Abstract

Since November 2010, the French, Belgian, German and Dutch electricity markets are sharing a common mechanism for Day Ahead price formation called “Market Coupling”. This implicit auctioning system for cross border flows management is part of a regional market integration policy which constitutes an intermediary step toward fully integrated European markets. Within a few years, power markets had evolved a lot, and faced many changes (completion of the deregulation process, renewable integration, …). They were also indirectly affected by the consequences of the Japanese nuclear catastrophe in 2011.
In this context, it is interesting to take a stock on the convergence process between these four countries, less than a year after the coupling was launched. Studying the convergence and its evolution for both spot and futures prices can give precious information in order to implement hedging strategies. In this thesis, we explore the dynamics of the convergence process through two main analyses: a Kalman filter and a more original approach based on Mean Reversion Jump Diffusion parameters estimation. We also describe and explore the convergence process under the light of market organisation, production portfolios and consumption profiles to highlight similarities but also divergences.
Despite a European framework suitable for convergence, we observe major differences in energy mixes, consumption profiles and renewable integration rates. However, prices are showing significant convergence patterns through the years. Indeed, we observed that the relation between prices was getting steadier and that the price spread was narrowing. Besides, we also noticed that such a convergence process was not constant but rather stepwise and could be affected by peculiar events. France, Belgium, Netherlands and Germany’s electricity markets are already well integrated and seem to converge further but sudden changes can appear. This is why a hedging strategy between these countries is feasible but implies some risks.