International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2026, 16(1), 17-26.

Examining the Dynamic Relationship between Oil Prices and Stock Market: New Evidence from Kuwait

Salah A. Alawadhi[1]*, Adedayo E. Longe[2]

[1]Faculty of Business Studies, Arab Open University, Ardiya, Kuwait, [2]Olabisi Onabanjo University, Ago-Iwoye, Ogun State, Nigeria.
*Email: salawadhi@aou.edu.kw

Received: 02 September 2025 **Accepted:** 15 December 2025 **DOI:** https://doi.org/10.32479/ijefi.22001

ABSTRACT

Despite oil revenues making up 90% of government revenue, Kuwait's stock market is surprisingly disconnected from oil price movements. This study analyzes the relationship between oil price shocks and stock market performance in Kuwait, a major oil-exporting nation sensitive to global oil price fluctuations. Using autoregressive distributed lag (ARDL) model and daily data from September 2015 to May 2025, the study investigates both the short and long-run dynamics of this relationship, with particular focus on optimal lag effects. The ARDL bounds test reveals no evidence of a long-term cointegration between Dubai oil prices and the Kuwait stock market index, suggesting that oil price changes do not exert a persistent effect on Kuwait's equity market. However, short-run results indicate a significantly positive immediate response of stock returns to oil price increases, followed by weaker and mixed lagged effects. The findings indicate that investor sentiment and speculative activity may drive short-term stock market reactions in Kuwait, while structural features like the presence of a sovereign wealth fund and heavy government involvement limits long-term volatility. This study contributes to the understanding of oil-financial market linkages in resource-dependent economies and provides empirical evidence to guide policy and investment strategy in Kuwait.

Keywords: Oil Price, Kuwait Stock Market, Dubai Crude, Autoregressive Distributed Lag
JEL Classification: Q41, E02, G1, N95

1. INTRODUCTION

The relationship between oil price shocks and the performance of stock market has remained the subject of scholarly research. This is especially more prominent in economies that are oil-dependent and one of such economies is Kuwait (Dizmen, 2021). Reports indicate that Kuwait is one of the leading exporters of oil globally as it is ranked the 7th largest exporter of crude oil and as of 2022, the country accounted for 4.31% of the total global oil exports of about $62.6 billion worth of oil (OPEC, 2025). Further, the country derives nearly 90% of its government revenue and 60% of its GDP from its hydrocarbon exports (Kozhanov, 2024). This significant reliance on oil becomes a rational basis for the fluctuations in global oil prices to significantly influence the economic stability, fiscal policies, and financial markets of Kuwait. In addition, it has also been observed that Kuwait stock exchange (KSE) (locally named "Boursa Kuwait") is one of the oldest and largest stock market in the gulf cooperation council (GCC) and it is particularly sensitive to oil price shocks (Bley and Chen, 2006; Cheikh et al., 2018). Considering the clear impact of oil on several aspects of the Kuwait economy, existing literature has explored the oil-stock market nexus in various contexts. However, the specific dynamics of these impacts within Kuwait remain underexplored, particularly concerning asymmetric effects, sectoral variations, and the role of government interventions in mitigating oil price shocks.

The impact of oil price shocks can be driven by several factors which are broadly categorized into demand-side factors and supply-side disruptions (Kilian, 2014; Omotosho and Yang, 2024). The demand-side factors include global economic growth, increased utilization of oil for industrial activities, and global recessions. The supply-side disruptions cover factors such as geopolitical tensions, OPEC decisions, oil production cuts, and financial market speculation among others (Kilian, 2008). Each of these broad drivers of oil price shocks has distinct implications for stock markets in various contexts. To exemplify, supply-side disruptions factors such as oil production cuts, may boost oil revenues for exporters like Kuwait. This is because when demand exceeds supply, prices tend to go up especially in the oil market which is sensitive to the demand-supply dynamics. On the other hand, demand-side shocks, such as a global recession, may depress both oil prices and stock markets simultaneously. These varied and probable scenarios are vital for investors, policy makers, and governments who actively seek to hedge against financial instability induced by oil price volatility.

In line with the above, Kuwait presents a unique context to examine the above noted oil price driven financial instability as the Kuwait context provides characteristics that warrant deeper analysis. For example, unlike more diversified GCC markets such as the United Arab Emirates or Saudi Arabia. Kuwait's stock market is heavily tilted towards its banking and petrochemical sector and these sectors are directly or indirectly tied to oil price movements (Merza and Almusawi, 2016). In addition, the sovereign wealth fund of Kuwait, Kuwait investment authority (KIA) plays a key stabilizing role by injecting liquidity into the economy especially during market downturns (Das, 2009; Bouhmidi, 2024; Alexander, 2025).

This action of the Kuwait Investment Authority produces several outcomes. First, it potentially dampens the transmission of oil shocks. Second, it reduces the need for austerity measures. Third, it maintains the confidence of investors in the economy of Kuwait despite external and internal shocks. Despite these measures aimed at mitigating the impact of oil price shocks on several aspects of the Kuwait economy, the effectiveness of such interventions remains empirically contested. Some studies argue that sovereign wealth funds can mitigate volatility (Das, 2012; Das and Kumar, 2021), while others suggest they merely delay necessary market corrections (Cherif and Hasanov, 2019).

Furthermore, existing studies on oil-stock market linkages often employ linear models and they assume that symmetrical responses are the outcome to price changes. However, evidence from other oil-dependent markets such as Norway and Russia suggest sharper reactions of stock markets to oil price decline than increase (Arouri and Rault, 2012). However, whether this asymmetry holds in Kuwait, which is an economy where fuel subsidies and government spending may cushion negative shocks, remains an open question that requires clear empirical evidence to explore. Also, while prior research has focused on aggregate market indices, sectoral analysis is sparse. As a result of this, industrial and financial sectors of Kuwait may respond to oil shocks, therefore we argue that lag analysis is essential for a comprehensive understanding. In line with the foregoing, this paper fills these identified gaps by critically examining the impact of oil price shocks on the Kuwait Stock Market, considering the optimal lag effects and policy interventions. The findings from the analysis contributes to the broader literature on commodity-financial market linkages while offering practical insights for investors and policymakers in Kuwait and perhaps, other oil-dependent economies that share similarities with the economy of Kuwait.

