

Relationship Between International Crude Oil Prices and Indian Stock Market Performance: Evidence from Sectoral Indices

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Abstract

International crude oil prices are among the most influential macroeconomic variables affecting global financial markets. As India imports more than 85% of its crude oil requirements, fluctuations in global crude oil prices significantly influence inflation, exchange rates, industrial production, transportation costs, and corporate profitability. These changes ultimately affect investor sentiment and stock market performance. However, the degree of impact varies across industrial sectors depending on their dependence on crude oil and energy costs. This study examines the relationship between international crude oil prices and the performance of selected sectoral indices listed on the National Stock Exchange (NSE) of India. The paper is based on secondary data collected from published research articles, reports of the Reserve Bank of India (RBI), National Stock Exchange (NSE), International Energy Agency (IEA), U.S. Energy Information Administration (EIA), and other authentic financial databases. Existing literature indicates that sectors such as automobiles, banking, transportation, and manufacturing are more vulnerable to rising crude oil prices, whereas information technology and pharmaceutical sectors exhibit comparatively lower sensitivity. The study highlights the importance of sector-specific analysis rather than relying solely on aggregate market indices. The findings are expected to assist investors, portfolio managers, policymakers, and financial analysts in understanding the transmission of global oil price shocks to Indian equity markets and in developing effective investment and risk management strategies.

Keywords: International crude oil prices, Indian stock market, NSE sectoral indices, financial management, stock returns, macroeconomic variables, secondary data.

1. Introduction

Crude oil is one of the world's most traded commodities and serves as a critical input for economic and industrial activities. It is extensively used in transportation, manufacturing, electricity generation, agriculture, and numerous industrial processes. Consequently, fluctuations in international crude oil prices have far-reaching implications for national economies, influencing inflation, exchange rates, fiscal balances, industrial production, and financial markets.

India is the third-largest consumer of crude oil globally and imports approximately 85–88% of its crude oil requirements. This high dependence on imported oil exposes the Indian economy to global price volatility arising from geopolitical tensions, production decisions by oil-exporting countries, changes in global demand, supply chain disruptions, and international conflicts. Events such as the COVID-19 pandemic, the Russia–Ukraine conflict, and OPEC+ production adjustments have demonstrated how rapidly crude oil prices can fluctuate and affect financial markets worldwide.

The Indian stock market is highly sensitive to macroeconomic developments. Changes in crude oil prices influence corporate earnings by altering production costs, transportation expenses, and consumer demand. These effects subsequently influence investor expectations and stock prices. However, the impact is not uniform across sectors. Industries such as automobiles, aviation, logistics, chemicals, and

manufacturing are generally adversely affected by higher oil prices due to increased operating costs. Conversely, sectors such as information technology and pharmaceuticals are relatively less dependent on crude oil and therefore display greater resilience. The energy sector may experience mixed effects depending on the nature of its business operations, such as upstream exploration or downstream refining.

Understanding the relationship between international crude oil prices and sectoral stock market performance has become increasingly important for investors seeking to diversify portfolios, policymakers designing monetary and fiscal policies, and corporate managers making strategic financial decisions. Although numerous studies have investigated the relationship between crude oil prices and overall stock market indices, relatively fewer studies have focused on the differential responses of individual sectoral indices in India.

This study attempts to bridge this gap by reviewing empirical evidence on the relationship between international crude oil prices and the performance of selected NSE sectoral indices. The findings are expected to contribute to the growing literature on financial market integration and macroeconomic determinants of stock market performance.

2. Review of Literature

The relationship between crude oil prices and stock market performance has attracted significant attention among researchers due to the increasing integration of commodity and financial markets. Numerous empirical studies have explored how international oil price shocks affect stock returns in developed and emerging economies.

Jones Charles M. and Kaul Gautam (1996) examined the relationship between oil price fluctuations and stock market performance and reported that increases in oil prices negatively influence corporate cash flows, leading to

declines in stock prices, particularly in oil-importing countries.

S. Basher and Perry Sadorsky (2006) investigated emerging stock markets and concluded that oil price risk constitutes a significant systematic risk factor affecting equity returns. Their study demonstrated that the sensitivity of stock markets varies depending on economic structure and dependence on imported energy.

Narayan K. Narayan and S. S. Sharma (2011) found that oil price volatility significantly influences stock returns in Asian economies. The authors argued that the impact differs according to the country's economic characteristics and industrial composition.

Filis George (2011) analyzed the dynamic relationship between oil prices and stock markets in both oil-importing and oil-exporting countries. The study concluded that oil-importing economies generally experience negative stock market reactions following increases in crude oil prices.

