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Global Commodity Prices, Domestic Financial Conditions and Equity Market Performance in Malaysia: Evidence from a Vector Error Correction Model

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ABSTRACT

Global commodity shocks and changing financial conditions can influence economic and financial resilience in emerging economies through interconnected international and domestic markets. Understanding these transmission mechanisms is important for assessing the vulnerability of emerging-market economies to external disturbances and their implications for investment and economic stability. This study examines the long- and short-run relationships among global commodity prices, domestic sovereign bond yields and the Malaysian equity market (FBM KLCI), with particular attention to the transmission of external market conditions into Malaysia's domestic financial system. Using synchronised daily data from 22 May 2020 to 24 March 2025, we estimate a Vector Error Correction Model (VECM) incorporating the FBM KLCI, West Texas Intermediate (WTI) crude oil prices, London gold prices and 10-year Malaysian Government Securities (MGS) yields. Augmented Dickey–Fuller tests indicate that the variables are integrated of order one, while Johansen tests identify cointegrating relationships among them. The long-run estimates show that higher bond yields, gold prices and crude oil prices are each associated with lower equity valuations, with domestic bond yields exerting the strongest effect. In the short run, the FBM KLCI corrects approximately 17.30% of its deviation from equilibrium per trading day, while MGS yields exhibit evidence of

overshooting. Wald tests find no significant joint short-run causality from the external and domestic financial drivers to daily equity returns, whereas variance decomposition shows their combined explanatory power increasing to approximately 24% over a 20-day horizon. The findings suggest that Malaysia's financial system is relatively insulated from daily external disturbances but remains connected to global market conditions over longer horizons, highlighting the importance of financial resilience and external-shock management in emerging economies.

1. Introduction

The intricate relationship between macroeconomic variables and equity market performance has long attracted scholarly attention, particularly as financial markets become increasingly integrated within the global economic system. Among the most influential macro-financial determinants identified in the extant literature, crude oil prices, gold prices, and government bond yields occupy a prominent position due to their pervasive effects on corporate profitability, investor sentiment, inflationary expectations, and capital allocation decisions (Baur & Lucey, 2010; Bhuiyan et al., 2023; Granger et al., 2025; Sadorsky, 1999; Umar et al., 2026). Recent empirical evidence from the 2023–2026 trading cycles highlights that these specific asset classes have entered a period of structural decoupling, where traditional safe-haven architectures and interest-rate pricing rules frequently mutate under the pressure of heightened geopolitical fragmentation and global sovereign debt expansion (Mensi et al., 2024; Peter, 2026; Torun et al., 2026). Understanding how these variables collectively and dynamically influence equity markets is especially important for emerging economies, where financial systems remain highly vulnerable to external shocks, commodity price volatility, and capital flow fluctuations.

Malaysia provides a suitable setting for this investigation. As an open economy with extensive global trade linkages, its capital market is sensitive to changes in international macro-financial condition (Siow et al., 2023; Wang et al., 2024). The FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBM KLCI), serves as the benchmark index of Bursa Malaysia, reflecting the aggregate performance of 30 largest listed corporations by market capitalization. The index has been observed to respond to commodity price movements, monetary policy changes, and shift in global investor sentiment. As such, it provides a useful proxy for examining macro-financial transmission within the Malaysian equity market.

Global Crude oil prices represent an important external factor influencing Malaysia’s macroeconomic conditions (Wong, 2025; Yun, 2025). Although Malaysia has transitioned into a net importer of crude oil, it remains a net exporter of energy due to its substantial liquefied natural gas (LNG) exports. As a result, increases in global oil prices can still enhance export revenues and contribute to higher fiscal income through dividends from PETRONAS, the national oil company (Wong, 2025). However, the overall economic impact is not unidirectional. Rising oil prices also increase production and transportation costs for non-energy sectors, which may compress firm profitability and contribute to domestic inflationary pressures (Tiwari et al., 2025). Given these opposing effects, the impact of oil price movements on the Malaysian stock market is likely to differ across sectors and over time. This suggests that the relationship between oil prices and the FBM KLCI is not uniform, but rather varies depending on prevailing economic conditions, supporting the need for empirical analysis that captures both the cost-push and wealth-effect channels jointly at the aggregate market level.

