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# Derivatives in the Gulf Market: An Empirical Analysis of Usage, Impact, and Risk Management

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**Abstract: This paper presents an empirical analysis of derivatives usage, impact, and risk management in Gulf Cooperation Council (GCC) financial markets. Utilizing panel logistic regression, VARMA-BEKK-GARCH analysis, and dynamic conditional correlation models, this study examines data spanning from 2010 to 2024 to provide comprehensive insights.**

**Key findings reveal that firm size is the strongest predictor of derivatives usage, increasing the likelihood by 2.4 times. Significant volatility spillover from oil markets to Gulf equity markets is observed, and oil price uncertainty is found to affect sovereign credit risk across all GCC nations. Furthermore, the analysis identifies sectoral heterogeneity in market responses. Despite their benefits, overall derivatives usage in the region remains relatively low.**

**These findings hold important implications for market participants, policymakers, and researchers, enhancing the understanding of derivatives market development in oil-dependent economies.**

***Keywords:*** *Derivatives Usage, Contingent Pricing, Futures Pricing, International Financial Markets, Financing Policy, Financial Risk and Risk Management, Panel Data Models; Spatio-Temporal Models, Financial Econometrics, Energy and the Macroeconomy (Oil and Related Markets).*

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## I. INTRODUCTION

Derivatives markets have become vital components of modern financial systems, offering essential tools for risk management, price discovery, and market efficiency. Globally, derivatives trading has expanded rapidly over the past two decades, and emerging economies increasingly recognize their importance. The Gulf Cooperation Council (GCC) countries—Saudi Arabia, the United Arab Emirates, Kuwait, Qatar, Oman, and Bahrain—present a unique case due to their dependence on oil revenues and exposure to commodity price volatility.

Given their significant vulnerability to oil price fluctuations, currency risks, and interest rate changes, derivatives instruments such as futures, options, and swaps can play a crucial role in stabilizing cash flows and enhancing financial resilience. However, despite this need, derivatives markets in the Gulf region remain relatively underdeveloped compared to those in North America, Europe, and parts of Asia.

This study provides a comprehensive empirical analysis of derivatives market development and usage in the GCC. It examines market structure, determinants of corporate derivatives usage, and the impact of derivatives trading on volatility, liquidity, and price discovery. Using panel regression techniques, volatility modeling, and data from 2010 to 2024, the research contributes to the growing literature on derivatives and risk management in oil-dependent economies.

## II. LITERATURE REVIEW

The academic literature on derivatives markets in emerging economies has expanded considerably in recent years, with growing attention to the specific characteristics and challenges of Gulf Cooperation Council financial markets.

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Alalmai (2023) provides a comprehensive survey of derivatives market development globally, highlighting the particular relevance of these instruments for economies with significant commodity exposure. The study emphasizes how derivatives facilitate risk transfer, improve market liquidity, and contribute to more efficient price discovery mechanisms in underlying spot markets. For GCC countries specifically, Alalmai documents the gradual evolution of derivatives trading infrastructure and regulatory frameworks, noting that while progress has been made, these markets remain relatively shallow compared to international standards. Dempsey (2016) offers crucial insights into corporate hedging behavior in GCC countries following the global financial crisis.

Through comprehensive survey evidence and financial statement analysis, the research demonstrates that derivatives usage among Gulf corporations is driven primarily by firm-specific characteristics including size, leverage, growth opportunities, and international exposure. The study reveals that larger, more leveraged firms with significant foreign operations exhibit higher propensity to engage in hedging activities, particularly for foreign exchange and commodity price risks. However, Dempsey also highlights that overall derivatives usage intensity in GCC firms remains lower than comparable corporations in developed markets, suggesting barriers related to market access, expertise, or regulatory constraints. The relationship between derivatives markets and underlying spot market dynamics has been examined by several researchers with focus on the Gulf region. Mansour et al. (2020) employ sophisticated VAR-GARCH modeling techniques to investigate volatility spillover effects between crude oil prices and GCC financial markets.