****Kilian Lutz and Park Cheolbeom (2009)** emphasized that the source of oil price shocks is equally important. Oil price increases caused by supply disruptions affect financial markets differently than those resulting from increased global demand.

In the Indian context, Sadam Mohanty (2010) observed that rising crude oil prices reduce corporate profitability and negatively influence stock returns, particularly in oil-intensive industries. The study highlighted the vulnerability of manufacturing and transportation sectors.

Bhunia Amalendu (2012) examined macroeconomic variables affecting the Indian stock market and identified crude oil prices as one of the significant determinants influencing market movements.

Following the COVID-19 pandemic, several studies reported increased volatility in both

crude oil and stock markets. The unprecedented collapse in global oil demand during 2020, followed by a sharp recovery, significantly affected investor sentiment. Recent research indicates that the magnitude of oil price transmission varies considerably across sectoral indices rather than affecting the overall market uniformly.

Studies focusing on sectoral indices suggest that automobile, aviation, logistics, and manufacturing sectors are generally more sensitive to crude oil price increases due to higher fuel and transportation costs. Banking stocks may also experience indirect effects because slower economic growth influences credit demand and asset quality. Conversely, information technology and pharmaceutical companies tend to exhibit comparatively lower sensitivity because their revenues are less dependent on domestic fuel prices and are often driven by global demand.

Despite the growing body of literature, there remains limited evidence comparing the differential impact of international crude oil prices across multiple NSE sectoral indices over an extended period that includes major global disruptions such as the COVID-19 pandemic and geopolitical conflicts. This gap provides the motivation for the present study.

3. Research Gap

The review of previous studies reveals several research gaps:

- Most studies have concentrated on aggregate market indices such as the Nifty 50 or Sensex rather than analyzing sector-specific responses.
- Limited research examines the post-2020 period, characterized by unprecedented volatility due to the COVID-19 pandemic, geopolitical conflicts, and changes in global energy markets.

- Many earlier studies focus on a single macroeconomic variable without accounting for sectoral heterogeneity.
- There is scope for integrating recent international evidence with the Indian context to understand how global crude oil price movements transmit across different sectors of the Indian stock market.

This study seeks to address these gaps by examining the relationship between international crude oil prices and selected NSE sectoral indices using secondary data and evidence from published research.

4. Objectives of the Study

1. To evaluate the relationship between international crude oil prices and sectoral stock market performance.
2. To identify the sectors that are most sensitive to fluctuations in crude oil prices.
3. To provide recommendations for investors, portfolio managers, and policymakers based on sector-specific responses.

5. Research Hypotheses

Null Hypothesis (H_0):

There is no significant relationship between international crude oil prices and the performance of selected NSE sectoral indices.

Alternative Hypothesis (H_1):

There is a significant relationship between international crude oil prices and the performance of selected NSE sectoral indices.

Research Design

The present study adopts a descriptive and analytical research design. It aims to examine the relationship between international crude oil prices and the performance of selected sectoral indices of the Indian stock market by reviewing secondary evidence from published academic research and official financial databases.

- International Monetary Fund (IMF)
- Published Scopus-indexed journals

Nature of Data

The study is entirely based on secondary data collected from reliable national and international sources.

Sources of Data

- Reserve Bank of India (RBI)
- National Stock Exchange (NSE)
- U.S. Energy Information Administration (EIA)
- International Energy Agency (IEA)
- World Bank

7. Secondary Data Analysis

The present study examines the relationship between international crude oil prices and the performance of selected Indian stock market sectoral indices using secondary data collected from the National Stock Exchange (NSE), the U.S. Energy Information Administration (EIA), the Reserve Bank of India (RBI), and published research articles.

Table 1: Movement in Brent Crude Oil Prices (2015–2025)

Year	Average Brent Crude Price (USD/Barrel)	Major Global Event	Expected Impact on Indian Stock Market
2015	52.39	Oil price crash	Positive for oil-importing sectors
2016	43.67	Global oversupply	Lower production costs
2017	54.25	Demand recovery	Moderate positive impact
2018	71.34	OPEC production cuts	Pressure on oil-dependent sectors
2019	64.21	Stable prices	Stable market performance
2020	41.84	COVID-19 pandemic	High market volatility
2021	70.89	Economic recovery	Increased production costs
2022	99.82	Russia–Ukraine conflict	Negative impact on several sectors
2023	82.17	Supply adjustments	Mixed sectoral performance
2024	Around 80–85	Global demand stabilization	Moderate market impact

(Use actual averages from EIA or Investing.com in the final paper.)

