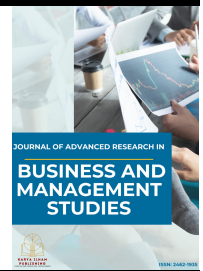




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The Impact of Stock Market Development, Covid-19, and Selected Macroeconomic Variables on Economic Growth in Malaysia

Sharmilawati Sabki^{1,*}, Pavitra Nadaraja¹

¹ School of Economics, Finance and Banking, Universiti Utara Malaysia, 06010, Sintok, Kedah, Malaysia

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ABSTRACT

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Economic growth is a significant indicator of a country's sustainable economic performance. In Malaysia, economic growth is driven by domestic and international factors. This study assesses the influences of stock market development, COVID-19, capital formation, trade openness, and unemployment on Malaysia's economic growth. Employing annual data covering the period from 1982 to 2024, this study uses the Autoregressive Distributed Lag (ARDL) bounds testing approach to investigate both the short-run and long-run relationships among the selected variables. The findings show that trade openness and capital formation have influenced the Malaysian economy positively. Meanwhile, the COVID-19 pandemic has found to have a negative and significant effect on economic growth, implying the detrimental effects of the pandemic on the national production. Unemployment and stock market development are found to have insignificant impacts on economic expansion in the long run. These findings emphasize the importance of promoting capital investment and international trade activities while strengthening the sustainability of the Malaysian economy to the global shocks. The study also offers valuable policy implications for supporting the sustainable economic expansion, fostering financial market development, and formulating sound policy responses to future economic disturbances. The findings also contribute to the body of literature on this area.

1. Introduction

Economic growth is an important determinant of a nation's economic performance, production capacity, and standards of living [1-3]. It continues as a primary policy goal because sustained economic growth facilitates the employment opportunities, capital investment and poverty reduction [4]. Nevertheless, economic development is affected by a range of macroeconomic, financial, and external factors. Among these determinants, stock market development, trade openness, capital investment, and unemployment are the key factors, whereas major international

* Corresponding author.

E-mail address: sharmila@uum.edu.my

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disruption such as COVID-19 can further constraints economic activities [5-7]. Understanding the impacts of these drivers is important for Malaysia, considering its open, global trade-oriented, and financially interconnected economy.

Stock market development fosters economic development by promoting capital allocation, enhancing resource distribution, and enabling firms with better accessibility to long-term financing. However, past studies concerning its impacts on economic growth remains unresolved. Few studies support a significant and positive relationship, indicating that stock market development improves capital formation and economic growth [3,5,8]. On the other hand, other studies discover detrimental effects, which may be linked to high-risk investment activities, low-efficiency capital allocation, and poor institutional framework [9,10].

Likewise, the role of fixed capital formation to economic performance remains unresolved. Several studies recognize positive impacts of capital formation on economic growth [6,11,12]. This is because investment in fixed assets expand production and creates employment, and thereby improve the country's economic growth. However, other studies indicate a negative link among the two variables, potentially resulting from investment inefficiencies, structural restrictions, and delayed investment profits [13,14]. These mixed findings propose that the growth impacts of financial and capital developments could be vary in accordance to country-specific economic and institutional settings.

Trade openness and unemployment are also representing significant macroeconomic factors affecting economic growth, although the evidence from previous literature is similarly mixed. Trade openness enhances growth through broader market penetration, technology transfer, and comparative advantage [7]. Past studies have revealed positive impacts in both short and long runs [7,12,15], while others discover negative long-run impacts, mostly in developing countries with restricted human and physical capital [16,17]. Likewise, evidences regarding unemployment are also inconsistent. Although few studies validate the negative association projected by Okun's Law [18,19], other studies report a positive effect of economic growth on employment rate [20,21]. Furthermore, other group of literature discover no significant association, which also include evidences from Malaysia [22,23]. Jointly, these conflicting findings show that the relationship between economic growth and its determinants continues to require further investigation.

