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FROM OIL DEPENDENCE TO GROWTH DYNAMICS: STRUCTURAL BREAKS IN SAUDI ARABIA'S EQUITY MARKET

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ABSTRACT

This study examines the dynamic interactions between the Tadawul All Share Index (TASI), key domestic macroeconomic variables, and international oil prices. Using monthly data from January 2010 to March 2025, cointegration tests, vector error correction modelling (VECM), and Bai–Perron multiple structural break tests are employed to capture both short-run dynamics and long-run equilibrium relationships. The analysis distinguishes between pre- and post-2016 periods to evaluate the evolving influence of macroeconomic and oil market factors. Results reveal a significant long-run cointegrating relationship among TASI, oil prices, and macroeconomic indicators. A major structural break is identified around 2016, coinciding with Vision 2030 implementation, where stock market sensitivity to oil prices declines notably. Post-2016, diversification policies reduce oil dependency while monetary factors gain influence. These findings highlight Saudi Arabia's evolving financial resilience and provide important implications for policymakers, investors, and risk managers in resource-dependent emerging economies.

KEYWORDS: Saudi Arabia, TASI, Oil Prices, Macroeconomic Variables, Structural Breaks, Vision 2030, Emerging Markets.

JEL Classification : E44, F41, G15, Q43

1. INTRODUCTION

The Saudi Arabian economy occupies a unique position in the global economic system as one of the largest oil exporters and a member of the G20. The Tadawul All Share Index (TASI), the country's principal stock market benchmark, serves as a barometer for investor sentiment, macroeconomic performance, and policy effectiveness. As with many emerging markets, TASI's dynamics are influenced by a combination of domestic macroeconomic variables, international commodity prices, and structural economic changes. Understanding these relationships is essential for policymakers, investors, and researchers seeking to navigate the complexities of a resource-dependent economy in transition.

Oil prices have historically played a dominant role in shaping Saudi Arabia's fiscal capacity, trade balance, and overall economic performance. Fluctuations in crude oil markets can directly affect corporate earnings, government expenditure, and liquidity in the financial system, thereby influencing equity market valuations. At the same time, other macroeconomic indicators, such as inflation, interest rates, money supply, and GDP growth, provide important signals about the state of the domestic economy and its potential to sustain corporate profitability. In resource-dependent economies, these relationships are often subject to global market shocks, policy reforms, and cyclical fluctuations (**Hamilton, 1983; Basher & Sadorsky, 2006**).

Since the mid-2010s, Saudi Arabia has embarked on an ambitious programme of economic reform, most notably through Vision 2030, announced in April 2016. This strategy aims to diversify the economic base, reduce fiscal reliance on oil revenues, and strengthen the role of the private sector (**IMF, 2022**). Simultaneously, significant capital market reforms, including the opening of the Saudi stock market to qualified foreign investors in 2015 (**CMA, 2015**) and the inclusion of TASI in major global equity indices, have enhanced market integration with international financial systems. Such transformations raise the question of whether the macroeconomic drivers of the Saudi equity market have undergone structural changes.

Previous studies on the determinants of stock market performance in Saudi Arabia and the wider GCC region have often assumed stable relationships between macroeconomic variables and equity prices. However, economic reforms, financial liberalisation, and changes in oil market dynamics may have altered these relationships over time. There is a need for empirical work that simultaneously examines domestic macroeconomic variables, oil prices, and the possibility of structural breaks in their relationship with TASI, particularly in the context of post-reform economic conditions.

The main objectives of this study are therefore to:

- Analyse the short-run and long-run relationships between TASI, oil prices, and key domestic macroeconomic variables, namely GDP growth, inflation, interest rates, and money supply, over the period January 2010 to March 2025.
- Identify and date any structural breaks in these relationships, with particular attention to the period surrounding Saudi Arabia's Vision 2030 reforms.
- Assess whether the influence of oil prices and macroeconomic indicators on TASI has shifted between pre- and post-reform periods.
- Provide policy-relevant insights for monetary and fiscal authorities, as well as strategic guidance for domestic and international investors in the Saudi market.

By pursuing these objectives, the study aims to deepen understanding of how structural economic transformation and evolving market conditions have reshaped the macro-financial linkages in one of the world's most strategically important emerging markets.

This paper proceeds as follows: Section 2 reviews relevant literature, Section 3 presents the methodology. Section 4 outlines the data. Section 5 reports the empirical results, Section 6 discusses the findings and presents some policy implications, and Section 7 concludes with directions for future research.

2. LITERATURE REVIEW

2.1 Macroeconomic Variables and Equity Markets

The relationship between macroeconomic indicators and stock market performance has been extensively examined in both developed and emerging economies. **Fama (1981)** argued that stock returns reflect expectations about future real economic activity, while **Chen, Roll, and Ross (1986)** demonstrated that macroeconomic variables such as inflation, industrial production, and term structure significantly influence equity returns. In emerging markets, **Bilson, Brailsford, and Hooper (2001)** found that macroeconomic factors often exert a stronger influence on equity prices due to higher economic volatility and less mature market structures (**Yu et al., 2023**).

Recent evidence further highlights the sensitivity

of equity markets to monetary conditions. Using U.S. data for the period 2015–2025, **Abid (2025)** shows that increases in interest rates and tightening monetary policy exert significant downward pressure on stock market performance, reinforcing the importance of inflation expectations and the cost-of-capital channel in explaining equity market dynamics.

2.2. Oil Prices and Stock Market Performance

Given Saudi Arabia's position as one of the world's largest oil exporters, oil prices play a potentially central role in determining stock market dynamics. **Hamilton (1983)** documented the macroeconomic significance of oil price shocks, while **Jones and Kaul (1996)** showed that in oil-exporting countries, positive oil price shocks often lead to higher equity valuations via increased corporate earnings and fiscal revenues. However, **Basher and Sadorsky (2006)** reported that the oil–equity relationship can be non-linear and dependent on broader economic conditions, while **Arouri and Rault (2011)** found evidence that in Gulf Cooperation Council (GCC) countries, oil price changes affect stock markets asymmetrically (**Yiming et al., 2024**).

2.3. Domestic Macroeconomic Drivers in GCC Markets

Studies focusing on Saudi Arabia and other GCC economies have emphasised the influence of inflation, interest rates, GDP growth, and money supply on equity prices. **Menacer and Nurein, (2017)** found that higher inflation and interest rates generally depress GCC stock returns, reflecting increased costs of capital and reduced purchasing power. In contrast, money supply growth is often positively related to equity performance, as noted by **Ibrahim and Aziz (2003)**, suggesting that liquidity expansion stimulates market activity. GDP growth, as a proxy for real economic performance, has been linked to higher equity valuations in both developed and emerging markets (**Humpe & Macmillan, 2009; Alter et al., 2025**).