2. LITERATURE REVIEW

Oil price shocks entail significant and sudden changes in the prices of oil prices, and which can arise from fluctuations in demand, supply disruptions, and/or speculative trading (Hamilton, 1983; 2008; Ahmad and Shah, 2024; Bilal et al., 2025). The implications of these shocks oil-exporting and oil-importing nations could be far reaching. This is because for oil exporting countries, an increase in oil prices typically boosts fiscal revenues and corporate earnings which can thereby support the performance of the stock market of such a country. On the other hand, sharp decline in oil prices can strain public finances, reduce investor confidence, and trigger market selloffs (Basher et al., 2018; Bashir, 2022). By implication, the performance of the stock market in such a scenario becomes negatively impacted. Having noted this, the transmission mechanisms that link oil prices to stock markets include (a) revenue effects, where higher oil prices increase corporate profits in energy and related sectors; (b) macroeconomic effects, where oil price changes influence inflation, interest rates, and government spending, indirectly affecting equity valuations; and (c) investor sentiment effects, where oil markets volatility leads to risk aversion or speculative behavior from investors (Degiannakis et al., 2018; Taghizadeh-Hesary and Yoshino, 2020; Dokas et al., 2023; Bouzidi et al., 2024; Kumar and Mallick, 2024). While these mechanisms have significant impacts, the strength and direction of these channels depend on a country's economic structure. In the case of Kuwait, for example, where oil dominates the country's exports and fiscal policy, the revenue effect is likely the most direct. However, the intervention of the Kuwaiti government may alter the transmission (Shehabi, 2020).

Despite the above patterns of the impact of oil price shocks, literature remains divided on the persistence and magnitude of oil-stock market linkages to aspects of economic structures. Some scholars have noted a strong co-movement (Kisswani and Elian, 2017), while others argue that the relationship is time-varying or weak (Apergis and Miller, 2009). Either way, these discrepancies may be influenced by the methodological differences or failure to account for structural breaks, such as the 2014 oil price crash or the COVID-19 pandemic. Moreover, most of the arguments emerge from evidence obtained from developed or emerging markets, leaving a gap in understanding small, oil-reliant economies like Kuwait.

Empirical studies on the nexus between oil price shocks and stock market have resulted in mixed findings. For GCC markets, Arouri et al. (2011) found significant positive effects of oil prices on stock returns, particularly in Saudi Arabia and Qatar. Similarly, Mohanty et al. (2011) showed that oil price shocks explain a substantial portion of stock return volatility in the UAE. However, these studies often overlook Kuwait, despite its heavy oil dependence. On their part, Castro and Jiménez-Rodríguez (2024) examined the impact of the demand-side and supply disruptions of oil prices impact real stock returns in Germany, France, Italy, UK, and the

USA. This led to the discovery that the impact of these shocks on stock returns and volatility does not change even when oil inventories are included in the model. Also, the shocks do affect stock returns differently when oil inventories are considered, highlighting the role of market uncertainty in the oil-stock market relationship (Huang et al., 1996; Chen et al., 2014; Demirer et al., 2020; He et al., 2022). Finally, the oil prices changes have a negative effect on stock returns over medium-term horizons because rising oil prices lead to inventory depletion, which hurts market performance (Waheed et al., 2018). In short, Castro and Jiménez-Rodríguez (2024) contend that while supply and general demand shocks behave predictably, oil-specific demand and inventory shocks reveal more nuanced effects, with inventories amplifying uncertainty and medium-term declines in stock returns.

Studies on emerging oil-exporting economies—especially those in the Gulf region—remain relatively limited (Agarwalla et al., 2021; Fasanya et al., 2021). The relationship between oil prices and stock market performance is complicated, particularly in oil-dependent economies like Kuwait. Historical evidence suggests that oil price fluctuations drive investor sentiment, impacting stock prices and market stability (Kim and Vera, 2022; Lee and Kim, 2025). While rising oil prices typically generate economic surpluses that can be reinvested in sustainability projects, global financial markets are now placing increasing value on firms with strong Environmental, Social, and Governance (ESG) profiles, rewarding them with favorable stock performance (Kruse et al., 2024). A few Kuwait-specific studies exist but with limitations. Fayyad and Daly (2011) following a comparative analysis of the relationship stock market returns and oil price shocks in seven countries namely Kuwait, UAE, Oman, Qatar, Bahrain, UK and USA, discovered that oil prices were a stronger predictor of stock market returns after price increases and during the Global Financial Crisis (GFC), stock markets reacted more strongly to sudden changes in oil prices during the GFC period, and among the GCC countries, Qatar and the UAE showed the highest sensitivity to oil price changes, while in advanced economies, the UK demonstrated the most significant response. This implies that the Kuwait stock market showed less response to price changes. Boubaker and Raza (2017) argue that Kuwait's market is less sensitive to oil shocks than other GCC markets due to its sovereign wealth fund's stabilizing role. Yet, their analysis does not account for nonlinearities or structural breaks.

Additionally, sectoral studies such as Sadorsky (2012) reveal that energy and financial stocks react more strongly to oil shocks than consumer or industrial stocks. Given Kuwait's sectoral concentration, such disaggregated analysis is crucial but remains absent in current literature. In another study, Kisswani and Elian (2017) examined the impact of oil price shocks (Brent/WTI) on Kuwait's stock market (2000-2015) using ARDL cointegration and Toda-Yamamoto causality tests. The findings reveal a long-run negative relationship, with Brent showing bidirectional causality and WTI unidirectional. The error correction term indicates rapid adjustment (67%) to shocks. The paper concludes that oil volatility significantly affects Kuwait's equity market, highlighting risks for investors and policymakers in oil-dependent economies. The ARDL approach robustly captures dynamics, though sectoral analysis could enhance insights. Furthermore, Alshihab and AlShammari (2020) examine the impact of fluctuations in the price of oil on Kuwaiti stock market returns. The findings confirmed that changes in Kuwaiti stock market returns are only affected by crude oil price fluctuations in the short run. Al-Mutairi et al., 2022 and Kisswani, 2023 investigated the Impact of the COVID-19 pandemic on Kuwait stock market. The finding confirms a positive relation between daily recovery and the Kuwait stock market index; there is also a negative relationship between the lock down and the days the country was under curfew and the stock market. While Al-Kandari et al. (2022) assessment of the impact of COVID-19 pandemic on Kuwait stock market sector, yield positive effects of pandemic three indices: banks, telecommunication and consumer goods. On the other hand, the pandemic negatively affected oil and gas, real estate, financial services, basic materials, consumer services, insurance.

Overall, these examined studies are indicative that previous studies on Kuwait either use dated data, linear models, or aggregate indices to examine the impact of oil price changes on stock market, thereby failing to capture asymmetries, sectoral dynamics, and policy influences. This paper addresses these gaps by employing nonlinear models and sectoral decomposition.

3. METHODOLOGY AND DATA

This paper is predicated upon three theories to explain the relationship between oil price shocks and stock market: The efficient market hypothesis (EMH) and the discounted cash flow (DCF) model, and theory of stock valuation.

