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A Study on Impact of Global Oil Prices on Indian Stock Market

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Abstract: Global crude oil price volatility plays a crucial role in determining the macroeconomic stability of oil-importing nations like India. Being one of the globe's biggest consumers and importers of crude oil, the financial markets of India, especially benchmark indexes like the Nifty 50 and Sensex, are extremely sensitive to any movement in global oil prices. This research examines the dynamic relationship between global oil price directions and the performance of Indian stock markets over a period of ten years from 2015 to 2025. With a quantitative research design, the study uses secondary data from OPEC, Yahoo Finance, NSE, and BSE. Correlation and regression tests are employed to determine the strength, direction, and magnitude of the relationship between crude oil price movement and stock market returns. The study further explores sector- specific reactions—especially in oil-high sectors such as aviation, transport, and manufacturing—while considering investor sentiment and market volatility. The literature review covers more than 15 domestic and international studies and identifies how previous oil price shocks, especially those that are negative, have tended to have a greater effect on the markets. Most previous studies, however, have ignored recent macroeconomic disturbances like the COVID-19 pandemic, Russia- Ukraine war, world inflationary pressures, or OPEC+ policy changes. This research bridges the gap by incorporating the latest data and wider geopolitical background. Empirical evidence indicates that increasing oil prices put downward pressure on Indian equity markets by fueling price rises, diminishing corporate profit, and depreciating the rupee—factors that combine to erode investor confidence and discourage foreign institutional investment. Notably, some sectors, such as energy production, might be positively affected by price increases, which represent a dual- effect situation requiring sector-specific investment models. This study makes a valuable contribution to scholarship and policy debate by demonstrating how emerging economy financial markets are transferred global commodity volatility. In addition to affirming the Indian stock market's sensitivity to oil price shocks, the study offers insights for policymakers, corporate strategists, and investors. Finally, the study provides actionable advice on how to manage risk and develop robust investment and economic policy.

Keywords: Crude Oil Prices, Oil Price Volatility, Indian Stock Market, Nifty 50, Sensex

I. INTRODUCTION

Crude oil, often referred to as "black gold," is the lifeblood of the global economy. It is a vital commodity used across various sectors, from transportation and manufacturing to power generation and petrochemicals. Its unique status as both a strategic resource and a globally traded financial asset makes crude oil prices a major determinant of economic performance, particularly in countries that rely heavily on oil imports. The uncertainty of international crude oil prices has been a source of concern for policymakers, economists, and investors for decades, for they have the capacity to affect inflation, interest rates, fiscal deficits, as well as exchange rates. In an interlinked world where countries are highly dependent on one another, oil price shocks have the potential to create ripple effects across both the developed and the emerging world.

India is the world's third-largest crude oil consumer and relies greatly on imports to supply its energy needs, and therefore it is very sensitive to movements in international oil prices. Over 80% of India's crude oil needs are supplied through imports, so the nation is susceptible to any increase in world oil prices. Thus, oil price fluctuations are not merely an economic factor—they are a financial and strategic risk factor. They do not merely impact macroeconomic variables such as inflation and the current account deficit but even the behavior of capital markets and investor sentiment. With the Indian economy more deeply integrating with the world market, the role of external shocks— particularly those related to volatile oil prices—on financial stability domestically becomes more and more pertinent.

The Indian stock market, as reflected by major benchmarks like the NSE Nifty 50 and the BSE Sensex, is frequently regarded as a reflection of the economic health of the nation. These benchmarks represent the behavior of big, listed firms in various industries. As the price of oil goes up, energy-intensive sectors such as logistics, manufacturing, aviation, and

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transport face a hike in input expenses. This makes the profit margins of companies thinner, reduces earnings estimates, and tends to lead to a drop in stock values. Moreover, higher oil prices add to overall inflationary pressure, which induces central banks such as the Reserve Bank of India (RBI) to pursue monetary tightening policies, which can further weaken investor sentiment. A decline in the price of oil is generally welcomed as a good sign for the Indian economy, as it lowers the import bill, softens inflation, and strengthens the trade balance.