Their findings reveal asymmetric transmission patterns, with particularly interesting evidence that Islamic financial markets in the Gulf exhibit lower volatility spillover from oil price shocks compared to conventional markets. This suggests that derivatives instruments may play different roles across market segments and that Shariah-compliant derivatives structures merit specific attention in the GCC context. Recent research has also examined the broader macroeconomic implications of derivatives markets in oil dependent economies. Maghyereh et al. (2024) analyze how oil price uncertainty affects sovereign credit risk in GCC countries, finding that derivatives markets can serve as important mechanisms for managing sovereign exposure to commodity price volatility. Abuzayed (2023) extends this analysis to sectoral impacts, demonstrating that different segments of GCC stock markets respond asymmetrically to oil price volatility and that derivatives usage patterns vary significantly across sectors. Despite these valuable contributions, significant gaps remain in the literature, particularly regarding comprehensive empirical assessments of derivatives market depth, effectiveness in risk mitigation, and the optimal policy frameworks to support market development in the unique GCC economic environment.

## III. DERIVATIVES MARKET STRUCTURE IN THE GULF REGION

The derivatives market landscape in the Gulf Cooperation Council countries has undergone significant transformation over the past fifteen years, evolving from virtually non-existent organized exchanges to increasingly sophisticated market infrastructure. The primary derivatives instruments available in GCC markets include futures and options contracts on crude oil and other energy commodities, foreign exchange derivatives covering major currency pairs against the US dollar and regional currencies, and interest rate derivatives including swaps and forward rate agreements. Commodity derivatives dominate trading activity given the central role of oil and gas in Gulf economies, with particular liquidity in crude oil futures contracts that serve as critical hedging tools for both producers and consumers. The regulatory environment governing derivatives trading in GCC countries varies considerably across jurisdictions but has generally moved toward greater standardization and oversight. Saudi Arabia has made substantial progress with the establishment of the Saudi Derivatives Market (NOMU) and comprehensive regulatory frameworks under the Capital Market Authority. The UAE has developed derivatives trading capabilities through both the Dubai Gold and Commodities Exchange and Abu Dhabi Securities Exchange, with regulatory oversight from the Securities and Commodities Authority. Other GCC markets including Kuwait, Qatar, Oman, and Bahrain have introduced varying degrees of derivatives trading infrastructure, though market depth and liquidity remain more limited compared to Saudi Arabia and the UAE. Market capitalization and trading volumes in GCC derivatives markets have grown substantially but remain modest in absolute terms compared to global benchmarks. Recent data indicates that total derivatives trading volumes across GCC exchanges have increased from negligible levels in 2010 to approximately USD 850 billion in notional value by 2024, with Saudi Arabia accounting for roughly 45 percent of this activity, the UAE approximately 35 percent, and the remaining GCC countries collectively representing 20 percent. Growth has been particularly pronounced in currency derivatives as firms seek to manage exchange rate risks, and in commodity derivatives as both hedging and speculative activity has expanded. However, challenges persist including limited market maker participation, relatively wide bid-ask spreads, and concentration of trading activity in a small number of instruments and maturities.

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Table 1. GCC Derivatives Market Overview

| Saudi Arabia | Saudi Derivatives Market | Oil futures, FX, Interest rate swaps | 385 | Capital Market Authority |
|---|---|---|---|---|
| UAE | DGCX, ADX | Gold, Oil, Currency futures | 295 | Securities & Commodities Authority |
| Kuwait | Boursa Kuwait | Equity derivatives, FX | 75 | Capital Markets Authority |
| Qatar | Qatar Stock Exchange | Index futures, Currency | 55 | Qatar Financial Markets Authority |
| Oman | Muscat Securities Market | Limited FX forwards | 25 | Capital Market Authority |
| Bahrain | Bahrain Bourse | Equity options, FX | 15 | Central Bank of Bahrain |

## IV. DATA AND METHODOLOGY

### *A. Data Sources*

This study utilizes a comprehensive dataset spanning the period 2010–2024 to examine the evolution and structure of derivatives markets across the six Gulf Cooperation Council (GCC) member states. Data were collected from official GCC stock and commodity exchanges, including the Saudi Derivatives Market and the Dubai Gold and Commodities Exchange, as well as from Bloomberg, Refinitiv, and company annual reports. The corporate dataset covers approximately 450 publicly listed firms across various sectors.

Macroeconomic and financial indicators were obtained from the central banks of GCC countries, the Bank for International Settlements (BIS), and the International Monetary Fund's International Financial Statistics (IFS). These include measures of oil prices, credit risk, and global financial conditions relevant to the region's economic structure.

### *B. Econometric Framework*

The empirical framework integrates several econometric techniques to capture both firm-level determinants of derivatives usage and macro-financial dynamics.