3.1. Efficient Market Hypothesis (EMH)

The EMH is built on the argument that stock prices are reflections of all available market information including the movement of oil prices (Fama, 1970; Malkiel, 2005). This reflection takes several forms in various market contexts. In the weak form, past price data offers no advantage, In the semi-strong form efficiency, markets quickly adjust to new oil price information which means that shocks should be rapidly incorporated into stock valuations while in the strong form, all information, including private, is reflected in prices (Fasanya et al., 2021). However, empirical evidence from studies undertaken on GCC markets reveal inefficiencies which are due to thin trading, limited foreign participation, and government interventions (Al-Khazali et al., 2014). In the case of Kuwait's stock market which is characterized by dominance from local retail investors and periodic sovereign fund injections, the stock market may exhibit delayed or incomplete adjustments to oil shocks thereby not being a true reflection or incorporation of all market information. It becomes pertinent therefore underpins this paper with the argument of this model to determine the extent to which stock market reflects oil price volatility.

3.2. Discounted Cash Flow (DCF) Model

Discounted cash flow (DCF) model is a method of valuation that is deployed to estimate the value of an investment based on its expected future cash flow (Laitinen, 2019). It accounts for the time value of money by discounting future cash flows back to present value. As it relates to the focus of this paper, the DCF model links stock prices to future cash flows, which are influenced by oil prices in energy-dependent economies. This implies that rising oil prices increase the expected earnings for oil firms on the stock market thereby lifting their valuations, while a decline in oil prices reduce their profitability and equity prices and this also impacts on the performance of the stock market (Jones and Kaul, 1996). This is, however, not always the case as this relationship may be nonlinear. For instance, if oil price drops are perceived as temporary (e.g., due to OPEC cuts), the long-term cash flows of firms may remain stable and as a result dampen stock market declines. Contrarily, sustained low prices may trigger severe selloffs which could result in increased stock earnings and value (Henriques and Sadorsky, 2011; Difiglio, 2014). In essence, The DCF model provides the theoretical framework for this paper to analyze how oil price shocks affect Kuwait's stock market by linking changes in expected corporate cash flows to equity valuations.

3.3. Stock Valuation Theory

The theory of stock valuation (Bakshi et al., 1997; Bakshi and Chen, 1997; Bakshi and Chen, 2005) argues that the price of a stock reflects the present value of its expected future cash flow, and which is usually discounted by a proper rate (Kisswani and Elian, 2017). This framework, rooted in the Dividend Discount Model (DDM) and Discounted Cash Flow (DCF) analysis, assumes that a rational market is one in which investors price assets based on fundamental factors like earnings, growth prospects, and macroeconomic conditions. However, critics argue that this theory oversimplifies market behavior as it ignores behavioral biases, speculative bubbles, and short-term noise that often drive stock prices (Liao and Errico, 2023). In any case, external shocks such as oil price fluctuations may significantly disrupt cash flow expectations by altering production costs, inflation, and interest rates. For oil-dependent economies like Kuwait, these shocks are particularly pronounced, as oil revenues directly influence fiscal stability and corporate profitability. The paper uses this theoretical foundation to argue that oil price volatility transmits to stock returns through macroeconomic channels. In essence, the theory of stock valuation serves as the paper's theoretical framework by establishing the mechanism through which oil price shocks affect equity markets since oil price shocks tend to distort expected cash flows and discount rates, thereby shaping investor behavior and stock returns in Kuwait's oil-reliant economy.

Consequently, the study follows the model of Elian and Kisswani (2018) who studied the long-run cointegrating relationship between oil price changes on stock market returns in emerging market considering Kuwait as a case study using daily data, the authors expressed their model in a linear function as;

$$R_t = \beta_0 + \beta_1 P_t + \varepsilon_t \quad (1)$$

R_t is defined as stock market return, P_t is nominal spot oil price, and ε_t is the error term. Hence, they measured all the variables in logarithm and used nominal oil price as data for consumer price index are not available. For the nominal oil price, they measured oil price using Brent Oil Price and West Texas Intermediate (WTI) oil price.

For this study, we considered the stock market index closing prices as our dependent variable and the Dubai Oil Price as a proxy for oil price. The model for this study is therefore expressed as;

$$SM_t = \beta_0 + \beta_1 DOP_t + \varepsilon_t \quad (2)$$

SM_t is defined as Stock Market Closing Price, DOP_t is Dubai oil price, and ε_t is the error term. β_0 is the intercept and β_1 is the coefficient of the independent variable (oil price). To analyze oil price shocks impact stock market returns, different from Elian and Kisswani (2018) model, oil price is decomposed into positive and negative changes in oil price.

To empirically analyze the impact of oil price shocks on stock market performances in Kuwait, it is important the data are subjected to preliminary tests such as the long-run cointegrating test and unit-root test. Before carrying out the long run cointegrating relationship test among the variables, it is important that the data employed in this study are subjected to stationary test at first to ensure none of the variables are stationary at second order of integration [I (2)]. According to Herranz (2017), unit root tests (URTs) evaluate the null hypothesis that a time series has a unit root. In the context of a driftless AR(1) model ($x_t = \emptyset_1 x_{t-1} + \varepsilon_t$), this means testing whether $\emptyset_1 = 1$ under the null hypothesis. The alternative hypothesis is typically that the process is stationary, with $|\emptyset_1| < 1$. However, in our analysis, we broaden the alternative to $\emptyset_1 \neq 1$, which also encompasses non-stationary but explosive time series characterized by $|\emptyset_1| > 1$.

When the null hypothesis in the AR (1) model is extended to include an interception and a linear trend, the model is expressed in a one-dimensional state-space model as;

$$x_t = \emptyset_1 x_{t-1} + \varepsilon_t,$$

$$y_t = \beta_0 + \beta_1 t + \varepsilon_t,$$

$$\emptyset_1 = 1$$

On the other hand, rather than modeling the intercept and trend within a state-space framework as said in equation 3, incorporating the trend directly into the AR equation for the null hypothesis would lead to quadratic time trends in the level series. Therefore, the equation is re-written as;

$$x_t = \emptyset_1 x_{t-1} + \beta_0 + \beta_1 t + \varepsilon_t,$$

$$\emptyset_1 = 1$$

If $x_t = 0$, solving for the recursion using the Faulhaber's formula, x(t) will be expressed in an equation that includes a quadratic time trend component. The x(t) equation is expressed as;

$$x_t = \beta_0 t + \beta_1 \frac{t(t+1)}{2} + \sum_{i=1}^{t} \varepsilon_i \quad (5)$$

