

# Article

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## CURRENT ISSUES ON THE PRICE OF OIL: DECLINE, FORECASTING, VOLATILITY AND UNCERTAINTY

By Niaz Bashiri\*, Andrea Bastianin†, Elisa Bortolussi‡, Francesca Conti§, Matteo Manera\*\* and Marcella Nicolini††

*The 2015 workshop on “Recent evolutions of oil and commodity prices”, organized by FEEM, focused on the sharp decline in the oil price in 2014. High crude oil production and slower demand growth explain a large fraction of the current low level of prices, but a complex set of factors is responsible. In light of these events, forecasting the price of oil is challenging and requires composite information: accurate forecasting models are able to predict this. The decline in price is reflected in an increase in oil price volatility and uncertainty, which have relevant implications on the real economy.*

*Keywords: Oil Price Decline, Forecasting, Volatility, Uncertainty*

*JEL classification: Q41, Q43, Q47*

*See other useful [links](#)*

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### Introduction

Fondazione Eni Enrico Mattei (FEEM) has been organising since 2012 an annual workshop which gathers together internationally distinguished academics, renowned professionals and FEEM researchers to discuss and interpret, from different perspectives, core issues related to oil and commodity markets.

The topic of the 2015 workshop has been the recent evolutions of oil and commodity prices. The event has brought together academics from US and European universities, experts from different

international institutions, such as Central Banks and futures exchange companies (e.g. ICE and CME group), as well as an audience from energy companies (e.g. Nomisma Energia, Edison Trading and Eni), financial institutions (e.g. Cassa Depositi e Prestiti and Intesa Sanpaolo), data providers (Argus Media), consulting firms.

In this article, we summarize the main topics discussed during the workshop, namely causes and effects of the recent decline of the price of crude oil, the important and challenging task of oil price forecasting, and the role of volatility and uncertainty in commodity markets.

### The Oil Price Decline

The 2014 decline in the price of crude oil has raised attention from scholars and practitioners. Figure 1 shows that the price of West Texas Intermediate (WTI) crude oil - one of the most important reference prices for the US and global crude oil markets - experienced a sharp drop from over \$100 per barrel to near \$40 per barrel between June and December 2014.

The general consensus is that a complex set of factors is responsible for this sharp decline. A crucial aspect is the non-homogeneous nature of crude oil and the tight interconnections between WTI and two other important reference prices for crude oil, namely Brent and Dubai. The possible causes of the oil price decline can be categorized into three main groups: physical, financial and socio-political drivers. The interactions between these different layers has been investigated to understand the complex functioning of these markets (you can find further insights by looking at the presentations of Mike Davis, ICE Futures Europe, Leo Drollas, energy consultant and Vincent Kaminsky, Rice University; you can also listen to the interviews with Drollas and Kaminski).

Concerning the role of fundamentals, there is a general agreement that the disequilibrium between oil supply and demand contributes to explain the recent decline of oil prices. This is primarily caused

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by supply-side pressures resulting from the increase of shale oil production in North America and from the partial return of Libyan supply to the market. The increase in US oil production can be attributed to the presence of small and medium sized companies willing to invest in advanced technologies. This willingness to invest has been helped by the low level of interest rates, which provide more accessible funding opportunities.

The general consensus is thus that unexpected high crude oil production coupled with a slower demand growth can explain a large fraction of the current low level of crude oil prices (these topics have been addressed in the presentations of Bahattin Buyuksahin, Bank of Canada and Vincent Kaminsky).

The supply glut has continued in 2015, largely because of OPEC's decision to maintain its production quota which dates back to November 2014. Besides events which affect oil markets worldwide - such as the financial crisis in 2008 or the loss of Libyan crude oil production in 2011 - there are other events that are local in nature - such as oil spills - but that can in principle impact on the global market for crude oil (further discussion of these themes can be found in the presentations by Leo Drollas and Anna Creti, Dauphine University).

### **Forecasting**

In light of the recent market developments, it is clear that forecasting the price of oil is a very challenging task, which requires composite information. This is illustrated in Figure 1: by the end of 2015 the price of crude oil is forecasted to be in a range that goes from 40 dollars per barrel to 80 dollars per barrel.