The importance of these factors is mainly evident in the Malaysian context. The country stock market and investment activities play a significant role in strengthening capital accumulation and production capacity. The FBM KLCI deteriorated by roughly 3.3% in 2020, demonstrating elevated uncertainty and deteriorating corporate earnings [24], while capital formation fell by 14.5% (2020), demonstrating a significant reduction in investment activities [25]. Workforce conditions have also fluctuated over time, at the unemployment rate escalating from 3.3% (2019) to 4.5% (2020) and 3.3% in 2024 [26]. Meanwhile, Malaysia's high dependence on international trade markets makes trade openness an important driver of economic performance, with total trade exceeding RM2 trillion in 2024 [27]. These developments demonstrate the importance of studying stock market development, capital formation, labour market, and global trade in assessing Malaysia's economic growth.

In addition to these domestic and structural determinants, COVID-19 is an important external shock that has affected production, investment, trade and financial market activities around the world. Empirical evidence generally shows a negative influence of COVID-19 on economic growth, in particular through disruptions to production, investment, and trade [28]. However, the magnitude of such impacts is not uniform across countries and sectors. For example, Tampubolon [29] found a negative but not statistically significant relationship, which suggests that the resilience of the sector and government intervention can influence the economic impact of the pandemic. In Malaysia, movement control measures have significantly limited domestic business, production, transport and

consumption activities, thus, contributing to a contraction in real GDP of 5.5% in 2020 compared to a growth of 4.4% in 2019 [30]. Therefore, COVID-19 is an important external factor to be considered in assessing changes in Malaysia's economic growth.

As discussed previously, despite many studies conducted on economic growth, given the mixed evidences, some issues remain unresolved. This present study offers a longer time period to investigate the long-term pandemic effect on GDP growth in Malaysia. Therefore, this study aims to examine the impact of stock market development, COVID-19 and selected macroeconomic determinants (trade openness, capital formation, and unemployment) on economic growth in Malaysia for the period of 1982 to 2024. By analysing these financial and macroeconomic factors in an empirical framework, this study aims to provide a recent assessment of their impacts on Malaysia's economic growth, and finally contributes to the existing literature.

The remainder of this paper is organized as follows. Section 2 elaborates the method applied in this study that comprises of hypotheses developments, data and its sources. Section 3 discusses on the findings. Finally, the overall conclusion is presented in Section 4.

2. Methodology

Secondary annual time-series data covering 1982–2024 were used, yielding 43 observations. The extended period enables examination of the long-run relationships among COVID-19, economic growth, stock market development, and macroeconomic indicators in Malaysia. The study period covers several major economic events, including the 1997–1998 Asian Financial Crisis, the 2007–2008 Global Financial Crisis, and the COVID-19 outbreak in 2019. The duration of the study was determined based on the availability and consistency of data for all variables. Data on imports and exports, GDP, gross fixed capital formation (GFCF), market capitalization, and unemployment rate are obtained from World Bank databases.

2.1 Definitions of Variables

The following are the discussions on the dependent variable and independent variables:

2.1.1 Dependent Variable: Economic Growth (GDP)

Economic growth is the dependent variable, quantified using real gross domestic product (GDP), which captures the value of domestic output after adjusting for price changes. This variable is transformed into natural logarithms before empirical analysis and estimation are carried out. Real GDP provides a reliable measurement of actual economic growth in economy by capturing changes in production over time at constant prices. Unlike nominal GDP, it excludes the effects of inflation and therefore better represents the changes in real economic activity. Real GDP is generally regarded as a key indicator of the overall economic performance. Accordingly, higher real GDP indicates stronger economic performance and expansion in the Malaysian economy [2,3].

2.1.2 Independent Variables

2.1.2.1 Stock Market Development

Stock market development promotes economic growth through efficient capital allocation and savings mobilization. It is measured by market capitalization of listed domestic companies as a percentage of GDP. Developed stock markets enhance liquidity and risk allocation, supporting long-term growth [31]. Equity market development also improves financial intermediation and capital

allocation. Empirical evidence indicates that stock market development influences the economic expansion positively [32,33].