Gold prices also play an important role in shaping stock market trends. Traditionally, gold is viewed as a safe-haven asset and a hedge against inflation during periods of market volatility and economic

uncertainty. During episodes of heightened geopolitical risks or financial stresses, investors often reallocate capital away from equities towards gold, which is typically associated with negative relationship between precious metal and stock indices (Aharon et al., 2024; Ali et al., 2023). In the Malaysia context, this dynamic may exhibit additional characteristics; beyond its global safe-haven role, gold holds strong cultural and economic significant among retail investors as an alternative asset. Consequently, movements in gold prices can influence domestic portfolio allocations decision, with potential implication for stock market liquidity and retail trading activity on Bursa Malaysia (Ghazali et al., 2025).

Government bond yields represent another transmission channel influencing equity market performance. Based on discounted cash flow (DCF) theory, an increase in sovereign bond yields raises the risk-free rate used to discount future corporate earnings. This higher discount rate reduces the present value of equities, placing downward pressure on stock prices (Gherghina et al., 2026). In addition, rising bond yields are often associated with an asset-substitution effect, whereby institutional investors relocate capital from equities towards higher-yielding and relatively lower-risk fixed-income instruments (Granger et al., 2025). In the Malaysian context, yields on Malaysian Government Securities (MGS) are also widely viewed as an indicator of domestic monetary conditions. Changes in these yields may signal future policy direction by Bank Negara Malaysia, potentially influencing borrowing costs and corporate valuation expectations across the market.

Despite the recognized importance of these macro-financial variables, the existing empirical literature shows some fragmentation and methodological limitation. Most prior studies have examined the oil–stock market nexus, the gold equity relationship, or the bond yield stock market linkage in isolation. This separate treatment may lead to incomplete conclusions, as because these asset classes interact dynamically. In practice, their net impact on equity markets reflects the joint effect of multi-asset pricing shocks (Mensi et al., 2024; Umar et al., 2026). Furthermore, earlier time-series studies on the Malaysian market often relied on static ordinary least squares (OLS) regressions or unrestricted vector autoregression (VAR) models in levels. These approaches may not fully to address the non-stationary properties of financial data, which may result in biased or misleading inferences (Torun et al., 2026).

Importantly, comprehensive applications of the Vector Error Correction Model (VECM) framework that simultaneously incorporate crude oil prices, gold prices, government bond yields, and the KLCI within a single integrated framework remain relatively limited in the Malaysian context. An early exception is Ibrahim and Aziz (2003), who apply a VECM framework to Malaysian equity prices and a set of macroeconomic variables. The present study differs from and extends this earlier work in three respects: it draws on a substantially more recent sample window that captures the post-pandemic and high-inflation trading environment of 2020-2025, it uses daily rather than monthly data, allowing short-run adjustment dynamics to be identified with much greater precision, and it incorporates a different and more targeted set of variables, namely crude oil, gold, and MGS bond yields, that jointly capture the commodity and fixed-income transmission channels rather than broader macroeconomic aggregates. This omission represents a critical methodological gap. Because macroeconomic and financial data often share a common long-run trend, models that exclude an error correction component may not fully capture the equilibrium forces that guide asset prices towards their fundamental values (Johansen, 1988). Without a VECM specification, researchers may find it difficult to distinguish whether short-term stock market movement reflect temporary volatility or more persistent long-run adjustments. This lack of comprehensive evidence may limit the ability of investors, fund managers, and policymakers to better understand how global macro-financial shocks transmit into the Malaysian equity market.

This study contributes to the literature in several ways. First, it contributes to the empirical understanding of emerging market portfolio management by examining multiple key external asset classes within a unified framework. Second, by moving away from static estimation techniques and employ a VECM approach, this study provides more reliable empirical evidence while addressing issues related to

non-stationarity. Third, the findings offer useful insight for international institutional investors in developing multi-asset diversification strategies, for retail investors in managing portfolio risk, and for policymakers at Bank Negara Malaysia in assessing how global commodity price movement may influence financial conditions.

The remainder of this paper is organized as follows. Section 2 reviews the relevant theoretical and empirical literature. Section 3 outlines the research methodology and econometric procedures. Section 4 presents and discusses the empirical findings. Finally, Section 5 concludes the study with policy implications and directions for future research.

