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THE FUNDAMENTAL AND SPECULATIVE COMPONENTS OF THE OIL SPOT PRICE: A REAL OPTION VALUE APPROACH

Overview
In this paper we focus on some of the key causes behind the unstable oil price path, by exploring the stochastic behavior of the World Texas Intermediate (WTI) and Brent oil spot price from January 1994 until December 2010. In particular we aim to analyze the recent dynamics of oil price formation from both the point of view of its fundamental drivers and its speculative components with the objective to analyze the main drivers that during last fifteen years have led the unstable path and the volatility persistence in the international oil market.

Methods
We assume that the oil price is composed by two components, deterministic and speculative. The first one can be defined as the certain one, and it is referred to the fundamental component given by supply and demand interaction. Differently, the uncertain one is given by unclear changes in the price structure, and it is assumed to be linked to the speculative activity. Through a structural equation model (SEM) in a linear reduced form we find that the speculation in the oil market measured with the real option methodology can improve the traditional model explaining a consistent part of the oil fluctuations. To this end we use a number of results from real option theory to construct econometric estimates of the speculative components of monthly oil price movements.

Results
Our results show that speculative components, measured according to mathematical option theory, may be at the origin of significant and sizable effects on oil prices, specially for what concerns the episodes of extreme variations. We find that adding the speculative component among the explanatory variables is an achievable improvement in the understanding of the short-run market dynamics of oil prices. It can also be asserted that speculative buying by index funds in commodity futures and over the counter (OTC) derivatives markets could have created a bubble in oil prices with the result that prices level far exceeded fundamental values at the peak and that the “financialization” itself of commodities has been responsible of a speculative bubble in the price of oil.

Conclusions
Several possibilities can be conjectured: the first is that speculation may have been driven by the money invested by large financial institutions, hedge funds, pension funds, and other investment funds. These institutions have been pouring billions of dollars into the energy commodity markets, trying to take advantage of sudden price changes pushing its price far from its fundamentals. A second reason is that speculation may be just the reflection of rational expectations about future disequilibria in the supply-demand balance. A final possibility is that speculation is the mirror of geopolitical imbalances in the international markets.

References


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