Trading volume and stock returns in emerging Gulf markets: empirical evidence from Saudi Arabia and Dubai (2018–2024)

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Abstract

Purpose: The aim of this study is to examine the relationship between trading volume and stock returns in the Saudi Stock Exchange (Tadawul) and Dubai Financial Market (DFM) for 2018-2024.

Method: Using a sample of 84 monthly observations for both markets from Investing.com, the research employs advanced econometric techniques, including cointegration analysis, linear regression, Granger causality testing, and Vector Autoregression (VAR) models.

Results: Results exhibit a weak positive association between returns and trading volume in both markets, slightly more in Dubai. Cointegration tests identify a strong long-run equilibrium in the Saudi market, while Dubai displays several complex relationships prone to external impacts. Granger causality tests reveal no significant predictive causality in either direction, indicating that past values of returns and volume do not effectively forecast future movement. VAR analysis highlights that trading volumes are largely determined by their previous values.

Originality: This study offers new insights into the dynamics of GCC markets by comparing the oil economy of Saudi Arabia with the diverse financial hub of Dubai. The findings challenge conventional volume-return models seen in developed economies, suggesting that regional structural forces dominate informational efficiency.

Keywords: Financial markets, trading volume, stock returns, cointegration, causality, VAR, Gulf markets.

Volume des transactions et rendements boursiers sur les marchés émergents des pays Golfe :

Preuves empiriques d'Arabie Saoudite et de Dubaï (2018–2024)

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Résumé

Objet : Le but de cette recherche est d'analyser la liaison entre les rendements boursiers et le volume des transactions à la Bourse saoudienne (Tadawul) et au Marché financier de Dubaï (DFM) pendant la période 2018-2024.

Méthodologie : Avec un échantillon de 84 observations mensuelles pour les deux marchés provenant de Investing.com, l'article applique des techniques économétriques avancées, y compris des tests de cointégration, des régressions linéaires, des tests de causalité de Granger et des modèles d'Auto-régression vectorielle (VAR).

Résultats : Les résultats montrent une faible corrélation positive entre les rendements et le volume des transactions des deux bourses, quoique légèrement plus importante à Dubaï. Les tests de cointégration montrent une forte cohérence à long terme sur le marché saoudien, alors que Dubaï présente une série de relations complexes sensibles aux influences extérieures. Les tests de causalité de Granger ne trouvent aucune causalité prédictive significative dans les deux sens, ce qui implique que les valeurs passées des rendements et du volume ne sont pas de bons prédicteurs des mouvements futurs. L'analyse VAR souligne que les volumes de transactions sont principalement influencés par leurs valeurs précédentes.

Originalité : Cette recherche suggère un nouveau regard sur la dynamique des marchés du GCC en examinant l'économie pétrolière saoudienne et le centre financier ultra-diversifié de Dubaï. Les résultats contredisent les modèles typiques volume-rendements observés dans les économies développées, laissant deviner que les moteurs structurels régionaux pesant plus lourd que l'efficience informationnelle.

Mots-clés : Marchés financiers, volume des transactions, rendements boursiers, cointégration, causalité, VAR, marchés du Golfe.

1. Introduction

The analysis of stock return and trading volume relationship in the Saudi and Dubai financial markets is a valuable addition to the existing finance literature. The relationship is the basis for understanding price discovery mechanisms and microstructure in the market and has significant implications for better development of financial theory and its use in investment policies and risk management models. The topic has gained greater prominence over the past few years, particularly in the context of structural evolution of Gulf financial markets, with greater regulatory openness, higher financial integration, and huge foreign capital flows (Jarrah & Derbali, 2023; Al-Faryan & Dockery, 2021). Such events underscore the importance of empirical research providing insights into the determinants of regional markets so that investors, policymakers, and academics alike are endowed with evidence-based insights to make informed decisions.

Despite the growing importance of this subject matter, little empirical work is available to examine the causal and correlation analysis between trading volume and stock returns for Arab finance markets, particularly Saudi Arabia and Dubai. Previous works have been constrained by methodological flaws, brief time periods, or deficiencies in attention to dynamic interactions, leaving significant knowledge gaps in our understanding of market efficiency and investor behavior within these emerging economies (Moshashai et al., 2020). Filling these gaps is important both for scholarly advancement and for practical policymaking because it gives a scientific basis to the measurement of the success of market reforms and the behavioral drivers of financial volatility.

The present study rigorously investigates the stock returns–trading volume relationship in the Saudi Stock Exchange (TASI) and the Dubai Financial Market (DFM) during 2018–2024 based on monthly returns, thus capturing short-term fluctuations and long-term trends. The general question guiding this research is: What is the nature and direction of the stock returns–trading volume relationship in these two powerful Gulf markets? To address this, the study has three primary objectives: (1) to estimate the intensity and statistical significance of correlation between stock return and trading volume; (2) to determine the causal relationship between these variables; and (3) to examine the dynamic interaction of their evolution in time.