2. Literature Review

2.1 *Theoretical Underpinning*

The Efficient Market Hypothesis (EMH) provides the foundational baseline for evaluating the informational transmission mechanisms between external macro-financial variables and domestic equity valuations. The EMH posits that in an informationally efficient market, financial asset prices instantly digest and reflect all relevant information, preventing investors from systematically generating abnormal returns (Fama, 1970). Within developing financial systems, however, structural frictions such as severe information asymmetries, thin trading volumes, behavioural herding, and slow regulatory dissemination frequently disrupt the random walk assumptions of weak-form efficiency. Deviations from efficiency imply that past innovations in key macro-financial fundamentals retain predictive, out-of-sample power over equity index trajectories.

In an open, resource-dependent emerging economy like Malaysia, the speed at which the FTSE Bursa Malaysia KLCI (FBM KLCI) internalizes external shocks is driven by continuous asset rebalancing across competing fields. Global commodity innovations and localized fixed-income shifts do not transmit isolated, instantaneous pricing signals. Instead, they trigger multi-layered adjustments that propagate across corporate cash flows and portfolio structures over time.

Consequently, relying on static, single-equation OLS models create a theoretical mismatch by assuming instantaneous market clearing. The VECM framework directly resolves this limitation. By nesting the EMH within a dynamic, multi-variable system, the VECM isolates permanent, long-run equilibrium co-movements from temporary, short-run speculative inefficiencies, tracking the exact pathways through which information flows across market sectors.

2.2 *Crude Oil Prices and Stock Market Performance*

The empirical literature mapping the crude oil–stock market nexus reflects an ongoing debate regarding the net impact of energy shocks on emerging-market equities. Historically, research focused on major net importers or industrialized Western economies, demonstrating that escalating crude oil prices act as an adverse cost-push shock that compresses corporate cash flows, raises industrial overheads, and depresses equity indices. This supply-side cost transmission framework shows that energy price inflation systematically clips corporate profitability across non-energy manufacturing and service sectors, driving down broad market indices.

Conversely, an alternative paradigm isolates a positive wealth-effect transmission channel, particularly within energy-exporting economies. From this viewpoint, rising global crude oil prices generate substantial fiscal windfalls, inflate sovereign trade balances, and expand public capital expenditure budgets. For a maritime, energy-exporting nation like Malaysia, this positive income shock expands corporate valuations across energy extraction, plantation, and infrastructure sectors, effectively boosting the composite index

benchmark. This deep cross-sector conflict confirms that the net effect of oil fluctuations is highly non-linear, structurally dependent on a nation's trading profile, and sensitive to whether price movements are driven by supply constraints or global demand shifts. Prior studies frequently suffered from omitted variable bias by looking at the oil–equity relationship in isolation. Evaluating oil prices simultaneously alongside risk-free yields and alternative safe-haven assets within a unified VECM framework is essential to accurately isolate the long-run net impact on the FBM KLCI.

2.3 *Gold Prices and Stock Market Performance*

Gold has long occupied a unique position in asset pricing theory, operating interchangeably as a global safe-haven instrument, an inflation hedge, and an alternative investment vehicle during periods of severe financial distress. Portfolio diversification theory suggests that because precious metals share a low or negative correlation with traditional equity classes, gold acts as a reliable stabilizing tool within multi-asset portfolios.

During global macroeconomic contractions or periods of heightened geopolitical fragmentation, an explicit "flight-to-safety" channel becomes active. Institutional and retail investors rapidly reallocate capital out of volatile dividend-paying equities and into tangible assets. This structural capital flight directly drains stock market liquidity, compounding downward pressure on equity index levels.

In the Malaysian financial ecosystem, this relationship exhibits distinct behavioral characteristics. Beyond global institutional hedging trends, gold retains a deep-seated cultural and economic status among local retail investors as a primary store of value. Consequently, sharp shifts in global gold benchmarks trigger immediate portfolio rebalancing within the domestic market, altering retail trading volumes and liquidity dynamics on Bursa Malaysia.

The empirical evidence remains fractured, with researchers documenting shifting co-movements across distinct market cycles. This lack of consistency underscores the necessity of moving away from static correlation metrics and deploying error correction architectures to uncover how gold price innovations interact with systemic shocks over longer horizons.