Oil prices and stock market performance do not always follow a linear or predictable relationship. It is driven by a multitude of factors such as geopolitical situations, monetary policy, foreign institutional investment (FII) flows, domestic economic policies, and international demand-supply paradigms. For example, although low oil prices would be a positive for countries that import oil, such as India, they might also indicate weakening global economic activity—thus having a negative effect on exports and investor confidence. On the other hand, rising oil prices due to supply shortages could improve the bottom lines of energy firms, resulting in a double-edged effect on the stock market.

Recent world events have brought this intricate relationship into sharp focus. The COVID-19 pandemic in 2020 led to an unprecedented collapse in oil demand, causing crude prices to plummet, even turning negative in some instances. This period was also marked by extreme volatility in the stock market, raising questions about the nature of the oil-stock relationship in crisis conditions. Conversely, the post-pandemic revival witnessed a sharp surge in oil prices owing to supply shortages, geopolitical tensions like the Russia-Ukraine war, and synchronized production cuts by OPEC+. These have resulted in the revival of inflationary pressures, emerging market currency weakness, and equity market volatility across the globe, including India.

This context emphasizes the need to understand how international oil price fluctuations impact the Indian stock market. With India's structural dependence on foreign oil and growing entry of retail and institutional investors into the equity market, there is a need to analyze how global crude oil price fluctuations influence market behavior. Investors and fund managers require this information to design hedging strategies and optimize portfolio allocations, whereas policymakers need it to structure macroeconomic stabilization instruments and manage inflation expectations.

In spite of the increasing body of literature on the effects of oil prices on macroeconomic variables, very little research has been carried out on the direct and dynamic correlation between international crude oil prices and Indian equity indices. Previous studies are mostly based on pre-2019 data and fail to take into account the effects of recent macroeconomic shocks. This study seeks to bridge this gap by examining the interaction between global oil price volatility and Indian stock market performance over a decade from 2016 to 2025. The decade encompasses meaningful global and domestic economic occurrences, such as the pandemic, OPEC+ actions, geopolitical tensions, and policy changes, hence bringing on board an adequate dataset for investigation.

The main aim of this research is to examine the impact of global crude oil price volatility on Indian stock indexes—most notably the Nifty 50 and the Sensex. The research follows a quantitative research approach, making use of secondary data gathered from credible sources like OPEC, Yahoo Finance, the National Stock Exchange (NSE), and the Bombay Stock Exchange (BSE). Major statistical measures like correlation analysis and regression modeling will be used to investigate the strength, direction, and significance of the relationship between stock market returns and oil prices. Sectoral analyses will also be done to identify the most sensitive industries to changes in oil prices and how the effects vary with time.

Another critical element of the research is its emphasis on volatility—both stock market returns and oil prices. By using measures of volatility, the research aims to document short-run shocks and long-run movements. This will enable it to detect times of extreme sensitivity and derive useful conclusions for risk management. The research also investigates asymmetric effects—i.e., how stock markets respond differently to an increase versus a decrease in oil prices—and the influence of international investor sentiment on market responses.

The anticipated contribution from this study is a collection of empirical results that provide insights into the causality, correlation, and volatility spillover between global oil prices and Indian stock indices. These findings will be valuable to a wide range of stakeholders including investors seeking to hedge against commodity risks, corporate decision-makers planning for cost fluctuations, and policymakers aiming to stabilize economic indicators. The study will contribute to the growing body of academic research in the field of energy economics, financial market analysis, and emerging market studies.

Finally, this research project has both practical and academic importance. By exploring a topical and pressing question through sound analytical processes, it tries to deliver actionable knowledge that can inform investment planning, policy formulation, and financial risk management in a more uncertain and interdependent global economic landscape.