Forecasting models based on global oil production, global real economic activity, changes in global crude oil inventories have been proven to produce accurate predictions of the real price of crude oil. More specifically, using information available as of June 2014, models of this type are able to predict the decline of price from July 2014,

which can be attributed to the weakening of real economic activity and positive supply shocks. The forecast accuracy can be improved by taking into account the reduction in storage demand in July 2014 due to the lower oil price expectations and the weakening of global economy in December 2014.

Helpful information can be gathered also from other commodity markets. For instance, the analysis of various energy commodities prices over the last century highlights some similarities between the price evolutions of such commodities, especially oil, natural gas and coal. The common evolution of these prices can help to better understand the dynamics of different energy markets. (additional discussion on those topics can be found in the presentations by Lutz Kilian, University of Michigan and Adonis Yatchew, University of Toronto; you can also listen to the interviews with Lutz Kilian and Adonis Yatchew).

### **Volatility and Uncertainty**

The recent behavior of crude oil price is associated to an increase in price volatility, as shown by the crude oil volatility index in Figure 2. Such increase has important implications for the real economy. In the words of Lawrence Summers, former Director of the US National Economic Council: *"If energy prices will trend higher, you invest one way; if energy prices will be lower, you invest a different way. But if you don't know what prices will do, often you do not invest at all."*

The investigation of volatility associated with the prices of crude oil, natural gas, coal and tradable credits (RINs) related to biofuel production shows significant interactions among these markets.

Looking at the WTI-Brent spread, it appears that from 2011 through the second quarter of 2014 the spread between the two reference oil prices has been particularly volatile, whereas from the third quarter of 2014 to the present, when crude oil prices have declined substantially and overall price volatility has increased, WTI and Brent

prices have become closer and the volatility of their spread has been perceived to lower (you can see on this point the presentations by Charles Mason, University of Wyoming, Apostolos Serletis, University of Calgary and Robert Levin, CME Group; you can also listen to the interviews with Charles Mason and Apostolos Serletis).

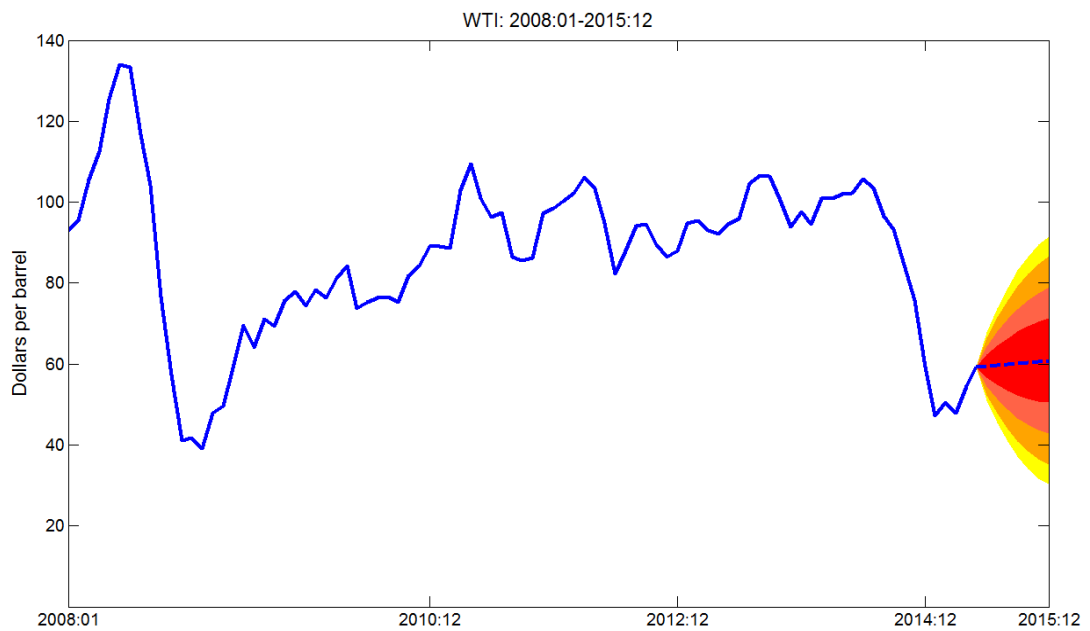
Lastly, the discussion has also focused on the role of oil price uncertainty and its impact on the macroeconomy. Empirical evidence looking at the effects of oil price uncertainty on investments shows that these are particularly relevant for energy-intensive industries. Oil price uncertainty is also investigated by proposing a new broader measure which encompasses different oil prices, oil market-specific variables and macroeconomic factors (further discussion on those issues can be found in the presentations by Andrea Bastianin, FEEM and John Elder, Colorado State University; see also Bastianin and Manera, 2015).