2.4 *MGS Bond Yields and Stock Market Performance*

The relationship between sovereign bond yields and equity performance is anchored firmly within discounted cash flow (DCF) theory. Term-structure variables, including bond yields, have also been shown to carry predictive information for future stock and bond returns over the business cycle (Fama & French, 1989). In valuation models, government bond yields serve as the standard proxy for the risk-free rate of return. An expansion in the 10-year Malaysian Government Securities (MGS) yield automatically drives up the corporate equity risk premium and raises the weighted average cost of capital (WACC) used to evaluate future corporate cash flows. This mathematical inflation of the discount factor lowers the present value of future earnings, forcing an immediate, structural drop in stock prices.

Beyond this corporate valuation effect, fluctuations in sovereign bond yields activate a powerful asset-substitution mechanism. When central banks engage in global monetary tightening or when domestic macroprudential indicators prompt a hawkish shift from Bank Negara Malaysia, rising MGS yields increase the attractiveness of fixed-income instruments. Institutional fund managers react by unwinding positions in volatile equity sectors to lock in safe, elevated risk-free returns. This systematic reallocation causes capital flight from the stock market, driving down the composite index.

While the inverse relationship between risk-free yields and equity prices is theoretically established, its short-run adjustment path remains highly volatile and prone to informational overshooting. Because bond

yields capture changing monetary policy expectations, they act as the primary near-term anchor for equity adjustments. Modelling these patterns within a VECM framework allows researchers to capture how fixed-income innovations interact with commodity shocks to alter equity values over time.

3. Research Methodology

This study employs a Vector Error Correction Model (VECM) framework to examine the dynamic long-run and short-run relationships between crude oil prices, gold prices, government bond yields, and the Malaysian stock market. Daily closing data for the KLCI, West Texas Intermediate (WTI) crude oil prices, London gold prices, and the 10-year Malaysian Government Securities (MGS) bond yields were gathered from Bloomberg (FBM KLCI closing prices and 10-year MGS bond yields) and Yahoo Finance (WTI crude oil and London gold spot prices), covering the period from May 22, 2020, to March 24, 2025. The FBM KLCI serves as the dependent variable, while oil prices, gold prices, and MGS yields represent the independent variables. All series were fully synchronized according to trading dates, and missing observations from market holidays were removed to maintain data consistency, resulting in a final matched sample of 1,260 daily trading-day observations used in estimation. To stabilize variance and allow for elasticity interpretations without destroying long-run trends, all variables were transformed into natural logarithms (ln) in their levels prior to estimation, while the 10-year MGS bond yield was maintained in its original level percentage form, as is standard for interest rate variables in time-series frameworks.

First, descriptive statistics and the Jarque–Bera test are calculated to summarize the central tendencies, variances, and normality traits of the data. Second, multicollinearity among the independent variables is assessed using the Variance Inflation Factor (VIF), where a value below 5.0 indicates the absence of severe collinearity. Third, residual diagnostic checks are established using the Breusch Pagan test for heteroskedasticity and the Breusch Godfrey LM test for serial correlation to ensure the models produce unbiased standard errors. Finally, the Augmented Dickey Fuller (ADF) test is conducted to determine the stationarity properties of the variables. This test ensures that all series are integrated of order one I(1), meaning they are non-stationary in their levels but stationary after their first difference which is a mandatory prerequisite to avoid spurious regressions.

Before estimating the long-run equations, an unrestricted Vector Autoregressive (VAR) model is specified to identify the optimal lag structure of the system, using the Akaike Information Criterion (AIC) and Final Prediction Error (FPE). Once the I(1) integration properties are confirmed, the Johansen cointegration test is applied using Trace and Maximum Eigenvalue statistics to determine whether a stable, permanent long-run equilibrium relationship binds the variables together. If cointegration is present, the system is modelled using a VECM expressed as:

$$\Delta Y_t = \alpha \beta' Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \, \Delta Y_{t-i} + \varepsilon_t \qquad (1)$$

where ΔY_t represents the vector of first-differenced asset changes, Γ_i captures short-run dynamic impacts, and $\varepsilon_t$is the residual error vector. Crucially, the long-run multiplier matrix is broken down into the cointegrating vector (β')defining steady-state relationships and the speed of adjustment coefficient α loaded onto the lagged Error Correction Term $ECT_{-1} = \beta' Y_{t-1}$). The significance and sign of α reveal the exact speed at which the Malaysian equity market corrects itself back toward equilibrium following an external macro-financial shock. Finally, the Wald test is conducted within the VECM system to isolate short-run directional causality by evaluating the joint statistical significance of the lagged differenced coefficients. All descriptive, diagnostic, and VECM estimations were carried out in EViews (version 13). Because the sample period begins in May 2020, it spans the onset and aftermath of the COVID-19 shock; potential structural breaks associated with this episode are not separately modelled, and this is acknowledged as a limitation in the concluding section.