- *Panel Logistic Regression*

Following Dempsey (2016), a panel logistic regression model is employed to identify the determinants of derivatives usage among GCC firms. The dependent variable is a binary indicator of whether a firm engages in derivatives hedging. Explanatory variables include firm size (total assets), leverage (debt-to-equity ratio), growth potential (market-to-book ratio), international exposure, and sector classification. The panel structure controls for firm-specific and time-invariant characteristics, enabling robust estimation of hedging behavior over time.

- *Varma-Bekk-Garch Model*

To examine volatility transmission and the impact of derivatives activity on market stability, the study applies a VARMA-BEKK-GARCH framework following Mansour et al. (2020). This model captures both mean and variance spillovers between crude oil prices and GCC stock market returns while ensuring the positive definiteness of the conditional covariance matrix. It allows for time-varying correlations essential for analyzing financial market interdependence in volatile environments.

- *Event Study Methodology*

To evaluate causal effects of market events—such as the introduction of new derivatives, regulatory changes, or major economic announcements—event studies quantify abnormal returns and other market responses around these events, offering insights into immediate market reactions.

- *Granger Causality Testing*

Within a VAR framework, Granger causality tests identify directional relationships between variables, such as whether past derivatives trading volumes predict future market liquidity or volatility, revealing feedback loops and interdependencies in the financial system.

### *C. Variables and Robustness*

Key variables include oil price volatility (based on WTI and Brent implied volatility), sovereign credit default swap (CDS) spreads, stock market returns, and measures of derivatives market depth such as trading volume, open interest, and bid–ask spreads. Global control variables include the VIX index, U.S. Treasury yields, and Middle East geopolitical risk indices.

Model lag structures are selected using standard information criteria, and robustness is verified through alternative model specifications, sub-sample analyses, and sensitivity tests to ensure result reliability.

## V. EMPIRICAL FINDINGS: DERIVATIVES USAGE PATTERNS

The panel logistic regression analysis highlights significant patterns in derivatives usage among GCC corporations, offering insights into the determinants of hedging behavior. Firm size emerges as the strongest predictor, with a one standard deviation increase in total assets associated with a 2.4-fold higher likelihood of engaging in derivatives hedging. Larger firms benefit from economies of scale, greater internal expertise, and lower relative transaction costs in derivatives markets.

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Leverage also shows a positive and significant effect. Highly leveraged firms are approximately 1.8 times more likely to use derivatives, reflecting motivations to mitigate financial distress and satisfy debt covenants, particularly in interest rate and foreign exchange hedging.

Growth opportunities, measured via market-to-book ratios and capital expenditure patterns, display a smaller but positive association, with firms exhibiting higher growth propensity about 1.3 times more likely to hedge. Sectoral analysis indicates that energy, utilities, and materials firms hedge more intensively than consumer and technology sectors, consistent with their direct exposure to commodity price fluctuations.

Comparative analysis shows that overall derivatives usage among GCC firms remains lower than global benchmarks: around 34% of GCC firms use derivatives versus 58% of large-cap firms in developed markets. This gap suggests that market infrastructure, regulation, expertise, and cultural factors may constrain adoption. Encouragingly, the time trend indicates growth, with usage rising from 22% of firms in 2010 to 34% by 2024, though significant potential for expansion remains.

Table 2. Determinants of Derivatives Usage in GCC Firms

| | | | | |
|---|---|---|---|---|
| Log(Total Assets) | 0.876 | 0.142 | 2.402 | *** |
| Gearing Ratio | 0.594 | 0.178 | 1.811 | *** |
| Market-to-Book | 0.263 | 0.095 | 1.301 | *** |
| Foreign Sales Ratio | 0.428 | 0.134 | 1.534 | *** |
| Energy Sector | 1.124 | 0.288 | 3.077 | *** |
| Oil Price Volatility | 0.312 | 0.087 | 1.366 | *** |
| Time Trend | 0.089 | 0.023 | 1.093 | *** |

## VI. IMPACT OF DERIVATIVES ON MARKET VOLATILITY AND LIQUIDITY

The VARMA-BEKK-GARCH analysis provides compelling evidence regarding the complex relationships between crude oil price dynamics and GCC stock market behavior, with important implications for the role of derivatives in market stability. The estimated volatility spillover coefficients reveal significant transmission of shocks from international oil markets to Gulf equity markets, with the magnitude of spillover varying considerably across countries and market segments. The baseline model estimates indicate that a one standard deviation shock to oil price volatility translates into approximately 0.42 standard deviation increase in GCC stock market volatility on average, with Saudi Arabia and UAE markets showing the strongest transmission effects given their deeper integration with global energy markets.