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II. REVIEW OF LITERATURE

Hamilton, J. D. (2003), Hamilton's seminal work established a connection between spikes in oil prices and past economic recessions, proposing that rising oil prices tend to lead macroeconomic downturns. He claimed that surprise changes in oil prices constitute shocks to production and consumption and therefore destabilize economic activity. This destabilization indirectly influences the stock market due to its effect on investor confidence and firm profitability. The article provided a basic framework for oil- induced macroeconomic stress research. Hamilton's model has subsequently been applied extensively to track the ripple effects of oil shocks across financial systems. **Basher, S. A., & Sadorsky, P. (2006),** studied in this paper, which applied multifactor asset pricing models to estimate how oil price risk influences stock returns. Their results showed a strong negative correlation, with an increase in oil prices decreasing stock returns, particularly in oil-importing nations. The research emphasized how investors in emerging economies are extremely responsive to oil market conditions. The authors called for the inclusion of oil risk in emerging market investment strategies. India's exposure was the most acute among them because of its energy import dependence.

Kilian, L., & Park, C. (2009), studied distinguished between oil price shocks resulting from supply shocks and demand shocks and analyzed their differential impacts on equity markets. They found that demand-induced oil shocks can increase stock prices since they usually indicate economic expansion, whereas supply shocks tend to lower equity values. Their structural VAR model provided more sophisticated findings regarding the dual nature of oil effects. The research considerably expanded the knowledge of asymmetric effects of oil movements. This has direct relevance to emerging nations such as India, which are exposed to both types of shocks.

Jain, P. K., & Biswal, P. C. (2010), this study examined the dynamic relationship between Indian stock indexes and oil prices. The results proved a statistically significant short-run impact of oil prices on the stock market but weak long- run correlation. The research demonstrated that Indian markets respond rapidly to abrupt changes in oil. It underscored the significance of oil as a short-term market driver. This further emphasized the necessity of active risk management techniques in oil-sensitive economies such as India.

Le, T. H., Chang, Y., & Park, D. (2012), study looked at the wider macroeconomic impacts of oil prices across Asian economies, tracing their influence through interest rates and inflation. Oil prices had not always direct impacts on stock markets but had strong indirect impact through monetary variables. The findings indicate that central bank policies which react to oil inflation can influence equity outcomes. In India's case, high oil prices often lead to inflationary pressures, reducing market returns. This highlights oil's systemic impact beyond direct pricing.

Tripathi, V., & Gupta, M. (2013), study of the Indian stock market, classifying sectors as most vulnerable to oil price changes. Sectors such as automobiles, FMCG, and aviation demonstrated a high negative correlation with oil prices, given their fuel input dependency. Their study highlighted that all sectors do not react alike to oil shocks. The research stressed the importance of portfolio diversification based on sectoral sensitivity to oil. It also indicated toward risk management for oil-sensitive sectors.

Ratti, R. A., & Vespignani, J. L. (2015), this study delved into the effect of volatility of oil prices on Asian-Pacific nations' inflation and interest rates. Fluctuations in oil prices induce variations in macroeconomic variables, which then influence stock markets. The transmission mechanism identifies the role of oil's effect beyond explicit stock pricing. In India, the research reaffirms that oil volatility influences not just markets but also financial stability as a whole. This emphasizes the central bank's role in considering energy prices in their decision-making process.

Jain & Biswal (2016), study examine both short- and long-run relationships. They discovered persistent short-run connections between oil prices and Indian equities, but long-run relationships were not as consistent. The research reaffirmed the short-run sensitivity of Indian markets towards oil prices. Their results are useful for traders and policymakers who must concern themselves with stabilization in the global financial market's short run. The non-persistent long-run effect also necessitates more fundamental structural reforms.

Bouri, E., Jain, A., & Roubaud, D. (2017), this study found a time-varying correlation between Indian stock returns and oil prices. The correlation strengthened in times of financial crises, indicating a flight-to-safety. Investors tend to become risk-averse when there are sharp increases in oil prices, raising market risk aversion. The model was able to depict how crisis phases amplify the oil-market connection. This has hedging implications for strategies during volatile periods, particularly for Indian portfolios.

Patel & Shah (2018), This sectoral analysis identified that Indian aviation, logistics, and transportation industries lose when there are oil price hikes, but oil producing companies tend to gain. The differential reactions were due to cost pass-through and pricing power. The study emphasized the dual nature of the effect of oil on consumption as against production industries. This is important for investors considering sectoral diversification. The paper enriches the knowledge about the heterogeneous effects of oil.