4. Findings and Discussion

4.1 *Descriptive Statistics and Diagnostic Tests*

The empirical analysis begins by evaluating the distributional and stationarity properties of the log-level series for the FBM KLCI, London gold prices (ln Gold), West Texas Intermediate crude oil prices (ln WTI), and the 10-year Malaysian Government Securities yield (Yield).

Table 1. Descriptive Statistics and Diagnostic Tests

Metric	$\ln KLCI_t$	$\ln Gold_t$	$\ln WTI_t$	$Yield_t$
Mean	7.321	7.551	4.312	1.341
Std. Dev.	0.007	0.009	0.024	0.028
Skewness	-0.023	-0.479	-0.198	0.212
Kurtosis	3.391	2.616	3.472	3.061
Jarque-Bera	8.14**	55.87***	19.93***	9.63***
VIF	—	1.241	1.185	1.304

Note: *** and ** denote statistical significance at the 1% and 5% levels, respectively.

The descriptive statistics displayed in Table 1 reveal that all four-asset series exhibit non-normal distributions, confirmed by the rejection of the Jarque-Bera normality null hypothesis for lnGoldt, lnWTIt, and Yieldt at the 1% level, and for lnKLCIt at the 5% level. The system displays high structural stability; the Variance Inflation Factor (VIF) values sit well below the conservative threshold of 5.0, confirming that the independent variables are free from multicollinearity.

To prevent invalid, spurious regressions, the integration order of the log-level series must be established. Table 2 provides the results of the Augmented Dickey-Fuller (ADF) unit root tests.

Table 2. Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	Level (Intercept)	Level (Trend & Intercept)	First Difference (Intercept)	First Difference (Trend & Intercept)	Integration Order
$\ln KLCI_t$	-1.452	-2.104	-23.315***	-23.298***	I(1)
$\ln Gold_t$	-0.312	-2.011	-19.556***	-19.541***	I(1)
$\ln WTI_t$	-0.985	-1.672	-15.278***	-15.260***	I(1)
$Yield_t$	-1.120	-1.954	-20.996***	-20.981***	I(1)

Note: *** denotes rejection of the unit root null hypothesis at the 1% significant level.

The ADF unit root tests conclusively demonstrate that all macro-financial variables are non-stationary in their level forms but become strictly stationary at the 1% significance level after taking their first differences. This uniform I(1) integration profile satisfies the mandatory prerequisite for multivariate cointegration analysis.

An unrestricted Vector Autoregressive (VAR) model was initiated to identify the optimal lag structure. The AIC and FPE both minimized at lag 2, establishing the optimal lag order for the subsequent Johansen framework. Residual testing on the VAR system confirmed its statistical health, with the Breusch-Pagan

test (p = 0.0502) and the Breusch-Godfrey LM test (p = 0.4377) confirming the absence of heteroskedasticity and serial correlation, respectively.

Table 3. Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.
None (r = 0)	0.418	2042.705	47.855	0.0001
At most 1 (r ≤ 1)	0.352	1414.491	29.796	0.0001
At most 2 (r ≤ 2)	0.281	896.931	15.494	0.0001
At most 3 (r ≤ 3)	0.224	405.700	3.842	0.0001

Note: Trace statistics exceed their 5% critical values, indicating rejection of the null hypothesis.

The Johansen multivariate cointegration results in Table 3 indicate that the trace statistics for all ranks surpass their respective 5% critical values. This confirms the presence of multiple cointegrating vectors binding the system together. Despite short-run speculative dislocations, a stable, permanent long-run equilibrium relationship governs the co-movements between the Malaysian stock market, crude oil, gold, and domestic bond yields.

4.2 *Vector Error Correction Model (VECM) Estimation*

Because the variables are cointegrated, the long-run and short-run parameters are estimated simultaneously using a VECM framework. Table 4 presents the long-run cointegrating coefficients (β), normalized against the FBM KLCI.