2.4. Structural Change and Market Integration

Recent literature points to the importance of considering structural breaks and evolving market linkages in assessing macro-financial relationships. **Bai and Perron (2002)** developed statistical methods to detect multiple structural breaks in time series, which have been applied in stock market studies to identify regime shifts due to policy changes, crises, or economic reforms (**Kim et al., 2005**). In the Saudi context, **Alotaibi and Mishra (2015)** found that global financial integration and domestic policy reforms have altered the responsiveness of the Tadawul to both domestic and international factors. The opening of the Saudi stock market to direct foreign investment in 2015 (**CMA, 2015**) and the announcement of Vision 2030 in 2016 represent major institutional changes that may have influenced these relationships (**Almutairi et al., 2024**).

2.5. Recent Advances and Emerging Evidence

Recent studies have provided deeper insights into the evolving relationship between macroeconomic variables and the Saudi stock market. **Alabdulwahab (2025)**, using a nonlinear ARDL framework, finds that income and negative oil shocks exert a positive long-run influence on market performance, while positive oil shocks and higher real interest rates have adverse effects, underscoring the asymmetric nature of macroeconomic impacts. Similarly, **Abdou et al., (2024),** applying a combination of machine learning techniques and generalized method of moments estimation, demonstrate that oil prices remain a strong predictor of Saudi stock market movements, particularly in the aftermath of the 2006 market collapse, and that the influence of major global markets, such as China, has grown markedly since then. Complementing these findings, **Cao et al., (2025)** present a broader review highlighting that oil prices, inflation, trade openness, GDP, and FDI play pivotal roles in shaping Saudi economic outcomes, with important implications for policies aimed at diversifying the economy, fostering non-oil sector growth, and enhancing employment opportunities (**Abid, 2025c**).

In addition, recent time-series evidence for Saudi Arabia emphasizes the importance of capturing nonlinear and dynamic macroeconomic relationships. Using a NARDL framework, **Abid (2025a)** documents asymmetric responses of economic activity to environmental and macroeconomic factors, highlighting the presence of nonlinear adjustment mechanisms and reinforcing the need for flexible econometric approaches when analysing Saudi macro-financial dynamics.

2.6. Research Gap

While prior studies have examined the influence of macroeconomic indicators and oil prices on the Saudi stock market, most have treated these relationships as stable over time and have not explicitly modelled potential structural changes associated with major policy shifts, such as Vision 2030. Moreover, few studies have jointly considered domestic macroeconomic variables, oil market

dynamics, and possible regime shifts in a unified empirical framework. This study addresses this gap by employing time series models capable of capturing both short-run dynamics and long-run equilibrium relationships, while also testing for structural breaks that may correspond to major economic policy changes.

3. METHODOLOGY

3.1. Var Model Specification

This study employs a Vector Autoregressive (VAR) model to capture the dynamic interrelationships among Saudi Arabia's stock market returns and key macroeconomic variables. The VAR framework is chosen because it treats all variables as endogenous, allowing for mutual feedback effects without imposing strict theoretical restrictions (**Sims, 1980**). The VAR framework is widely used in financial econometrics to analyze short-run and medium-run interactions between asset prices and macroeconomic fundamentals.

The VAR(p) model of order p can be written as:

$$Y_t = c + \sum_{i=1}^{p} A_i Y_{t-i} + \varepsilon_i \quad (1)$$

where:

- Y_t is a vector of endogenous variables at time t,
- c is a vector of constants,
- A_i are coefficient matrices for lag i,
- ε_i is a vector of white noise error terms.

The optimal lag length p is determined based on standard information criteria such as Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), and Hannan-Quinn (HQ) Criterion.

3.2. Cointegration And VECM

Since macroeconomic and financial time series often exhibit non-stationarity, the study tests for cointegration using the **Johansen (1988)** methodology, which allows for multiple cointegrating relationships. Cointegration indicates a stable long-run equilibrium among variables despite short-term fluctuations.

The Johansen test is based on the Vector Error Correction Model (VECM):

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + \varepsilon_i \quad (2)$$

where:

- Δ denotes the first difference,
- Π contains information about long-run relationships through the product αβ′\alpha \beta'αβ′, where β\betaβ represents cointegrating vectors and α\alphaα adjustment speeds,
- Γ_i capture short-term dynamics.

The VECM allows disentangling short-run deviations from the long-run equilibrium, providing insights into the adjustment process of stock returns relative to macroeconomic changes.

3.3. Structural Break Analysis

To capture possible shifts in the underlying relationships due to significant economic events, this study employs the **Bai and Perron (1998)** multiple structural break test. This method detects unknown breakpoints by minimizing the sum of squared residuals across segments, allowing for breaks in the regression parameters. Accounting for these breaks improves the model's ability to reflect changing market dynamics and policy impacts.

3.4. Diagnostic Tests

The robustness of the VAR and VECM models is assessed through several diagnostic checks:

- Lagrange Multiplier (LM) test for autocorrelation verifies that residuals are free of serial correlation, a key assumption for valid inference (**Breusch, 1978**).
- Stability tests using cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests (**Brown, Durbin, & Evans, 1975**) confirm that model parameters remain stable over the sample period. Stability is crucial to ensure the reliability of impulse response functions and forecast error variance decompositions.

4. DATA

4.1. Data Description

This study uses monthly macro-financial data for Saudi Arabia spanning January 2010 to March 2025. The primary variable of interest is the Tadawul All Share Index (TASI), which reflects the overall performance of the Saudi stock market. The dataset comprises six key variables presented in **Table 1.**

Table 1: Variable Description.

Variable	Description	Source
TASI	Tadawul All Share Index level (points)	Tadawul
CPIG	Inflation rate, measured as the year-on-year percentage change in the Consumer Price Index	SAMA
SAIBOR	Monthly average 3-month Saudi Interbank Offered Rate (%)	SAMA
M2	Broad money supply (SAR millions)	SAMA

GDP	Gross Domestic Product (SAR millions), monthly frequency	SAMA
OIL	Brent crude oil futures closing price (USD/barrel)	Investing.com

All variables are expressed at monthly frequency, aligned to the same time span to ensure comparability. Logarithmic transformation is applied to variables in levels (TASI, M2, GDP, OIL) to stabilize variance and interpret estimated coefficients as elasticities, while rate-based variables (CPIG, SAIBOR) are retained in their original form.

Since official GDP data for Saudi Arabia are typically reported at quarterly frequency, the monthly GDP series used in this study is constructed through temporal disaggregation of the quarterly data. The interpolation method preserves the original quarterly totals while generating smooth intra-quarter movements, allowing consistency with the monthly macro-financial dataset without altering the long-run properties of the series. This approach is widely adopted in empirical macroeconomic research when higher-frequency modelling is required.

4.2. Theoretical Justification

The choice of these variables in this study is grounded in their well-established theoretical and empirical links to stock market performance.

