

4° Séance du Séminaire d'Economie d'Energie

Mercredi 10 avril 2013, 16h30-18h30

Université Paris Dauphine, Place du maréchal de Lattre, Paris

Salle : A709 (7^{ème} étage – nouvelle aile)

**Les modélisations possibles du marché gazier européen:
Quels enseignements possibles pour la décision ?**

Yves Smeers (Université Catholique de Louvain), *On the evolution of the European gas market: a modelling approach*

Olivier Massol (IFP School, Centre d'éco-gestion), *A generalized Nash-Cournot Model for the North-Western European Natural Gas Markets with a fuel substitution demand.*

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Le séminaire se fera en français

Entrée libre dans la limite des places disponibles

Résumé des deux présentations

Yves SMEERS : *On the evolution of the European gas market: a modelling approach*

The European gas market operates today under a hybrid regime with part of the volume subject to long-term contracts and the rest traded at spot price in a gas bubble. The tension between these two submarkets is sometimes interpreted as the signal of a transition away from long-term contracts and more specifically away from the oil products indexation clauses that are part of these contracts. The movement is further heralded and enhanced by the European policy that sees it as an evolution towards a more efficient gas market.

We examine the question through three counterfactuals: one is the traditional regime that is driven by long-term contracts and the pricing of gas (through long term contracts) at market value (the principle prevailing in oil based indexation clauses). The other is the forthcoming hub pricing that is currently in the process of implementation by the Madrid Regulatory Forum. In between we insert a third counterfactual (a double marginalization view of the market) that is common in academic circles and may have influenced European reasoning. We assume, as is widely admitted, that the upstream part of the market has market power and that European policy will reduce if not eliminate most of the midstream market power.

We analyse these counterfactuals using different types of models, some of them rather standard (Cournot, double oligopolies), other more unusual (bilateral negotiation), all of them computable. We find that (and explain why) the end result might be quite different from what is promised. The rationale for oil based indexation clause (which depends of the structure of the consuming market) and the evolution towards hub pricing (which is a matter of both market and policy) interact in the argument and computation with the result that part of our conclusion originates in the natural evolution of the market (the evolving relevance of oil indexation clauses), and part is due to policy (the structure of hub pricing).

Olivier MASSOL. *A generalized Nash-Cournot Model for the North-Western European Natural Gas Markets with a fuel substitution demand.*

We shall present a dynamic Generalized Nash–Cournot model to describe the evolution of the natural gas markets. The major players along the gas chain are depicted including: producers, consumers, storage and pipeline operators, as well as intermediate local traders. Our economic structure description takes into account market power and the demand representation tries to capture the possible fuel substitution that can be made between the consumption of oil, coal, and natural gas in the overall fossil energy consumption. We also take into account long-term contracts in an endogenous way, which makes the model a Generalized Nash Equilibrium problem. Our model has been applied to represent the European natural gas market and forecast, until 2030, after a calibration process, consumption, prices, production, and natural gas dependence. A comparison between our model, a more standard one that does not take into account energy substitution is carried out to analyze our results. Finally, in order to illustrate the possible use of fuel substitution, we studied the evolution of the natural gas price as compared to the coal and oil prices.

A partir d'un article récent d' Ibrahim Abada, Vincent Briat, Steven Gabriel, Olivier Massol " A Generalized Nash–Cournot Model for the Northwestern European Natural Gas Markets with a Fuel Substitution Demand Function: The GaMMES Model", *Networks and Spatial Economics* , March 2013, Volume 13, Issue 1, pp 1-42