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Modeling the oil prices: analysis with the vector error correction model

ahmed hammadache
cepn university of paris north

Abstract

The aim of this study is to identify the factors which influence the dynamic of oil prices. Analysis by co-integration enables us to grasp the dynamic aspect of the analysis by making a distinction between a short-term and a long-term dynamic, between variables (both physical (real) and financial) of the model that is considered as endogenous. A first model Vector Error Correction Model (VECM) identifying a relationship of co-integration between real prices of oil and factors that affect its movement over times: supply, demand, value of the dollar, stocks, exploration. A second model VECM with the introduction of variants future prices with a maturity 2,3 and 4 months supposed to capture the effect of speculation upon the dynamic of oil prices and to show which variables (supply, demand… or speculation) are more influent in determining the evolution of the prices oil. The result of our study shows the weak correlation of supply/demand with the real price of oil on the short term. On longer term the real price of oil appears to be determined predominantly by supply and demand. The introduction of the future prices shows that speculation affects the real price of oil but not more than the supply and the demand variables. However, specifications including longer terms maturity (4 months: more speculative) influence more the real prices than the short term maturity (2 and 3 maturities).

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ahmed hammadache
cepn university of paris north
a.hmmadache@yahoo.fr

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