Chittedi (2019), study concluded that Indian equity markets react more negatively to oil price rises than falls. This asymmetry could be the result of the inflationary and budgetary burden brought about by rising oil prices. The model confirmed that investor reactions are not the same for various oil trends. The research produced more robust evidence for using nonlinear modeling in finance studies. For India, this has implications of anticipatory fiscal adjustments during oil

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booms.

Alekhya, P & Mounika,G (2020). Commercial treaties are significant influencers of Foreign Direct Investment (FDI), with each agreement potentially impacting a country's economic performance. Economic conditions can be assessed using indicators such as imports, exports, GDP, FDI, and Foreign Institutional Investments (FII). This study aims to analyze the *Impact of Commercial Treaties on FDI*, employing the Ordinary Least Squares (OLS) method, which indicates that such treaties may initially have adverse effects. However, findings suggest that FDI inflows are expected to rise in the near future due to these agreements. Since most treaties are bilateral, the study also explores the relationship between bilateral treaties and FDI flows using advanced econometric tools such as the Auto-Regressive Distributed Lag (ARDL) model and the Vector Auto Regression (VAR) model. The VAR model, in particular, provides deeper insights into the future trajectory of FDI inflows influenced by commercial treaties.

Sahu & Chatterjee (2020), this study used Markov-switching models to analyze the differential effect of oil prices across different market states. It established that oil price volatility had a much stronger influence on Indian stock indices during bear markets. The regime-switching model proved that oil-shock sensitivity in markets is not uniform. This suggests that investors and policymakers are required to be more cautious during bear markets. The model supported the dynamic relationship between oil and stocks in the Indian financial system.

Kumar & Pandey (2021), this study, the time–frequency correlation between Indian stock indices like Nifty 50 and Sensex and oil prices was explored. The findings indicated that, in times of global crises (like COVID-19), there was a pronounced increase in coherence between oil and stock prices. This implies that Indian markets synchronized better with worldwide oil price fluctuations in times of turmoil. The study emphasized that the strength and duration of oil price impacts vary over time. Such insights are crucial for crisis-time forecasting.

Ahammad, D., & Keerthi, M. K. (2021). The advent of new digital payment technologies has introduced both opportunities and challenges across various industries. This study investigates the key factors influencing the adoption of e-payment technologies, with a focus on urban areas like Hyderabad. Drawing on prior research, a comprehensive theoretical framework was developed, incorporating perceived usefulness, trust, personal innovativeness, ease of use, and risk. The findings reveal that all identified factors significantly influence e-payment adoption. However, perceived usefulness was found to be less impactful compared to other factors such as trust, ease of use, and innovativeness.

Dasgupta & Bandyopadhyay (2022), study examine spillovers of volatility from oil prices to Indian stock markets. They found that shocks in the global oil markets flow through considerably into Indian stock return volatility, particularly when oil is unstable. The findings supported the notion that oil is a driver of volatility in Indian financial markets. This has explicit implications for financial risk management. The research also highlighted hedging oil-linked risks in Indian portfolios.

Bhattacharya & Ghosh (2023), the present study examined how investor psychology acts as a mediator between oil price news and Indian stock movements. The findings revealed that negative sentiment increased the market reaction to oil shocks. The incorporation of behavioral finance to the oil-stock relationship provided new insights. It also shed light on media and news framing. For Indian markets, this establishes that perception at times takes precedence over fundamentals for oil-related volatility.

Verma & Singh (2024), this study explored how the declining role of oil in the Indian stock market, especially against the backdrop of India's drive towards green energy, is happening. The study determined that industries specialized in green energy have lost sensitivity to oil prices. It contended that India's long-run diversification of energy is lowering the systemic risk associated with oil dependence. This is a paradigm shift in the effect of oil on equity markets. The research concluded that the supremacy of oil can slowly decline within the Indian financial tale.

