Article

Macroeconomic Determinants of FTSE KLCI Volatility: Evidence from 2006 to 2023

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Abstract – This study examines the impact of key macroeconomic variables: Gross Domestic Product (GDP), Consumer Price Index (CPI), and Consumer Confidence Index (CCI) on the volatility of the FTSE Bursa Malaysia Kuala Lumpur Composite Index (FTSE KLCI) from 2006 to 2023. As Malaysia shifts towards a more market-driven financial system, understanding how economic fundamentals influence market behavior is essential. Using a random-effects panel regression model, the study analyses 16 years of data. Results show that GDP and CPI significantly affect FTSE KLCI volatility, indicating that real economic activity and inflation are major drivers of investor responses. CCI, though significant at the 10% level (marginal effect), also influences market fluctuations during uncertain periods. These findings support the semi-strong form of the Efficient Market Hypothesis (EMH), suggesting the market reflects available economic information. The study offers valuable insights for policymakers and investors aiming to understand and manage volatility in Malaysia's emerging capital market.

Keywords: "Gross Domestic Products", "Consumer Price Index", "Consumer Confidence Index"

1. Introduction

The volatility of stock markets has long been a key area of interest for investors, policymakers, and researchers, especially in emerging economies such as Malaysia. The FTSE Bursa Malaysia Kuala Lumpur Composite Index (FTSE KLCI), as a benchmark index, reflects the health and sentiment of the Malaysian equity market. Understanding the macroeconomic determinants of this volatility is vital for designing effective investment strategies and policy interventions.

Macroeconomic indicators such as Gross Domestic Product (GDP), Consumer Price Index (CPI), and Consumer Confidence Index (CCI) are considered fundamental forces

influencing stock market movements. GDP represents the overall economic output and serves as a key indicator of economic performance. CPI reflects inflationary pressures and purchasing power, while CCI captures consumer sentiment and expectations—elements that are increasingly recognized for their predictive role in financial markets (Mohammed & Haron, 2021; Abdullah et al., 2023). These indicators not only influence investor behavior but also shape market dynamics and capital flows.

Recent empirical studies suggest that stock market volatility is significantly affected by macroeconomic conditions, especially in the wake of global economic uncertainty, inflation shocks, and domestic policy adjustments (Shahzad et al., 2020; Tan & Yusof, 2022). However, the extent and direction of these effects remain mixed across countries and periods, particularly in developing markets where structural and behavioral characteristics differ from those of developed economies (Ismail & Rahman, 2021).

This study addresses this gap by empirically investigating the impact of GDP, CPI, and CCI on the volatility of the FTSE KLCI over an 18-year period (2006–2023). The analysis seeks to provide new insights into how macroeconomic fundamentals influence market behavior in Malaysia, contributing to the literature on emerging market efficiency and financial stability. By employing a robust quantitative framework, this study also supports the theoretical underpinnings of the Efficient Market Hypothesis (EMH), which posits that stock prices reflect all available information, including macroeconomic data (Rahim et al., 2023).

This paper contributes to the literature by incorporating a behavioral indicator (CCI) alongside traditional macroeconomic variables, covering a longer time series (2006–2023) than most prior studies on Malaysia's equity market. It also contextualizes findings within the framework of the Efficient Market Hypothesis while considering behavioral finance perspectives.

Three hypotheses are developed in this study:

- H_1: Gross domestic product has a significant influence on the volatility of FTSE Composite Index.
- H_2: Consumer price index has a significant influence on the volatility of FTSE Composite Index.
- H_3: Consumer confidence index has a significant influence on the volatility of FTSE Composite Index.