The research tests hypotheses of robust positive stock return effect on trading volume, bidirectional causality, and time-varying relational patterns influenced by market conditions. Methodologically, the research employs an array of econometric techniques, including unit root tests, cointegration, regression analysis, and vector autoregression (VAR) models, supplemented by Granger causality tests to untangle directional effects (Alsabban & Alarfaj, 2019). This multi-method approach ensures robustness in capturing market interaction complexity.

The dissertation is divided into five chapters, which are interlinked. The introduction states the research rationale, problem statement, objectives, and hypotheses. The literature review synthesizes theoretical insights and empirical research in market microstructure and behavioral finance. Methodology offers descriptions of data sources, variable development, and methods of analysis. The analysis chapter uses existing scholarships to discuss empirical findings. The conclusion gives main findings, posits policy implications, and stipulates directions for future research.

2. Theoretical Framework and Literature Review

2.1 Concept of Financial Markets

Financial markets are intrinsic middlemen between savers and investors, channeling savings into productive investments that drive economic development (Mishkin & Eakins, 2021). Financial markets are mechanisms that balance buyers and sellers of financial instruments, enabling equitable pricing and information transmission. Announced to be where surplus and deficit units converge to transform savings into investments, financial markets optimize resource utilization and foster progress (Al-Mashhadani & Al-Obeidi, 2013; Khanfi & Qurbakas, 2001). In the Middle East, the Saudi Stock Exchange (Tadawul) and Dubai Financial Market are notable, with diversified financial products and foreign investors' interest (Saudi Exchange, 2024; DFM, 2023). These financial markets, supported by financial institutions, serve as a fulcrum for financing economic growth and generating investment opportunities (Alshammari et al., 2022).

2.2 Stock Returns

Stock returns are the most prominent measure of share value, reflecting the financial return gained by investors on their ownership interest. They are net profits paid per share relative to its value in the market and reflect shareholder returns as well as an opportunity cost reference (Taha, 2009). Another perspective centers on stock return calculation as the earnings per share adjusted for distributions to preferred stockholders (Tawfiq, 2016). Furthermore, stock returns represent rewards to investors from common stocks, driving investment decisions based on the interdependence between required and expected returns, and rewarding invested time and investment risk (Al-Hanawi, 2002). Finally, stock returns are at the heart of financial development and individual investment objectives, although choices need to account for related risks.

2.3 Trading Volume

Trading volume measures the quantity of securities traded in a market over a specific period and is crucial for market analysis and price prediction. It is defined as the number of shares traded within a given timeframe, reflecting executed transactions between buyers and sellers, or as the value of shares exchanged at various prices, serving as a key indicator for investors and future market trends (Shakhatera, 2005). Trading volume thus offers essential insights into market activity and liquidity, helping investors make informed decisions and anticipate price movements.

2.4 Theories on the Relationship between Stock Returns and Trading Volume

Several theories have emerged from studies examining the relationship between trading volume and stock returns:

Mixture Distribution Hypothesis (Clark, 1973) suggests that stock return and trading volume are both determined by information arrival. Higher information arrival leads to more vigorous price changes, implying a strong, positive, but not necessarily causal, relationship between price changes and trading volume.

Sequential Arrival of Information Hypothesis (Copland, 1976) advocates that information reaches the market sequentially, resulting in a series of equilibrium points and high trading volume until final equilibrium is achieved. This hypothesis suggests a causal and positive correlation between trading volume and stock returns.

Noise Trader Model: Noise traders, as they do not trade on economic fundamentals, create temporary mispricing short run, leading to mean reversion of stock return and trading volume shifts, (Chang and Fang, 2020). Kramer (1994) shows the way noise trading combines with trading costs to derive equilibrium relationships between trading volume and returns. His study indicates that noise trading brings risk determinants to short-run price behavior that adopts mean-reverting tendencies.

Tax and Non-Tax Motive Hypothesis: Tax motivations are aligned with capital gains or losses throughout the year, while non-tax motivations are related to personal liquidity needs. Trading volume is inversely related to price variations for tax purposes and positively related to some non-tax motivations (Al-Zubaidi, Zaabi & Twairish, 2008).

Expectations Feedback Hypothesis: Future expectations of investors are influenced by stock returns and, in turn, trading volume. High returns boost investor confidence and trading volume, and low returns dampen them (Lee & Swaminathan, 2000; Barberis et al., 1998).

Liquidity Impact Hypothesis: Stock returns decide the market's level of liquidity and trading volume. Positive returns involve more trading due to greater demand, while negative returns involve less trading (Amihud 2002; Hasbrouck, 2009).