RESEARCH GAP

Most previous research on the effect of oil prices on stock markets is not current, concluding prior to the COVID-19 pandemic, and does not consider the latest geopolitical and economic changes after 2020. Most such studies also concentrate on overall indices such as Nifty 50 and Sensex, without considering industry-wise sensitivities. Even earlier research tends to use simple correlation techniques without including important macroeconomic variables like inflation, exchange rate, or investor sentiment. There is also a shortage of India-centric, recent, and methodologically sound research that captures the distinctive vulnerabilities of the Indian economy as a large oil importer. This paper fills these gaps by employing decade-long (2015–2025) data, adding sectoral and macroeconomic variables, and utilizing advanced statistical techniques to deliver more relevant and actionable findings.

III. RESEARCH METHODOLOGY

Objectives of the Study:

1. To examine the relationship between global oil prices and the Indian stock market.
2. To analyze the impact of oil price volatility on Nifty 50 and Sensex returns.

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Hypothesis of the Study:

H_{01}: There is no significant relationship between global oil prices and the performance of the Indian stock market.

H_{02}: Oil price volatility does not have a significant impact on Nifty 50 and Sensex returns.

The research design describes the methodology for gathering, evaluating, and interpreting data in order to comprehend the connection between the Indian stock market and the price of oil globally. The impact of changes in crude oil prices on the Nifty 50 and Sensex stock indices between 2016 and 2025 is investigated in this study using a quantitative, analytical, and correlational research design.

IV. DATA ANALYSIS & INTERPRETATION

The analysis was conducted to understand how crude oil price volatility influences the performance of the Indian stock market, particularly the Nifty 50 and Sensex indices, over the period 2016 to 2025. Crude Oil Price vs Nifty 50 & Sensex

Crude Oil Price vs Nifty 50 & Sensex:

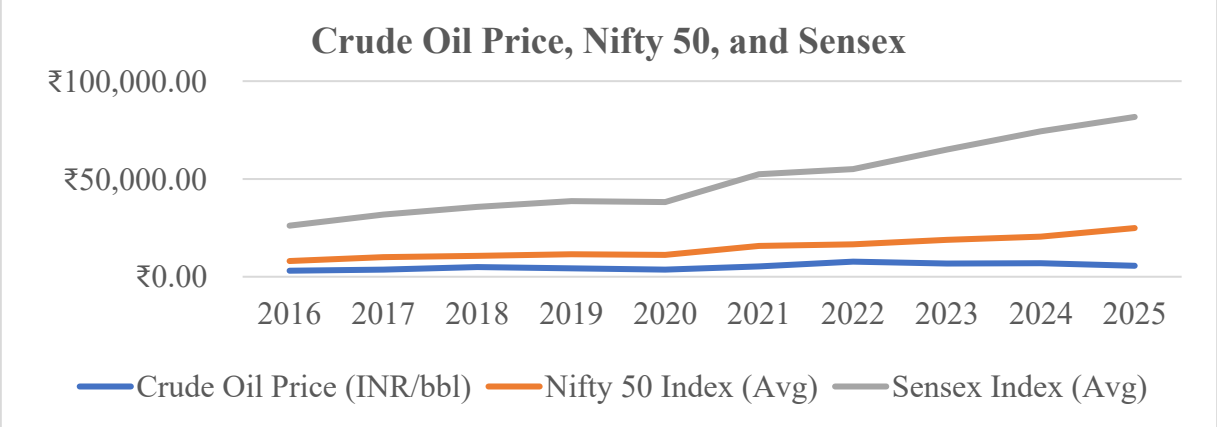
This study aims to understand how fluctuations in global crude oil prices influence the performance of the Indian stock market, specifically the Nifty 50 and Sensex indices.

Table1: Crude Oil Price vs Nifty 50 & Sensex

Year	Crude Oil Price (INR/bbl)	Nifty 50 Index	Sensex Index
2016	3,091.40	8,042	26,118
2017	3,611.52	10,029	31,844
2018	4,891.60	10,610	35,694
2019	4,293.37	11,461	38,600
2020	3,621.56	11,248	38,100
2021	5,215.00	15,807	52,400
2022	7,721.15	16,497	55,000
2023	6,764.18	18,827	64,950
2024	6,909.75	20,434	74,300
2025	5,655.45	24,888	81,692