2. Literature Review

2.1. Reviewing The FTSE KLCI: Trends, Drivers, And Empirical Evidence

The FTSE Bursa Malaysia Kuala Lumpur Composite Index (FTSE KLCI) serves as a key benchmark for Malaysia’s stock market, making it a frequent subject of empirical research that explores its responsiveness to macroeconomic conditions, investor behavior, and global uncertainties. Over the past seven years, researchers have increasingly examined how core

macroeconomic variables such as Gross Domestic Product (GDP), Consumer Price Index (CPI), and Consumer Confidence Index (CCI) influence FTSE KLCI movements.
For instance, Mansor and Razak (2019) observed that GDP plays a significant role in driving stock returns, reflecting the linkage between economic expansion and corporate profitability. Ibrahim and Azman (2021) further demonstrated that inflation, captured by CPI, negatively affects stock performance due to its impact on consumer purchasing power and firm costs. More recently, Jamaluddin and Lim (2022) highlighted the role of CCI as a psychological indicator that can predict short-term market volatility, especially during periods of political instability or economic uncertainty.

In addition to domestic indicators, studies have also explored the influence of external shocks and global market integration on FTSE KLCI volatility. Kamarudin et al. (2020), using GARCH models, found that fluctuations in oil prices, exchange rates, and international trade tensions significantly influence the volatility of the index, suggesting that the Malaysian market is moderately sensitive to global developments. Likewise, Ali and Ghazali (2018) reported strong evidence of volatility clustering and asymmetry during crisis periods, such as the Global Financial Crisis and the COVID-19 pandemic, emphasizing the role of external uncertainty in shaping investor behavior.

The efficiency of the FTSE KLCI has also been critically examined within the framework of the Efficient Market Hypothesis (EMH). While Rahman and Yusoff (2023) supported the weak-form EMH by showing that past prices do not predict future returns, other scholars have challenged this position. Tarmizi et al. (2020) identified herding behavior among investors, especially retail participants, which can distort price formation and lead to temporary inefficiencies. Cheong and Isa (2017) further emphasized that financial literacy and behavioral biases remain key barriers to market efficiency in Malaysia, reinforcing the need to account for psychological factors when analysing stock price movements.

Despite the growing body of research, significant gaps remain. Most studies have focused on individual macroeconomic factors rather than their combined or interactive effects on market volatility. Furthermore, financial stress indicators such as non-performing loans (NPLs) have rarely been incorporated into volatility models of the FTSE KLCI, despite their critical role in banking stability and credit risk transmission. Addressing these gaps could enhance understanding of stock market dynamics in Malaysia’s bank-dominated financial system and provide deeper insights into risk management and policy formulation.

2.2. Review On FTSE KLCI in Relation to Efficient Market Hypothesis (EMH)Theory
The Efficient Market Hypothesis (EMH), introduced by Fama (1970), posits that financial markets are "informationally efficient," meaning that asset prices fully reflect all available information. In recent years, the applicability of EMH to emerging markets, including Malaysia, has gained increasing scholarly attention. Studies on the FTSE Bursa Malaysia Kuala Lumpur Composite Index (FTSE KLCI), which serves as the country’s key benchmark, have yielded mixed evidence concerning the hypothesis, particularly regarding the weak-form efficiency that asserts price movements are unpredictable based solely on past data.

Rahman and Yusoff (2023) tested the weak-form efficiency of the Malaysian stock market using autocorrelation and run tests. Their results supported the EMH, indicating that FTSE KLCI prices do not follow predictable patterns and past price movements do not offer reliable forecasts of future prices. These findings suggest that the Malaysian stock market exhibits characteristics of an efficient market where information is rapidly incorporated into stock prices. Similarly, Mansor and Hassan (2020) employed unit root and variance ratio tests to analyze stock return behavior on the FTSE KLCI, concluding that while certain short-term anomalies existed, the market tended to correct itself over time, aligning with weak-form efficiency.

However, opposing evidence also exists. Tarmizi et al. (2020) found significant traces of herding behavior and overreaction among Malaysian investors, particularly during periods of market stress and political instability. This behavioral bias undermines the assumption of rational investor behavior and challenges the EMH framework. Moreover, Cheong and Isa (2017) observed that the FTSE KLCI often deviates from its intrinsic value due to the influence of investor sentiment, speculative activity, and limited financial literacy, particularly among retail participants. These findings align more closely with behavioral finance theories than the strict assumptions of EMH.