A particularly noteworthy finding emerges from the comparison between conventional and Islamic financial market segments within the GCC region. Consistent with the findings of Mansour et al. (2020), our extended analysis confirms that Islamic equity indices and Shariah-compliant financial institutions exhibit significantly lower volatility spillover from oil price shocks compared to conventional market segments. The estimated BEKK coefficients for Islamic market segments are approximately 30 to 40 percent lower in magnitude than for conventional segments, suggesting that structural features of Islamic finance—including prohibition of excessive leverage and speculation—may provide natural stabilization mechanisms. This differential response has important implications for portfolio construction and risk management strategies in GCC markets.

The analysis of derivatives market impact on underlying spot market liquidity yields mixed but generally positive results. In markets with more developed derivatives trading infrastructure, particularly Saudi Arabia and UAE, we observe statistically significant improvements in spot market liquidity metrics following the introduction and expansion of derivatives products. Bid-ask spreads in the underlying equity and commodity markets have narrowed by an average of 18 to 25 basis points in the post-derivatives period, while market depth—measured by order book volume at best prices—has increased by approximately 30 percent. These improvements are most pronounced during periods of elevated uncertainty, suggesting that derivatives markets enhance the capacity of market makers and liquidity providers to manage inventory risks.

Price discovery analysis using information share metrics and Hasbrouck's permanent-transitory decomposition indicates that derivatives markets contribute meaningfully to price formation in GCC financial markets, though the relationship varies by instrument and market segment. For the most liquid derivatives contracts, particularly crude oil futures and major currency pairs, the derivatives market accounts for 35 to 55 percent of price discovery, with the remainder occurring in spot markets. This suggests that informed traders increasingly utilize derivatives markets to express views and hedge positions, contributing to more efficient information aggregation. However, in less liquid derivatives segments, the contribution to price discovery remains limited, highlighting the importance

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of sufficient trading volumes and market depth for derivatives to effectively perform their economic functions.

Table 3. GCC Market Volatility Transmission and Derivatives Usage

| | | | |
|---|---|---|---|
| Saudi Conventional | 0.486 | 0.72 | 25% |
| Saudi Islamic | 0.298 | 0.68 | 22% |
| UAE Conventional | 0.452 | 0.69 | 23% |
| UAE Islamic | 0.275 | 0.65 | 19% |
| Kuwait | 0.389 | 0.58 | 18% |
| Qatar | 0.412 | 0.61 | 15% |
| Oman | 0.358 | 0.52 | 12% |
| Bahrain | 0.341 | 0.49 | 11% |

Note: Volatility spillover coefficients from BEKK-GARCH models; Hedging effectiveness measured by variance reduction ratios; Liquidity improvement represents percentage narrowing of bid-ask spreads post-derivatives introduction.

## VII. OIL PRICE UNCERTAINTY AND SOVEREIGN RISK: IMPLICATIONS FOR DERIVATIVES MARKETS

The relationship between oil price volatility and sovereign credit risk is a key dimension for understanding the macroeconomic role of derivatives in GCC countries. Extending Maghyereh et al. (2024), our analysis shows that oil price uncertainty significantly affects sovereign credit default swap (CDS) spreads across all six GCC nations. Using daily data from 2014–2024, dynamic conditional correlation models indicate that a 10% increase in oil price volatility corresponds to a 4–8 basis point rise in sovereign CDS spreads, with heterogeneity reflecting differences in fiscal buffers, economic diversification, and reserves.

We also identify asymmetries in sovereign risk responses. Negative oil price shocks produce larger increases in CDS spreads than the reductions associated with equivalent positive shocks. This effect is most pronounced in Bahrain and Oman, which have higher fiscal breakeven prices and lower sovereign wealth fund buffers, while Saudi Arabia and the UAE exhibit more symmetric responses due to stronger fiscal positions.

These findings highlight the importance of derivatives for sovereign risk management. Oil price hedging instruments, such as options and collars, allow governments and sovereign wealth funds to mitigate downside risks while retaining upside exposure. The analysis shows that several GCC entities expanded hedging activities after the 2014–2016 oil price collapse, though the scale and sophistication vary across countries.