H1: Stock market development positively and significantly influences economic growth.

2.1.2.2 COVID-19

This study adopts a dummy variable to assess the influence of the pandemic on economic development. The variable is coded a value of 1 for observations within the post-pandemic period (2020–2024) and 0 for observations in the pre-pandemic period (1982–2019) [34–36]. COVID-19 disrupted economic activity through lockdowns, supply-chain disruptions, reduced investment, trade, and consumer demand, resulting in substantial output contractions [37,38]. Containment measures and mobility restrictions further reduced economic activity and GDP, particularly in emerging and developing economies [39,40]. The pandemic therefore represents a major negative shock to economic growth and overall economic performance.

H2: COVID-19 outbreak negatively and significantly affects economic growth.

2.1.2.3 Gross Fixed Capital Formation

Gross fixed capital formation (GFCF) signifies the investment in tangible fixed assets and considered to be an important factor of economic development. This study employs the log transformation of the total amount of GFCF (RM millions) as a measurement for capital formation. Previous theoretical and empirical studies confirm the positive contribution of investment in fixed assets to the economic growth [41–43]. Therefore, higher GFCF is expected to enhance Malaysia's economic performance.

H3: Gross fixed capital formation positively and significantly influences economic growth.

2.1.2.4 Trade Openness

Trade openness promotes economic growth through greater efficiency, technology transfer, innovation, and access to larger markets [7]. This variable is measured using the total amount of imports and exports of goods and services as percentage of real GDP. Empirical evidence shows that more open economies generally achieve higher growth through improved productivity and international integration, mainly in the developing economies [7,15].

H4: Trade openness positively and significantly affects economic growth.

2.1.2.5 Unemployment Rate

Unemployment reflects the underutilization of labour resources and is generally negatively associated with economic growth [18,19]. The percentage of unemployment rate provided by the World Bank is used to measure this variable. Okun's Law posits a negative association between unemployment and economic output [44]. Empirical studies confirm that higher unemployment reduces GDP and economic performance, particularly during recessions [19,45]. Thus, higher unemployment is expected to weaken Malaysia's economic growth.

H5: Unemployment rate negatively and significantly affects economic growth.

2.2 Research Framework

The conceptual framework illustrated in Figure 1 outlines the empirical effects of independent variables on economic growth (GDP). The selected determinants incorporated including COVID-19, trade openness, stock market development, unemployment rate, and gross fixed capital formation.

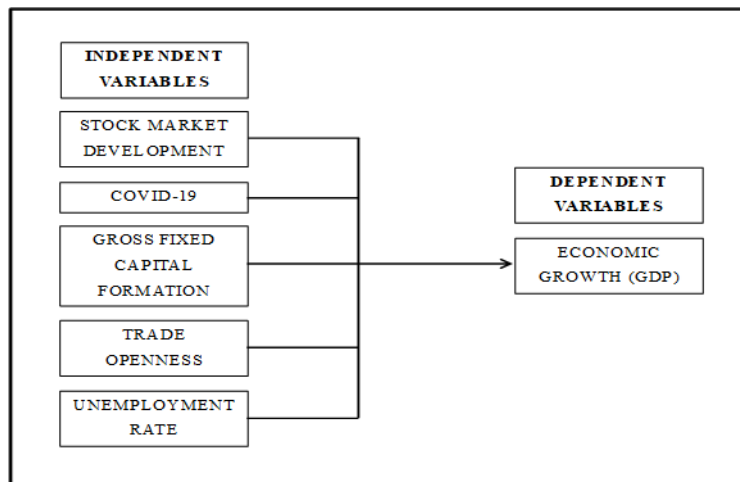


Fig. 1. Research Framework

According to the prior studies, economic growth (GDP) is anticipated to be adversely impacted by COVID-19 and unemployment rate. A positive link between real GDP, stock market development, trade openness and gross fixed capital formation, is also predicted.