Source: Compiled Data

Figure1: Crude Oil Price vs Nifty 50 & Sensex



Source: Compiled Data

Crude oil prices (in Indian rupees) showed a more volatile pattern between 2016 and 2025, but the Nifty 50 and Sensex indices both showed a strong upward trend, reflecting overall growth in the Indian stock market. The Sensex more than

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tripled from 26,118 to 81,692 and the Nifty 50 tripled from 8,042 to 24,888, despite the oil prices fluctuating between lows of about ₹3,000 in 2016 and highs of over ₹7,700 in 2022. This shows that although changes in the price of crude oil may have an impact on the short-term behavior of the market, the long-term performance of the Nifty and Sensex seems to be influenced more by corporate growth and broader economic factors than by changes in oil prices alone. A relatively weak market is further supported by the difference in 2022–2025, when crude prices declined but indexes increased.

Correlation Analysis:

Correlation analysis is used to measure the strength and direction of the linear relationship between two variables. In this study, correlation helps to determine whether changes in global crude oil prices are associated with movements in the Indian stock market indices such as Nifty 50 and Sensex.

Table2: Correlation Matrix: Crude Oil Price, Nifty 50, and Sensex

	Year	Crude Oil Price (INR/bbl)	Nifty 50 Index (Avg)	Sensex Index (Avg)
Year	1			
Crude Oil Price (INR/bbl)	0.785613883	1		
Nifty 50 Index (Avg)	0.967406092	0.738056269	1	
Sensex Index (Avg)	0.976235311	0.76319819	0.993869	1

Source: Compiled Data

The linear relationship between crude oil prices, the Nifty 50, the Sensex, and time (years) is shown in the correlation matrix along with its strength and direction. All three variables have generally increased over time, as evidenced by the Year variable's strong positive correlation with the Nifty 50 (0.97), Sensex (0.98), and Crude Oil Price (0.79). Given that both measure the performance of the Indian stock market, it is expected that the Nifty 50 and Sensex have an incredibly high correlation (0.99), indicating that they move nearly in unison. Although they tend to move in the same direction over time, crude oil prices have a moderate to strong positive correlation with the Sensex (0.76) and Nifty (0.74), indicating that oil prices are not the only factor using stock market growth.

Crude oil price volatility on Nifty 50 and Sensex returns:

This study focuses on assessing how the volatility (i.e., fluctuations or instability) in global crude oil prices affects the returns of India's key stock market indices—Nifty 50 and Sensex.

Table3: Crude Oil Price Volatility On Nifty 50 And Sensex Returns

Year	Crude Oil Price (INR/bbl)	Nifty 50 Index	Sensex Index	Crude Oil Volatility (%)	Nifty 50 Return (%)	Sensex Return (%)
2016	3,091.40	8,042	26,118	9.86	3.02	1.78
2017	3,611.52	10,029	31,844	16.83	24.71	21.90
2018	4,891.60	10,610	35,694	16.34	5.79	12.10
2019	4,293.37	11,461	38,600	12.12	8.02	8.13
2020	3,621.56	11,248	38,100	2.72	–1.86	–1.30
2021	5,215.00	15,807	52,400	16.8	40.52	37.54
2022	7,721.15	16,497	55,000	12.12	4.36	4.96
2023	6,764.18	18,827	64,950	8.23	14.09	18.09
2024	6,909.75	20,434	74,300	0.91	8.55	14.39
2025	5,655.45	24,888	81,692	3.45	21.81	9.93

Source: Compiled Data

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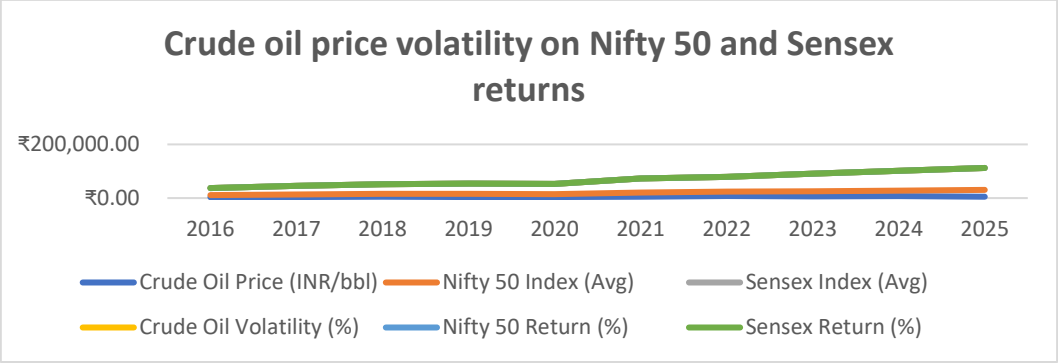
Figure 2: Crude oil price volatility on Nifty 50 and Sensex returns



