OIL PRICES AND STOCK MARKETS: A REVIEW OF THE THEORY AND EMPIRICAL EVIDENCE

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Do oil prices and stock markets move in tandem or in opposite directions? The complex and time varying relationship between oil prices and stock markets has caught the attention of the financial press, investors, policymakers, researchers, and the general public in recent years. In light of such attention, this survey provides a thorough review of both the theoretical and empirical research on the oil price/stock market relationship.

Our journey begins by reviewing theoretical transmission mechanisms between oil and stock market performance, highlighting five different channels: stock-valuation, monetary, output, fiscal, and uncertainty. Next, we look at the relationship between oil prices and stock market returns. We review and summarize key studies in this literature, differentiating between analysis at aggregate, sectoral, and firm levels; symmetric and asymmetric effects; oil-importing and oil-exporting countries; and time-varying impacts of one on the other. We then turn to review studies that look into the relationship between oil price volatility and stock market volatility. Here, we differentiate between studies based on static approaches—including those that separate out oil-importing and oil-exporting countries—and those focused on a possible time-varying relationship. Finally, our survey reviews the work on oil price and oil price volatility forecasting, using predictive information from stock market fluctuations. The paper concludes with some implications and possible avenues for future research.

The majority of papers we survey study the impacts of oil markets on stock markets, although research in the reverse direction does also exist. Overall, we find that the causal effects between oil and stock markets depend heavily on whether research is performed using aggregate stock market indices, sectoral indices, or firm-level data, and whether stock markets operate in net oil-importing or net oil-exporting countries. Some specific conclusions are the following:

1. The majority of empirical studies which use aggregate stock market indices suggest that positive oil price changes lead to negative stock market returns for oil-importing countries. The reverse holds true for the stock markets of oil-exporting economies.
2. In addition to the type of the country, there appear to be heterogeneous responses to oil price changes depending on industrial sector. In particular, oil-users show a negative relationship,

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whereas oil-related and oil-substitutes show a positive relationship. Firm-level data suggest that the impact of oil on stock returns depends also on the size of the firm, rather than solely on the sector.

3. Recent work also demonstrates that the relationship between oil and stock markets is time-varying and it driven by economic and geopolitical events.
4. Oil price volatility exercises a significant effect on stock market volatility. This does not hold true for the US market, as it is the only stock market volatility that exercises a significant effect on oil market volatility. These findings hold for both aggregate and sectorial indices.
5. Finally, there are few studies that look into forecasting oil prices and oil price volatility using stock market information. The evidence suggests that including measures of stock market performance improves forecasts of oil prices and oil price volatility.

Our thorough review has identified several gaps in the current understanding of the oil price/stock market relationship, which we outline here. Theoretically, transmission channels by which stock markets affect oil prices should be developed. On the empirical side, future research should use aggregate or sectorial stock market indices that represent actual tradable financial assets, such as index futures contracts, ETFs of stock indices, etc. There is also scope to extend this line of research using firm-level data. Another interesting area for further study is investigation of possible time-varying tail dependence between oil prices and stock market indices, or tail dependence between different stock market sectors. Even more, further research should also concentrate on the development of improved proxies for global economic activity, as well as, speculative activity. Finally, gaps in the literature on forecasting oil prices with stock market information are particularly acute. It is evident from the scarce literature in this line of research that significantly more research should be conducted on the benefit of using the information content of stock markets in forecasting both oil prices and oil price volatility. Another interesting avenue for further research is the production of density oil price and oil price volatility forecasts, based on information extracted from the stock market fluctuations.