Sovereign risk also affects the private sector. Higher CDS spreads raise corporate and bank funding costs, influencing derivatives usage and market liquidity. Elevated sovereign risk can constrain corporate access to international derivatives markets, increasing reliance on domestic infrastructure. These feedback loops between oil volatility, sovereign risk, and derivatives markets underscore the need for robust, liquid, and well-regulated derivatives markets to enhance financial resilience in the GCC.

## VIII. SECTORAL ANALYSIS OF DERIVATIVES IMPACT ON GCC STOCK MARKETS

Disaggregated sectoral analysis highlights substantial heterogeneity in how GCC stock market segments respond to oil price volatility and the mitigating role of derivatives. Following Abuzayed (2023), panel regressions were estimated for nine major sectors—Energy, Materials, Industrials, Consumer Discretionary, Consumer Staples, Healthcare, Financials, Real Estate, and Telecommunications—using data from over 300 firms across GCC countries (2015–2024). Explanatory variables include oil price changes, oil implied volatility, geopolitical risk indices, and interaction terms capturing derivatives market development.

The Energy sector is most sensitive to oil market developments. A 10% increase in crude oil prices is associated with a 6.8% rise in sector returns (coefficient = 0.68), while oil price volatility negatively affects performance (coefficient = -0.34). Firms with active hedging programs exhibit approximately 40% lower sensitivity to volatility, demonstrating the stabilizing effect of derivatives.

The Financial sector shows positive but modest direct effects from oil prices (coefficient = 0.22). Indirect effects via credit risk and sovereign risk are more pronounced. Financial institutions engaged in derivatives—both for hedging and as

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intermediaries—experience roughly 25% lower return volatility during volatile periods.

Consumer-oriented sectors, including Consumer Discretionary and Consumer Staples, display negative sensitivity to oil price increases (coefficients = -0.18 and -0.12, respectively), reflecting higher costs and reduced real incomes. These firms primarily use foreign exchange derivatives to manage import and currency risks, but hedging effectiveness is limited during periods of combined oil price and currency volatility.

Overall, the findings underscore that derivatives usage can meaningfully mitigate sector-specific risk exposures, but effectiveness varies depending on sectoral exposure type and the nature of the underlying risks.

Table 4. Sectoral Sensitivity to Oil Price Changes and Derivatives Hedging

| | | | |
|---|---|---|---|
| Energy | 0.68 | -0.34 | -40% |
| Materials | 0.42 | -0.22 | -32% |
| Industrials | 0.28 | -0.18 | -28% |
| Financials | 0.22 | -0.26 | -25% |
| Consumer Discretionary | -0.18 | -0.15 | -18% |
| Consumer Staples | -0.12 | -0.11 | -15% |
| Real Estate | 0.31 | -0.19 | -22% |
| Telecommunications | 0.08 | -0.09 | -12% |
| Healthcare | -0.05 | -0.07 | -10% |

Note: Oil Price Beta represents sectoral return sensitivity to 10% oil price change; Volatility Impact measures response to oil implied volatility; Hedging Benefit indicates volatility reduction from derivatives usage. All coefficients significant at 5% level or better.

## IX. DISCUSSION

The empirical findings provide a comprehensive perspective on derivatives markets in the Gulf Cooperation Council (GCC) countries, highlighting key determinants, impacts, and challenges. Firm-specific characteristics—particularly size, leverage, and international exposure—are the primary drivers of corporate derivatives usage, consistent with theory and evidence from other emerging markets. However, overall penetration remains below global benchmarks, suggesting that market infrastructure, regulatory frameworks, and expertise availability constrain broader adoption.

Derivatives usage demonstrates tangible benefits for financial stability and market efficiency. Volatility spillovers from oil markets to GCC equities are significant but are mitigated for firms with active hedging programs. Islamic financial segments exhibit lower volatility transmission than conventional segments, suggesting structural features of Islamic finance may provide implicit stabilization. Modest improvements in spot market liquidity further indicate positive spillovers from derivatives market development.

Despite these benefits, challenges remain. Market depth and liquidity are limited outside the most actively traded contracts, and derivatives activity is concentrated among large firms and financial institutions, restricting access for small and medium enterprises. Regulatory inconsistencies across GCC jurisdictions complicate cross-border hedging, while gaps in market awareness and technical expertise hinder effective derivatives utilization.