Further complicating the efficiency narrative, studies have shown that macroeconomic announcements can lead to market overreactions and delayed adjustments in the FTSE KLCI. For instance, Jamaluddin and Lim (2022) demonstrated that changes in consumer confidence significantly influence short-term market movements, reflecting delayed or exaggerated investor responses to new information. While EMH assumes immediate price adjustment, the presence of lagged reactions contradicts its core premise. Additionally, Kamarudin et al. (2020) observed that external macroeconomic shocks, such as oil price volatility and currency depreciation, induce volatility in the FTSE KLCI, often without immediate market correction, raising questions about the market's responsiveness to global information.

Taken together, the literature reveals a divided perspective on the efficiency of the FTSE KLCI. While some empirical findings uphold the weak-form EMH, others expose behavioral and structural inefficiencies in Malaysia's equity market. These inconsistencies suggest that while the FTSE KLCI may demonstrate pockets of informational efficiency, it also exhibits characteristics of an inefficient market influenced by investor psychology, macroeconomic shocks, and institutional limitations. Therefore, the Malaysian market presents a unique context where both EMH and behavioral finance theories may coexist and complement each other in explaining stock price behavior.

3. Methodology of Study

3.1. Research Approach and Study Design

This study adopts a quantitative research design grounded in the positivist paradigm, which prioritizes objectivity, empirical measurement, and hypothesis testing through statistical methods (Creswell & Creswell, 2018). The primary aim is to examine the impact of selected macroeconomic variables: Gross Domestic Product (GDP), Consumer Price Index (CPI), and Consumer Confidence Index (CCI) on the volatility of the FTSE Kuala Lumpur Composite Index (FTSE KLCI) over the period 2006 to 2023. The positivist stance is appropriate in this context, as it allows for generalizable conclusions through systematic data analysis rooted in observable financial and economic indicators (Sekaran & Bougie, 2020).

The study utilizes panel data analysis, which integrates both cross-sectional and time-series data, offering significant advantages in financial market research. Panel data provides a more comprehensive view of macroeconomic and market interactions by capturing the dynamics over time and across economic cycles, while also controlling for unobserved heterogeneity among variables (Hsiao, 2014; Raza, Shahzad, & Umar, 2020). This approach enhances the efficiency and reliability of statistical estimations, particularly in capturing structural shifts, macroeconomic volatility, and lagged effects in financial markets (Baltagi, 2021).

By employing panel data econometrics specifically random effects model and the study aims to generate robust, policy-relevant findings that reveal the nature and strength of the relationship between macroeconomic fundamentals and stock market volatility in Malaysia. The method used helps to clearly analyse both short-term changes and long-term trends, aligning with recent research in emerging market contexts that emphasize the predictive power of macroeconomic variables on equity market performance (Ibrahim & Azman, 2021; Tan & Yusof, 2022).

3.2. Data Collection

The study utilizes secondary data spanning from 2008 to 2023, covering monthly observations. Data on the FTSE KLCI, GDP, CPI, Real Interest Rates (RIR), Industrial Production Index (IPI) and Consumer Confidence Index (CCI) were collected from reliable sources including: Bank Negara Malaysia (BNM), Department of Statistics Malaysia (DOSM), World Bank Database, and Bloomberg and Trading Economics.

3.3. Variables

The volatility of the FTSE KLCI, measured by the quarterly standard deviation of closing prices, reflects fluctuations in Malaysia's stock market and serves as a key indicator of financial risk (Ali et al., 2021; Zakaria & Shamsuddin, 2022). It is influenced by macroeconomic fundamentals and investor responses to economic uncertainty (Kamarudin et al., 2020; Tan & Yusof, 2022).

Among the independent variables, GDP is a crucial determinant of market performance. Higher GDP typically enhances investor confidence and reduces volatility (Mansor & Hassan, 2020; Raza et al., 2020).

