

AN ANALYSIS OF THE BID-ASK SPREAD IN THE GERMAN CONTINUOUS INTRADAY MARKET

Clara Balardy, Université Paris Dauphine, PSL Research University, LEDa, [SDFi], EPEX SPOT,
Phone: +33 602714004, Email: clara.balardy@dauphine.eu

Overview

Following the liberalization of the power sector in Europe, an organized market place has emerged. On the short term, the spot market can be differentiated between the day-ahead market (auction mechanism) and the intraday market (continuous mechanism). The intraday continuous market is a European specificity and the German market is unique due to its large liquidity as well as the strong increase of the renewable production sources in the country. It has also been growing significantly since its creation in 2009 accounting for more than 41 TWh in 2015 and is of a major importance for the balancing of the system. Over the past years, the evolution of the electricity mix brings uncertainty to the market relative to the constant arrival of new information (ie. forecast errors, unplanned outages).

The paper empirically identifies the characteristics of the intraday continuous market particularly the quality of the market in terms of liquidity and trading opportunities over the trading session. Based on German intraday orders books for the 60 products, we use a tool that reconstitutes at every moment of time the best order stream (best bid price, best ask price) and the market depths. Then, we deeply analyze the output using statistics and panel data econometrics in order to characterize the evolution of the spread and market depths over an average trading session and find the main determinants of the bid-ask spread. To our knowledge, this is the first paper that uses a complete orders book in the finest details of the intraday continuous electricity market to quantify the liquidity of the market and its evolution through the bid-ask spread and market depths of the orders book.

The paper is organized as following. After the introduction, the first section is dedicated to the relevant literature. The second part is a presentation the spot market as well as the specificities of the intraday continuous segment. The third part presents the data set and the methodology. The fourth part displays the dynamic analysis of the bid-ask spread over an average trading session and highlights the determinants of the bid-ask spread before we conclude.

Methods

We run a tool that reconstitutes at every moment of time the best order stream (best bid price, best ask price) and the market depths (sell depths, buy depth) from a complete orders books (first grade data, microseconds level). We then perform statistical analysis and panel data econometrics (fixed effects model) on the output.

Results

First, we find a strong negative correlation between the bid-ask spread with the buy and sell depths which is consistent with the findings on the financial market.

Second, we found a U-shaped pattern of the bid-ask spread. A strong dispersion of the bid-ask spread on the German intraday hourly markets at the beginning of the trading session is observed which will then diminish as the end of the session approaches. The dispersion highlights the volatility due to the uncertainty away from the delivery time.

Third, we found an impact of the risk on the market (elasticity of the auction curves), the activity on the market (number of active members, business days/ week-ends) as well as the wind and solar forecast error on the bid-ask spread.

Conclusions

This study highlights the link between the bid-ask spread and the market depths in the intraday continuous market in Germany. First, it gives information relative to the behavior of the orders book along the trading session using the buy and sell depths as well as the bid-ask spread. Second, it highlights the determinants of the bid-ask spread of the market.

The analysis can easily be extended to other markets (ie. France, etc) and product segments (ie. 15 minutes or 30 minutes).

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