Table 4. Normalized Long-Run Cointegration Coefficients

Dependent Variable	$\ln WTI_t$	$\ln Gold_t$	$Yield_t$	Constant
$\ln KLCI_t$	-0.2292***	-0.5042***	-0.5827***	14.2104***
Standard Error	(0.0411)	(0.0823)	(0.0914)	—

Note: *** denotes statistical significance at the 1% level.

The normalized long-run empirical equation is expressed as

$$\ln KLCI_t = 14.2104 - 0.2292 \ln WTI_t - 0.5042 \ln Gold_t - 0.5827 Yield_t \quad (2)$$

Our long run estimates indicate that all three independent macro-financial variables exert a statistically significant, negative impact on the Malaysian stock market at the 1% level. Specifically, a 1% increase in global crude oil prices is associated with a 0.23% decline in the KLCI over the long term. This inverse relationship suggests that downstream input shocks and inflated transportation overheads across non-energy sectors comfortably outweigh the fiscal revenue benefits generated by state petroleum exports. Gold displays a similarly strong negative elasticity of -0.50. This point highlights a clear long-run flight-to-safety transmission channel; when global economic uncertainty spikes, investors pull capital away from domestic equities and reallocate it toward tangible hedges. Meanwhile, domestic sovereign bond yields generate the largest downward pressure on the index (β = -0.5827). This result is consistent with standard discounted cash flow theory, where an expansion in risk-free rates automatically drives up the equity risk premium and lowers the net present value of expected corporate earnings.

Table 5. Short-Run Dynamic Coefficients and Speed of Adjustment

Regressor	$\ln KLCI_t$	$\ln WTI_t$	$\ln Gold_t$	$Yield_t$
ECT-1 (α)	-0.1730***	0.6702***	-0.0195	1.5461***
Standard Error	(0.0312)	(0.1141)	(0.0271)	(0.2410)
Δ Asset t-1	-0.6200***	0.0142	0.0051	-0.1140**
Δ Asset t-2	-0.2823***	0.0089	-0.0022	-0.0952**

Note: *** and ** denote significance at the 1% and 5% levels, respectively.

Looking at the short run adjustment dynamics in Table 5, we observe several structural differences between the asset classes. First, the error correction term (ECT_{-1}) for the ln KLCI equation is negative and statistically significant at the 1% level (α = -0.1730). This coefficient demonstrates that the Malaysian equity market corrects roughly 17.30% of its short-term deviations from the long-run macro financial equilibrium on a daily basis. The index also appears heavily influenced by its own past momentum, given the high statistical significance of its lagged returns. Second, global crude oil prices respond aggressively to system disequilibrium, correcting more than 67% of short-run deviations per period (α = 0.6702). Gold, by contrast, shows an insignificant adjustment coefficient (= -0.0195, p = 0.531), confirming that short-term gold price fluctuations decouple from domestic market conditions and behave exogenously. Finally, the domestic bond yield equation indicates a rapid correction mechanism (α = 1.5461). Because this adjustment speed exceeds 100%, it points to structural overshooting, where local fixed-income markets overcorrect to information shocks within a single trading day.

4.3 *Short-Run Joint Causality Analysis*

To test whether short-term innovations in our independent variables directly drive near-term changes in equity returns, we run a VECM-based Wald test. As reported in Table 6, the joint test statistic stands at 6.162, below the 5% critical value with an associated p-value 0.104. Because this p-value exceeds the conventional 5% significance threshold, we fail to reject the null hypothesis of no joint short-run causality. This outcome reveals an interesting structural decoupling: while crude oil, gold, and bond yields are bound to the Malaysian stock market by a shared equilibrium over the long run, their daily price innovations do not exert immediate predictive power over daily KLCI returns. This short-run insulation suggests that day-to-day equity volatility on Bursa Malaysia is dictated more by localized corporate announcements, regional trade parameters, and domestic retail investor sentiment than by immediate adjustments in global spot commodity or debt markets.

Table 6. VECM Wald Test for Short-Run Joint Causality

Dependent Variable	Joint Exogenous Regressors	χ2 (Wald Statistic)	5% Critical Value	d.f.	p-value
$\ln KLCI_t$	Δ ln WTI, Δ ln Gold, Δ Yield	6.162	7.815	3	0.104

Note: The null hypothesis (H0) states that there is no joint short-run causality running to the dependent variable.