- **Inflation (CPIG):** Inflation affects stock prices primarily through its impact on real interest rates and expected corporate earnings. The Fisher effect postulates a one-to-one adjustment of interest rates with inflation, which influences discount rates applied to future cash flows (**Fama, 1981**). Empirical evidence suggests that high inflation often correlates with lower stock market returns due to uncertainty and erosion of purchasing power (**Boudoukh & Richardson, 1993**).
- **Interest Rates (SAIBOR):** Higher short-term interest rates increase the cost of capital and reduce firms' investment incentives, negatively impacting stock prices (**Bernanke & Kuttner, 2005**). Changes in interest rates influence the opportunity cost of holding equities relative to bonds, affecting investor portfolio allocation decisions (**Campbell & Shiller, 1988**).
- **Money Supply (M2):** Money supply expansion increases liquidity and can stimulate economic activity, leading to higher asset prices (Monetary Liquidity Preference Theory). Empirical studies document a positive association between broad money growth and stock market returns, as greater liquidity encourages investment in equities (**Thorbecke, 1997**).
- **Economic Activity (GDP):** GDP growth signals stronger corporate earnings prospects and higher expected dividends, supporting higher stock valuations as per the present value model (**LeRoy & Porter, 1981**). Economic expansions typically coincide with bullish stock markets, reflecting improved fundamentals (**Chen, Roll, & Ross, 1986**). However, given the interpolation of GDP to monthly frequency, the variable should be interpreted as a high-frequency proxy for underlying economic activity rather than a direct measure of observed monthly output.
- **Oil Prices (OIL):** For oil-exporting countries such as Saudi Arabia, oil price fluctuations significantly influence fiscal revenues, corporate earnings, and overall economic health, which in turn affect stock market performance (**Faff & Brailsford, 1999**). The resource dependence hypothesis suggests that oil price shocks translate into stock market volatility via changes in liquidity and investor sentiment (**Jones & Kaul, 1996**).

4.3. Descriptive Statistics & Correlations

The descriptive statistics of the variables in the dataset are presented in **Table 2**.

Table 2: Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
TASI	183	9.0377	0.2330	8.6347	9.5276
CPIG	183	2.3740	2.1810	-3.2321	7.2011
SAIBOR	183	2.1317	1.7968	0.6000	6.3207
M2	183	14.2859	0.2948	13.6406	14.8412
GDP	183	13.5795	0.2451	13.0696	14.0135
OIL	183	4.3098	0.3271	3.2715	4.8354

The Tadawul All Share Index, expressed in logarithmic form, shows moderate fluctuations around its average level, capturing the general trends of the Saudi stock market over this period. Inflation,

measured by the consumer price index growth rate, exhibits notable variability, including periods of both moderate inflation and occasional deflation. The 3-month Saudi interbank offered rate reflects changing monetary policy conditions, ranging from very low to moderately high levels throughout the sample. Broad money supply and GDP, both in logarithmic terms, indicate steady growth consistent with economic expansion and monetary accumulation. Brent crude oil prices, also logged, display significant volatility, mirroring the swings typical of global energy markets and underscoring the importance of oil to Saudi Arabia's economic environment.

The correlation analysis reveals several important relationships among the variables (**Table 3**).

Table 3: Correlation Matrix.

Variable	TASI	CPIG	SAIBOR	M2	GDP	OIL
TASI	1.0000	-0.2234	0.6067	0.7863	0.8763	0.1988
CPIG	-0.2234	1.0000	-0.2720	-0.4219	-0.2491	0.3314
SAIBOR	0.6067	-0.2720	1.0000	0.7159	0.7621	-0.0011
M2	0.7863	-0.4219	0.7159	1.0000	0.8490	-0.3130
GDP	0.8763	-0.2491	0.7621	0.7490	1.0000	0.1801
OIL	0.1988	0.3314	-0.0011	-0.3130	0.1801	1.0000

The Tadawul All Share Index (TASI) is strongly and positively associated with GDP, broad money supply, and the 3-month Saudi interbank offered rate, indicating that the stock market tends to rise alongside economic growth, monetary expansion, and prevailing interest rates. Conversely, inflation exhibits a moderate negative correlation with TASI, suggesting that higher inflation may exert downward pressure on stock market performance. The relationship between oil prices and TASI is positive but relatively weak, reflecting the nuanced influence of global oil market fluctuations on the Saudi stock market. Inflation also tends to move inversely with money supply growth and interest rates, while money supply, GDP, and interest rates themselves show strong positive interrelations, consistent with interconnected economic dynamics. Oil prices correlate moderately with inflation but have limited association with interest rates and show a negative relationship with money supply.

4.4. Stationarity Tests

The Augmented Dickey-Fuller (ADF) test results (**Table 4**) indicate mixed stationarity properties across the variables.

Table 4: Augmented Dickey-Fuller (ADF) Test Results.

Variable	ADF Statistic	p-value	Variable	ADF Statistic	p-value
TASI	-2.9060	0.0488	**dTASI**	-10.2470	0.0000
CPIG	-2.9390	0.0410	**dCPIG**	-10.0210	0.0000
SAIBOR	-0.5690	0.8778	**dSAIBOR**	-7.3850	0.0000
M2	-1.4780	0.5441	**dM2**	-8.8960	0.0000
GDP	-1.6370	0.4640	**dGDP**	-5.6060	0.0000
OIL	-2.3440	0.1583	**dOIL**	-9.5160	0.0000

At the level form, the consumer price index growth (CPIG) and the Tadawul All Share Index (TASI) are stationary with p-values just below the 5% significance level, suggesting weak evidence against the presence of a unit root. The other variables, SAIBOR, M2, GDP, and oil prices, fail to reject the null hypothesis of a unit root at conventional significance levels indicating non-stationarity. However, after first differencing, all variables exhibit strong stationarity. This confirms that all series are integrated of order one, I(1), meaning they become stationary only after differencing once. These findings justify the use of first differences in subsequent time series analyses or applying cointegration techniques to investigate long-term equilibrium relationships among the variables.

4.5. Multicollinearity Check

The Variance Inflation Factor (VIF) values for all explanatory variables, GDP, OIL, CPIG, SAIBOR, and M2 in **Table 5**, are well below the common threshold of 5.

Table 5: Collinearity Diagnosis.

Variable	VIF	1/VIF
GDP	1.33	0.7538

OIL	1.28	0.7813
CPIG	1.11	0.9021
SAIBOR	1.05	0.9566
M2	1.03	0.9713
Mean VIF	**1.16**	

The results indicates that multicollinearity is not a concern in the model, as none of the variables show excessive linear dependence. The mean VIF of 1.16 further supports the conclusion that the regressors are suitably independent for reliable estimation.

5. RESULTS

5.1. VAR For the Full-Sample (2010–2025)

Based on the Akaike Information Criterion (AIC), the optimal lag length for the VAR model is 4, as it corresponds to the lowest AIC value among all lag orders tested (**Table 6**). Although other criteria such as HQIC and SBIC favor shorter lags, the AIC's selection of lag 4 suggests including four lags best captures the dynamic relationships in the data without overfitting.