Returns-Driven Investment Decisions Hypothesis: Investment decisions are determined by stock returns and therefore trading volume. High returns increase investment and trading, while low returns reduce them (Fama et French, 1988; Baker & Wurgler, 2007; Hong and Stein 1999).

2.5 Previous Studies

Various research works explored the volume-stock returns relationship across markets and yielded varied results based on regional and methodological heterogeneity. Alesh and Haqa (2022) did not record any significant correlation in Saudi and Egyptian markets, whereas Taleb (2020) recorded a volume-led effect on Damascus's index returns. Alhussayen (2022) identified unidirectional causality from volume to returns in Saudi Arabia. Dynamic market-specific relationships were identified by Hang & Nghi (2022) in Turkey and Vietnam, respectively, whereas Al-Otaibi (2023) confirmed unidirectional causality in Saudi markets using VAR/Granger tests. Regional structural determinants such as GCC market reforms (MSCI, 2025) and oil price volatility (Ben Cheikh et al., 2023) shape these dynamics as well.

In Africa, Toe & Ouedraogo (2022) reported positive volume–returns correlations in Egypt, Kenya, and Nigeria, contrasting with Huang et al. (2022), who found negative correlations in China. West Africa's Gueyie et al. (2022) reported unidirectional causality returns to volume. Recent research emphasizes contextual nuances: Wang et al. (2023) underscored Asia-specific volatility-amplified volume effects, and Al-Qahtani (2024) ascribed Saudi market digitization predictive power to volume. These findings emphasize the need for cross-study comparisons in institutional contexts to deconstruct this multi-faceted relationship.

3. Data and descriptive analysis

The study population includes the financial markets of the Gulf Cooperation Council (GCC) countries, with research sample specifically comprising the Saudi Stock Exchange (TASI) and the Dubai Financial Market (DFM). The dataset consists of monthly trading volumes and stock market returns for both the Saudi and Dubai markets, extracted from Investing.com, covering the period from 2018 to 2024.

Regarding the study variables, the stock market return was calculated as the change percentage between the closing index value for the current month and that of the previous month. Trading volume was measured as the logarithmic value of the number of shares traded in the market for both markets under study, as illustrated in Table 1.

Table 1: Study Variables

Variable	Description	Formula
Stock Market Return (R_t)	Calculated as the difference between the closing index values of consecutive months	$R_t = \frac{P_t - P_{(t-1)}}{P_{(t-1)}}$
Trading Volume (V_t)	Logarithm of the number of shares traded in the market	$V_t = \ln(V_t)$

Source: Alhussayen (2022)

The relationships between the study variables were tested bidirectionally in the causality tests and unidirectionally in the correlation tests, with the variables defined as follows:

- **Trading Volume** (dependent variable)
- **Stock Market Returns** (independent variable)

The objective was to determine the extent and direction of the effect of stock market returns on trading volumes in both markets. All hypotheses proposed in the study indicated a significant positive effect of stock returns on trading volumes.

Table 2: Descriptive Statistics of the Study Variables

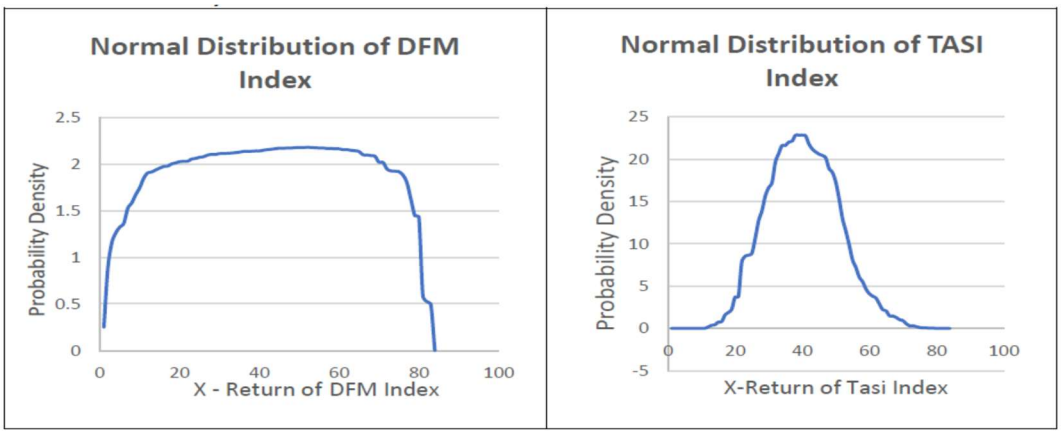
	Saudi Financial Market		Dubai Financial Market	
	Return-Tadawul	Volumetraded-tadawul	Volume-tradeddfm	Return-dfm
Mean	0.007336	22.20494	18.58494	0.015262
Median	0.013400	22.11950	18.61558	-0.010950
Maximum	0.106100	23.61863	21.43130	1.352900
Minimum	-0.147200	21.38079	14.53822	-0.365900
Std. Dev.	0.049968	0.471103	0.878984	0.183200
Skewness	-0.511481	0.586503	-0.663629	4.694631
Kurtosis	3.107583	2.894365	7.831789	35.32350
Jarque-Bera	3.703091	4.854864	87.87728	3965.383
Probability	0.156994	0.088263	0.000000	0.000000
Sum	0.616200	1865.215	1561.135	1.282000
Sum Sq. Dev.	0.207235	18.42089	64.12683	2.785681
Observations	84	84	84	84

