growth and inflation in Italy and Austria between 1980 and 2016. The result is that inflation has a considerable negative influence on economic growth. Thus, a study by Nyenyi *et al.* (2017) showed that inflation negatively influenced economic growth in East African Community countries from 1990 to 2014. A strong negative connection exists between inflation and economic growth (Barro, 2013). Ndoricimpa (2017) calculates the inflation rate required for economic growth in a selection of African nations. A study by Ekinci *et al.* (2020) using the threshold analysis found that the relationship between inflation and growth is insignificant when the threshold value is below. Meanwhile, if the threshold value is about it, inflation adversely impacts economic growth. This finding indicates that the link between inflation and economic growth is nonlinear.

In contrast, Sumon and Miyan (2017) investigate the relationship between inflation and economic development in Bangladesh using annual data from 1990 to 2016. The findings show a statistically significant long-term positive association between inflation and economic growth, which is backed up by a statistically significant long-term relationship between inflation and real GDP. Munir *et al.* (2009) found a significant positive relationship between inflation and growth in Malaysia. Besides, a study by Akter and Smith (2021) found that inflation negatively affects GDP in the short term, it may have a positive impact in the long run.

FDI has a positive relationship with economic growth in Pakistan (Zain, 2019). Masipa (2018) reveals that economic growth positively correlates with FDI. FDI has a

favourable and significant impact on economic growth (Zekarias, 2015). Besides, Kharroubi and Meddas (2018) found that foreign direct investment had a positive and significant influence on Malaysia's economic growth. According to the research, foreign direct investment, both short- and long-term, positively impacts Malaysia's economic growth (Alzaidy *et al.*, 2017). The findings demonstrate that FDI has large and advantageous benefits in both the long and short term (Javaid, 2016). This conclusion is further confirmed by Sokang's (2018) observation that GDP and FDI have a positive connection, contrary to what growth and development authorities believe. A study by Ma'in *et al.* (2021) investigated the correlation between unemployment and indicator variables, namely GDP, population, inflation, and FDI, using the OLS analysis. The findings indicate a negative association between unemployment and FDI as well as population, while no significant relationship was observed between unemployment and GDP or inflation.

Materials and Methods

This study investigates the linkage between macroeconomic indicators and economic growth in Malaysia from 1990 to 2019. The dependent variable of this study is economic growth, while the independent variables are unemployment, inflation, and foreign direct investment. The dataset for this work was extracted from the World Bank. This study uses the ARDL approach. Thus, the following is the model specification for this study:

$$GDP_t = \beta_0 + \beta_1 UR_t + \beta_2 INF_t + \beta_3 FDI_t + \varepsilon_t, \quad (1)$$

where GDP refers to gross domestic product, UR refers to the unemployment rate, INF refers to inflation, and FDI refers to foreign direct investment. The subscript t represents the number of years. β is the regression coefficient for each variable, and ε is the error term. Several variables in Equation 1 will then be logged to avoid false estimates. Thus, Equation 2 will be formed as follows:

$$\ln GDP_t = \beta_0 + \beta_1 UR_t + \beta_2 INF_t + \beta_3 \ln FDI_t + \varepsilon_t. \quad (2)$$

A unit root test based on Augmented Dickey-Fuller (ADF) in the equation was used in this work to examine data stagnation (3).

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \alpha \sum^p \Delta Y_{t-1} + U_t \quad (3)$$

The null hypothesis is accepted if the result shows that it is insignificant ($\delta = 0$). As a result, it can be said that the data is either stationary or has a single source. The alternative hypothesis is accepted if the data indicate that it is significant ($\delta \neq 0$). As a result, it can be said that the data does not move or have a unit source. This method demonstrates how the dependent variable responds over the long term to changes in the independent variable. In contrast to the Johansen cointegration strategy, which necessitates a large sample size, this approach can still be employed with a small sample size. The benefits of the ARDL technique can also provide estimates that are long-term-shaped. In the ARDL test, several combinations of tests are run, such as the bound test, cointegration test, diagnostic test, error correction model (ECM), cumulative residual recursive sum (CUSUM), and

cumulative square residual sum (CUSUMSQ). Equation 4 presents a model for both the long and short term for the relationship between economic growth and macroeconomic indicators.