Table 6: Optimal Lag Length Choice Results.

Lag	Log-Likelihood (LL)	LR Statistic	df	p-value	FPE	AIC	HQIC	SBIC
0	853.266	-	-	-	3.00E-12	-9.51985	-9.47635	-9.4126
1	1418.43	1130.3	36	0.0000	7.70E-15	-15.4655	-15.1611*	-14.7148*
2	1458.31	79.753	36	0.0000	7.40E-15	-15.5091	-14.9437	-14.1148
3	1492.89	69.153	36	0.0010	7.60E-15	-15.4931	-14.6667	-13.4553
4	1530.43	75.089*	36	0.0000	7.50E-15	-15.5104*	-14.4231	-12.8292

The estimated Vector Autoregression (VAR) model for the Tadawul All Share Index (TASI) provides important insights into the macro-financial dynamics of Saudi Arabia from June 2010 to March 2025 (**Table 7**).

Table 7: Full-Sample VAR Estimation Results (2010–2025).

Variable	Lag	Coefficient	Std. Error	z-value	p-value
tasi	L1	0.9564	0.0788	12.1400	0.0000
	L2	-0.1061	0.1056	-1.0000	0.3150
	L3	0.0873	0.1075	0.8100	0.4170
	L4	0.0596	0.0813	0.7300	0.4630
cpig	L1	-0.0086	0.0044	-1.9700	0.0490
	L2	0.0098	0.0059	1.6600	0.0970
	L3	-0.0072	0.0057	-1.2600	0.2060
	L4	0.0064	0.0040	1.5700	0.1150
dsaibor	L1	-0.0573	0.0238	-2.4100	0.0160
	L2	0.0323	0.0266	1.2100	0.2250
	L3	-0.0543	0.0274	-1.9900	0.0470
	L4	0.0219	0.0239	0.9200	0.3590
dm2	L1	0.7157	0.2765	2.5900	0.0100
	L2	0.2412	0.2943	0.8200	0.4120
	L3	-0.1921	0.3001	-0.6400	0.5220
	L4	0.0751	0.2964	0.2500	0.8000
dgdp	L1	0.3110	0.3160	0.9800	0.3250
	L2	0.4316	0.3870	1.1200	0.2650
	L3	1.0810	0.3902	2.7700	0.0060
	L4	-0.2411	0.3078	-0.7800	0.4330
doil	L1	-0.0707	0.0486	-1.4500	0.1460
	L2	-0.0545	0.0477	-1.1400	0.2530
	L3	0.0013	0.0485	0.0300	0.9790
	L4	-0.1671	0.0448	-3.7300	0.0000
_cons		0.0166	0.1490	0.1100	0.9110
Model Fit Statistics					
Statistic	**Value**	**Statistic**	**Value**	**Statistic**	**Value**
Observations	178	Chi-square	4726.151	HQIC	-14.4231
R-squared	0.9637	P-value	0.000	SBIC	-12.8292
RMSE	0.0475	AIC	-15.5105	FPE	7.48×10^{-15}

- **Coefficient Interpretation**

The TASI equation exhibits a high degree of persistence, with the first lag (L1) showing a large and highly significant positive coefficient (0.9564, $p < 0.01$), indicating that current stock market performance is strongly influenced by the previous month's level. Other TASI lags are statistically insignificant, suggesting limited predictive power beyond a one-month horizon. Inflation (CPIG) at the first lag has a small but significant negative effect (–0.0086, $p = 0.049$), consistent with the Fisher effect, where higher inflation increases discount rates and erodes the real value of expected earnings. The Saudi interbank offered rate (SAIBOR) shows a significant negative relationship with TASI both contemporaneously (L1: –0.0573, $p = 0.016$) and with a three-month delay (L3: –0.0543, $p = 0.047$), reflecting the cost-of-capital channel whereby higher rates reduce equity demand.

Monetary and real economic activity variables exert positive influences. Broad money supply (M2) at the first lag has a large positive effect (0.7157, $p = 0.010$), indicating that liquidity injections quickly boost equity valuations, consistent with the monetary liquidity preference theory. GDP growth (GDP) at the third lag shows a strong positive coefficient (1.0810, $p = 0.006$), suggesting that improved economic fundamentals take approximately three months to be fully priced into the stock market. Oil prices (OIL), contrary to the expected positive relationship in an oil-exporting economy, display a significant negative effect at the fourth lag (–0.1671, $p < 0.01$). This could reflect delayed macroeconomic adjustments, fiscal policy responses, or portfolio reallocation away from equities toward oil-linked investments.

- **Model Performance**

The TASI equation achieves an R^2 of 0.9637, meaning over 96% of the variation in TASI is explained by its own lags and the selected macroeconomic indicators. The root mean squared error (RMSE) is 0.0475, indicating high predictive accuracy. The joint significance test ($Chi^2 = 4726.151$, $p < 0.0001$) confirms that the explanatory variables are jointly highly relevant. Information criteria values (AIC = –15.51, HQIC = –14.42, SBIC = –12.83) and the very low Final Prediction Error (FPE = 7.48×10^{-15}) underscore the model's strong fit and efficiency.

- **Residual Autocorrelation Test**

The Lagrange Multiplier (LM) test for residual autocorrelation (**Table 8**) fails to reject the null hypothesis of no serial correlation at both lag order 1 and lag order 2. This indicates that the residuals are free from autocorrelation, confirming that the model adequately captures the dynamic relationships in the data and does not omit important lagged effects.

Table 8: LM Test for Residual Autocorrelation.

Lag	Chi^2	df	p-value
1	46.4842	36	0.1132
2	39.8219	36	0.3038

- **Stability Assessment**

The eigenvalue stability condition (**Table 9**) shows that all roots lie inside the unit circle. This confirms that the VAR satisfies the stability condition, ensuring that shocks have finite and decaying effects over time.

Table 9: Eigenvalue Stability Condition for VAR Model.

Eigenvalue	Modulus
0.977651	0.977651
0.9133826	0.913383
0.5259194 ± 0.591938i	0.791822
0.7916731	0.791673
0.2914895 ± 0.7255044i	0.781871
-0.7233857	0.723386
0.1375677 ± 0.6843094i	0.698000
0.6635095 ± 0.02118604i	0.663848
-0.3782121 ± 0.4935i	0.621761
-0.5718104 ± 0.2297447i	0.616238
-0.2174039 ± 0.4981754i	0.543547
-0.2497568 ± 0.442725i	0.508315
0.4874465	0.487446
0.2247406 ± 0.388795i	0.449077

-0.4260715	0.426071

The VAR model is statistically robust, dynamically stable, and free from residual autocorrelation. The results indicate that while market momentum is the dominant short-term driver of TASI, monetary conditions, economic growth, and certain commodity price movements also exert significant and time-varying influences. Inflation and interest rates act as short-term drags, while liquidity expansion and GDP growth provide strong support to equity prices. The lagged negative effect of oil prices underscores the complex and sometimes counterintuitive nature of commodity–equity linkages in resource-dependent economies like Saudi Arabia. Importantly, the lagged negative effect of oil prices highlights the evolving and nonlinear nature of commodity–equity linkages, suggesting that oil shocks may transmit through fiscal, liquidity, and expectation channels rather than through a simple revenue effect in a resource-dependent economy such as Saudi Arabia.

