Oil and equity index return predictability: The importance of dissecting oil price changes

As the modern global economy heavily depends on oil, the price of oil is widely thought to affect global real economic activity and consequently the global equity market. The impact of oil price fluctuations on equity markets has been of great interest to finance academics and practitioners alike. In recent research (co-authored with Georgios Skoulakis at University of British Columbia and Jinming Xue at University of Maryland), we study the impact of oil price fluctuations on international equity returns.

An oil price drop has been considered in the past to be good news as it lowers the cost of production in a significant number of sectors and allows consumers to boost their consumption. Accordingly, one could conjecture that negative (positive) oil price changes should predict higher (lower) subsequent equity returns. Prior studies document that this is indeed the case for a large number of MSCI equity indexes based on data until the mid-2000s. However, this predictive relationship has dramatically changed over the last ten years. We demonstrate that the ability of oil price change to forecast future equity returns has diminished over the sample period extending to 2015. Furthermore, using the formal structural break tests, we detect a structural break in the predictive relationship in the third quarter of 2008 for most of the G7 country MSCI index returns. This structural change is striking and begs an explanation.

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We argue that information contained in oil price changes is useful once it is suitably complemented with relevant information about oil supply and global economic activity. The key observation is that oil price changes are driven by various supply and demand shocks that fundamentally play different roles. Using the structural VAR approach and real-time available information, we obtain an oil price change decomposition into an oil supply shock, a global demand shock, and an oil-specific demand shock.

We illustrate the ability of these three shocks to predict G7 MSCI index returns, denominated in both local currency and US dollars. In particular, the conjecture that oil supply shocks and oil-specific demand shocks (global demand shocks) predict equity returns with a negative (positive) slope is supported by the empirical evidence over the 1986-2015 period. Moreover, we detect no structural breaks in the predictive relationship between the three aforementioned shocks and G7 country MSCI equity index returns.

We also demonstrate the advantage of using the oil price decomposition instead of just the oil price change, in economic terms, by the substantial and statistically significant improvements in the performance of simple mean-variance trading strategies. Specifically, for the case of the MSCI World index, the certainty equivalent return and Sharpe ratio increase from 3.88% to 7.90% and from 0.30 to 0.56, respectively, with the differences being statistically significant. Last, these results survive in the presence of traditional macroeconomic predictors for the case of the US and, in general, do not appear to be consistent with time-varying risk premia.

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Overall, we offer an explanation for the dramatic reduction in the predictive ability of oil price changes over the last ten years and emphasize the importance of dissecting oil price changes. Our research may be of interest to market participants who wish to use the real-time information embedded in oil price changes and captured by the three aforementioned shocks in order to predict subsequent equity index returns.

BIOGRAPHY

DR. HAIBO JIANG is a Visiting Assistant Professor in Finance at A.B. Freeman School of Business, Tulane University. He received his Ph.D. in Finance at University of British Columbia. His research interests are in asset pricing, macro finance, and energy and commodity markets. He studied how oil price fluctuations affect inflation, bond, and stock returns. In one of his research papers, he provides novel empirical evidence that the price of oil is a significant macro variable for explaining returns on Treasury bonds and inflation swaps, and theoretical analysis that oil supply and demand shocks have an opposite impact on bond yields and expected inflation. His research has been funded also by the Social Sciences and Humanities Research Council of Canada (SSHRC). He presented his papers at several academic conferences, such as the Northern Finance Association annual meetings, and was invited to participate in the NBER and IMF meetings on oil market changes and monetary policy. He teaches investments and risk management courses at Tulane University.

TESTIMONIAL

As a recipient of the CSIRF Ph.D. Scholarship, I am motivated to conduct original research on studying the impact of oil price fluctuations on inflation and asset returns, which is very relevant to the energy sector, monetary policy, and financial markets in Canada. In addition, the CSIRF scholarship allowed me to focus my time on research and the job market, without spending too much time on teaching and research assistance in the last year of my Ph.D. program. I am very grateful to CSIRF for the generous support.