In contrast, CPI, an indicator of inflation, tends to increase market volatility due to its impact on purchasing power and interest rate expectations (Ibrahim & Azman, 2021; Shah et al., 2019).

The Consumer Confidence Index (CCI), a behavioral variable, also plays a significant role. Changes in CCI can influence short-term market movements by affecting investor sentiment and expectations (Jamaluddin & Lim, 2022; Abdullah et al., 2023). Unlike GDP and CPI, CCI reflects psychological rather than structural market drivers.

Together, these variables provide a comprehensive understanding of the macroeconomic and behavioral factors shaping FTSE KLCI volatility.

3.4. *Model Specification*

Model:

$$\text{FTSE KLCI}_{it} = \beta_0 + \beta_1 \text{GDP}_{it} + \beta_2 \text{CPI}_{it} + \beta_3 \text{CCI}_{it} + \varepsilon_{it}$$

Where:

FTSE KLCI_{it} represents stock market volatility for entity i at time t,
GDP_{it} is the Gross Domestic Product,
CIPI_{it} is the Consumer Price Index,
CCI_{it} is Consumer Confidence Index, and
ε_{it} is the error term.

4. Findings and Discussion

4.1 Hypotheses Testing Using Random Effect Model

Table 1: Results of Random Effect (Model) for Hypotheses Testing

DVFTSE KLCI	Expected Sign	Actual Sign	Coefficient	Standard Error	t	P>|t|
Constant			-102.2182	.08019	-6.84	0.000
IV1GDP	+	+	0.5717	.06435	8.88	0.000
IV2CPI	+	-	-0.0339	.01286	-2.63	0.009
IV3CCI	+	+	0.0196	.01073	1.82	0.070
Number of Observations = 192						
Wald chi² (5) = 22688.85						
$R^2 = 0.9925$						
Prob > chi² = 0.0000						

*Note: n = 192 DVFTSE KLCI=Dependent Variable of KL Composite Index. IV1=Independent Variable 1 of Gross Domestic Product. IV2CPI=Independent Variable 2 of Consumer Price Index. IV3CCI=Independent Variable 3 of Consumer Confident Index. ***, **, * indicates significant at 1%, 5% and 10% respectively*.

The R^2 value of 0.9925 indicates that approximately 99.25% of the variation in the volatility of the FTSE KLCI is explained by the model, which includes GDP, CPI, and CCI as independent variables. This exceptionally high R^2 suggests that the selected macroeconomic variables collectively provide a very strong explanatory power for changes in stock market volatility in Malaysia. In other words, the model fits the data extremely well, leaving only a very small percentage (0.75%) of the variation unexplained by factors outside the model. While this strong fit underscores the importance of the selected variables, it also raises potential concerns about multicollinearity or overfitting. Future studies could conduct Variance Inflation Factor (VIF) analysis or robustness checks to validate model stability.

This result implies that the behavior of the FTSE KLCI is highly sensitive to macroeconomic conditions, particularly economic growth, inflation, and consumer sentiment. It also confirms the robustness of the model in capturing the underlying dynamics of the market during the study period. However, while a high R^2 is generally desirable, it is important to interpret it with caution. In real-world economic and financial modelling, such a high R^2 may also raise questions about potential overfitting or model rigidity, especially if the dataset is small or highly consistent. Nonetheless, given the significant p-values and logical relationships of the variables involved, the model appears both statistically sound and practically meaningful for explaining stock market volatility in Malaysia.

The empirical findings from the direct effect model reveal that all the selected macroeconomic variables: Gross Domestic Product (GDP), Consumer Price Index (CPI) and Consumer Confidence Index (CCI) are significant determinants of FTSE Kuala Lumpur Composite Index (FTSE KLCI) volatility over the 16-year study period. The regression model addresses the first research question.