For the alternative hypothesis, it follows an AR (1) process with $\phi_1 \neq 1$. When $|\phi_1| < 1$, this implies a stationary I (0) process. For a standard unit root method (such as the Augmented Dickey Fuller (ADF) and Philips Perron (PP) methods), this hypothesis is adopted to accept that a variable is stationary. However, in a situation where $|\phi_1| > 1$, the process is assumed to be explosive and highly non-stationary. Replicating equation 6, the alternative hypothesis equation is written as.

$$x_t = \emptyset_1 x_{t-1} + \varepsilon_t,$$

$$y_t = \beta_0 + \beta_1 t + \varepsilon_t,$$

$$\emptyset_1 \neq 1$$

For the lag selection, the Akaike information criterion (AIC) is employed for the purpose. According to Liew (2004), the AIC and final prediction error (FPE) are superior in use for lag selection for small observations ranging between 60 and below. For this study, the number of observations is 63, therefore, AIC is suitable for the optimal lag selection. The AIC and FPE according to Liew (2004) are suitable for this sample size as they reduce the risk of underestimation while increasing the likelihood of identifying the true lag length. The model is presented

$$AIC_p = -2T\,[ln(\hat{\sigma}^2_p)] + 2p$$

$$FPE_p = \hat{\sigma}^2_p\,(T-P)^{-1}\,(T+P) \tag{7}$$

Equation 7 represents AIC and FPE models where T is sample size, $\hat{\sigma}^2$ is the finite variance and p is the appropriate lag length. Having established the stationarity level of the variables from the unit root tests, the long-run cointegrating relationship is examined to ascertain the variables have a long-run cointegrating relationship. For this purpose, the ARDL Bounds test is employed. The ARDL equation is stated as

$$\Delta SM_t = \alpha_0 + \sum_{i=1}^{p} \theta_i \Delta SM_{t-i} + \sum_{i=1}^{q} \theta_i \Delta LDOP_{t-i} + \mu_t \tag{8}$$

Δ is the operator differences, p and q are the length of lags applied on the variables and μ_t is the serially uncorrelated error term. The coefficients explain the impact of the oil price variables on Kuwait stock market. ecm_{t-1} is the error correction model which explains the rate at which the independent variables can correct deviations in the dependent variable considering a time lag.

3.4. Data Used

To examine the impact of oil price shocks on Kuwait stock market performances, the daily data of Kuwait Stock Market closing index and Dubai oil price are considered from 1st September 2015 to 31st May 2025. The daily data is examined to know how stock market returns react to daily changes in oil price. This study uses Dubai crude oil prices (also known as Dubai Fateh) for the oil price variable, unlike the vast majority of papers that use West Texas Intermediate (WTI) or Brent oil prices, Because Dubai crude benchmark is the primary crude oil loading from GCC region, and more volatile and reflective to regional economical elements (Alawadhi and Longe, 2024). Oil prices obtained from the energy information administration (EIA) using daily frequency of Dubai crude prices is denominated in US dollars, while Kuwait stock market closing index is sourced from Kuwait stock exchange.

4. EMPIRICAL RESULTS AND FINDINGS

The study follows the analysis process specified from the model specification. At first, we considered the unit root test to establish the stationarity result of the variables considered in the study. The augmented dickey fuller (ADF) and Phillip-Perron (PP) test were considered (Dickey and Fuller, 1979; 1981; Phillips and Perron, 1988).

4.1. Unit Root Test

For the unit root test, we considered the two-tail hypothesis for the test. The null hypothesis for the unit root test is stated as Y_t = (H_0: $\beta = 0$), while the alternative hypothesis is written as Y_t = (H_0: $\beta < 0$). In this specification, the adjustment speed parameter (β) is assumed to operate continuously and at a constant rate, irrespective of the magnitude of the deviation from equilibrium. The ADF test is performed both with and without a trend component (Elian and Kisswani, 2018). The unit root test is also considered to reveal the mean reverting capacity of the variables in the long-run.

From the result in Table 1, it is estimated that the variables are stationary after first order of integration (I[1]) consider with and without trend at 1% significance level. This implies that the variables are not stationary at levels ([I(0)]), and their deviations do not mean reverting in the long-run. Therefore, there is a need

Table 1: Unit root test results

Stationarity	ADF			
	SM		DOP	
	No trend	With trend	No trend	With trend
Level	1.648 [10] (0.975)	−1.619 [10] (0.774)	0.257 [10] (0.757)	−1.270 [10] (0.885)
1st difference	−7.087 [10] (0.000)***	−7.300 [10] (0.000)***	−6.580 [10] (0.000)***	−7.145 [10] (0.000)***
	PP			
Level	1.611 [10] (0.973)	−1.642 [10] (0.765)	0.198 [10] (0.740)	−1.313 [10] (0.875)
1st difference	−7.093 [10] (0.000)***	−7.304 [10] (0.000)***	−6.603 [10] (0.000)***	−7.138 [10] (0.000)***

The brackets [] contains the optimal lag values selected using the AIC, and () contains the probability values. ***Implies that the probability values significance level at 1%

for long-run cointegrating estimation which the ARDL test is adopted for.

4.2. Long-Run Cointegrating Test

The null hypothesis of the ARDL bounds test is stated as no long-run cointegration between the variables if the F-Statistic is less than both the upper and lower bounds class (i.e., $\beta < I[0]$ and $I[1]$). The alternative hypothesis is stated as there is a long-run cointegrating relationship between the variables (Stock Market returns and Oil Price in Kuwait), if the F-statistic is greater than the lower and upper bounds class (i.e., $\beta > I[0]$ and $I[1]$). The ARDL Bounds test result shows that the F-statistic is less than both the lower and upper bounds at all significance levels. This implies that there is no long-run cointegrating relationship among the variables (stock market returns and oil price) in Kuwait. The implication of this is that, in estimating the impact of oil price shocks on stock market returns in Kuwait, only the short-run result will be reported. The error correction coefficient is rightly signed with a lower negative sign of 0.19 but insignificant, which implies a lower rate of convergence to equilibrium in the long-run. The ARDL test result is presented in Table 2 below.

4.3. ARDL Short-Run Estimate of Oil Price Shocks Impact on Stock Market Returns

The ARDL short-run results are presented in table 3. For the short-run impact of oil price shocks on stock market returns in Kuwait, an optimal lag of 3 was selected by the AIC. This indicates that the study accounts for the impact of shocks in oil prices within 4 days. From the result, it is established at the immediate, oil price shocks impact on stock market returns is positive and significant. That is, a 1% change in oil price, stock market returns increase by 97% immediately after the changes in oil price in Kuwait. At lag one, the impact of oil price remains insignificantly positive on Kuwait stock market returns. However, the magnitude of the positive impact is less than the immediate impact at time lag zero. The implication of the result is that, for a 1% change in oil price, there is about 2.5% increase in Kuwait stock market returns. In the 2nd day, following the result at an optimal lag of two, the result shows that oil price impact on Kuwait stock market returns is negative but insignificant. The implication of this is that a 1% change in oil price brings about a 1.4% decrease in stock market returns. This could be due to a decrease in investor sentiment in the Kuwait stock market. Considering the result at an optimal lag of 3, the result shows that the impact of oil price on the Kuwait stock market returns is insignificantly positive. This implies that the stock market regains a positive investor sentiment in the returns on investment in the Kuwait economy.