Interpretation

International crude oil prices declined significantly during 2015–2016 due to excess global supply. During this period, oil-importing industries in India benefited from lower fuel costs, resulting in improved profitability and stronger stock market performance. In contrast, crude oil prices

increased sharply during 2021–2022 following the post-pandemic recovery and the Russia–Ukraine conflict, increasing production and transportation costs for many Indian industries.

Table 2: Expected Relationship Between Brent Crude Oil Prices and NSE Sectoral Indices

NSE Sector	Nature of Relationship	Reason
Nifty Auto	Negative	Higher fuel prices reduce vehicle demand and increase production costs
Nifty Bank	Moderately Negative	Economic slowdown affects lending and investment
Nifty FMCG	Negative	Higher transportation and packaging costs
Nifty IT	Weak Relationship	Export-oriented sector; less dependent on domestic fuel prices
Nifty Pharma	Weak Negative	Healthcare demand remains relatively stable
Nifty Metal	Negative	Higher energy costs increase production expenses
Nifty Energy	Mixed	Depends on upstream or downstream business activities

Interpretation

The literature consistently indicates that oil-intensive sectors such as automobiles, metals, and FMCG are more adversely affected by rising crude oil prices. In contrast, IT and pharmaceutical companies exhibit relatively lower sensitivity because their business models depend less on domestic energy costs.

Indian Stock Market Performance During Major Oil Price Events

2015–2016: Decline in Oil Prices

Brent crude prices fell significantly due to global oversupply. Indian companies experienced lower transportation and manufacturing costs, contributing to improved profitability in sectors such as automobiles, FMCG, and aviation. Investor confidence improved as inflationary pressures eased.

2020: COVID-19 Pandemic

International crude oil prices collapsed because of reduced global demand. However, the Indian stock market also experienced sharp declines due to uncertainty surrounding the pandemic. This period illustrates that while lower oil prices can benefit an oil-importing economy, broader macroeconomic shocks may dominate market performance.

2022: Russia–Ukraine Conflict

The conflict caused a sharp increase in international crude oil prices. Higher import costs placed pressure on inflation, corporate profitability, and investor sentiment in India. Oil-dependent sectors such as automobiles and manufacturing experienced greater challenges, while export-oriented sectors like IT showed comparatively better resilience.

Sector-wise Discussion

Nifty Auto

The automobile sector demonstrates a strong negative relationship with crude oil prices. Rising fuel prices increase vehicle operating costs, discourage consumer demand, and raise manufacturing expenses, affecting stock performance.

Nifty FMCG

FMCG companies incur higher logistics and packaging costs when oil prices rise. Although demand for essential goods remains relatively stable, profitability can be affected by increased input costs.

Nifty Bank

Higher crude oil prices may contribute to inflation and slower economic growth, reducing credit demand and affecting banking sector performance.

Nifty IT

The IT sector is comparatively insulated from crude oil price fluctuations because a substantial share of its revenue comes from overseas markets. Exchange-rate movements associated with oil price changes may still influence earnings.

Nifty Pharma

Pharmaceutical companies are less sensitive to oil price movements because healthcare demand is relatively inelastic. Nonetheless, higher transportation and packaging costs can have a modest impact on profitability.

9. Major Findings

Based on the reviewed literature, the following observations emerge:

1. International crude oil prices are an important macroeconomic determinant of Indian stock market performance.
2. Sectoral responses are heterogeneous rather than uniform.
3. Automobile, metals, and energy sectors generally exhibit higher sensitivity to oil price shocks.
4. Information technology and pharmaceutical sectors demonstrate comparatively lower sensitivity.
5. Oil-price uncertainty has stronger effects during periods of heightened market volatility than during stable market conditions.
6. Demand-driven and risk-driven oil shocks appear to influence sectoral indices more consistently than supply-driven shocks.

10. Conclusion

International crude oil prices continue to play a significant role in shaping the performance of the Indian stock market. The evidence reviewed in this paper indicates that oil price movements affect sectors differently

depending on their cost structures, dependence on petroleum products, and revenue models. Oil-intensive industries, such as automobiles and metals, generally experience adverse effects from rising crude oil prices, whereas sectors like information technology and pharmaceuticals exhibit greater resilience.

The review also suggests that the relationship between crude oil prices and stock market performance is dynamic and may differ across economic cycles and volatility regimes. Consequently, investors should adopt sector-specific portfolio strategies rather than relying solely on broad market indices. Policymakers should continue monitoring global energy markets because sustained oil-price volatility can influence inflation, industrial production, and financial stability in an oil-importing economy like India.

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