2.3 Model Description

This study was conducted in Malaysia for the period of 1982 to 2024. Using annual data, an empirical analysis was conducted to examine the influence of stock market development, COVID-19 and macroeconomic factors including capital formation, trade openness and unemployment rate on economic growth. The Autoregressive Distributed Lag (ARDL) method is used to analyze the short-term and long-term dynamics between selected variables in influencing economic growth. Equation (1) is the model used in this study:

$$GDP_t = \beta_0 + \beta_1 SMD_t + \beta_2 COV_t + \beta_3 GFCF_t + \beta_4 TO_t + \beta_5 UR_t + \varepsilon_t \quad (1)$$

Where:

- t is the period of time
- GDP is Real Gross Domestic Product
- SMD is stock market development
- COV is COVID 19
- GFCF is Gross Fixed Capital Formation
- TO is trade openness
- UR is unemployment rate
- ϵ -Epsilon is the error term

To answer the objective of this study, the ARDL approach was performed. This method was developed by Pesaran [46] and Pesaran et al. [47]. It comprises of five important steps, namely (i) bound testing method, (ii) estimation of long-term relationship, (iii) assessment of short-term relationship, (iv) diagnostic testing, and (v) the stability tests are the Cumulative Sum of the Recursive Model (CUSUM) and Cumulative Sum of Squares of the Recursive Model (CUSUMSQ). Before the ARDL test is conducted, a unit root test should be performed to determine if the variable is stationary. Therefore, the following hypotheses are proposed:

H_0 : has a unit root (non-stationary)

H_1 : no unit root (stationary)

Based on the hypotheses indicated above, the null hypothesis is accepted if the variable is significant at the level $I(0)$, However, an alternative hypothesis is accepted if the variable is significant at the first difference $I(1)$, and then, the ARDL testing is conducted. The ARDL analysis starts with a bounds test to determine if there is a long-term relationship between the dependent variable (DV) and at least one non-dependent variable (IV). If the F-statistical value exceeds the critical value $I(1)$, this indicates that there is a long-term relationship between the non-dependent variable (IV) and the dependent variable (DV).

Next, a long-term relationship test is conducted to determine the long-term effect of the non-lean variable on the lean variable. The similarities for this test are shown as follows.

$$GDP = \beta_0 + \beta_1 GDP_{t-1} + \beta_2 SMD_{t-1} + \beta_3 COV_{t-1} + \beta_4 GFCF_{t-1} + \beta_5 TO_{t-1} + \beta_6 UR_{t-1} + \beta_{7,i} \sum_{i=1}^p \Delta GDP_{t-i} + \beta_{8,i} \sum_{i=1}^{q1} \Delta SMD_{t-i} + \beta_{9,i} \sum_{i=1}^{q2} \Delta COV_{t-i} + \beta_{10,i} \sum_{i=1}^{q3} \Delta GFCF_{t-i} + \beta_{11,i} \sum_{i=1}^{q4} \Delta TO_{t-i} + \beta_{12} \sum_{i=1}^{q5} \Delta UR_{t-i} + \beta U_t \quad (2)$$

whereas Δ referring to the first stage of differentiation equation (2), it can be considered as the ARDL model which uses p , $q1$, $q2$, $q3$, $q4$ and $q5$. The following is a hypothesis for a long-term relationship.

H_0 : Long-run relationship does not exist ($\beta_1=0$ and $\beta_2=\beta_3=\beta_4=\beta_5=\beta_6=0$)

H_1 : Long-run relationship exists ($\beta_1 \neq 0$ and $\beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$)

Consistent with the hypothesis, if the t-statistical value exceeds the critical t-value, then the null hypothesis is accepted, which indicates that there is no long-term relationship between the variables studied. On the other hand, if the critical t-value exceeds the t-statistical value, then the null hypothesis is rejected, which indicates the existence of a long-term relationship among variables. Subsequently, the Error Correction Model (ECM) is conducted to study the process of correcting imbalances in the model for the long term period. In addition, the ECM model is also used to assess the short-term relationship between variables. Therefore, Equation (3) below shows the similarities of the ECM model used in this study.