As presented in Table 1, with FTSE KLCI as the dependent variable, the model yields the following empirical results:

Model and results:

$$\text{FTSE KLCI}_{it} = -102.2182 + 0.5717\ \text{GDP}_i - 0.0339\ \text{CPI}_{it} + 0.0196\ \text{CCI}_i + \varepsilon_{it}$$

(0.000 *) (0.009 ***) (0.070 *)**

The regression model the FTSE Kuala Lumpur Composite Index (FTSE KLCI) as a function of key macroeconomic variables. It incorporates each variable's coefficient and significance level to evaluate their impact on the index. The magnitude and p-values of the coefficients indicate the strength and significance of each effect.

The intercept, $\beta_0 = -102.2182$, represents the estimated FTSE KLCI value when all predictors are zero. The GDP coefficient, $\beta_1 = 0.5717$ ($p = 0.000$***), indicates a strong and statistically significant positive effect suggesting that a one-unit increase in GDP leads to a 0.5717 rise in the FTSE KLCI, holding other variables constant.

Conversely, CPI has a negative influence, with $\beta_2 = -0.0339$ ($p = 0.009$***), implying that a one-unit increase in CPI reduces the FTSE KLCI by 0.0339 units. The Consumer Confidence Index (CCI)

shows a positive but significant at the 10% level (marginal effect) impact, with $\beta_3 = 0.0196$ ($p = 0.070$*), indicating that an increase in consumer confidence slightly raises the FTSE KLCI.

4.2 Summary of Hypotheses Testing Outcomes

Table 2: Summary of the Random Effect (Model) for Hypotheses Testing

	Hypotheses	Coefficients	P-values	Outcomes
H_1:	Gross Domestic Product (GDP) significantly affects the volatility of the FTSE KLCI	0.5717	0.000	Accepted
H_2:	Consumer Price Index (CPI) significantly affects the volatility of the FTSE KLCI	-0.0339	0.009	Accepted
H_3:	Consumer Confidence Index (CCI) significantly affects the volatility of the FTSE KLCI.	0.01956	0.070	Accepted

The results of the panel regression analysis provide clear evidence that Gross Domestic Product (GDP) significantly affects the volatility of the FTSE KLCI. With a positive coefficient of 0.5717 and a highly significant p-value of 0.000, the findings confirm that GDP is a strong and reliable predictor of market volatility. This suggests that periods of strong economic growth are associated with increased market activity, likely driven by improved investor confidence, rising corporate profits, and stronger economic fundamentals. Therefore, GDP plays a crucial role in influencing investor behavior and market performance in Malaysia, and its trends should be closely monitored by policymakers and financial analysts.

The Consumer Price Index (CPI) also shows a significant relationship with market volatility, with a negative coefficient of -0.0339 and a p-value of 0.009. This indicates that rising inflation tends to reduce market stability. High inflation can weaken consumer purchasing power, increase production costs, and prompt monetary tightening, all of which may lead to reduced investor optimism and capital outflows. Thus, inflation emerges as a destabilizing factor for the FTSE KLCI, reinforcing the need for sound inflation management policies to support market confidence.

The Consumer Confidence Index (CCI), while only significant at the 10% level (marginal effect) with a p-value of 0.070, still shows a positive relationship with FTSE KLCI volatility, as reflected by its coefficient of 0.01956. This suggests that higher consumer confidence can increase market activity, potentially due to more optimistic economic expectations and increased spending and investment. Although the effect is weaker compared to GDP and CPI, it highlights the role of behavioral factors in influencing market dynamics, especially during times of uncertainty or transition.

In conclusion, the acceptance of all three hypotheses confirms that macroeconomic variables: GDP, CPI, and CCI, significantly affect the volatility of the FTSE KLCI. GDP stands out as the most influential driver, followed by CPI and then CCI. These results

underscore the importance of both economic fundamentals and investor sentiment in shaping market behavior, offering valuable insights for policymakers, investors, and market observers.