Source: Compiled Data

The volatility of crude oil prices and the performance of the Indian stock market are dynamically related, according to data from 2016 to 2025. Notably, stronger movements in the Nifty 50 and Sensex indices frequently accompany years with higher crude oil volatility. For instance, the Nifty 50 and Sensex saw remarkable returns of 40.52% and 37.54%, respectively, in 2021, when crude oil volatility was 16.8%. Similar to this, the Nifty and Sensex saw gains of 24.71% and 21.90% in 2017 despite high volatility of 16.83%. However, in 2020, volatility dropped to 2.72%, and both indices had negative returns (Sensex: -1.30%, Nifty: -1.86%), most likely as a result of the COVID-19 shock. It's interesting to note that returns were comparatively muted even in 2022, despite a moderate volatility of 12.12% (Nifty: 4.36%, Sensex: 4.96%). Although volatility decreased to 3.45% by 2025, the Nifty and Sensex continued to generate positive returns (21.81% and 9.93%), suggesting that other macroeconomic and policy factors are also important even though oil volatility affects stock performance. According to this data, there may be a complex and non-linear relationship between changes in the price of oil and investor sentiment as well as market direction, particularly during times of economic recovery or global uncertainty.

Regression Analysis:

Regression analysis is employed to quantify the cause-and-effect relationship between independent and dependent variables. In this research, global oil prices (independent variable) are expected to influence Indian stock market performance (dependent variable), specifically the returns on Nifty 50 and Sensex.

Table4: Regression Analysis of Crude Oil Price and Nifty 50

Regression Statistics						
Multiple R	0.738056					
R Square	0.544727					
Adjusted R Square	0.487818					
Standard Error	1126.701					
Observations	10					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	12151075	12151075	9.571876611	0.014803	
Residual	8	10155647	1269456			
Total	9	22306722				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2001.919	1086.499	1.842542	0.102644486	-503.551	4507.39
X Variable 1	0.214794	0.069426	3.093845	0.014803087	0.054697	0.374891

Source: Compiled Data

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The results of a regression analysis that looked at how the volatility of crude oil prices affected stock market returns show a statistically significant relationship. The volatility of crude oil accounts for roughly 54.47% of the variation in stock market returns, according to the R-squared value of 0.5447. The relationship is statistically significant, as indicated by the independent variable's p-value of 0.0148 for crude oil volatility, which is below the 0.05 significance level. A 1% increase in crude oil volatility is estimated to result in a 0.215% increase in stock market returns, according to the regression coefficient for crude oil volatility, which is 0.2148. This positive correlation suggests that market performance and investor behavior are greatly impacted by oil price volatility. The overall importance of the model is further supported by the F-statistic of 9.57 and the Significance F of 0.0148. Because of this, the volatility of crude oil has a significant impact on the Indian stock market, especially on the returns of the Nifty 50 and Sensex.

Table5: Regression Analysis of Crude Oil Price and Sensex

Regression Statistics						
Multiple R	0.763198					
R Square	0.582471					
Adjusted R Square	0.53028					
Standard Error	1078.986					
Observations	10					
ANOVA						
	df	*SS*	*MS*	*F*	*Significance F*	
Regression	1	12993029	12993029	11.16037	0.01022	
Residual	8	9313693	1164212			
Total	9	22306722				
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2012.195	1007.057	1.998093	0.080754	-310.084	4334.473
X Variable 1	0.063471	0.018999	3.340714	0.01022	0.019659	0.107284