$$GDP_t = \mu + \sum_{i=1}^p \delta \Delta GDP_{t-i} + \sum_{j=1}^{q1} \alpha_j \Delta SMD_{t-j} + \sum_{k=1}^{q2} \sigma_k \Delta COV_{t-k} + \sum_{l=1}^{q3} \omega_l \Delta GFCF_{t-l} + \sum_{m=1}^{q4} \infty_m \Delta TO_{t-m} + \sum_{n=1}^{q5} \gamma_n \Delta UR_{t-n} + ECM_{t-1} + \varepsilon_t \quad (3)$$

Where:

- $\delta, \alpha, \sigma, \omega, \infty$ and γ - the dynamic coefficient in the short term
- μ - speed of adjustment for long-term error correction.

3. Results

This section elaborates the findings. The discussion included descriptive statistics, correlation analysis and also the findings from the regression analysis.

3.1 Descriptive Statistics Analysis

This section deliberates the descriptive statistics of variables, presented in Table 1.

Table 1
Descriptive Statistics

Variables	Mean	Minimum	Maximum	Standard deviation
GDP	27.142	25.942	28.131	0.673
SMD	131.043	51.773	320.991	58.115
COV	0.116	0.000	1.000	0.324
GFCF	25.738	24.389	26.588	0.657
TO	127.779	71.807	168.109	28.124
UR	3.861	0.481	8.289	1.432

Notes: GDP=economic growth (LN), SMD=stock market development (%), COV=COVID-19 (Dummy; 0-pre crisis; 1-post crisis), GFCF=gross fixed capital formation (LN), TO=trade openness (%), UR=unemployment rate (%)

Table 1 reports the descriptive statistics for the selected variables, covering 43 observations from 1982 to 2024. The statistics include the values for mean, minimum, maximum, and standard deviation. Economic growth, measured in natural log, recorded a mean of 27.142, ranging from 25.942 to 28.131, with a relatively low standard deviation of 0.673, indicating limited variation over the study period.

Stock market development recorded an average of 131%, with a maximum of 320% and a standard deviation of 58%, indicating relatively higher variability. As reported by Securities Commission, Malaysia has a substantial size of stock market, with total equity-market capitalisation recording approximately RM2.08 trillion (2024) and RM2.06 trillion (2025) [55]. In addition, the COVID-19 dummy recorded a mean of 0.116 and a standard deviation of 0.324, reflecting its binary nature and limited variation.

Trade openness averaged 127.77%, ranging from 71.80% to 168.10%, with a standard deviation of 28.12, indicating substantial fluctuations in Malaysia's international trade activities. This relatively high ratio is consistent with Malaysia's strong integration into the international global trade. The World Bank data has reported that the trade-to-GDP ratio of 132.06% for Malaysia in 2023, with exports and imports of goods and services standing at 68.58% and 63.48% of GDP, respectively [56].

The unemployment rate averaged 3.86%, with minimum and maximum values of 0.48% and 8.28%, respectively. Gross fixed capital formation, measured in natural log, recorded an average of 25.73, ranging from 24.38 to 26.58, with a standard deviation of 0.657, suggesting relatively stable capital formation over the study period. Overall, the descriptive statistics indicate varying degrees of volatility across the variables, with stock market development and trade openness showing greater fluctuations, while GDP and capital formation demonstrate comparatively greater stability.

3.2 Correlation Analysis

Table 2 presents the Pearson correlation coefficients among the variables used in the study.

