

'Oil and Gas Modelling' Conference Energy Institute, 29th October 2012

ESCP Europe Business School's Research Centre for Energy Management (RCEM) and London Metropolitan Business School's Centre for International Business and Sustainability (CIBS) co-hosted a conference on Oil and Gas Modelling at the Energy Institute in London on the 29th of October 2012, from 2-5.30pm.

The conference brought together over 60 leading international energy industry professionals from business and academia to discuss key challenges for the oil and gas sectors, as well as their ideas, methodologies and findings on the theories and practice of oil and gas modelling.

The speakers were:

- **Dr. Kostas Andriosopoulos**, RCEM Director, ESCP Europe Business School: *Opening speech*
- **Prof. Michael Jefferson**, CIBS Professor; former Chief Economist of Shell and Deputy Secretary General of the World Energy Council: *"Oil & Gas modelling: some "pre-determined" elements and building blocks"*
- **Dr. Thierry Bros**, Senior Energy Analyst, Société Générale *"Can we model European gas prices?"*
- **Dr. Rita D' Ecclesia**, Director, PhD in International Economics and Finance; Sapienza University of Rome: *" Oil, Gas and Electricity Prices in US and in Europe "*
- **Mr. John Mitchell**, Associate Fellow, Chatham House *"Challenges to the uncertain oil industry"*
- **Dr. Vlasios Voudouris**, CIBS Director, London Met Business School, Closing speech: *"Somebody knows something in the oil industry"*

Notes from the Conference

The conference was introduced by Dr. Kostas Andriosopoulos, who offered a warm welcome to the audience and distinguished speakers.

1. "Oil & Gas modelling: some "pre-determined" elements and building blocks" *Prof. Michael Jefferson*

The title "*some "pre-determined" elements and building blocks"* refers back to Prof. Michael Jefferson's time as Chief Economist at Shell, some 14 years ago when he was involved in scenario planning and believed in the efficiency of modelling. He has since somewhat tempered his views and acknowledges: "We don't know the future ... we use scenarios but we have to consider that there is a low probability that what we are predicting will actually happen". These uncertainties apply to energy policy papers, which refer to 'probable', 'possible' etc. levels of reserves, based on ever-inflating data provided by producing countries and companies. Producers tend to overestimate the oil and gas reserves available and underestimate the oil and gas peak. "We don't know the future but we know that there are some lifestyle choices to make if we want to have enough energy for everyone".

2. "Can we model European gas prices?" *Dr. Thierry Bros*

Following the Jefferson presentation on uncertainties was a challenge for Dr. Bros, who acknowledged that no prediction is perfect. He presented his model which compares gas supply, demand and prices month-by-month compared with the previous year, and takes into account external factors, such as economic growth. Each external factor or event is observed and interpreted to gauge its potential impact on both the demand and supply sides. The model projects forward 4 years to 2017.

Gas demand is more complex than oil demand and is split roughly evenly between domestic (weather-related), industrial (GDP-related) and power-generation (inter-fuel competition-related) uses. The supply side can be analysed in the context of wars (Libya), national interests (Russia, Norway), disasters (Fukushima), all of which, in addition to strategic issues have an impact on the price. Differing prices across Europe add to the difficulty to predict the future. In the US gas modelling is easier to predict and to manage as it works like a true commodity. In Europe, demand forecast is difficult, supply forecast is challenging, prices are complex.

3. "Oil, Gas and Electricity Prices in US and in Europe"

Dr. Rita D' Ecclesia

Given the volume and questionable variety of data available, "Can we say that there is any kind of price relationship between oil, gas and electricity within the US and Europe?" was the opening question from Dr D'Ecclesia.

In Europe there is still no competitive market, especially for gas and electricity and gas prices vary between individual member states, making it difficult to study the market overall. Gas prices follow oil prices in Europe and, to some extent, electricity prices depend on the gas ones, but the market for electricity is not integrated into that for gas and oil. The US picture is different: energy imports have declined overall and this dependency on other countries is expected to continue to decline as local production of gas, crude oil and biofuels increases. Shale oil is not likely to materially impact the price of crude oil but it could potentially have a more significant impact on the supply of US natural gas. The US is also working on raising energy efficiency. The US clearly leads Europe in terms of the integration of energy markets.

4. "Challenges to the uncertain oil industry"

Mr. John Mitchell

John Mitchell began with the purposes of modelling: understanding the model; understanding its relationship with reality; and recognising the boundaries in order to make judgements. The key strength of modelling is to understand what is happening and question the assumptions of governments and investors.

He discussed the changes for the energy industry from geo-political shifts. Since 2005, oil prices have moved to a permanently high level, but the future will look different: the demand trades, the oil import dependence, the Middle East oil going East instead of West, the Asian market deficit problem, the state companies which are taking on new roles, etc.

Surprisingly, unlike Prof. Jefferson, Mr Mitchell believes that oil reserves are growing and not peaking because to the oil reserves available we can add the technologies available and investment available to extract these reserves. Technological progress and the willingness to invest will be key drivers. The private sector has a role to play, working with state-owned companies to gain access to the resources, bringing their technological and managerial skills. Inertia is not an option and we are in a way obliged to rely on modelling in order to act.

5. "Somebody knows something in the oil industry"

Dr. Vlasios Voudouris

Dr. Voudouris predicted that the discussion would inevitably move towards the questioning of modelling: why model? From his perspective energy modelling is about constructing scenarios of oil and gas markets in order to advise on long term investment and risk processes around the world. Well-designed models can focus teams of experts from many disciplines; they can both discipline and facilitate dialogue about policy options and lead to more considered judgements. After his convincing introduction, Dr. Voudouris gave an animated demonstration of how models can also bring synergies in research. He did so by listing and presenting some of the results of the joint research on models by the CIBS & the RCEM. These different kinds of joint research show how models can help to make judgements by using computational tools.

With all these examples in mind, Dr. Voudouris closed the conference showing why we need models in order to think rationally and get a broad picture of the future. Modelling is not only about forecasting, it's about defining the boundaries, demarcating and reducing uncertainties.