Introduction to Topics on "*Uncertainty and Recent Challenges in Oil and Commodity Markets*"

Papers presented at the fifth International Symposium in Computational Economics and Finance organized in Paris on April 12–14th, 2018 www.iscef.Com

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ABSTRACT

This ISCEF special issue of *The Energy Journal* presents new results in the area of energy economics to provide new insights on commodity markets, which will be helpful for investors, policymakers and analysts. In particular, this issue focuses on studies that use recent modeling techniques and empirical design. It introduces seven studies, presented at the fifth International Symposium in Computational Economics and Finance organized in Paris on April 12–14th, 2018 (www.iscef.com). These studies focus on the investigation of the dynamics of commodity markets, discuss the consequences of uncertainty on energy prices and their effects on the real economy and financial markets, and use high frequency data and recent econometric methods to empirically investigate the interactions between commodity markets and financial markets.

Keywords: Oil market, Commodities, Uncertainty

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1. INTRODUCTION

Over the last decade, commodity markets have experienced high volatility and have shown important changes. For example, the WTI oil price per barrel was about US$58 in 01/2007, US$140 in 06/2008, and US$41 in 01/2009; it reached a level of US$133 in 04/2011, before declining to US$48 in 09/2016, and evolving around US$60 in 2018–2019. This high volatility excess might be explained differently. On the one hand, the oil price increase observed in the aftermath of the recent global financial crisis might be due to diversification strategies practiced by investors, who have massively invested in commodities to hedge their portfolios against the financial crisis shock. On the other hand, regarding the oil price decline after 2014, Hamilton (2018) has associated it to both a demand shock due to the decrease of China's GDP growth rates and the US shale revolution.[1] All things being equal, these recent developments have yielded an increase in uncertainty and pressure on energy prices.

1. For more details, see : https://www.iaee.org/energyjournal/article/3225

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It is worth noting that uncertainty about commodity prices has always been considered as an important issue, because it might push investors and firms to postpone their investment decisions and their projects (Bernanke, 1983; Elder and Serletis, 2009). In addition, the higher the uncertainty, the more important are the cyclical fluctuations in aggregate investment, yielding less opportunities for the real economy and negative effects on the industrial production and financial markets. Moreover uncertainty about commodity prices has been considered as a major source of asymmetry in the effects of energy prices on the level of economic activity (Mork, 1989; Elder and Serletis, 2009). In this regard, recently, Joo and Park (2016) have shown that oil price uncertainty has negative, symmetrical, and time-varying effect on oil returns.

The current issue of *The Energy Journal* provides an overview of recent studies that: i) assess the dynamics of commodity markets, ii) investigate the effects of energy price uncertainty, and iii) and explain the interaction between commodity and financial markets. The issue consists of seven papers presented at the fifth International Symposium in Computational Economics and Finance in Paris on April 12–14th, 2018 (www.iscef.com) as well as an interview with James Hamilton on oil price dynamics.

2. PRESENTATION OF THE CONTRIBUTIONS

This issue starts with an interview that has been conducted with Prof. James Hamilton in April 2018 by Dr. Fredj Jawadi with the assistance of Professors Jim Smith and Adonis Yatchew during the 5th International Symposium in Computational Economics and Finance (ISCEF) held in Paris, France. This interview includes 21 questions related to oil price dynamics, which aim to discuss the main factors driving changes in oil prices over the last decades and to better explain the impact of oil price shocks on the real economy. Accordingly, James Hamilton has shared with us his excellent and rich experience in energy economics. He has explained very carefully the main origins of oil shock (supply shock in the 70s versus demand shock in 2014) as well as the time-varying effect of oil price change on the real economy, and finally the impact of this recent US shale revolution on this relationship between oil price and the real economy.

In addition, this issue includes seven excellent papers presented at the 5th International Symposium in Computational Economics and Finance (ISCEF) held in Paris in April 2018, and which their authors have carried out a double blind review process. The first two papers focus on the oil price uncertainty and the main fundamentals of oil pricing respectively. The next three papers investigate the effects of oil price on housing market, banking sector and stock markets. Finally, the two last papers focus on the connectedness between commodity markets and the Forex, using high frequency data and recent developments of econometric modeling.

The first paper, entitled: "*On the Oil Price Uncertainty*" is by Zied Ftiti and Fredj Jawadi. In this paper, the authors propose a new measure of oil price uncertainty, using the class of stochastic volatility models (standard stochastic volatility, stochastic volatility moving average, and leverage stochastic volatility models), in line with Poon and Granger (2003) and Teräsvirta and Zhao (2011). They explain the high level of uncertainty reached by the oil price over the last decade, and find that the standard stochastic volatility model outperforms the other models. Further, they point to significant effects of oil price uncertainty on the real economy.