$$\Delta \ln GDP_t = \beta_0 + \phi_t \ln GDP_{t-1} + \beta'_1 UR + \beta'_2 INF_t + \beta'_3 \ln FDI_t + \sum_{j=1}^{p-1} \lambda_j \Delta \ln GDP_{t-j} + \sum_{j=0}^{q-1} \delta'_{1ij} \Delta UR_{t-j} + \sum_{j=0}^{q-1} \delta'_{2ij} \Delta INF_{t-j} + \sum_{j=0}^{q-1} \delta'_{3ij} \Delta \ln FDI_{t-j} + \varepsilon_j \quad (4)$$

The Breusch-Godfrey serial correlation test, the Ramsey stability test, the Jarque-Bera test, and the heteroscedasticity test are a few of the diagnostic procedures that must be carried out. If the diagnostic findings are non-significant, the optimal model is this one. The CUSUM and CUSUMSQ tests can then be carried out. This test is used to validate the stability of the equation model (4). The model is said to be stable if the CUSUM and CUSUMSQ lines are within the 5% critical line.

Results and Discussion

The results of each variable's stagnation using Malaysia's time-series data from 1990 to 2019 are displayed in Table 1. According to the analysis results in Table 1, all variables are stationary at first differentiation I (1) for intercept and intercept and trend, i.e., significant at the 5% significance level, according to the unit root test results for ADF. Due to the fact that all variables are stationary at the initial differentiation, this indirectly allows for the avoidance of incorrect regression estimations. The time-series data that were used in this investigation are stationary at the first differentiation but not at level differentiation I (0). This is evidence that the time series data have a long-term link.

Table 1: Unit root test

Variable	Intercept				Trend & Intercept			
	I(0)		I(1)		I(0)		I(1)	
	t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.
LnGDP	0.549493	0.9845	-3.948284**	0.0055	-3.358838	0.0769	-4.132856**	0.0158
UR	-3.849581**	0.0066	-5.482898**	0.0001	-3.563225**	0.0511	-5.112652**	0.0017
INF	-4.216944**	0.0027	-7.009505**	0.0000	-5.215101**	0.0012	-6.864832**	0.0000
lnFDI	-3.656428**	0.0106	-8.086169**	0.0000	-3.751058**	0.0346	-7.952525**	0.0000

Note: ** and * denote significant at 5% and 10%, respectively.

Before the ARDL estimate, ARDL boundary testing should be done. This investigates whether the dependent and independent variables have a cointegration connection. The results of the boundary test are shown in Table 2. In the long term, economic growth and the independent variables have a cointegration connection, according to the findings of the cointegration analysis. The F-statistic value of 6.0551, which is higher than the critical value's upper bound, proves this. As a result, the null hypothesis is disproved at the 1% significance level. When a long-run link is present, this investigation can be extended with regression analysis utilising the ARDL model.

Table 2: Bound test

Test Statistic	Value
F-Statistic	6.055143***
Critical Values	
Significance	Lower Bound I (0) Upper Bound I (1)
10%	2.37 3.2
5%	2.79 3.67
2.5%	3.15 4.08
1%	3.65 4.66

The ARDL long-term estimation test is a model for studying the linkage between macroeconomic indicators and economic growth in Malaysia. The results of the ARDL model in the long and short term can be shown in Table 3 and Table 4. The study's results in the estimation model use ARDL (2,1,1,1).

Table 3 shows the long-run ARDL estimation. According to the table, the unemployment rate has a positive relationship and is important to economic growth in the long run. This suggests that if there is a 1% increase in the unemployment rate, economic growth will increase by 2.12%. This contradicts Okun's Law, which puts forward a negative relationship between unemployment and economic growth. This finding has been supported by a previous study conducted by Enejoh and Tsauni (2017) in Nigeria, which found that unemployment positively impacts economic growth in the long run. FDI has a positive relationship and is important to long-term economic growth. This suggests that if there is a 1% increase in FDI, economic growth will increase by 0.50%. This is because FDI provides high-profit opportunities for Malaysia. This finding is supported by a previous study conducted in Malaysia (Alzaidy *et al.*, 2017). The coefficient is 18.84674, which is significant at the 5% significance level.

Table 3: ARDL long-run estimation result

Variable	Coefficient	t-Statistics	Prob.
UR	2.124128**	3.590714	0.0058
INF	-0.114227	-1.288483	0.2297
lnFDI	0.501894**	5.147519	0.0006
C	18.84674**	14.63588	0.0000

Note: ** represent significance at 5%

Table 4: ARDL short-run estimation results

Variable	Coefficient	t-Statistics	Prob.
D(UNEMP)	-0.033679*	-1.917838	0.0703
D(INF)	-0.007970*	-2.000041	0.0600
D(FDI)	0.027365**	3.030546	0.0069
ECT(-1)	-0.041463**	-2.338276	0.0305
R-squared = 0.998180	Adjusted R-squared = 0.997413		

Note: ** and * represent significance at 5% and 10%, respectively.