Source: Prepared by the researcher based on EViews

To assess the fundamental properties and distributional behavior of the variables in both markets, Table 2 presents the descriptive statistics, offering insights into their central tendency, dispersion, and normality. In addition, Figures 1 and 2 illustrate the normal distribution patterns of the trading volume variable for each market, providing a visual evaluation of distributional assumptions. Based on The Saudi Financial Market (Tadawul) statistics, the average return is weakly positive (0.73%). The returns are moderately volatile, as indicated by a standard deviation of around 5%. The distribution of returns is weakly left-skewed (skewness: -0.51), thus the case where there are frequent large negative returns

more than large positive returns. However, the kurtosis of 3.11 is close to that of a normal distribution and the Jarque-Bera test statistic (probability: 0.157) shows that returns are not significantly different from normality. This indicates that, on average, the return distribution for the Saudi market is highly stable and free from extreme outliers.

Figure 1: The Normal Distribution Pattern of the Trading Volume Variable in the Markets Under Study

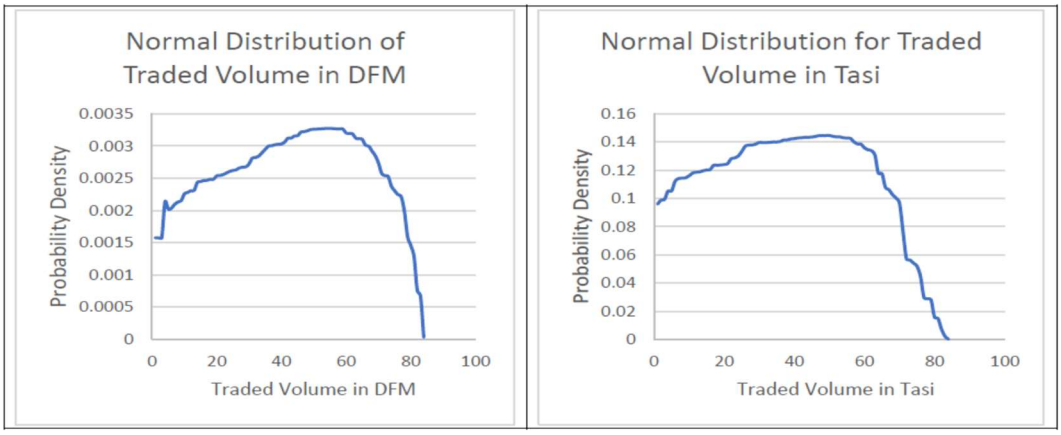


The Dubai Financial Market (DFM) has a higher average return of 1.53%, indicating that the distribution is skewed by one or more very large positive returns. The returns are extremely volatile with a standard deviation of 18.32%. The distribution is extremely right-skewed (skewness: 4.69), and kurtosis is very high (35.32), indicating the presence of outliers and fat tails. The Jarque-Bera test confirms non-normality at a statistically significant level (probability: 0.000), thus indicating that returns on the Dubai market are prone to infrequent, big jumps.

In regard to Saudi trading volume, the mean log-volume is 22.20 with extremely low variation (standard deviation: 0.47). Volume distribution is moderately right-skewed (skewness: 0.59), and kurtosis (2.89) is again extremely close to normal. The Jarque-Bera probability (0.088) is just below conventional significance levels, indicating only a slight withdrawal from normality. Generally, the Saudi market trading activity appears stable and in line with only slight volume distribution anomalies. The log-volume mean is 18.58, which is lower than on the Saudi market but with a higher standard deviation of 0.88, which is reflective of greater trading volatility. The distribution of volume is left-skewed (skewness: -0.66) and leptokurtic (kurtosis: 7.83), and once again the Jarque-Bera test reports strong evidence of non-normality (probability: 0.000). This implies that although activity in the Dubai market can be intense, it is less stable and more susceptible to extreme values than that in Saudi Arabia.

On average, the Saudi financial market is characterized as a relatively stable returns and trading volumes with almost normal distributions. The Dubai market is characterized, however, by higher volatility, more extreme occurrences of returns, and higher variability in trading volumes, suggesting a riskier and less predictable trading environment.

