

INVITATION Séminaire fermé de recherche CEEM
LA VALEUR ÉCONOMIQUE DE LA FLEXIBILITÉ SUR LE MARCHÉ ÉLECTRIQUE

Mardi 20 Février 2018, de 9h00 à 11h00

[Université Paris-Dauphine](#)

Salle A 709 (Nouvelle Aile), 7^{ème} étage

Inscription gratuite et obligatoire: [Formulaire d'inscription/ registration form](#)

Le plan VIGIPIRATE ayant été renforcé à Paris, les agents de sécurité de l'Université Paris-Dauphine ont pour consigne de ne laisser rentrer personne sans une pièce d'identité. La liste de tous les participants à ce séminaire sera remise aux agents de sécurité devant l'entrée. Merci de présenter une pièce d'identité, avec éventuellement un imprimé de cette invitation.
Merci pour votre compréhension.

PROGRAMME:

8h30 Accueil des Participants et café de bienvenue à l'ESPACE 7 (7^{ème} étage).

9h00 Introduction par **Jan Horst Keppler** (Directeur scientifique, CEEM, Université Paris-Dauphine) et **Fabien Roques** (Conseiller scientifique CEEM, Université Paris-Dauphine, et Compass Lexecon).

Session 1 : Présentations

Philippe Vassilopoulos (EPEX Spot, Head of Product Design, EPEX Spot)

The Value of Flexibility in Power Markets: Overview and Methodology

In the paper "The Value of Flexibility in Power Markets" we attempt to quantify the net revenues that can be captured by a flexible resource able to react to the short term price variations on the day-ahead and intraday markets in Germany. The results of the backward-looking empirical estimations allow us to distinguish and quantify two components of flexibility: (1) the "immediacy" value as we are approaching real-time and the urgency of the delivery increases (this value is revealed during the continuous intraday process and is highly linked to the stochastic nature of power supply and demand (i.e. wind/solar forecasts, forced outages of thermal generation,...) forecast error risk), and (2) the "flexibility" component, a more technical concept, as a resource can react to variations of shorter granularity (15mn Vs 60mn). We model and quantify the "flexibility" component using a geometric brownian motion with jumps." Additional research is carried out to derive equivalent empirical findings in the case of demand response and storage.

Ce papier a été co-écrit avec **Stéphane Goutte** (Université Paris 8 (LED) et Chercheur CEEM).

Amaury Testu de Balincourt (Élève ingénieur civil de l'École des Mines de Paris, Assistant de recherche CEEM)

The Value of Flexibility on Intraday Electricity Markets: The Case of Storage

The various technologies of large-scale electricity storage allow a better flexibility in distribution by reacting quickly to the peaks of consumption to balance supply and demand. Intraday electricity markets managed by EPEX Spot are markets organized by continuous trading; contracts are negotiated the same day of the delivery, until 30 minutes in France and 5 minutes in Germany before distribution. In this article, we attempt to compute the value of the economic flexibility for the electricity's storage, like batteries with predetermined parameters, on French and German Intraday electricity markets. These calculations are made at first in a determinist universe, under the hypothesis of perfect foresight. In this context, the economic value of the flexibility for the storage is the solution of mathematical optimization problem. We find profits until three times as important in Germany as in France, thanks to the more flexible market, even if this value decreases year by year on these two markets, from 2014 to 2017.

Pierre Bouffort (Élève ingénieur en 1^{ère} année du cycle ingénieur civil de l'École des Mines de Paris)
Value of Flexibility on Intraday Markets: Demand-Response

Power systems have always known variability and uncertainty. They are managed by grid operators with the use of reserves to ensure power availability at all time. The constant need for a demand-supply balance, can create extreme price volatility when intermittent means of production make the supply uncertain. For the last few years, the intraday markets have allowed market participants to buy electricity only a few hours ahead of delivery. For flexible market participants, this allows interesting opportunities to be captured. The flexible asset under study was demand-response: the ability one has not to consume an electricity (by shutting off an industrial process for instance) which he was expected to consume, when peak-loads happen on the power grid. This allows him, in counterparts for not using the electricity, to earn various rewards. Today, owners of such assets can value them on wholesale markets. The purpose of my work was to evaluate how big of a reward could one capture when using his demand-response asset over the last three years, given the technical constraints of his asset. By doing so, we could determine “the value of demand-response”.

Session 2 : Discussion ouverte avec les Participants

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