Table 4 shows the result of a short-run ARDL estimation test. ECT reflects the speed of adjustment for the model, and a negative value means that the variables in the model will accumulate in the model in the long run. A total of 4.14% of the adjustment was completed in less than one year for Malaysia. The finding of R-squared at 0.998180 shows that about 99% has been adjusted in Malaysia. The results show that FDI has a positive relationship and is significant for economic growth in the short run. This is because FDI provides equal income. This suggests that if there is a 1% increase in FDI, economic growth will increase by 2.7%. This finding is supported by Javaid's [28], which discovered that FDI has a significant positive impact on GDP growth in both the long and short term. The unemployment rate and inflation show a negative relationship and are significant at the 10% significance level for economic growth in the short run.

The diagnostic procedures are shown in Table 5. To test the data received and rule out any issues, tests such as the Jarque-Bera normal test, the Breusch-Godfrey serial correlation test, the Breusch-Pagan test for heteroskedasticity, and the Ramsey RESET stability test were conducted. Table 5 provided negligible results for the Jarque-Bera normality test, Breusch-Godfrey series correlation, heteroskedasticity test, and Ramsey RESET stability test. The model does not encounter any economic issues because the p-value of each test exceeds 10% of the significance level.

Table 5: Diagnostic test result

Test Statistic	F-statistic
Jarque-Bera	0.740496 (0.690563)
Serial correlation	1.246555 (0.3795)
Heteroscedasticity test	1.463676 (0.2443)
Ramsey reset test	0.058819 (0.8180)

The plots of the cumulative sum of squares of recursive residuals and the cumulative total of recursive residuals are depicted in Figures 5 and 6, respectively.

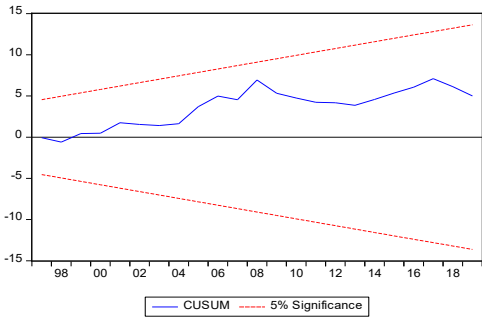


Figure 5: Cumulative Sum of Recursive Residual (CUSUM)

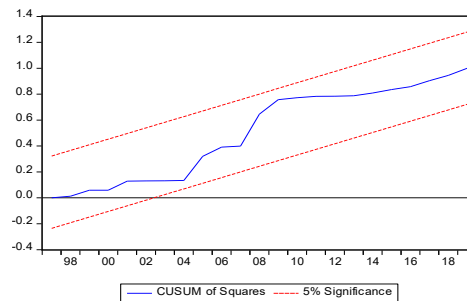


Figure 6: Cumulative Sum of Squares of Recursive Residual (CUSUMSQ)

These will aid in ensuring the model's stability. Within the red lines is the blue line for both CUSUM tests. At a 5% level of significance, the CUSUM test is significant. According to diagnostics and stability tests, the econometric model employed in this study can get the best results from the analysis.

Conclusion

Based on the estimation of the ARDL model, this study finds that the unemployment rate and the foreign direct investment variable have a positive and significant effect on economic growth in Malaysia. The study also showed that only the unemployment rate and inflation rate have a negative and significant effect on economic growth in the short run, while foreign direct investment shows a positive and significant effect in the short run.

Existing fiscal measures must be expanded by governments and policymakers. The expansion of economic activity and aggregate demand are two ways that fiscal policy might help lower the unemployment rate. The government will need to implement an expansive budgetary policy that includes tax cuts and higher public spending. Increased demand is the effect of more consumption if reduced taxes increase disposable income. The GDP will rise at the same time that overall demand rises. More jobs will be created for the local population as economic growth picks up and businesses generate more goods and services. Consequently, the unemployment rate will also decline. The unemployment rate can be reduced by offering a job training course. The government must help graduates with work-training programmes in particular. They, therefore, provide several benefits, including the opportunity to develop new abilities and gain experience. As a result, it will help create job opportunities and lower the unemployment rate.

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Conflict of Interest

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare absence of conflicting interests with the funders.

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