Table 2
Pearson Correlation Matrix

Variables	GDP	SMD	COVID19	GFCF	TO	UR
GDP	1.0000					
SMD	0.1494	1.0000				
COV	0.4837	-0.1520	1.0000			
GFCF	0.9594	0.3172	0.3919	1.0000		
TO	0.6845	0.4406	0.0435	0.7032	1.0000	
UR	-0.4466	-0.4319	0.0769	-0.5986	-0.6366	1.0000

Notes: GDP=economic growth, SMD=stock market development, COV=COVID-19, GFCF=gross fixed capital formation, TO=trade openness, UR=unemployment rate

Table 2 shows that gross fixed capital formation has the strongest positive correlation of 0.9594 with the economic growth. This correlation indicates a strong connection between the dependent variable (economic growth) and its determinant (gross fixed capital formation). The second strongest positive relationship is between the capital investment (GFCF) and trade openness, which is 0.7032. Meanwhile, Table 2 also shows that trade openness and unemployment rate represent the strong negative correlation of 0.6366. Moreover, economic growth, gross fixed capital formation, and stock market development having a moderate negative correlation and the weakest negative correlation exists on COVID-19 and stock market development (-0.1520). From table 2, the correlation coefficients among the selected independent variables do not exceed 0.70, which indicate that there is no evidence of severe multicollinearity issues among the explanatory variables employed in this study [57].

3.3 Results and Discussions

Table 3 highlights the unit root test's results. At level I(0), only stock market development is stationary at the 5% significance level under the intercept specification. However, all variables become stationary after first differencing, I(1), at the 1% and 5% significance levels. Thus, the unit root null hypothesis is rejected, confirming that the variables are suitable for ARDL analysis.

The Bound Test results are shown in Table 4. At 5% and 10% significance levels, The F-statistics result was 5.4563 higher than the upper-bound critical value, confirming a persistent long-run relationship between the variables. Consequently, cointegration is also supported by the t-statistics results. The ARDL long-run estimation can therefore be conducted since the alternative hypothesis is accepted.

Table 3
Unit Roots Test

Variable	Intercept		Trend	
	I (0)	I (1)	I (0)	I (1)
GDP	-1.6912 (0.4282)	-5.2806*** (0.0001)	-1.0826 (0.9200)	-5.4818*** (0.0003)
SMD	-3.3425** (0.0191)	-3.1931** (0.0280)	-3.2646* (0.0862)	-3.2430* (0.0912)
COV	-0.3208 (0.9130)	-6.4031*** (0.000002)	-1.2002 (0.8975)	-6.6419*** (0.000008)
GFCF	-1.1864 (0.6712)	-4.5230*** (0.0008)	-2.6129 (0.2769)	-4.4723*** (0.0049)
TO	-2.0718 (0.2566)	-5.5196** (0.000002)	-1.1888 (0.8999)	-5.5778*** (0.0002)
UR	-2.4662 (0.1308)	-6.6629*** (0.000001)	-2.7239 (0.2327)	-6.5766*** (0.00001)

Notes: () refer to probability; ***, ** and * refer to significant levels at 1%, 5%, & 10%. GDP=economic growth, SMD=stock market development, COV=COVID-19, GFCF=gross fixed capital formation, TO=trade openness, UR=unemployment rate

Table 4
ARDL Bound Test

F-statistic		5.4563**
t-statistic		-4.8796
Significant Level	I (0)	I (1)
10%	3.032	4.213
5%	3.577	4.923
1%	4.885	6.550

Notes: ** represent 5% of significance level.

Table 5 presents the long-run ARDL results. Stock market development (SMD) exhibits a negative but insignificant impact on economic development, consistent with [48]. In contrast, COVID-19 has a negative and statically significant influence on GDP at the 1% level, with a one-unit increase resulting in a 0.0582% decline in GDP. This reflects the adverse effects of movement control order (MCO), reduced investment and consumption, disruptions to production, tourism, manufacturing, retail, transportation, and global supply chains. These findings are consistent with [28,49].

Gross fixed capital formation (GFCF) has proven to influence economic growth positively at the 1% level, where a 1% increase in GFCF increases real GDP by 0.2388%. Higher capital investment can enhance productivity, technological adoption, production capacity, and employment, thereby supporting economic expansion. This finding is supported by Poudel [50], Njenga [42], and Nor et al. [14]. Similarly, trade openness (TO) has a positive and significant association with economic expansion, with a one-percentage-point increase in TO leading to a 0.021% increase in economic growth. Greater international integration contributes to higher exports, foreign exchange earnings, productivity, technology transfer, foreign investment, and employment. In addition, this finding is consistent with Peverga [51] and Phommouny and Shuquan [52].