"*Location Basis Differentials in Crude Oil Prices*" is the title of the second paper, coauthored by Phat V. Luong, Bruce Mizrach, and Yoichi Otsubo. The authors investigate the long-run pricing relationship between crude oil prices at the North Sea (Brent) and Cushing (WTI) delivery

points. They show that Brent and WTI prices are cointegrated, but that they experience time-variation.

The third paper entitled "Drilling Down: The Impact of Oil Price Shocks on Housing Prices" is coauthored by Valerie Grossman, Enrique Martínez-García, Luis Bernardo Torres, and Yongzhi Sun. This paper studies the impact of oil price shocks on house prices in the largest urban centers in Texas. The authors find that oil price shocks have limited pass-through to house prices. Moreover, the empirical relationship between oil and house prices has remained largely stable over time, in spite of the significant changes in the oil sector of Texas with the onset of the shale revolution in the 2000s.

The next two papers focus more on the impact of oil price on banking and stock markets respectively. Accordingly, Willi Semmler and Samar Issa coauthored a paper entitled: "Oil Prices and Banking Instability: A Jump-Diffusion Model for Bank Capital Structure". They develop an empirical model of bank capital structure to study the impact of large oil shocks on overleveraging of banks. They show that most of the banks under consideration had a high optimal debt around 2008, overlapping with the oil price shock.

"*Oil Prices and the Stock Markets: Evidence from High Frequency Data*," by Sajjadur Rahman and Apostolos Serletis, investigates the relationship between the oil price and the stock markets. It uses the highest frequency data that have ever been used before, and conducts the analysis in the context of a bivariate (identified using heteroscedasticity in daily data) structural VAR in stock market returns and the change in the oil price. It finds that positive oil price shocks have negative and statistically significant effects on stock market returns, and that the results are robust to the use of different types of stock market returns.

The last two papers in this special issue study various aspect of linkages between commodity prices and the exchange rate. In the paper entitled "Do Jumps and Co-jumps Improve Volatility Forecasting of Oil and Currency Markets?" Fredj Jawadi, Waël Louhichi, Hachmi Ben Ameur, and Zied Ftiti model the volatility in both oil and US dollar exchange rate markets, using high frequency data. The authors investigate whether co-jumps between these markets, as well as intraday unexpected news, help to improve volatility forecasting. In doing so, they extend the Corsi (2009) model by including co-jumps and news. Their results show that both markets exhibit significant co-jumps driven by unexpected macroeconomic news. Further, their extended model outperforms the Corsi (2009) model and provides more accurate volatility forecasts.

The last paper is entitled: "Total, Asymmetric and Frequency Connectedness between Oil and Forex Markets," by Jozef Baruník and Evžen Kočenda, and investigates the connectedness between the oil and foreign exchange markets using high frequency. The authors show that divergence in monetary policy regimes affects foreign exchange market volatility spillovers, but that adding oil to a foreign exchange portfolio decreases the total connectedness of the mixed portfolio. While negative shocks dominate foreign exchange market volatility connectedness, positive shocks prevail when oil and the foreign exchange markets are assessed jointly.

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REFERENCES

Bernanke, Ben S. (1983). "Irreversibility, Uncertainty and Cyclcical Investment." *Quarterly Journal of Economics* 98: 85–106. https://doi.org/10.2307/1885568.

Corsi, F. (2009). "A Simple Approximate Long-Memory Model of Realized Volatility." *Journal of Financial Econometrics* 7(2): 174–196. https://doi.org/10.1093/jjfinec/nbp001.

Elder, J. and A. Serletis, A. (2009). "Oil Price Uncertainty in Canada." *Energy Economics* 31: 852–856. https://doi.org/10.1016/j.eneco.2009.05.014.

Mork, K.A. (1989). "Oil and the Macroeconomy when Prices Go Up and Down: An Extension of Hamilton's Results." *Journal of Political Economy* 91: 740–744. https://doi.org/10.1086/261625.

Poon, S.H. and C.J. Granger (2003). "Forecasting Volatility in Financial Markets: A Review." *Journal of Economic Literature* XLI: 478–539. https://doi.org/10.1257/002205103765762743.

Teräsvirta, T. and Z. Zhao (2011). "Stylized Facts of Returns, Robust Estimates and Three Popular Models of Volatility." *Applied Financial Economics* 21: 67–94. https://doi.org/10.1080/09603107.2011.523195.