5.2. VECM For the Full-Sample (2010–2025)

The Johansen trace test examines the number of cointegrating relationships among the variables in the VAR system (**Table 10**).

Table 10: Johansen Cointegration Test Results.

Rank (r)	Parameters	Log Likelihood (LL)	Eigenvalue	Trace Statistic	5% Critical Value
0	114	1427.9160	0.4437	205.0271	94.15
1	125	1480.1100	0.2178	100.6396	68.52
2	134	1501.9730	0.1535	56.9142	47.21
3	141	1516.8000	0.0857	27.2592	29.68
4	146	1524.7730	0.0553	11.3144	15.41
5	149	1529.8320	0.0067	1.1959	3.76

There is strong statistical evidence of three cointegrating relationships among the variables in the model, implying a long-run equilibrium connection between the Saudi macro-financial variables, including the Tadawul All Share Index (TASI), inflation, interest rates, money supply, GDP, and oil prices over the sample period.

The cointegration results (**Table 11**) reveal a long-run equilibrium relationship between the Tadawul All Share Index (TASI) and several key macroeconomic variables. By normalizing the equation on TASI, the analysis shows how changes in inflation, interest rates, money supply, GDP, and oil prices relate to the stock market index over the long term.

Table 11: Cointegrating Equation (_ce1).

Variable	Coefficient	Std. Error	P-value
tasi	1 (normalized)	–	–
cpig	0.0000	–	–
dsaibor	0.0000	–	–
dm2	-1.1625	53.7479	0.9830
dgdp	-234.8358	32.6055	0.0000
doil	115.6814	10.5137	0.0000
_cons	-7.8032	–	–

Notably, Brent crude oil prices exhibit a strong and positive relationship with TASI. This finding aligns with Saudi Arabia's economic structure as a major oil exporter, where fluctuations in oil prices directly influence government revenues, corporate earnings, and overall investor sentiment. Thus, an increase in oil prices tends to raise the stock market index in the long run, reflecting improved economic prospects and profitability for listed companies.

Conversely, GDP has a significant negative coefficient, indicating that increases in GDP are associated with decreases in the TASI index within this equilibrium relationship. Although counterintuitive, this result may reflect measurement and structural factors rather than a true inverse relationship between economic activity and equity performance. In particular, the use of interpolated monthly GDP may capture short-term cyclical adjustments, while periods of strong GDP growth in Saudi Arabia are often associated with expansionary public spending, higher inflation expectations, or liquidity absorption, which can temporarily weigh

on equity valuations.

The negative long-run coefficient on GDP, although statistically significant, should be interpreted with caution. Several factors may explain this counterintuitive relationship. First, the interpolated monthly GDP series may capture short-term cyclical adjustments rather than pure real activity effects, potentially affecting the estimated long-run elasticity. Second, periods of strong GDP growth in Saudi Arabia are often associated with expansionary fiscal spending financed by oil revenues, which may lead to inflationary pressures, higher interest rate expectations, or increased government absorption of liquidity—factors that can dampen equity valuations. Third, structural shifts in the economy, including the growing role of government-led projects and non-listed sectors, may weaken the direct transmission from aggregate output growth to listed corporate profitability. Robustness checks using alternative lag structures and model specifications confirm that the overall cointegration relationship remains stable despite the sign of the GDP coefficient, suggesting that the result reflects structural characteristics rather than model instability.

On the other hand, inflation (measured by CPIG) and interest rates (SAIBOR) do not appear to have significant long-run relationships with the stock market index in this model. Inflation's coefficient is effectively zero, and SAIBOR was omitted, suggesting that these variables may influence stock prices primarily in the short term or through indirect channels rather than through a stable long-term equilibrium. Similarly, the coefficient on money supply (M2) is negative but statistically insignificant, indicating weak evidence that liquidity conditions directly impact the long-run level of the stock market.

Overall, these results emphasize the dominant role of oil prices in shaping Saudi Arabia's stock market over the long term, while the roles of GDP, inflation, interest rates, and money supply are less straightforward or less influential in the cointegrated system. The findings also indicate that macro-financial transmission mechanisms operate through indirect channels and may vary across economic regimes, underscoring the importance of accounting for structural change in empirical analysis.

5.3. Structural Break Tests Results

The **Bai and Perron (1998)** test for multiple structural breaks provides compelling evidence of two significant breaks in the dataset for the Tadawul All Share Index and associated macro-financial variables over the period 2010 to 2025 (**Table 12**). The test statistic of 49.81 greatly exceeds the critical values at the 1%, 5%, and 10% significance levels, decisively rejecting the null hypothesis of no breaks in favor of two structural breaks.

Table 12: Bai-Perron Structural Break Test Results.

Test	Statistic / Value	1% Critical Value	5% Critical Value	10% Critical Value
Test Statistic	49.81	3.67	3.12	2.87
Number of Breaks	2	-	-	-
Estimated Break Points	Break 1: 2016m10	**95% Confidence Intervals**	Break 1: 2014m11 - 2018m09	
	Break 2: 2021m06		Break 2: 2021m05 - 2021m07	

The estimated break dates are approximately October 2016 and June 2021, with confidence intervals spanning roughly two years on either side. These breaks likely correspond to substantial shifts in the underlying data-generating process affecting the stock market and its macro-financial environment. The first break in late 2016 aligns with global oil market turbulence, characterized by a sharp decline in oil prices that significantly impacted Saudi Arabia's economy. This period also coincides with the introduction of structural reforms under Saudi Arabia's Vision 2030 plan aimed at economic diversification, which likely influenced financial market dynamics.

The second break around mid-2021 may be attributed to the global economic recovery from the COVID-19 pandemic, oil price volatility, and changes in domestic monetary and fiscal policies. Such macroeconomic shifts could alter the relationships between stock prices and their fundamental drivers, thereby justifying the presence of a structural break.

Recognizing these breaks is essential for precise econometric modeling, as neglecting them may lead to biased parameter estimates and misleading inferences regarding the dynamics linking the Tadawul All Share Index with macro-financial variables. Accounting for structural change also improves economic interpretation by allowing relationships to evolve in line with major policy reforms, oil market cycles, and shifts in investor behavior.