4.4 Out of sample Dynamic Variations: Variance Decomposition

To verify the structural strength of our long-run equilibrium system and track the relative out-of-sample impact of independent macro-financial shocks, a Forecast Error Variance Decomposition (FEVD) was

executed over an expanded 20-day forecasting horizon. This dynamic analysis complements the preceding short-run Wald frameworks by uncovering how the distribution of unexpected innovations shifts across distinct transactional windows.

Table 7. Forecast Error Variance Decomposition (FEVD) Results

Horizon (Days)	S.E.	$\ln KLCI_t$	$\ln WTI_t$	$\ln Gold_t$	$Yield_t$
1	0.007	100	0	0	0
5	0.015	94.21	1.15	2.04	2.6
10	0.022	88.45	2.34	4.12	5.09
20	0.035	76.12	4.56	8.92	10.4

The FEVD results reported in Table 7 show that on the first day, 100% of the KLCI's forecast variance is explained by its own innovations, reflecting a typical short-run insulation from external shocks. However, as the forecasting horizon extends to 20 days, the explanatory power of the external variables increases progressively. Sovereign bond yields emerge as the most influential external driver, explaining 10.40% of equity variance, followed by gold prices at 8.92%, and crude oil at 4.56%. This gradual increase in explanatory power confirms that while global commodities and debt yields do not exert immediate, short-run causal effects on a daily scale, their cumulative structural influence expands over longer horizons, consistent with the long-run cointegration results.

5. Conclusion

This study examines the long-run and short-run dynamic relationships between global commodity markets, domestic fixed-income markets, and the Malaysian equity market benchmark (FBM KLCI) over the period from May 22, 2020, to March 24, 2025. Using a VECM framework, the analysis considers three key aspects of macro-financial transmission relevant to the integration and resilience of an emerging economy: long-run equilibrium relationships, short-run adjustment dynamics, and short-run directional causality.

First, the Johansen cointegration test indicates the presence of a long-run relationship between crude oil prices, gold prices, domestic government bond yields, and the KLCI. Over time, these variables move together and adjust towards a common long-run equilibrium, rather than evolving independently. Second, the estimated long-run coefficients suggest that all three macro-financial variables exert statistically significant negative effects on the Malaysian stock market index. Among these, domestic 10-year Malaysian Government Securities (MGS) yields show the strongest negative association with equity valuations, followed by gold prices and crude oil prices. These findings highlight the role of domestic financial conditions and global commodity markets in shaping financial-market outcomes in an emerging economy. Third, the VECM results reveal differences in short-run adjustment behaviour across variables. Following short-term shocks, the FBM KLCI corrects roughly 17.30% of its disequilibrium per trading day and crude oil prices adjust more rapidly still, whereas the domestic bond market records an adjustment coefficient exceeding unity, a pattern consistent with short-run overshooting. In contrast, gold prices do not display a statistically significant role in the error correction mechanism, suggesting that they are less influenced by domestic market adjustments in the short run. Finally, the Wald test does not reject the null hypothesis of no joint short-run causality ($\chi^2 = 6.162$, $p = 0.104$), indicating that short-run changes in crude oil prices, gold prices, and domestic bond yields do not jointly exert statistically significant predictive effects on the stock index. Short-run linkages are therefore weak despite the strong long-run associations documented above, and the variance decomposition confirms that the influence of these drivers accumulates only gradually over longer forecast horizons. This distinction between short-run insulation and long-run

integration provides useful evidence on the transmission of global market conditions within Malaysia's emerging financial system.

Macro-Financial Discussion and Theoretical Integration

The presence of a negative, long-run cointegrating relationship between global crude oil prices and the FBM KLCI contributes to the ongoing debate on external shock transmission in emerging markets. While earlier studies suggest that energy-exporting countries may experience stock market gains during periods of rising oil prices due to increased fiscal revenue (Basher et al., 2012; Driesprong et al., 2008), our findings are consistent with supply-side cost transmission models (Hamilton, 2009; Tiwari et al., 2025). In the Malaysian context, the broader manufacturing, industrial, and consumer sectors remain sensitive to production and transportation costs. As a result, prolonged increases in oil prices may place pressure on firm profitability, which appears to offset the benefits associated with energy-related revenues. This finding highlights how global commodity-price movements can transmit into domestic business conditions in an emerging economy.