Table 2: ARDL cointegration bounds test

K	Lags	F-statistics
1	(2,2)	1.76
Bounds critical value (%)	Lower bound	Upper bound
1	8.74	9.63
5	6.56	7.3
10	5.59	6.26

The lags are determined by the akaike information criterion (AIC)

Table 3: Short-run ARDL estimation results

Variable	Coefficient	Standard error	t-statistic	Probability*
LSM_{t-1}	−0.006	0.035	−0.162	0.872
LSM_{t-2}	0.009	0.035	0.258	0.797
$LDOP_{t}$	0.971***	0.020	48.011	0.000
$LDOP_{t-1}$	0.025	0.028	0.872	0.384
$LDOP_{t-2}$	−0.014	0.028	−0.494	0.621
$LDOP_{t-3}$	0.016	0.020	0.804	0.422

The lags are determined by the AIC optimal lag selection. ***Implies significance level at 1%

The empirical results of this study reveal that there is no long-run cointegration between oil prices and the Kuwait stock market, confirming the transient nature of oil price impacts on Kuwait's equity market. This finding diverges from Elian and Kisswani (2018), who found a significant long-run relationship using Brent and WTI prices for the period 2000-2015. The divergence may reflect structural shifts post-2015, including COVID-19, changes in global oil dynamics, and increased intervention by Kuwait's sovereign wealth fund, which buffers the economy from persistent oil price volatility.

In contrast to the absence of a long-term relationship, the study finds a strong and statistically significant positive impact of oil price shocks on stock returns in the short run. This aligns with Arouri et al. (2011) and Arouri and Rault (2012) who found positive short-term effects of oil prices on GCC stock markets, and with Mohanty et al. (2011) who saw that oil prices significantly contribute to stock return volatility in oil-dependent GCC countries. However, unlike the UAE and Qatar, where responses to oil shocks were more consistent, Kuwait's market shows a mixed pattern across lag periods, likely due to delayed investor reactions and policy smoothing mechanisms.

The positive but diminishing effects across lag periods (1-3 days) suggest that Kuwait's market reacts immediately to oil shocks, but this effect loses strength quickly. Fayyad and Daly (2011) similarly observed that Kuwait had lower responsiveness compared to its GCC peers, attributing this to the stabilizing effect of government policy and limited market depth. These findings are reinforced by Boubaker and Raza (2017), who noted that Kuwait's sovereign wealth fund may reduce the market's exposure to oil volatility.

Additionally, sectoral sensitivity could explain the variation in impact over time. Studies by Sadorsky (2012) and Basher et al. (2018) emphasize that financial and energy sectors are particularly responsive to oil price changes. According to Alotaibi (2024) Kuwait's stock market, being highly concentrated in these sectors expected to mirror this sensitivity. However, without disaggregated data, the precise sectoral transmission cannot be verified in this study, pointing to an important avenue for future research. The absence of long-run cointegration is also theoretically consistent with the Efficient Market Hypothesis in a semi-strong form, which posits that markets quickly absorb added information. Yet, the empirical evidence of lagged effects and mixed responses suggests that the Kuwait market may exhibit inefficiencies due to thin trading, limited foreign participation, and high government involvement, consistent with (Al-Khazali et al., 2014).

The study's use of optimal lags enhances the understanding of short-term dynamics and highlights that the market's initial response to oil price shocks is robust, but confidence or reaction decays over a few trading sessions. This nuance was not captured in earlier studies using monthly or quarterly data (e.g., Elian and Kisswani, 2018), underscoring the methodological value of high-frequency data in oil-stock market analyses.

This study's results are also consistent with broader macroeconomic findings of (Omotosho and Yang, 2024) and (Bouzidi et al., 2024; Bouzidi and Nefzi, 2024) observed that oil shocks have asymmetric and lagged effects on macroeconomic indicators in oil-exporting nations. Although the current study does not explore asymmetry directly, the variation in lagged coefficients suggests similar underlying behavioral patterns, where markets take time to process macro shocks, particularly in the presence of government intervention.

Finally, the results confirm the mixed nature of investor sentiment and speculative behavior in Kuwait's equity market. As outlined by (Degiannakis et al., 2018; Taghizadeh-Hesary and Yoshino, 2015; 2020), oil price volatility often triggers short-term market reactions based on perceived risk and return expectations. In Kuwait's context, this may be exacerbated by the market's narrow investor base and relatively low diversification, making it more reactive but less predictable over longer horizons.

4.4. Sensitivity Analysis

In addition to the analysis, we estimate the stability of the short-run model. To carry out this, we considered the Serial Correlation (Breusch-Godfrey serial correlation LM test), cumulative sum of recursive residuals (CUSUM) and CUSUM Square test by Brown et al. (1975). The results show absence of serial correlation problems following the F-statistics which is >5% significance level. This ensures that the model's estimates are not biased by omitted dynamics, enhancing the accuracy of the short-run inferences about the relationship between oil price shocks and stock market returns. Moreover, it signifies that the selected lag structure sufficiently captures the dynamics of the system, making the estimated coefficients credible for both policy and investment decision-making. The result is presented in Table 4 below.

Also, CUSUM and CUSUM Squares results in figure 1 and 2, verify model stability as their plots are within the critical 5% bound. This result verifies the short-run phenomenon of the variables employed in this study. The finding indicates that the estimated relationship between oil price shocks and stock returns did not experience significant structural breaks or regime shifts, even amidst notable global events such as the COVID-19 pandemic and oil market disruptions. This structural robustness implies that the market's reaction to oil shocks, though short-lived, is consistent and not highly susceptible to external shocks within the modeled framework. Therefore, investors and policymakers can rely on the short-run estimates to guide strategic responses to oil price volatility, while also recognizing the limits of long-term predictability in such a buffered and intervention-driven market environment.