5. Discussions

The R^2 value of 0.9925 indicates that 99.25% of the variation in FTSE KLCI volatility is explained by GDP, CPI, and CCI, suggesting a very strong model fit. This high explanatory power confirms that macroeconomic factors are highly influential in driving market volatility in Malaysia. It supports findings by Abdullah et al. (2023) and Mansor and Hassan (2020), who emphasized the central role of macroeconomic indicators in shaping stock market behavior in emerging economies. While such a high R^2 may raise concerns about overfitting, the significance and theoretical relevance of the variables suggest the model is robust and credible (Raza et al., 2020; Jamaluddin & Lim, 2022; Tan & Yusof, 2022). While this strong fit underscores the importance of the selected variables, it also raises potential concerns about multicollinearity or overfitting. Future studies could conduct Variance Inflation Factor (VIF) analysis or robustness checks to validate model stability.

The panel regression analysis using the Random Effects Model analysis provides insightful evidence on the relationship between key macroeconomic variables and the volatility of the FTSE Kuala Lumpur Composite Index (FTSE KLCI). The findings reveal that Gross Domestic Product (GDP) exerts a positive and highly significant effect on the FTSE KLCI ($\beta = 0.5717$; $p = 0.000$), indicating that economic growth plays a critical role in stabilizing and boosting investor confidence in the Malaysian equity market. This aligns with the work of Mansor and Hassan (2020), who emphasized that GDP growth enhances corporate earnings potential, thereby strengthening market performance. Similarly, Raza et al. (2020) affirmed that GDP is a strong predictor of stock market behavior in emerging economies, reinforcing its role as a key driver of market dynamics.

In contrast, the Consumer Price Index (CPI) is found to have a negative and statistically significant impact on the FTSE KLCI ($\beta = -0.0339$; $p = 0.009$). This result is consistent with Ibrahim and Azman (2021), who observed that inflationary pressure reduces purchasing power, increases production costs, and triggers monetary tightening, all of which contribute to heightened market uncertainty and reduced investor activity. High inflation also signals potential policy shifts such as interest rate hikes, further influencing capital flows and equity valuations (Abdullah et al., 2023).

The Consumer Confidence Index (CCI), while positively associated with the FTSE KLCI ($\beta = 0.0196$), exhibits marginal statistical significance ($p = 0.070$). This finding suggests that investor sentiment, although influential, may not consistently translate into significant market movement unless accompanied by substantial economic or political events. Jamaluddin and Lim (2022) similarly found that consumer confidence can drive short-term volatility but often lacks predictive strength in the long run unless sentiment shifts sharply due to crises or major policy changes. The marginal significance of CCI may also reflect the

behavioral nature of this indicator, which is inherently more volatile and susceptible to temporary shocks (Tan & Yusof, 2022).

Collectively, these findings underscore the mixed but meaningful influence of macroeconomic factors on stock market volatility in Malaysia. GDP emerges as the most robust and consistent driver, while inflation dampens market stability, and consumer sentiment plays a supporting yet less consistent role. These outcomes validate the theoretical expectations of the Efficient Market Hypothesis (EMH) in its semi-strong form, suggesting that the FTSE KLCI responds to publicly available macroeconomic information, though not all variables influence the market with equal intensity or immediacy.

6. Conclusions and Recommendations

The panel regression analysis using the Random Effects Model provides robust evidence on the influence of key macroeconomic variables on the volatility of the FTSE Kuala Lumpur Composite Index (FTSE KLCI). The results confirm that Gross Domestic Product (GDP) has a strong and statistically significant positive effect on market volatility, highlighting its critical role in driving investor confidence and market stability. This finding is consistent with the conclusions of Mansor and Hassan (2020), who noted that GDP growth enhances corporate earnings and market performance. Similarly, Raza, Shahzad, and Umar (2020) found that GDP is a reliable predictor of stock market trends in emerging economies, supporting its role as a stabilizing force.

Conversely, the Consumer Price Index (CPI) has a negative and significant impact on the FTSE KLCI, indicating that inflation undermines investor sentiment and increases market volatility. This aligns with the observations of Ibrahim and Azman (2021), who linked inflationary pressures to reduced purchasing power, increased production costs, and monetary tightening. High inflation often leads to policy responses such as interest rate hikes, which can intensify capital outflows and exacerbate market instability (Abdullah, Ibrahim, & Sulaiman, 2023).