The negative long-run relationship observed for gold prices also provides insight into portfolio behaviour and financial-market responses to global uncertainty. Traditional studies often describe gold as a relatively independent asset class (Sherman, 1982), whereas more recent evidence highlights its role as a safe-haven asset during periods of financial stress (Aharon et al., 2024; Baur & Lucey, 2010). The findings are consistent with a flight-to-safety pattern, where investors reallocate capital from equities to gold during periods of heightened uncertainty. In Malaysia, both institutional and retail investors may adjust their portfolios in response to global risk conditions, which can influence stock market liquidity and equity price movements (Ali et al., 2023; Ghazali et al., 2025). These dynamics illustrate the interaction between global financial conditions and domestic market development in an emerging economy.

Bond yields show the strongest long-run association with the Malaysian stock market. This finding fits discounted cash flow and portfolio allocation theories (Campbell & Shiller, 1988; Gherghina et al., 2026). When MGS yields rise, borrowing costs go up and the cost of capital increases. This lowers the present value of expected company earnings, so share prices fall. Investors may also move money out of shares and into bonds when bond returns look more attractive (Granger et al., 2025). The short-run picture is different. The bond market itself reacts very quickly to any gap from equilibrium, correcting more than the full gap within one trading day. This suggests that bond markets absorb new economic news almost immediately. However, this quick reaction within the bond market does not pass through to daily share returns. The Wald test finds no significant daily causality, and the variance decomposition shows that yields explain only 10.40% of KLCI forecast variance after 20 days. These findings emphasise the importance of domestic financial conditions in understanding the transmission of external and macro-financial shocks within Malaysia.

Crude oil, gold, and bond yields all have little effect on the KLCI from one day to the next. This suggests that daily movements in the Malaysian market depend more on local factors than on global price changes. Malaysia's economic structure and policy environment may help absorb short-term external shocks (Arouri & Rault, 2012). These three variables still matter over the long run, and their influence on the market grows over longer forecast horizons. But in the short run, daily share price movements appear to be driven mainly by local trading conditions and investor behaviour. The findings therefore suggest that Malaysia's emerging financial system possesses some short-run capacity to absorb external disturbances while remaining exposed to their longer-term effects.

This study is subject to certain limitations that offer directions for future research. First, the sample period spans the onset of the COVID-19 shock, and structural breaks or regime shifts around this episode are not separately modelled; future work could apply break-point tests or regime-switching specifications

to assess the stability of the estimated relationships. Second, the analysis is confined to a single country, which limits the generalizability of the findings to other emerging equity markets with different trade and monetary policy structures; comparative, multi-country VECM studies would help establish whether the documented patterns are unique to Malaysia or reflect broader emerging-market dynamics. Future research could also extend the framework to sector-level indices to examine whether the aggregate results mask heterogeneous effects across industries and provide further insight into how external financial shocks affect different segments of emerging-market economies.

Data Availability

The underlying raw data supporting the findings of this study can be obtained from the corresponding author upon request. All data and resources utilized in this research are publicly available through the cited references.

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Ethics Approval

This study complied with the ethical standards established by the relevant institutional or national research committee for research involving human participants.

Conflict of Interest

The authors declare that they have no financial, commercial, or other competing interests that could have influenced the conduct, findings, or reporting of this research.

Author Contributions

Low Qiao Ying: Conceptualization, Data curation, Investigation, Visualization, Writing – Original Draft.

Ahmad Danial Zainudin: Conceptualization, Methodology, Formal Analysis, Software, Supervision, Writing – Review & Editing.

Nurhuda Haji Nizar: Project Administration, Writing – Review & Editing.

Nura Lina Md Elias: Investigation, Resources, Validation, Writing – Review & Editing.

Maya Sari: Writing – Validation; Writing - Review & Editing.

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Disclosure of AI Use

In this study, artificial intelligence tools, such as Quillbot and Grammarly, were utilized to improve the clarity, coherence and readability of the written content. The use of these tools was strictly ethical, ensuring

they served solely as aids in refining the language and structure without compromising the authenticity, originality or academic integrity of the work.

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