Beyond economic rationale, we justify focusing on the October 2016 break based on robustness checks of model performance. Comparing models estimated

with and without the second break in 2021 using criteria such as the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and residual sum of squares (RSS) indicates that the model with only the 2016 break delivers better fit and greater stability. This confirms that adding the second break does not materially enhance explanatory power, thereby supporting a more parsimonious model specification. This approach ensures the selected break point is both economically meaningful and statistically robust, balancing simplicity and explanatory accuracy. Accordingly, subsequent analyses should incorporate the break (October 2016) by segmenting the sample into sub-periods to better capture evolving market conditions

Additionally, a Wald test was conducted to assess whether the interaction terms capturing the effects of structural breaks on the relationships between the dependent variable and explanatory variables are jointly zero (**Table 13**). The null hypothesis posits that the break has no significant impact on the coefficients of the post-break variables (post_cpig, post_dsaibor, post_dm2, post_dgdp, post_doil).

Table 13: Wald Test Results.

Test	Statistic	p-Value
Wald Test (joint test)	F = 10.4400	0.0000

The test yields an F-statistic of 10.44 and a p-value effectively zero ($p < 0.0001$). This strongly rejects the null hypothesis, indicating that the break significantly alters the relationships modeled by the interaction terms. In other words, the coefficients for the variables after the break differ statistically from zero, confirming that the break meaningfully impacts the system's dynamics.

These findings reinforce the conclusion that accounting for structural breaks enhances model specification and underscores the importance of incorporating regime changes when analyzing the time series behavior of the Tadawul All Share Index and its macro-financial determinants.

5.4. Pre and Post Break VAR

The vector autoregression (VAR) model was estimated on the sample period prior to the October 2016 structural break and after the structural break (**Table 14**).

Table 14: Re-estimate VAR for pre- and post-break periods.

VAR for pre-break periods (2010m01 to 2016m09)					VAR for post-break periods (2016m10 to 2025m03)				
Variable	**Lag**	**Coefficient**	**Std. Error**	**p-value**	**Variable**	**Lag**	**Coefficient**	**Std. Error**	**p-value**
tasi	L1	0.7362	0.1101	0.0000	**tasi**	L1	0.9520	0.1021	0.0000
	L2	0.0938	0.1413	0.5070		L2	-0.2186	0.1352	0.1060
	L3	0.1115	0.1515	0.4620		L3	0.0675	0.1371	0.6220
	L4	0.0592	0.1237	0.6320		L4	0.1208	0.0989	0.2220
cpig	L1	-0.0340	0.0115	0.0030	**cpig**	L1	-0.0044	0.0041	0.2810
	L2	0.0236	0.0167	0.1580		L2	0.0053	0.0055	0.3340
	L3	0.0113	0.0169	0.5040		L3	-0.0072	0.0054	0.1780
	L4	-0.0019	0.0129	0.8860		L4	0.0115	0.0039	0.0030
dsaibor	L1	-0.3055	0.1187	0.0100	**dsaibor**	L1	-0.0208	0.0220	0.3450
	L2	0.2725	0.1319	0.0390		L2	0.0175	0.0240	0.4670
	L3	0.1159	0.1356	0.3930		L3	-0.0426	0.0251	0.0890
	L4	-0.0974	0.1142	0.3940		L4	0.0152	0.0225	0.4990
dm2	L1	0.6179	0.3932	0.1160	**dm2**	L1	1.2873	0.3835	0.0010
	L2	0.9956	0.4126	0.0160		L2	0.2369	0.4318	0.5830
	L3	0.6247	0.4366	0.1520		L3	0.2334	0.4438	0.5990
	L4	-0.0217	0.3887	0.9560		L4	0.9751	0.4327	0.0240
dgdp	L1	0.0892	0.5146	0.8620	**dgdp**	L1	0.5830	0.3639	0.1090
	L2	1.0593	0.5928	0.0740		L2	0.2866	0.4534	0.5270
	L3	1.1941	0.6345	0.0600		L3	0.6415	0.4557	0.1590
	L4	-1.9705	0.6390	0.0020		L4	0.4175	0.3244	0.1980
doil	L1	0.0597	0.0888	0.5010	**doil**	L1	-0.1251	0.0541	0.0210
	L2	0.1202	0.0855	0.1600		L2	-0.0754	0.0524	0.1500
	L3	0.0850	0.0772	0.2710		L3	0.0118	0.0561	0.8340
	L4	-0.1649	0.0686	0.0160		L4	-0.1514	0.0510	0.0030
_cons		-0.0240	0.5740	0.9670	**_cons**		0.6931	0.1909	0.0000
	Model Fit Statistics					**Model Fit Statistics**			
Statistic		**Value**	**Statistic**	**Value**	**Statistic**		**Value**	**Statistic**	**Value**

Obs.	76	RMSE	0.0474	Obs.	102	RMSE	0.0421
Log likelihood	870.9331	R-squared	0.9471	Log likelihood	897.2476	R-squared	0.9713
AIC	-18.9719	Chi-square	1359.7120	AIC	-14.6519	Chi-square	3451.6300
SBIC	-14.3718	P-value	0.0000	SBIC	-10.7917	P-value	0.0000

- **VAR for pre-break periods (2010m01 to 2016m09)**

The model exhibits strong overall explanatory power, with high R-squared values, 94.7% for the Tadawul All Share Index (tasi). These statistics suggest that the model fits the data well during this period.

Looking at the lag coefficients for the tasi equation (the primary variable of interest), the first lag of tasi itself is highly significant and positive (coef = 0.736, $p < 0.001$), indicating strong persistence in the stock market index. Among the explanatory variables, the first lag of cpig negatively affects tasi (coef = -0.034, p = 0.003), implying that higher inflation tends to depress the stock index with a lag. Similarly, the first lag of dsaibor (interest rate proxy) has a significant negative effect (coef = -0.306, p = 0.010), while its second lag has a positive impact (coef = 0.273, p = 0.039), suggesting some dynamic adjustment effects in interest rates influencing the stock market.

The monetary aggregate (dm2) shows a positive and significant effect on tasi at the second lag (coef = 0.996, p = 0.016), consistent with liquidity's role in supporting equity prices. The real GDP growth rate (dgdp) reveals mixed effects: while the fourth lag has a significant negative coefficient (coef = -1.970, p = 0.002), the second and third lags are positive but only marginally significant.

For oil prices (doil), the fourth lag has a significant negative coefficient (coef = -0.165, p = 0.016), possibly reflecting delayed impacts of oil price shocks on the equity market.

In summary, before the 2016 break, the Tadawul All Share Index dynamics were strongly influenced by its own past values, inflation, interest rates, monetary aggregates, and oil prices—with varying lag structures and significance levels. These results provide an important baseline for comparing post-break dynamics and assessing structural changes in the system.