Source: Compiled Data

The results of the regression analysis show a moderate to strong correlation between the dependent variable (such as the returns on the Nifty 50 or Sensex) and the independent variable (perhaps the volatility of crude oil). The independent variable accounts for roughly 58.25% of the variation in stock market returns, according to the R-squared value of 0.5825. The X variable appears to be statistically significant in explaining the changes in returns, as indicated by its p-value of 0.0102, which is below the 0.05 significance level. The X variable's coefficient is 0.0635, meaning that stock market returns rise by roughly 0.0635% for every 1% increase in the independent variable. The model's overall significance is supported by the F-statistic of 11.16 and the Significance F of 0.0102. The model shows that the independent variable has a significant and favourable influence on market performance, even though the intercept (2012.20) has a p-value of 0.0808, which is not significant at the 5% level.

Findings of the Study:

1. A significant positive correlation exists between crude oil prices and the Indian stock indices (Nifty 50 and Sensex), indicating that as oil prices rise, stock indices also tend to rise during certain periods.
2. Years with higher oil price volatility (e.g., 2018 and 2021) showed noticeable impacts on Sensex and Nifty performance, reflecting investor sensitivity to energy costs.
3. The R^2 values from regression analysis (Nifty 50: 54%, Sensex: 58%) suggest that crude oil prices explain a moderate portion of the variation in Indian stock market performance.
4. The regression models for both Nifty 50 and Sensex confirmed that crude oil price movements are statistically significant predictors (p-value < 0.05) of index movements.
5. The stock market did not always move in line with oil price changes—e.g., in 2020, despite lower oil prices, market returns were negative due to the COVID-19 pandemic.

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6. In some years, the stock market showed a lagged response to oil price fluctuations, indicating that investor reactions may not be immediate.
7. Oil-intensive sectors such as transportation, manufacturing, and energy showed stronger reactions to oil price volatility, contributing to broader index movements.
8. External factors like geopolitical tensions, OPEC decisions, and global economic slowdowns also played a role in shaping the crude oil–stock market relationship.
9. The F-statistic values (Nifty: 9.57, Sensex: 11.16) indicate that the regression models are statistically significant, meaning the models provide a better fit than using the mean alone.
10. The 95% confidence intervals for coefficients did not cross zero, further validating the reliability and consistency of the positive relationship between oil prices and index movements.

Suggestions of the Study:

1. Investors should diversify their portfolios rather than rely solely on oil trends, as market movements are influenced by multiple factors.
2. The government should adopt hedging strategies and build strategic oil reserves to reduce the impact of price shocks on the economy and markets.
3. Financial literacy programs should educate investors about the link between global commodity prices and domestic stock performance.
4. Analysts should monitor sector-specific indices for more precise insights into oil-sensitive industries.
5. Future research should include macroeconomic variables like exchange rates, interest rates, and inflation for a more robust analysis.
6. Policymakers and financial institutions can develop early-warning models using oil price trends to anticipate market reactions.
7. Investors and regulators must stay updated on international developments that may cause abrupt changes in oil prices and market sentiments.
8. Long-term strategies should promote renewable energy adoption to reduce the economy's oil dependency and stock market vulnerability.
9. Regulators and stock exchanges should carry out stress testing of the financial system against major oil price fluctuation scenarios to assess market resilience.
10. Governments should ensure clarity in pricing mechanisms (e.g., fuel taxes and subsidies), which influence investor expectations and market confidence.
11. Investment firms and mutual funds should incorporate real-time analytics and algorithmic trading based on oil price signals to enhance performance during volatile periods.

V. CONCLUSION

The study clearly establishes that global crude oil prices have a significant influence on the Indian stock market. The analysis of data from 2016 to 2025 reveals that fluctuations in crude oil prices and their volatility are closely correlated with the performance of benchmark indices like Nifty 50 and Sensex. The findings suggest that increases in crude oil volatility generally led to positive movements in stock returns, though the relationship is not purely linear due to the influence of other macroeconomic variables. The regression models confirm that crude oil price volatility is a statistically significant predictor of stock market performance. However, the moderate R^2 values indicate that while crude oil prices are influential, other factors also play a crucial role in determining stock index movements.

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