Finally, the unemployment rate (UR) posits a positive but insignificant association with GDP. This shows that the unemployment rate did not have a significant influence on Malaysia's GDP during the study period, in line with the findings of Padder and Mathavan [53]. In addition, the Error Correction Term (ECT) is negative and significant at the 1% level, yielding a coefficient value of -0.5693 , thereby providing the evidence of a long-run equilibrium relationship among the variables studied. These findings show that roughly 56.93% of short-term deviations from the long-term equilibrium are rectified in a single period.

Table 5

Long Run Result

Variables	Coefficient	t-statistic	Probability
SMD	-0.0000	-0.5592	0.5796
COVID-19	-0.0582***	-3.3970	0.0017
GFCF	0.2388***	6.7236	0.0000
TO	0.0021***	7.9072	0.0000
UR	0.0032	0.5466	0.5880

Note: *** represent 1% of significance level. GDP=economic growth, COV=COVID-19, SMD=stock market development, GFCF=gross fixed capital formation, TO=trade openness, UR=unemployment rate

Following the evidence on the presence of long-term equilibrium relationship, as presented in Table 6, the Error Correction Model (ECM) is utilized to examine the short-term dynamics and the speed of adjustment process to the long-term equilibrium. According on AIC, the ARDL (2,0,0,1,0,0) is selected as the optimal model. Short-run results indicate that GFCF has a positive and significant effect on GDP, which recommends that an increase in capital investment enhances production and economic activities in the short-run. This finding is consistent with [50].

The Error Correction Coefficient indicates that about 57% of disequilibrium is corrected in a single period. This relatively high speed of adjustment indicates that the variables in the model react quickly to short-term shocks and return to a long-term equilibrium relationship.

Table 6

Short Run Result

Variables	Coefficient	t-statistic	Probability
D (GDP (-1))	-0.1308**	-2.1641	0.0372
D(GFCF)	0.2018***	11.7791	0
COINTEQ (-1)	-0.5693	-6.1659	0
C	11.3581	6.2002	0

Note: ** & *** represent 1% & 5% of significance level.

Table 7 reports the diagnostic test results to assess the reliability and stability of the estimated ARDL model. The table shows that, across all tests (normality, correlation, heteroskedasticity and Ramset RESET), the results are not significant. These prove the robustness of the established models. Furthermore, the Ramsey RESET test verifies that the model is adequately specified, and the heteroskedasticity test shows that the model has no heteroskedasticity problems. In summary, the diagnostic test results provide evidence that the model utilized in this study is valid, robust, and reliable.

Table 7
Diagnostic Test

Test	F-statistics	Probability
Normality Test (Jarque-Bera)	1.2681	0.5304
Correlation Test (LM test)	1.7234	0.1992
Heteroskedasticity Test	0.9090	0.8723
Ramsey RESET	0.4253	0.5192

Finally, following Brown et al. [54], the CUSUM and CUSUMSQ tests are applied to assess the structural stability of the ARDL model. Figure 2 and 3 present the results for the CUSUM and CUSUMQ, respectively. Both models have undergone these stability tests. The CUSUM statistics plot remains within the 5% significant level, confirming the stability of the findings. The CUSUM and CUSUMQ data that were plotted stayed inside the bounds. According to both figures, at the 5% significant level, the plotted lines are inside the critical bound. Therefore, the model's long-term stability and robustness to generate reliable findings, have consequently been validated by the CUSUM and CUSUMQ tests.