Table 4: Breusch-godfrey serial correlation LM test

F-statistic	2.592	Probability F (2,49)	0.066
Obs*R-squared	5.645	Probability Chi-square (2)	0.070

5. DISCUSSION AND POLICY IMPLICATION

This study reveals a fundamental paradox in Kuwait's financial markets: despite oil revenues dominating 90% of government income, the stock market exhibits only ephemeral responses to oil price movements. Our ARDL analysis of high-frequency data (2015-2025) demonstrates that while oil shocks generate explosive immediate returns (97% same-day response), these effects dissipate within 72 h, with no long-run cointegration detected. These finding challenges three theoretical paradigms:

First, it contradicts the semi-strong form of the Efficient Market Hypothesis (Fama, 1970; Malkiel, 1989; 2005) by revealing persistent short-term inefficiencies driven by behavioral biases rather than information processing. Second, it questions the applicability of traditional DCF models in sovereign wealth fund-dominated markets (Jones and Kaul, 1996; Henriques and Sadorsky, 2011; Difiglio, 2014; Laitinen, 2019) where government intervention disrupts normal cash flow transmission mechanisms. Third, it exposes the limitations of standard stock valuation theory in economies (Bakshi et al., 1997; Bakshi and Chen, 1997; Bakshi and Chen, 2005) where institutional buffers decouple fundamental economic drivers from market performance.

Figure 1: CUSUM test result

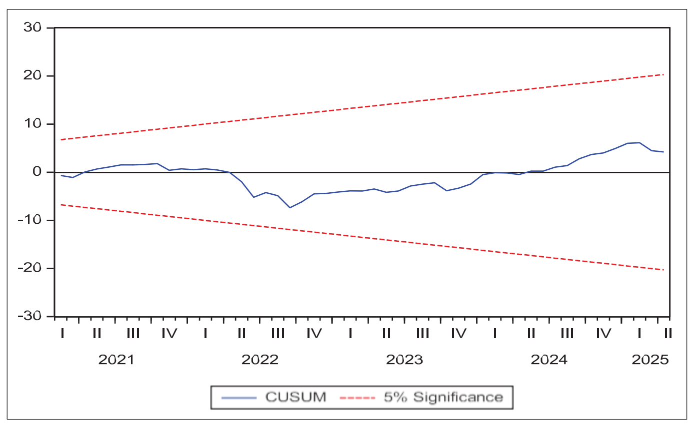
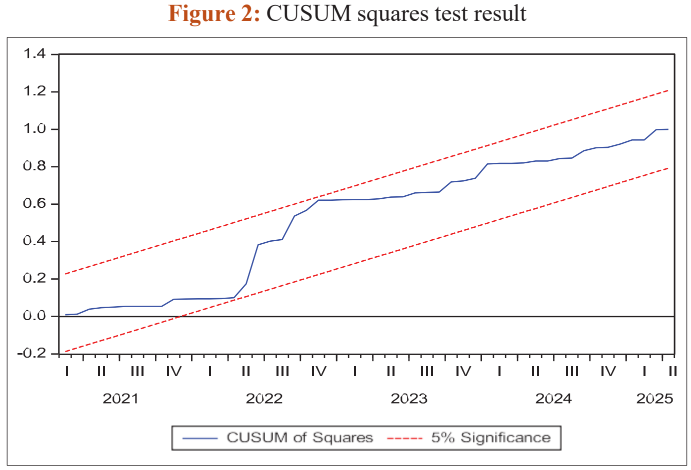


Figure 2: CUSUM squares test result



The analysis found no evidence of long-run cointegration between oil prices and stock market performance, implying that while oil is central to Kuwait's economy, its stock market does not absorb or reflect oil price changes in a sustained manner. This could be due to the presence of stabilizing policy instruments and structural buffers, including the Kuwait Investment Authority. However, in the short run, however, the market exhibits significant responsiveness to oil price movements, especially immediately after a shock. A 1% increase in oil prices led to a 97% increase in market returns on the same day, with effects tapering off over the next few days. This result highlights the relevance of investor sentiment and the speculative nature of stock trading in Kuwait, especially in a market dominated by retail investors and subject to behavioral biases.

The findings also align with literature emphasizing the weakening influence of oil shocks on financial markets due to policy adaptation and economic diversification (Huang et al., 1996; Chen et al., 2014; Demirer et al., 2020; He et al., 2022). However, Kuwait's high sectoral dependence on oil-linked industries means that even short-term shocks can have immediate but not lasting consequences. This calls for more refined policy tools that can address these quick surges in volatility. Methodologically, the use of daily data and ARDL modeling allows for a granular understanding of lag effects, offering a more nuanced picture than earlier studies that employed lower-frequency data. The absence of long-run effects combined with strong short-run volatility suggests a disjoint between economic fundamentals and market pricing in Kuwait, which could present challenges for investors relying on oil trends as predictors of equity performance.

From a financial policy perspective, the finding of this paper suggests that Kuwait Stock Market (Boursa Kuwait) is highly exposed to external shocks (Alshihab and AlShammari, 2020; Alotaibi, 2024). Thus, any drop in oil prices may lead to a dramatic drop in the general stock market index. Hence, the Kuwaiti government needs to apply effective policies to provide stability in Kuwait Stock Market, this can be accomplished by implementing solid policies to enhance the macroeconomic environment. Consequently, this study advocates for integrated policy selection on the performance of the stock exchange as well as expanding clear understanding of the relationships of the oil prices of Kuwait stock market. It is recommended that the Kuwaiti government, policy makers and the investors should estimate probable changes in oil prices to more accurately forecast the performance of Kuwait stock market.

Although Kuwait stock markets are still promising areas for international portfolio diversification, the Kuwaiti government investment policy for global investors should consider significant heterogeneous reactions in their respective financial assets. Consequently, this study also recommends that the government should pursue stabilizing the impact of oil price change. The key to such stabilization might be in the context of reducing the expected sensitivity of non-oil growth to oil-related influences over time. Finally, Policymakers should continue to monitor short-term market behavior while promoting greater market depth and diversification.

6. CONCLUSION

This study analyzes the relationship between oil price shocks and stock market performance in Kuwait, a major oil-exporting nation sensitive to global oil price fluctuations. Using ARDL model and daily data from September 2015 to May 2025, the study investigated both the short and long-run dynamics of this relationship, with particular focus on optimal lag effects. The ARDL bounds test reveals no evidence of a long-term cointegration between Dubai oil prices and the Kuwait stock market index.

The study fundamentally challenges the conventional wisdom that oil prices drive long-term equity performance in oil-dependent economies. The Kuwait case demonstrates that institutional architecture especially sovereign wealth fund interventions which can effectively decouple commodity dependence from market dynamics. However, this decoupling comes at a cost: persistent market inefficiencies, limited price discovery, and reduced international competitiveness. As Kuwait pursues its Vision 2035 diversification agenda, policymakers must balance market stability with the need for efficient capital allocation. The window for reform is narrowing as global energy transitions accelerate, making immediate action on these recommendations critical for Kuwait's financial market development.

Future research should explore sector-level responses and incorporate global uncertainty variables to better capture the full scope of oil price effects on financial markets in oil-dependent economies.