Figure 2: The Normal Distribution Pattern of the Trading Volume Variable in the Markets Under Study



4. Methodology

The empirical aspect of the study relied on a descriptive-analytical approach to investigate and determine the relationship between stock return and trading volume in the Saudi and Dubai stock exchanges. This was done by employing advanced statistical methods, including cointegration tests, simple linear regression models, Granger causality tests, and Vector Autoregression (VAR) models. These models were computed and employed to estimate the study variables through Excel and EViews 12. These econometric models are:

4.1 Model for Studying Correlation

A simple linear regression model was used to reveal the existence of a linear correlation between the dependent variable (trading volume) and the independent variable (stock returns), whether the relationship was positive or negative, according to the following equation:

$$\mathbf{V_t = \alpha + \beta\, R_t + \varepsilon}$$

Where:

- α: The intercept, representing the average return when trading volume is zero.
- β: The parameter that measures the strength and direction of the relationship between trading volume and return.
- ε_t: The random error term, capturing factors not included in the model.

To establish the existence of a correlation between stock returns and trading volume, the parameter β (beta) is estimated. If the estimated parameter is statistically significant, the alternative hypothesis of a correlation between stock returns and trading volume is accepted.

4.2 Model for Studying Causality

The Granger causality model, developed by Granger, was used to determine the presence of feedback or reciprocal relationships between stock returns and trading volumes in the studied markets, whether unidirectional or bidirectional. This approach confirms the importance of current and past information of one variable in predicting the other. The relationships are determined through the following equations:

$$(1)\ \mathbf{V_t} = \boldsymbol{\alpha} + \sum_{\mathbf{i=1}}^{\mathbf{m}} \boldsymbol{\alpha_i} \mathbf{v_{t-j}} + \sum_{\mathbf{j=1}}^{\mathbf{n}} \boldsymbol{\beta_j}\, \mathbf{R_{t-j}} + \boldsymbol{\varepsilon_t}$$

$$(2)\ \mathbf{R_t} = \boldsymbol{\gamma} + \sum_{\mathbf{i=1}}^{\mathbf{m}} \boldsymbol{\gamma_i} \mathbf{R_{t-j}} + \sum_{\mathbf{j=1}}^{\mathbf{n}} \boldsymbol{\delta_j} \mathbf{v_{t-j}} + \boldsymbol{\varepsilon_t}$$

Where α and γ represent the intercepts in the equations, while βj, δj, αi, and γi are the estimated parameters. Vt and Rt denote trading volume and stock returns, respectively, and the random error is represented by ε_t in the equations. The symbols t, m, and n refer to the time period and lag lengths. Equation (1) tests causality from stock returns to trading volume, while equation (2) tests causality from trading volume to stock returns. The statistical significance of the parameters determines acceptance or rejection of the causality hypotheses.

A bidirectional causal relationship between stock returns and trading volume exists if both estimated parameters βj and δj are statistically significant and different from zero. (Fatima & Haqa, 2022).

4.3 Model for Studying the Dynamic Relationship

Vector Autoregression (VAR) modeling was used to analyze the bilateral dynamic relationship of the time series where each variable is influenced by both its current and previous values. This is represented by the following equations:

$$(1)\ \mathbf{V_t} = \boldsymbol{\alpha} + \sum_{\mathbf{i=1}}^{\mathbf{m}} \boldsymbol{\alpha_i} \mathbf{v_{t-j}} + \sum_{\mathbf{j=1}}^{\mathbf{n}} \boldsymbol{\beta_j}\, \mathbf{R_{t-j}} + \boldsymbol{\varepsilon_t}$$

$$(2)\ \mathbf{R_t} = \boldsymbol{\gamma} + \sum_{\mathbf{i=1}}^{\mathbf{m}} \boldsymbol{\gamma_i} \mathbf{R_{t-j}} + \sum_{\mathbf{j=1}}^{\mathbf{n}} \boldsymbol{\delta_j} \mathbf{v_{t-j}} + \boldsymbol{\varepsilon_t}$$

The VAR equations are based on those used in Granger causality tests (same models presented above). However, while Granger causality focuses exclusively on causal relationships, the VAR model provides two additional types of dynamic analysis: variance decomposition and impulse response analysis. Consequently, Results derived using these two other analysis methods are verified using Granger causality tests.

