



Introduction to a Special issue on “Financial Speculation in the Oil Markets and the Determinants of the Price of Oil”

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The last decades have witnessed a number of changes in commodities futures markets. The oil market has kept growing, becoming the world's biggest commodity market and turning from a primarily physical product activity into a sophisticated financial market.

The increased financialization of oil futures markets has led to allegations that speculators drive crude oil prices, and are thus supposedly responsible for the increase in the crude oil price from 2004 onwards. As a consequence, lay people often claim that by controlling speculative activities in financial markets it is possible to limit commodity price rises and commodity price volatility.

Given the bad reputation that financial speculation has among public opinion and politicians, it is of utmost importance that current economic research provide the answers to relevant issues, such as: the definition, measurement and role of financial speculation in the oil and commodity derivatives markets; the impact of speculation on spot and futures oil prices, and on oil price volatility; the determinants of the oil price; the transmission mechanisms through which structural macroeconomic shocks affect the oil price; the effects of oil price shocks on the global economy; the effects of speculative shocks on the oil price.

These and other related topics have been discussed in a workshop organized by the Fondazione Eni Enrico Mattei (FEEM) in Milan on January 12–13, 2012, which gathered together both scholars in the field of energy economics and professionals from international financial and energy institutions. A significantly high degree of consensus among conference participants was found on a number of points, which are documented in Bastianin et al (2012), Drollas et al. (2012), Büyüksahin and Robe (2012), Fattouh (2012), Helbling et al. (2012), Morana (2012). First, speculation can be defined as the activity of buying or selling in futures markets in the expectation of future price movements to make profits, as opposed to hedging, when people buy or sell with the ultimate aim of

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taking delivery of the physical good. Second, accurate measures of financial speculation should be based on disaggregated, trade by trade data, while the public classification of financial market participants into the broad categories of speculators and hedgers typically ignores the real motivations to trade. Third, speculation has a bad reputation among public opinion and politicians because it is an easy explanation for unexpected price movements, while calling in question economic fundamentals, which are largely determined by political economy factors, and the dynamics of which are generally more complicated to understand, is more difficult and costly. Fourth, speculation has a positive economic and social function, for it provides markets with liquidity and facilitates price discovery. Fifth, physical and futures markets are related via inventories and arbitrage opportunities. Financial markets always converge to the physical markets, which implies that speculation cannot influence the spot price in the long-run. Finally, economic fundamentals are in general more important than financial speculation in explaining the price of oil, its variations and associated volatility in the last decade.

This special issue collects a selection of papers presented at the FEEM workshop, as well as a number of contributions, which have been submitted with the aim of providing the reader with a broad and updated research perspective on financial speculation in the oil markets. Although many of the research questions answered by the contributions to this special issue are intertwined and, in some cases, partially overlapping, nevertheless it can be useful to classify each paper with respect to one of the following three groups of topics. The first group of topics comprises the definition of financial speculation and the role that financial speculation has in explaining oil prices. The first two papers belong to this group. The second group deals with the empirical relevance that specific measures of financial speculation have in explaining oil price returns, oil price volatility and oil price spreads. Contributions from three to six share these characteristics. The final group is relative to the relationship between oil prices, oil price returns and oil price volatility and the macroeconomy. This group is formed by the last three papers.

More specifically:

In the first paper, **Bassam Fattouh, Lutz Kilian and Lavan Mahadeva** provide the reader with a critical assessment of the popular interpretation that the surge in the real price of oil during the 2003–08 period was caused by the increased financialization of oil futures markets, which in turn allowed speculation to become a major determinant of the spot price of oil. The authors identify six strands in the literature and discuss to what extent each sheds light on the role of speculation. The main conclusion is that existing evidence is not supportive of an important role of speculation in driving the spot price of oil after 2003. Instead, there is strong evidence that the co-movement between spot and futures prices reflects common economic fundamentals rather than the financialization of oil futures markets.

In the second paper, **Ron Alquist and Olivier Gervais** further discuss the claim that financial speculation is responsible for the oil price increases ex-

perienced in the international oil markets especially over the past decade. The authors present several arguments that cast doubt on the validity of this view. For instance, although the quantity of oil implied by the number of open futures contracts is much larger than U.S. daily oil consumption, comparing these two statistics is misleading because not all paper oil is immediately deliverable. Moreover, changes in financial firms' positions do not predict oil-price changes, but oil-price changes predict changes in positions. Other explanations for the oil-price increases include macroeconomic fundamentals, such as increased demand from emerging Asia. Of these explanations, the most consistent with reality relates the oil-price increases to a series of positive demand shocks emanating from emerging countries.