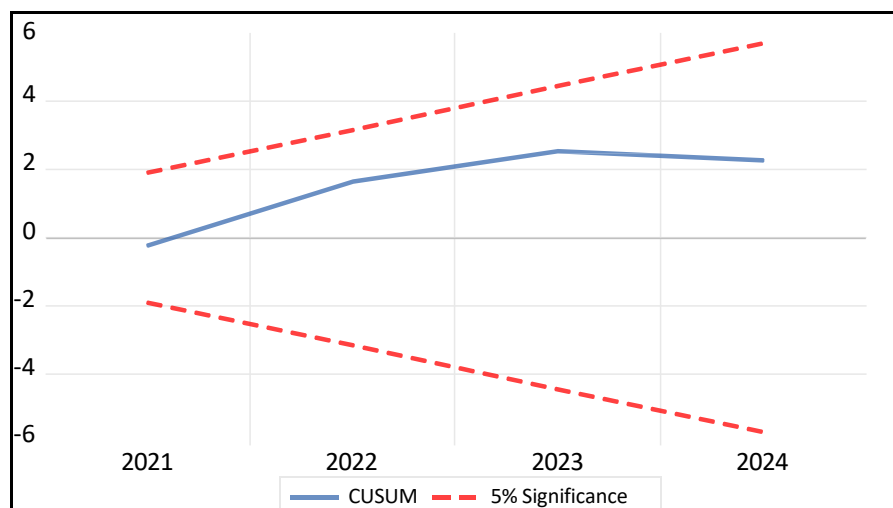


Fig. 2. CUSUM

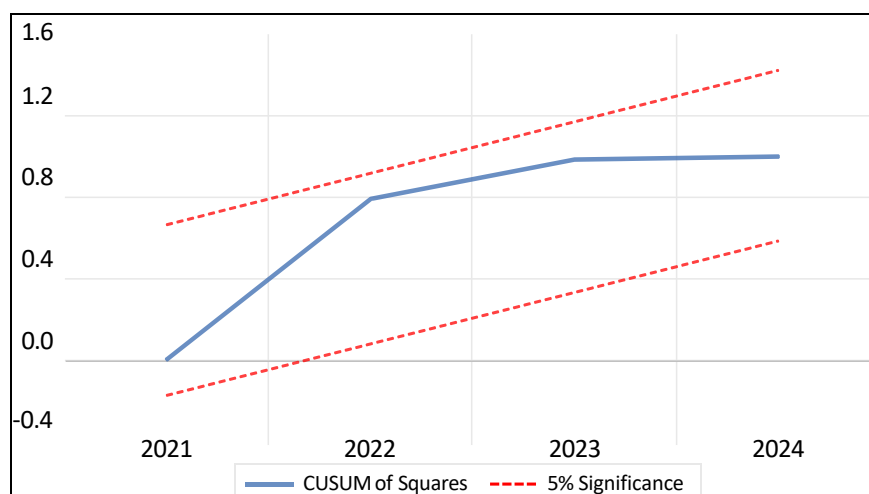


Fig. 3. CUSUMQ Squares

4. Conclusions

The objective of this study is to analyze the effects of stock market development, COVID-19, gross fixed capital formation, trade openness, and unemployment on economic growth in Malaysia throughout the period of 1982–2024. In general, the results show that capital formation and trade openness enhance the Malaysian economic development, emphasizing the significance of capital investment and global economic integration in fostering sustained economic performance. In contrast, the COVID-19 pandemic exerted an adverse effect on economic growth, reflecting the adverse consequences of pandemic-related restrictions, disruptions to production and trade, and reduced economic activity. Meanwhile, stock market development and the unemployment rate were found to have statistically insignificant effects on economic growth during the study period. These findings suggest that Malaysia's economic growth has been more strongly associated with real investment and trade integration, while the contribution of stock market development and unemployment to GDP growth was not statistically evident over the period examined. The findings suggest that policymakers should strengthen public and private investment in productive capital, particularly infrastructure, technology, and innovation, to sustain long-term economic growth. Malaysia should also enhance trade openness and international competitiveness by facilitating exports, attracting foreign investment, and strengthening participation in global value chains. Finally, policymakers should develop stronger economic resilience and crisis-response mechanisms to minimize the adverse effects of future pandemics and other external shocks on economic activity.

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