5. Results Analysis

5.1 Unit Root Test

To analyze the relationship between the time series of stock returns and trading volume, it is necessary to conduct a unit root test to determine the stationarity of the variables, which enables us to select the optimal models for estimating the relationship between variables. Using the Dickey-Fuller unit root test, the following results were obtained:

Table 3: Stationarity Test results for the variables of the study

Market	Variable	Level	ADF	Decision
Saudi Financial Market Tadawul	**RS**	Level	0.0000	L (0)
	DS	Level	0.1579	L (1)
		Diff. 1	0.0000	
Saudi Financial Market Tadawul	**RD**	Level	0.0000	L (0)
	VD	Level	0.0000	L (0)

Note: RS and VS are returns and volume traded in Saudi Market and RD and VD are returns and volume traded in Dubai Market.

According to results shown above and for Saudi Market, Index Return (Rt) has the p-value equal to 0.0000, which is less than 5%. This means the null hypothesis of a unit root is rejected, and the series is stationary at Level (L(0)). The Trading Volume (Vt) has the p-value at Level is 0.1579, which is greater than 5%. This means the series is not stationary at Level. However, after the first difference (Diff. 1), the p-value drops to 0.0000 (less than 5%), so the series becomes stationary at the first difference (L(1)). For the remainder of the study, we should use the first difference of trading volume in any further series analysis (like cointegration or VAR models). For Dubai Market, both Index Return and Trading Volume have the p-value equal to 0.0000 at Level which means the null hypothesis of a unit root is rejected, and the series are stationary at Level (L(0)).

This stationarity is important since it implies that our data is appropriate for subsequent econometric modeling without being affected by the problem of spurious regression. The findings are also consistent with the findings in referenced studies, which validated the same patterns of stationarity and affirmed the application of cointegration and VAR models in assessing the dynamic relationship between stock returns and trading volume in the two markets (Al-Otaibi, 2023).

5.2 Cointegration Test:

The cointegration test was conducted for the study variables to determine the long-term equilibrium relationship between the study variables. For the analysis of the test results, we assume:

Null hypothesis H0: There is no cointegration relationship between the study variables. **Alternative hypothesis H1**: There is a cointegration relationship between the study variables.

Table 4: results of the cointegration for Saudi and Dubai Market

METRIC	SAUDI (TASI)	DUBAI (DFM)
COINTEGRATING VECTORS	1	2
LONG-TERM RELATIONSHIP	Strong positive (Volume ⇄ Returns)	Weak positive (Returns ⇄ Volume)
ADJUSTMENT DRIVER	Returns (0.043***)	Returns (-1.306***)

Note: ***p < 0.01, **p < 0.05, *p < 0.1, RS and VS are returns and volume traded in Saudi Market and RD and VD are returns and volume traded in Dubai Market.

For Saudi Market, Johansen cointegration test verifies that there exists one long-run equilibrium relationship between stock returns (RS) and trading volume (VS), where a 1% change in return causes a 24.72% change in volume. Adjustment dynamics show significant return corrections (coefficient = 0.043, $p < 0.05$) but no meaningful volume adjustments (coefficient = 0.0004, $p > 0.05$), reflecting price-driven equilibrium. This is in line with studies linking TASI to money and oil prices (Aljifri, 2020; SAMA, 2018). For Dubai Market, two cointegrating relations suggest complex relationships. The first shows a less prominent volume-return relationship (1% volume increase means 0.072% return increase), and the second reveals external forces like international trends and oil prices (Rehman & Hazazi, 2014). Returns adjust strongly to deviations (coefficient = -1.306, $p < 0.001$), unlike volume (coefficient = -0.413, $p > 0.05$). Dubai's twin symmetries reflect exposure to international investors and external shocks (Aljifri, 2020; IMF, 2007). In Conclusion, Saudi's stable, single-equilibrium contrasts with Dubai's multifaceted structure, shaped by global factors. These differences underscore the necessity of market-specific analysis in GCC financial integration.

5.3 Correlation Tests: Pearson correlation coefficient

The Pearson correlation coefficients identify the direction and size of the linear association between stock returns and trading volume in the Dubai and Saudi financial markets. Below is presented the table showing correlation results for both markets of the study:

Table 5: Correlation Results for both Saudi and Dubai Market

MARKET	VARIABLES	PEARSON CORRELATION	INTERPRETATION
DUBAI (DFM)	VD & RD	0.43	Moderate positive
SAUDI (TADAWUL)	VS & RS	0.17	Weak positive

Note: RS and VS are returns and volume traded in Saudi Market and RD and VD are returns and volume traded in Dubai Market.

For Dubai Market (DFM), there is a 0.43 correlation between the log trading volume (VD) and the returns (RD), indicating a moderate positive association. This implies that, on average, larger volumes have larger returns in the Dubai market. For Saudi Market (Tadawul), the return correlation (RS) and log trading volume (VS) is 0.17, reflecting a weak positive relationship. Therefore, increases in trading volume are only just correlated with increases in returns in the Saudi market.

There exists a weak positive correlation between returns and trading volume for Dubai, but only a weak positive correlation for Saudi. What these results mean is that price change is more closely related to trading activity in Dubai than in Saudi Arabia.