### **Conclusions**

The 2015 workshop on “Recent evolutions of oil and commodity prices”, organized by FEEM, has gathered together scholars and practitioners, to discuss and interpret, from different perspectives, the latest events in the oil and commodity markets. The sharp decline in the oil price, which took place in the second half of 2014, has been the central issue. There is a general consensus that there is no single explanation to this event, but a complex set of factors is responsible. Overall, unexpected high crude oil production coupled with a slower demand growth can explain a large fraction of the current low level of crude oil prices. In light of these recent market developments, it is clear that forecasting the price of oil is a very challenging task, which requires composite information. Nonetheless, accurate forecasting models are able to predict the decline of price observed from July 2014. Finally, the recent events are reflected in an increase in oil price volatility and uncertainty, which have relevant implications on the real economy.

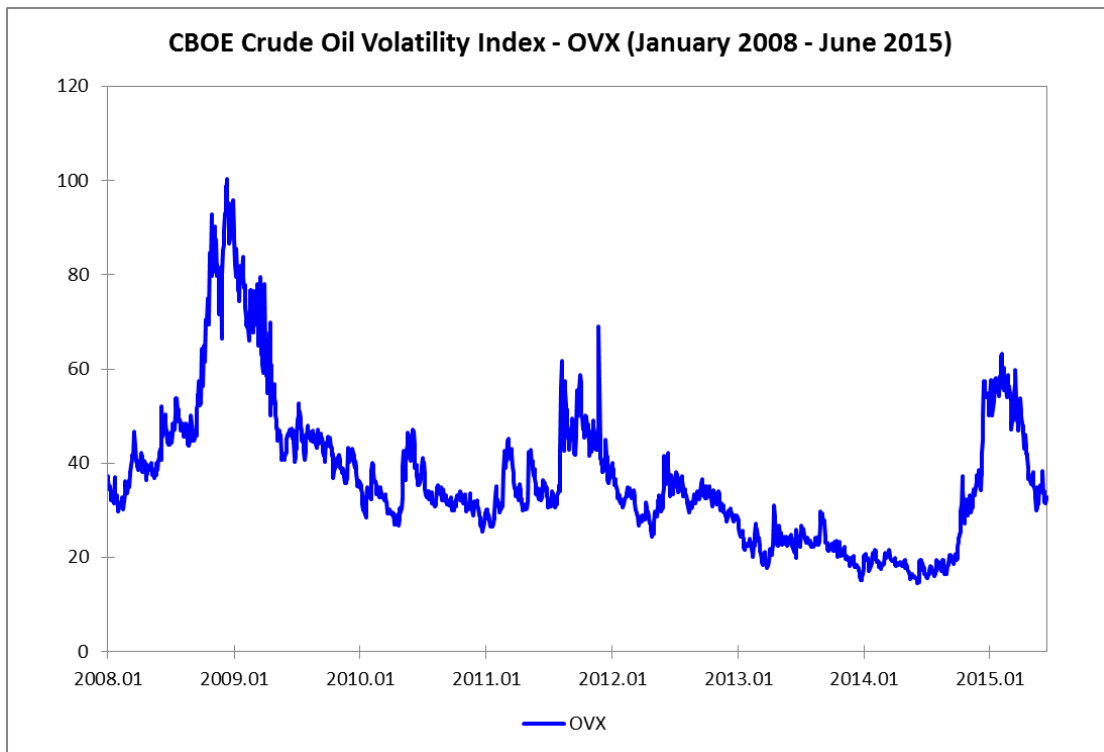
## Figures

**Figure 1 - West Texas Intermediate (WTI) Crude Oil Price**



*Notes:* the continuous line spans 2008:1 until 2015:5 is the spot price of WTI crude oil. The dashed line is a random walk with drift forecast of the WTI price. The shaded areas represent 50%, 75%, 90% and 95% interval forecasts

Figure 2 - Crude Oil Volatility Index (January 2008 – June 2015)



Source: Chicago Board of Options.

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## Links

[International Workshop on "Recent Evolutions of Oil and Commodity Prices"](#)

[Presentations, International Workshop on "Recent Evolutions of Oil and Commodity Prices"](#)