REFERENCES

Agarwalla, S.K., Varma, J.R., Virmani, V. (2021), The impact of COVID-19 on tail risk: Evidence from Nifty index options. Economics Letters, 204, 109878.

Ahmad, K., Shah, N. (2024), Factors influencing oil demand among ten leading countries: Empirical evidences. Journal of Energy and Environmental Policy Options, 7(3), 52-59.

Alawadhi, S.A., Longe, A.E. (2024), Oil price fluctuation and their impact on the macroeconomic variables: The case of Kuwait. International Journal of Energy Economics and Policy, 14(3), 375-386.

Alexander, J. (2025), How gulf sovereign wealth funds are preparing for the energy transition. In: Mogielnicki, R., editor. A Political Economy of Sovereign Wealth Funds in the Middle East and Asia. Berlin: Springer Nature Switzerland. p51-79.

Al-Kandari, A., AlRoomy, M., Al-Roumi, K. (2022), The influence of the COVID-19 on the GCC stock markets. International Journal of Business and Management, 17(4), 71-97.

Al-Khazali, O., Lean, H.H., Samet, A. (2014), Do Islamic stock indexes outperform conventional stock indexes? A stochastic dominance approach. Pacific-Basin Finance Journal, 28, 29-46.

Al-Mutairi, A., Al-Falah, A., Naser, H., Naser, K. (2022), Stock market reaction to the COVID-19 pandemic: Evidence from Kuwait. The Journal of Asian Finance, Economics and Business (JAFEB), 9(3), 327-335.

Alotaibi, T.A. (2024), Understanding the Impact of Dual shock on Kuwait Stock Market. Technological University Press. Available from: https://arrow.tudublin.ie/busdoc/55

Alshihab, S., AlShammari, N. (2020), Are kuwaiti stock returns affected by fluctuations in oil prices? International Journal of Financial

Research, 11(6), 1-9.

Apergis, N., Miller, S.M. (2009), Do structural oil-market shocks affect stock prices? Energy Economics, 31(4), 569-575.

Arouri, M.E.H., Bellalah, M., Nguyen, D.K. (2011), Further evidence on the responses of stock prices in GCC countries to oil price shocks. International Journal of Business, 16(1), 91-112.

Arouri, M.E.H., Rault, C. (2012), Oil prices and stock markets in GCC countries: Empirical evidence from panel analysis. International Journal of Finance and Economics, 17(3), 242-253.

Bakshi, G., Cao, C., Chen, Z. (1997), Empirical performance of alternative option pricing models. The Journal of Finance, 52(5), 2003-2049.

Bakshi, G., Chen, Z. (2005), Stock valuation in dynamic economies. Journal of Financial Markets, 8(2), 111-151.

Bakshi, G.S., Chen, Z. (1997), An alternative valuation model for contingent claims. Journal of Financial Economics, 44(1), 123-165.

Basher, S.A., Haug, A.A., Sadorsky, P. (2018), The impact of oil-market shocks on stock returns in major oil-exporting countries. Journal of International Money and Finance, 86, 264-280.

Bashir, M.F. (2022), Oil price shocks, stock market returns, and volatility spillovers: A bibliometric analysis and its implications. Environmental Science and Pollution Research, 29(16), 22809-22828.

Bilal, A., Ahmed, S., Zada, H., Thalassinos, E., Nawaz, M.H. (2025), How do asymmetric oil prices and economic policy uncertainty shapes stock returns across oil importing and exporting countries? Evidence from instrumental variable Quantile regression approach. Risks, 13(5), 93.

Bley, J., Chen, K.H. (2006), Gulf cooperation council (GCC) stock markets: The dawn of a new era. Global Finance Journal, 17(1), 75-91.

Boubaker, H., Raza, S.A. (2017), A wavelet analysis of mean and volatility spillovers between oil and BRICS stock markets. Energy Economics, 64, 105-117.

Bouhmidi, S. (2024), The sovereign wealth funds and monetary stabilization role on financial crisis. International Journal of Economic Performance, 7(1), 104-122.

Bouzidi, F.M., Nefzi, A.A. (2024), The impact of foreign bank entry on the efficiency and sustainability of domestic banks in developing countries: A meta-frontier approach. Sustainability, 16(24), 10932.

Bouzidi, F.M., Nefzi, A.A., Al Yousif, M. (2024), Impact of international oil price shocks and inflation on bank efficiency and financial stability: Evidence from Saudi Arabian banking sector. Journal of Risk and Financial Management, 17(12), 543.

Brown, R.L., Durbin, J., Evans, J.M. (1975), Techniques for testing the constancy of regression relationships over time. Journal of the Royal Statistical Society Series B: Statistical Methodology, 37(2), 149-163.

Castro, C., Jiménez-Rodríguez, R. (2024), The impact of oil shocks on the stock market. Global Finance Journal, 60, 100967.

Cheikh, N., Ben Naceur, S., Kanaan, O., Rault, C. (2018), Oil prices and GCC stock markets: New evidence from smooth transition models. IMF Working Papers, 18(98), 1.

Chen, W., Hamori, S., Kinkyo, T. (2014), Macroeconomic impacts of oil prices and underlying financial shocks. Journal of International Financial Markets, Institutions and Money, 29, 1-12.

Cherif, R., Hasanov, F. (2019), The Return of the Policy that Shall not be Named: Principles of Industrial Policy. International Monetary Fund. Available from: https://books.google.com/books?hl=en&lr=&id=ckyzeaaaqbaj&oi=fnd&pg=pa2&dq=cherif+%26+hasanov,+2019&ots=asebyjerlf&sig=vvmbi26a5lkipeytxvdloawpefw

Das, D.K. (2009), Sovereign-wealth funds: The institutional dimension. International Review of Economics, 56(1), 85-104.

Das, D.K. (2012), Sovereign-wealth funds-a paradigm shift in capital flows in the global economy. In: Research Handbook on Hedge Funds, Private Equity and Alternative Investments. Massachusetts: Edward Elgar Publishing.

Das, S., Kumar, A. (2021), Long-term dependency between sovereign bonds and sectoral indices of India: Evidence using Hurst exponent and wavelet analysis. Managerial Finance, 47(10), 1448-1464.

Degiannakis, S., Filis, G., Arora, V. (2018), Oil prices and stock markets: A review of the theory and empirical evidence. The Energy Journal, 39(5), 85-130.

Demirer, R., Gupta, R., Pierdzioch, C., Shahzad, S.J.H. (2020), The predictive power of oil price shocks on realized volatility of oil: A note. Resources Policy, 69, 101856.

Dickey, D.A., Fuller, W.A. (1979), Distribution of the estimators for autoregressive time series with a unit root. Journal of the American Statistical Association, 74(366a), 427-431.