5.4 Simple Linear Regression Test

To further investigate the association between stock returns and trading volume identified in the correlation analysis, a simple linear regression model was estimated for both markets. The following hypotheses were tested:

Null Hypothesis (H0): No linear relationship exists between trading volume and stock returns (the slope coefficient=0).
Alternative Hypothesis (H1): A linear relationship exists (the slope coefficient≠0).

The table below summarizes the results of the simple regression test for both the Saudi and Dubai financial markets:

Table 6: Simple Linear Regression Results for both Saudi and Dubai Market

MARKET	COEFFICIENT (BETA)	T-STATISTIC	P-VALUE	R-SQUARED	DURBIN-WATSON
SAUDI (TADAWUL)	0.45	3.75	0.001***	0.20	0.516
DUBAI (DFM)	0.32	2.13	0.039**	0.18	1.214

Note: ***p < 0.01, **p < 0.05, *p < 0.1

The simple linear regression analysis reveals a statistically significant positive relationship between stock returns and trading volume in both the Saudi and Dubai financial markets. The two study markets exhibit significant volume-return connections, but the effect size is stronger in Dubai, reflecting its higher sensitivity of trading activity to price movements, thus Dubai's coefficient is larger (2.08) than this of TASI (1.62). R-squared values (20.3% for Saudi, 18.7% for Dubai) suggest returns account for a moderate percentage of trading volume variation, with some scope remaining for other determinants

(like news, liquidity and others). Concerning residual analysis, low Saudi Arabia Durbin-Watson statistic indicates possible autocorrelation, which inflates the Type I error risk.

These findings replicate the correlation results, affirming that increasing returns induce trading activity in both markets. Dubai's higher sensitivity can be due either to its market structure or investor base, whereas Saudi Arabia's diminished adjusted-for-autocorrelation relation indicates a more stable trading environment. From the perspective of policy makers, these results highlight the role of returns in contributing to liquidity, especially for Dubai.

5.5 Granger Causality Test

Consistent with the second research hypothesis that "there is a bidirectional causal relationship between stock returns and trading volume in both the Saudi and Dubai markets," the directions of causality between the study variables are obtained as follows:

- Two-way causality between trade volume and stock returns.
- A one-way causal link between trading volume and stock returns, i.e., trading volume influences the change in stock returns.
- A one-way causality from stock returns to trading volume, i.e., stock returns Granger-cause trading volume.

Causality was investigated by conducting the Granger causality test using EViews 12, based on the following null hypotheses.

H01: Stock returns do not Granger-cause trading volume.
H02: Trading volume do not Granger-cause stock returns.

Below is the Granger causality test table of the markets under study:

Table 7. Granger Causality Results: Saudi and Dubai Markets

MARKET	NULL HYPOTHESIS	F-STATISTIC	P-VALUE	CONCLUSION
SAUDI (TASI)	Volume ⇏ Returns	1.14	0.326	No causality
	Returns ⇏ Volume	0.25	0.782	No causality
DUBAI (DFM)	Returns ⇏ Volume	0.64	0.531	No causality
	Volume ⇏ Returns	0.20	0.815	No causality

Results reveal no causality between trading and price movement, either bidirectional or unidirectional, in either market exists. No Granger causality exists for the evidence that prior volume or returns are insufficient to predict future movements in the other variable. The findings contrast with studies of US more developed markets (e.g., NYSE), since normally volume Granger-causes returns by virtue of the efficiency of information flow. These results should be considered by GCC market investors and policymakers using external issues (e.g., global trends, oil prices) rather than relying entirely on volume-return history patterns for forecasting and investment decisions.

5.6 Vector Autoregression (VAR) Test

After identifying the direction of causality in the markets under study, we proceed to examine the dynamic relationship between the study variables and assess the impact of past variables on current variables. The following table presents the results of the Vector Autoregression (VAR) test:

Table 8: VAR Results for Saudi (TASI) and Dubai (DFM) Markets

MARKET	EQUATION	F-STATISTIC	R (-1)	V (-1)
SAUDI TASI	**RS**	2.812	-0.425* (0.248) [-1.71]	0.748*** (0.228) [3.28]
	VS	7.400	0.123 (0.321) [0.38]	0.975*** (0.295) [3.28]
DUBAI DFM	**RD**	0.308	-0.115 (0.286) [-0.40]	-0.001 (0.245) [-0.01]
	VD	0.335	0.255 (0.328) [0.78]	0.140 (0.280) [0.50]

- Notes: Significance levels: ***p < 0.01, **p < 0.05, *p < 0.1, Coefficients are followed by standard errors in parentheses and t-statistics in brackets.
- RS and VS are returns and volume traded in Saudi Market and RD and VD are returns and volume traded in Dubai Market.