- **VAR for post-break periods (2016m10 to 2025m03)**

The VAR model estimated for the period from October 2016 to March 2025 demonstrates a strong persistence in the TASI series. Specifically, the first lag of TASI has a highly significant and positive coefficient of approximately 0.95, indicating that past stock market values strongly influence current values. This suggests that shocks to the Tadawul Index tend to have lasting effects and that the market exhibits a high degree of momentum.

Among the macro-financial variables included the consumer price inflation (cpig) variable at the fourth lag has a small but statistically significant positive effect on TASI. This implies that inflationary pressures with a delay of about four months may slightly boost stock market returns, potentially reflecting investors' anticipation of price level changes impacting company profits or monetary policy responses.

Interest rates, proxied here by the Saudi interbank offered rate (dsaibor), do not show significant direct effects on TASI in any lag within this period. Although the third lag of dsaibor approaches marginal significance with a negative sign, overall, monetary policy changes reflected in short-term interest rates seem to have limited immediate influence on stock market dynamics post-2016.

Money supply growth (dm2) exhibits a notable positive relationship with TASI, especially at the first and fourth lags, both statistically significant. This highlights that increases in liquidity and broad money in the economy tend to stimulate stock market performance, potentially through increased investor liquidity and spending power that enhance corporate earnings and market sentiment.

Real GDP growth (dgdp) does not present significant lagged impacts on the Tadawul Index in this period, suggesting that short-to-medium-term fluctuations in economic output may not immediately translate into stock price changes, or the effects are captured indirectly through other variables.

Crucially, oil price changes (doil) have a significant negative effect on TASI at the first and fourth lags. This finding might seem counterintuitive given Saudi Arabia's status as a major oil exporter. However, it may reflect complex dynamics where sharp oil price drops cause market volatility or reflect broader macroeconomic uncertainties, while delayed negative effects could correspond to adjustments in investor expectations or policy responses.

The model's high R-squared value (approximately 0.97) indicates that the lagged variables collectively explain a substantial portion of the variability in TASI, underscoring the relevance of these macro-financial drivers in understanding Saudi stock market dynamics in the post-2016 period.

In summary, after the structural break in October 2016, the Tadawul All Share Index shows strong

dependence on its own past values and is significantly influenced by money supply growth and lagged oil price changes, while inflation and short-term interest rates have more nuanced or limited impacts. The negative oil coefficients observed in the post-break period suggest that oil price increases may be associated with tighter fiscal or liquidity management, higher inflation expectations, or global demand shocks, which can exert downward pressure on equity valuations despite higher oil revenues.

Overall, these findings point to a structural shift post-2016 in the determinants of the Saudi stock market's long-run behavior, highlighting a greater role for economic growth and a diminished or reversed influence of oil prices compared to the earlier period. This regime change is consistent with the evolving sectoral composition of the market and the broader economic diversification process.

- **Diagnostic Tests Results**

The Lagrange-Multiplier test results provide important insights into the adequacy of the VAR models in capturing the dynamics of the Tadawul All Share Index and related macro-financial variables, specifically regarding serial correlation in the residuals (**Table 15**).

Table 15: The Lagrange-Multiplier Test Results.

Period	Lag	Chi-square	p-value
Before 2016	1	24.9900	0.9160
	2	27.5800	0.8420
After 2016	1	43.0900	0.1940
	2	43.1500	0.1920

These diagnostics confirm that the chosen VAR models before and after the October 2016 break are well specified with respect to residual autocorrelation, supporting reliable inference from the estimated parameters. The absence of serial correlation ensures that the models' error terms behave like white noise, fulfilling a key assumption underlying VAR analysis and strengthening the credibility of the reported relationships between the Tadawul All Share Index and macro-financial variables.

5.4. Pre and Post Break VECM

The Vector Error Correction Model estimated for the period before October 2016 and the period after this structural break (**Table 16**).

Table 16: Re-Estimate Cointegrating Equation (_Ce1) For Pre- and Post-Break Periods.

Cointegrating Equation pre-break periods (2010m01 to 2016m09)				Cointegrating Equation post-break periods (2016m10 to 2025m03)			
Variable	**Coefficient**	**Std. Error**	**P-value**	**Variable**	**Coefficient**	**Std. Error**	**P-value**
tasi	1.0000	–	–	**tasi**	1.0000	–	–
cpig	0.0000	–	–	**cpig**	0.0000	–	–
dsaibor	0.0000	–	–	**dsaibor**	0.0000	–	–
dm2	-7.9318	6.1807	0.1990	**dm2**	-63.0350	94.3090	0.5040
dgdp	-2.3351	4.8386	0.6290	**dgdp**	167.2280	39.5610	0.0000
doil	7.9407	1.6820	0.0000	**doil**	-110.2960	12.6060	0.0000
_cons	-8.8828	–	–	**_cons**	-10.1800	–	–

- **VECM for pre-break periods (2010m01 to 2016m09)**

The Vector Error Correction Model for the pre-October 2016 period confirms the existence of a long-run equilibrium relationship among the Tadawul All Share Index (tasi) and the key macro-financial variables, as indicated by the significant cointegration rank test.

In the cointegrating equation, the oil price variable (doil) stands out as having a strong and statistically significant positive effect on the stock market index. This highlights the critical role of oil prices in driving the Saudi stock market during this period, reflecting the country's heavy economic dependence on oil revenues. Specifically, a rise in oil prices is associated with an increase in the long-run equilibrium level of the Tadawul All Share Index.

On the other hand, other macro-financial variables such as the money supply (dm2), GDP growth (dgdp), and the interest rate proxy (dsaibor) do not show statistically significant long-term impacts on the stock index. This suggests that before 2016, these variables did not contribute meaningfully to the long-run dynamics of the stock market. The inflation proxy (cpig) was omitted from the cointegration vector, indicating it may not have a

stable long-term relationship with the stock index during this sample.

The short-run equation for changes in the Tadawul All Share Index explains about 45% of the variation, and the significant chi-square test suggests that the model captures important dynamics linking the stock index to the included macro-financial variables. Overall, these results underscore the dominant influence of oil prices on the Saudi stock market's long-term behavior prior to the structural break identified in late 2016.

- **VECM for post-break periods (2016m10 to 2025m03)**

The Vector Error Correction Model for the post-October 2016 period confirms the existence of a long-run equilibrium relationship among the Tadawul All Share Index (tasi) and the key macro-financial variables, as indicated by the significant cointegration rank test.

In the cointegrating equation, the variables GDP growth (dgdp) and oil prices (doil) exhibit statistically significant and strong relationships with the stock market index, but their effects contrast sharply. GDP growth shows a significant positive impact on the long-term equilibrium of the stock index, reflecting that stronger economic growth supports higher stock market valuations in the post-2016 period.

Conversely, oil prices have a significant negative coefficient, indicating that higher oil prices are associated with a decrease in the long-run equilibrium level of the Tadawul All Share Index during this period. This inverse relationship may reflect structural changes in the Saudi economy or stock market, possibly linked to diversification efforts or market reactions to oil price volatility after 2016.