The Consumer Confidence Index (CCI) exhibits a positive but significant at the 10% level (marginal effect) relationship with the FTSE KLCI, reflecting its role as a behavioral indicator that may influence short-term market fluctuations. Jamaluddin and Lim (2022) noted that while consumer sentiment can impact market activity during periods of uncertainty, it often lacks long-term predictive power unless driven by substantial economic or political shifts. Tan and Yusof (2022) similarly highlighted the volatile nature of sentiment-based indicators, particularly in emerging markets.

Collectively, these findings reveal the mixed but meaningful influence of macroeconomic variables on stock market volatility in Malaysia. GDP emerges as the most reliable and consistent predictor, CPI as a destabilizing force, and CCI as a supplementary behavioral driver. These results support the semi-strong form of the Efficient Market Hypothesis (EMH), suggesting that the FTSE KLCI responds to publicly available macroeconomic information, though the intensity of this response varies by indicator. This study contributes

to the empirical literature on market efficiency in emerging economies and offers practical insights for policymakers, investors, and financial analysts seeking to anticipate market movements through macroeconomic trends.

Based on the findings, it is recommended that policymakers focus on sustaining GDP growth through strategic investments and economic diversification, as GDP positively influences market stability and investor confidence. Since inflation (CPI) significantly increases market volatility, monetary authorities should adopt effective inflation control measures, such as timely interest rate adjustments and supply-side interventions, to maintain price stability and investor trust.

Although the Consumer Confidence Index (CCI) has only a marginal effect, it remains a useful short-term indicator. Therefore, financial analysts should monitor shifts in consumer sentiment, especially during uncertain times, while recognizing its limited long-term predictive value.

To enhance market efficiency, government agencies must ensure the timely and transparent release of macroeconomic data. This supports informed investor decisions and aligns with the semi-strong form of the Efficient Market Hypothesis (EMH). Additionally, investor education on the impact of macroeconomic indicators is essential to promote informed participation and reduce market overreactions.

Lastly, regulators should encourage the use of risk management tools like inflation-indexed instruments and promote further research combining behavioral and macroeconomic insights. These efforts will help build a more resilient and responsive financial market in Malaysia.

7. Limitations of the Study

Despite offering valuable insights, this study has several limitations. First, the analysis is limited to a set of five macroeconomic variables: GDP, CPI and CCI, while other important factors such as exchange rates, foreign direct investment, political risk, and global market shocks were not included, which may influence FTSE KLCI volatility. Additionally, there may be measurement errors in behavioral data such as the CCI, omitted variable bias from unobserved macroeconomic or political shocks, and potential structural breaks over the study period that were not explicitly modeled.

Second, the use of a Random Effects Model assumes that individual-specific effects are uncorrelated with the independent variables, which may not fully capture unobserved heterogeneity across time or structural shifts in the Malaysian economy.

Third, the Consumer Confidence Index (CCI) is treated as a quantitative indicator, yet it is inherently behavioral and subjective, which may introduce measurement bias or limit its predictive reliability.

Fourth, the study focuses only on Malaysia's FTSE KLCI, so the findings may not be generalizable to other emerging markets with different economic structures or regulatory environments.
Lastly, data constraints, particularly for long-term panel data on behavioral indicators like CCI, may affect the consistency and comparability of results across time.
Future research could address these limitations by incorporating a broader set of variables, applying alternative models such as time-varying parameter models, and conducting cross-country comparative analyses.

8. Suggestions for Future Research

Future research should explore additional macroeconomic variables such as exchange rates, money supply, and global market shocks to provide a more comprehensive view of stock market volatility. Using advanced econometric models like dynamic panel models or VAR could better capture the time-lagged and evolving relationships between variables.

Given the subjective nature of the Consumer Confidence Index (CCI), future studies may also incorporate sentiment analysis from sources like news or social media to better reflect investor behavior. Additionally, cross-country comparisons could help test the generalizability of findings and highlight differences between emerging and developed markets.

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