The VAR models report persistent volume trading in Saudi (TASI: t=5.15, R^2=0.63) and Dubai (DFM: t=2.47, R^2=0.22), driven primarily by lagged volume rather than by returns (Saudi: t=0.95; Dubai: t=0.64). Return models for both markets are weak (Saudi R^2=0.04; Dubai R^2=0.03) with all the lagged predictors insignificant. Saudi's market displays strong bidirectional volume-return dynamics, where lagged volume drives current volume and returns, aligning with self-reinforcing liquidity hypotheses. Conversely, Dubai exhibits weaker interdependencies, suggesting the model omits external factors (e.g., global trends or structural variables) critical to its behavior. These contrasts underscore Saudi's internally driven equilibrium versus Dubai's reliance on unmeasured external determinants.

6. Discussion of Results

This research highlights the need for market-specific research in GCC financial markets, and in Saudi Arabia and Dubai respectively, a weak positive relationship is found between stock returns and trading volume. Yet in Saudi Arabia, there is a stronger dynamic relationship with internal feedback driving this, whereas in Dubai the dynamics are more intricate and affected by global integration, regulation, and investor mix. The findings suggest tailored analytical models for Dubai incorporating global factors, such as world economic indicators, to better capture its market behavior. The research was able to achieve its objectives because it confirmed a weak positive relationship in the two markets, discovered bidirectional causality in Saudi Arabia and unidirectional causality from volume to returns in Dubai, and demonstrated that lagged volumes and returns influence current values in the two markets. The VAR results validate that institutional and behavioral factors shape these relationships, highlighting Saudi Arabia's self-reinforcing liquidity versus Dubai's reliance on external drivers, and emphasize the need for policy and investment strategies tailored to each market's unique structure.

This study reveals a complex volume-return relationship in Dubai and Saudi markets, with a positive weak correlation (Pathirawasam, 2011; Karpoff, 1987) and dynamic VAR evidence of the past volume leading to the current volume more in Saudi Arabia than Dubai (Alhussayen, 2022). In contrast with Alesh and Haqa (2022), who found no correlation in Egyptian/Saudi markets, this study identifies a weak dynamic relationship, particularly in Saudi. Granger tests show no significant causality in either market, contrasting bidirectional causality in mature markets (Karpoff, 1987; Alhussayen, 2022) but aligning with Lee & Rui (2000), who argue emerging markets' volume lacks predictive power. Saudi's

equilibrium aligns with domestic factors like oil and money supply (Aljifri, 2020), while returns dominate error correction, mirroring TASI's post-restructuring volatility reduction (Rehman & Hazazi, 2014). Dubai's dual equilibria reflect its global hub status and external shock sensitivity (IMF, 2007), with weaker volume-return ties likely due to foreign investor influence (SAMA Working Paper, 2018). VAR results confirm poor return equation explanatory power, with lagged returns failing to predict current outcomes.

7. Conclusion

This study checked the correlation between the Saudi and Dubai financial market volumes and stock returns between 2018-2024 through advanced econometric methods like cointegration, regression, Granger causality, and VAR models. The results confirm a weak positive but current relationship between volumes and returns in both markets. In the Saudi market, a strong and entrenched relationship was discovered, with robust self-persistence in volume and returns, which is a sign that historical volume and returns have a significant impact on current market behavior. The Dubai market, however, showed a weaker, largely unidirectional relationship from returns to volume with lower explanatory power and higher sensitivity to external influences. These findings highlight the explanatory power of the market-specific characteristics, such as institutional structure and investor composition, in shaping financial forces. Generally speaking, the research highlights the need for tailored policy and investment instruments for the GCC region markets, as well as empirical observations that increase the character of trading activity and price determination in emerging markets.

In accordance with these findings, the paper scientifically recommends further study of the correlation between stock returns and trading volume in other Arab markets, as well as a larger time horizon for data series and other independent variables like market capitalization and return volatility to analyze their correlation with stock returns. The study further suggests investigating the impact of this relationship on investor confidence and diversifying statistical approaches towards achieving improved and more dependable results. furthermore, the results illuminate investor behavior in Sharia-compliant markets, providing regulators with empirical evidence to support policies designed for liquidity enhancement.

In practice, the research recommends updating and drafting regulations and legislation that dictate trading activity and price action in GCC financial markets and monitoring closely announcements of information by corporations regarding returns since they have a direct impact on trading volumes. The study also points to the necessity of improving investment awareness to increase the level and size of the financial markets, as well as enhancing market efficiency because interdependence of trading volume with stock returns is rendered more apparent in efficient markets. Therefore, the study contributes to enriching financial literature and brings forth practical and scientific recommendations that boost financial markets' evolution in the region**.**

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