The third contribution by **Matteo Manera, Marcella Nicolini and Ilaria Vignati** analyses futures prices of energy and non-energy commodities over the period 1986–2010. Using DCC multivariate GARCH models, it investigates which macroeconomic factors explain the returns of energy and non-energy commodities, the relationship, if any, between financial speculation and returns in futures markets, the links among returns and volatilities across different markets, the potential cross-correlation between speculation activity in one market and returns in other markets. Results suggest that the S&P 500 index and the exchange rate significantly affect returns. Financial speculation, measured by Working's T index, is poorly significant in modeling commodity returns. Spillovers between commodities are present and the conditional correlations among energy and agricultural commodities display a spike around 2008.

In the fourth paper **Celso Brunetti, Bahattin Büyüksahin and Jeffrey Harris** examine whether herding behavior among speculators in U.S. crude oil futures markets affects market prices and volatility. Using detailed data on the positions of hedge funds and swap dealers from 2005–2009, the authors find little evidence that herding destabilizes the crude oil futures market. To the contrary, herding among speculative traders is negatively correlated with contemporaneous volatility and does not lead next-day volatility. The impulse-response analysis shows that market regulators should monitor herding since a shock to herding among all groups may lead to price changes, and, in the case of hedge funds, may lead to increased volatility. However, there is evidence that increased swap dealer herding actually dampens crude oil price volatility.

The fifth paper by **Dwight Sanders and Scott Irwin** deals with the "Masters Hypothesis", according to which unprecedented buying pressure in recent years from new index investment created a massive bubble in commodity futures prices. Specifically, the authors investigate the accuracy of the algorithm popularized by Masters to estimate index positions. Their results suggest that empirical tests of market impact based on Masters' algorithms in WTI crude oil futures should be viewed with considerable caution. In particular, the Masters' algorithm over-estimates the gross WTI crude oil position by an average of 142,000 contracts, and the deviation in the first half of 2008, the period of greatest concern about the market impact of index investment, is directionally wrong.

In the sixth paper, **Bahattin Büyüksahin, Thomas Lee, James Moser** and **Michel Robe** analyze the dynamics and the determinants of the spread between two oil price benchmarks, namely Brent and WTI. In particular, starting in the fall of 2008, WTI has periodically traded at unheard-of discounts to the corresponding Brent benchmark. This discount is not reflected in spreads between Brent and other benchmarks that are directly comparable to WTI. Drawing on extant models linking oil inventory conditions to the futures term structure, the authors test empirically several conjectures about how calendar and commodity spreads should move over time and be related to storage conditions at Cushing. After controlling for macroeconomic and physical market fundamentals, spread behavior can be partially predicted by the aggregate oil futures positions of commodity index traders.

The seventh paper by **Claudio Morana** investigates the oil price-macroeconomy relationship using a large scale macro-financial-econometric model. In addition to real activity, the model considers fiscal and monetary policy responses and labor and financial markets conditions, in order to provide a comprehensive account of the macro-financial effects of oil price shocks. Empirical evidence suggests that oil market supply side, speculative, preferences, and volatility shocks exercised recessionary effects during the first and second Persian Gulf War and 2008 oil price episodes. As long as oil supply keeps expanding at a slower pace than required by demand conditions, and in so far as the recently passed regulatory provisions aimed at controlling financial speculation in the oil futures market prove unsuccessful, a recessionary phase, determined by higher and more uncertain real oil prices, may be expected to persist also in the near future.

In the eighth contribution, **Karl Pinno** and **Apostolos Serletis** investigate whether oil price volatility affects real economic activity using a bivariate GARCH-in-Mean VAR with a BEKK variance specification. Among the many results presented by the authors, significant evidence of nonlinearities emerges for both aggregate and disaggregate production indices, as well as the importance of nominal prices and extreme events such as the Great Recession in the transmission of nonlinearities. Nonlinear impacts of the price of oil on the aggregate economy vary according to time period even within the post-1974 data. Oil price volatility has different meanings at different times, depending on the context of the volatility drivers, although it remains a significant contemporaneous issue for the U.S. economy.

Finally, **John Elder, Hong Miao** and **Sanjay Ramchander** reexamine the relationship between oil prices and economic news, using high frequency intraday data and a relatively new methodology to estimate jumps in oil prices. The authors report a surprisingly strong relation between high frequency jumps in oil prices and the arrival of new economic information, with the largest jumps in oil prices tending to be preceded by identifiable economic news. These results indicate that oil prices respond very rapidly to new economic data in ways that appear consistent with economic theory, and they suggest that economic news,

rather than speculation unrelated to the economic environment, drives jumps in oil prices.

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