Dickey, D.A., Fuller, W.A. (1981), Likelihood ratio statistics for autoregressive time series with a unit root. Econometrica: Journal of the Econometric Society, 49, 1057-1072.

Difiglio, C. (2014), Oil, economic growth and strategic petroleum stocks. Energy Strategy Reviews, 5, 48-58.

Dizmen, S. (2021), Oil price scenarios: Economic and fiscal impacts on the kuwait economy. In: Adıgüzel Mercangöz, B., editor. Handbook of Research on Emerging Theories, Models, and Applications of Financial Econometrics. Berlin: Springer International Publishing. p109-140.

Dokas, I., Oikonomou, G., Panagiotidis, M., Spyromitros, E. (2023), Macroeconomic and uncertainty shocks' effects on energy prices: A comprehensive literature review. Energies, 16(3), 1491.

Elian, M.I., Kisswani, K.M. (2018), Oil price changes and stock market returns: Cointegration evidence from emerging market. Economic Change and Restructuring, 51(4), 317-337.

Fama, E.F. (1970), Efficient capital markets: A review of theory and empirical work. The Journal of Finance, 25(2), 383-417.

Fasanya, I.O., Oyewole, O.J., Adekoya, O.B., Badaru, F.O. (2021), Oil price and stock market behaviour in GCC countries: Do asymmetries and structural breaks matter? Energy Strategy Reviews, 36, 100682.

Fayyad, A., Daly, K. (2011), The impact of oil price shocks on stock market returns: Comparing GCC countries with the UK and USA. Emerging Markets Review, 12(1), 61-78.

Hamilton, J.D. (1983), Oil and the macroeconomy since World War II. Journal of Political Economy, 91(2), 228-248.

Hamilton, J.D. (2008), Oil and the macroeconomy. The New Palgrave Dictionary of Economics, 2, 1-17.

He, Z., Chen, J., Zhou, F., Zhang, G., Wen, F. (2022), Oil price uncertainty and the risk-return relation in stock markets: Evidence from oil-importing and oil-exporting countries. International Journal of Finance and Economics, 27(1), 1154-1172.

Henriques, I., Sadorsky, P. (2011), The effect of oil price volatility on strategic investment. Energy Economics, 33(1), 79-87.

Herranz, E. (2017), Unit root tests. WIREs Computational Statistics, 9(3), e1396.

Huang, R.D., Masulis, R.W., Stoll, H.R. (1996), Energy shocks and financial markets. Journal of Futures Markets, 16(1), 1-27.

Jones, C.M., Kaul, G. (1996), Oil and the stock markets. The Journal of Finance, 51(2), 463-491.

Kilian, L. (2008), The economic effects of energy price shocks. Journal of Economic Literature, 46(4), 871-909.

Kilian, L. (2014), Oil price shocks: Causes and consequences. Annual Review of Resource Economics, 6(1), 133-154.

Kim, G., Vera, D. (2022), The effect of oil price fluctuation on the economy: What can we learn from alternative models? Journal of Applied Economics, 25(1), 856-877.

Kisswani, K.M. (2023), Investigating the effects of COVID-19 pandemic on Kuwait stock return:(A) symmetric time-varying evaluation. Journal of Financial Reporting and Accounting, 23, 2104-2117.

Kisswani, K.M., Elian, M.I. (2017), Exploring the nexus between oil prices and sectoral stock prices: Nonlinear evidence from Kuwait stock exchange. Cogent Economics and Finance, 5(1), 1286061.

Kozhanov, N.A. (2024), Political economy of Kuwait through the prism of its hydrocarbon sector. In: The Making of Contemporary Kuwait. London: Routledge. p157-175.

Kruse, T., Mohnen, M., Sato, M. (2024), Do financial markets respond to green opportunities? Journal of the Association of Environmental and Resource Economists, 11(3), 549-576.

Kumar, A., Mallick, S. (2024), Oil price dynamics in times of uncertainty: Revisiting the role of demand and supply shocks. Energy Economics, 129, 107152.

Laitinen, E. K. (2019), Discounted Cash Flow (DCF) as a Measure of Startup Financial Success. Available from: https://osuva.uwasa.fi/handle/10024/12030

Lee, S., Kim, Y.M. (2025), The inflationary impact of oil price shock in Korea: The role of inflation expectations. Journal of Asian Economics, 96, 101861.

Liao, S., Errico, M. (2023), Corporate investment and stock market valuation. Journal of Business Finance and Accounting, 50(3-4), 795-819.

Liew, V.K. (2004), Which lag length selection criteria should we employ? Economics Bulletin, 3(33), 1-9.

Malkiel, B.G. (1989), Efficient market hypothesis. In: Eatwell, J., Milgate, M., Newman, P., editors. Finance. London: Palgrave Macmillan UK. p127-134.

Malkiel, B.G. (2005), Reflections on the efficient market hypothesis: 30 years later. The Financial Review, 40(1), 1-9.

Merza, E., Almusawi, S. (2016), Factors affecting the performance of Kuwait Stock Market. Journal of Sustainable Development, 9(5), 23-32.

Mohanty, S.K., Nandha, M., Turkistani, A.Q., Alaitani, M.Y. (2011), Oil price movements and stock market returns: Evidence from Gulf Cooperation Council (GCC) countries. Global Finance Journal, 22(1), 42-55.

Omotosho, B.S., Yang, B. (2024), Oil price shocks and macroeconomic dynamics in resource-rich emerging economies under regime shifts. Journal of International Money and Finance, 144, 103082.

OPEC. (2025), World Oil Outlook 2025 (First). Austria: Organization of the Petroleum Exporting Countries.

Phillips, P.C., Perron, P. (1988), Testing for a unit root in time series regression. Biometrika, 75(2), 335-346.

Sadorsky, P. (2012), Correlations and volatility spillovers between oil prices and the stock prices of clean energy and technology companies. Energy Economics, 34(1), 248-255.

Shehabi, M. (2020), Diversification effects of energy subsidy reform in oil exporters: Illustrations from Kuwait. Energy Policy, 138, 110966.

Taghizadeh-Hesary, F., Yoshino, N. (2015), Macroeconomic effects of oil price fluctuations on emerging and developed economies in a model incorporating monetary variables. Economics and Policy of Energy and the Environment, 2, 51-75.

Taghizadeh-Hesary, F., Yoshino, N. (2020), Sustainable solutions for green financing and investment in renewable energy projects. Energies, 13(4), 788.

Waheed, R., Wei, C., Sarwar, S., Lv, Y. (2018), Impact of oil prices on firm stock return: Industry-wise analysis. Empirical Economics, 55(2), 765-780.