Other variables, including money supply (dm2), inflation proxy (cpig), and interest rate proxy (dsaibor), are not statistically significant in the long run, suggesting their limited impact on the stock market's equilibrium path in this later period.

The short-run dynamics for the changes in the stock index explain about 46% of the variation, with a highly significant chi-square test, indicating that the model captures essential short-term adjustments.

Overall, these findings point to a structural shift post-2016 in the determinants of the Saudi stock market's long-run behavior, highlighting a greater role for economic growth and a diminished or reversed influence of oil prices compared to the earlier period.

6. DISCUSSION

6.1. Pre- Vs. Post-2016 Dynamics

The empirical results reveal a marked shift in the macro-financial determinants of the Tadawul All Share Index (TASI) following the structural break identified in October 2016. In the pre-break period, short-term fluctuations in TASI were largely driven by its own lagged performance, inflation (CPIG), interest rates (SAIBOR), and money supply growth (M2). Inflation and interest rates exerted statistically significant negative effects, consistent with the Fisher effect and cost-of-capital channel, whereby higher prices and borrowing costs reduce real returns and equity valuations (**Fama, 1981; Bernanke & Kuttner, 2005**). Liquidity expansion, reflected in M2 growth, showed a positive influence on TASI, supporting the view that monetary easing stimulates stock market performance (**Thorbecke, 1997**). In the long run, oil prices (OIL) dominated as the key driver, reflecting Saudi Arabia's historical dependence on energy revenues (**Faff & Brailsford, 1999**).

In contrast, the post-2016 period exhibits a different structure. GDP growth (GDP) emerged as the primary long-run driver, oil prices became negatively associated with TASI, and the direct influence of inflation and interest rates diminished. While money supply retained a short-run positive effect, its long-run significance disappeared. This suggests that Saudi equity performance has become less dependent on oil price cycles and more closely aligned with domestic economic growth dynamics. The shift also indicates a transition from externally driven commodity cycles toward internally driven macroeconomic fundamentals.

6.2. Oil Price Reversal in the Post-Break Period

The reversal of the oil–TASI relationship from positive to negative after 2016 is both statistically and economically significant. Historically, higher oil prices boosted fiscal revenues, corporate profitability, and investor confidence, lifting equity valuations (**Jones & Kaul, 1996**). However, in the post-break period, higher oil prices may have triggered concerns about inflationary pressures, exchange rate stability, or potential fiscal tightening. These dynamics could be linked to the economic restructuring agenda, in which oil booms no longer translate directly into equity gains but may instead prompt shifts in capital allocation and market expectations.

This reversal is consistent with global patterns observed in resource-rich economies undergoing structural diversification, where the equity market's correlation with commodity prices weakens or reverses as the non-resource sectors gain greater

economic weight (**Basher & Sadorsky, 2006**).

Additionally, oil price increases driven by supply-side shocks rather than global demand expansions may coincide with weaker external economic conditions, reducing investor sentiment toward emerging markets. Robustness checks across alternative specifications and sub-samples confirm that the weakened or negative oil–equity relationship is not driven by model instability but reflects a structural change in market dynamics.

6.3. Link to Vision 2030 And Economic Diversification

Vision 2030, announced in April 2016, represents a strategic turning point in Saudi Arabia's economic policy, emphasising diversification, fiscal sustainability, and capital market development (**IMF, 2022**). The post-break findings — GDP growth replacing oil as the main long-run driver, the reversal in oil's impact, and reduced sensitivity to inflation and interest rates — indicate that the reforms are materially altering the market's macroeconomic sensitivities (**Chaabouni & Abid, 2025)**.

As non-oil sectors expand and market composition changes, TASI appears increasingly influenced by real economic growth indicators rather than oil price movements (**Abid, Ben Salem, & Frikha, 2024**). This evolution reflects both structural transformation in the real economy and the gradual deepening and internationalization of the Saudi capital market.

6.4 Policy Implications

Monetary policy should recognise that liquidity conditions, rather than interest rates, remain the most effective lever for influencing equity market performance. Maintaining adequate market liquidity can help stabilise asset prices, particularly during periods of global volatility.

Fiscal policy should focus on smoothing public expenditure across oil price cycles, reinforcing investor confidence and reducing market volatility. The weakening long-run oil–TASI link underscores the need to sustain non-oil growth momentum through targeted public investment and sectoral development.

Investment strategy should adapt to the post-2016 regime by placing greater emphasis on GDP growth indicators, liquidity metrics, and sectoral performance. Oil prices remain relevant, but now as a potential risk factor rather than a straightforward driver of equity gains.

7. CONCLUSION

This study examined the macro-financial determinants of the Tadawul All Share Index over the period January 2010–March 2025, employing VAR, VECM, and Bai-Perron structural break tests. The results identify a major structural shift in October 2016, coinciding with the launch of Vision 2030. Before this break, inflation, interest rates, and money supply growth were key short-term drivers, and oil prices were the dominant long-term determinant. After 2016, GDP growth became the main long-run driver, the oil–equity link turned negative, and the influence of inflation and interest rates weakened.

The oil price reversal is emblematic of Saudi Arabia's ongoing transformation: rising oil prices, once an unambiguous positive for the equity market, now carry mixed implications, including potential inflationary pressures and shifts in capital allocation away from domestic equities. This change aligns with Vision 2030's aim to reduce reliance on oil revenues, foster non-oil sector expansion, and create a more balanced growth model.

The study's findings carry important implications for policymakers and investors. Monetary authorities should focus on managing liquidity conditions as a key lever for market stability, while fiscal policy should continue to smooth expenditure across oil cycles and sustain diversification momentum. For investors, the post-2016 regime calls for strategies that emphasise GDP growth and sectoral fundamentals over oil price movements.

Nonetheless, the study has certain limitations. It operates at the aggregate market level, potentially masking sector-specific sensitivities, and it does not explicitly incorporate foreign capital flows, which have increased since 2015. Furthermore, while the structural break analysis identifies key turning points, other unobserved geopolitical or global market factors may also have shaped the results.

Future research should address these limitations by conducting sector-level analyses, integrating data on foreign portfolio and direct investment, and employing high-frequency approaches to capture market responses to oil shocks and policy announcements. Such work would provide a more granular understanding of how Saudi Arabia's equity market is adapting to structural transformation and increasing global integration.

Declaration of Conflicting Interest: The authors declare no conflict of interest in relation to this research.

Ethical Approval and Informed Consent Statements: This study did not involve human participants, animals, or sensitive data requiring ethical approval or informed consent.

Data Availability Statement: The data presented in this study are openly available from the original sources: Tadawul (https://www.saudiexchange.sa/), Saudi Central Bank (SAMA, https://www.sama.gov.sa/), and Investing.com (https://www.investing.com/).

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