These challenges present opportunities for market development and policy action. Expanding the range of instruments, including SME-targeted products, could enhance financial inclusion and support economic diversification. Educational initiatives for corporate treasurers, board members, and financial professionals can strengthen risk management capacity. Regulatory harmonization across GCC countries would facilitate regional integration and improve liquidity. Finally, promoting market-making and leveraging fintech innovations—such as electronic trading platforms, algorithmic market-making, and blockchain-based clearing—could overcome infrastructure limitations and position GCC derivatives markets at the technological frontier.

## X. CONCLUSION

This study provides a comprehensive empirical assessment of derivatives markets in the Gulf Cooperation Council (GCC) countries, offering insights into usage patterns, determinants, and economic impacts. Derivatives adoption among GCC corporations is strongly influenced by firm characteristics such as size, leverage, growth opportunities, and international exposure, with larger and more leveraged firms exhibiting higher hedging propensity. Yet, overall usage remains lower than in developed markets, indicating structural and market-level constraints that limit broader adoption.

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Derivatives contribute positively to financial market stability and efficiency. Volatility spillovers from international oil markets to GCC equities are mitigated for firms with active hedging programs. Differential volatility transmission between Islamic and conventional market segments suggests that structural features of Shariah-compliant finance may provide implicit stabilization. Improvements in spot market liquidity and price discovery further highlight the economic functions of derivatives beyond risk transfer.

The study underscores the critical role of derivatives in managing oil price and sovereign credit risks. For oil-dependent GCC economies, derivatives help stabilize government revenues, corporate cash flows, and macroeconomic performance. Asymmetric sovereign risk responses to negative oil price shocks emphasize the importance of hedging downside exposures. Sectoral heterogeneity also points to the need for tailored risk management strategies aligned with industry-specific exposures.

Several avenues for future research emerge. These include firm-level investigations into governance, managerial characteristics, and organizational capabilities that shape hedging decisions; analysis of innovative derivatives products, including Shariah-compliant and technology-enabled instruments; studies of regional financial integration and cross-border derivatives linkages to enhance liquidity; and evaluation of regulatory frameworks to optimize participation and hedging effectiveness. Finally, understanding the role of derivatives in supporting financial resilience amid energy transition and global economic uncertainty will be increasingly important as GCC countries pursue diversification and market sophistication.

## REFERENCES

[1]. Alalmai, S. (2023). Derivatives Market: A Survey. International Journal of Economics and Financial Issues, 13(6), 101–106. https://doi.org/10.32479/ijefi.15124
[2]. Dempsey, M. (2016). Derivatives Usage in Emerging Markets Following the GFC: Evidence from the GCC Countries. Journal of International Financial Management & Accounting.
[3]. Mansour, W., Hamdi, H., Majdoub, J., & Ben Slimane, I. (2020). Volatility spillover and hedging effectiveness among crude oil and Islamic markets: evidence from the Gulf region. European Journal of Comparative Economics, 17(1), 103-126.
[4]. Maghyereh, A., Al Rababa'a, A. R., & Ziadat, S. A. (2024). Re-examining the Impact of Oil Price Uncertainty on Sovereign CDS Spread of GCC Countries. Energy Research Letters, 5(1), 1-6.
[5]. Abuzayed, B. (2023). The effect of oil implied volatility and geopolitical risk on GCC stock sectors under various market conditions. Journal of International Financial Markets, Institutions and Money.
[6]. Arouri, M. E. H., Jouini, J., & Nguyen, D. K. (2012). On the impacts of oil price fluctuations on European equity markets: Volatility spillover and hedging effectiveness. Energy Economics, 34(2), 611-617.
[7]. Bartram, S. M., Brown, G. W., & Conrad, J. (2011). The effects of derivatives on firm risk and value. Journal of Financial and Quantitative Analysis, 46(4), 967-999.
[8]. Fattouh, B., Kilian, L., & Mahadeva, L. (2013). The role of speculation in oil markets: What have we learned so far? The Energy Journal, 34(3), 7-33.
[9]. Gupta, K., & Banerjee, R. (2019). Does OPEC news sentiment influence stock returns of energy firms in the United States? Energy Economics, 77, 34-45.
[10]. Hull, J. C. (2018). Options, Futures, and Other Derivatives (10th ed.). Pearson Education.
[11]. Moosa, I. A. (2020). The effectiveness of social distancing in containing Covid-19. Applied Economics, 52(58), 6292-6305.