

Could Market Making be Profitable in The European Carbon Market?

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Executive summary

On a transaction-by-transaction basis, investors face an order-type selection dilemma each time they enter the market. They can either prioritize minimizing execution risk by submitting a market order, or they can prioritize minimizing price risk by submitting a limit order. Each type of order exhibits its relative merits and previous literature suggests that the order selection depends on market conditions. Several studies (e.g. Biais et al., 1995) identify the cost of liquidity and consequently, the width of the spread as a major determinant of limit-order suitability. Limit orders appear to be preferred when spreads are wide because investors can earn the spread, while they prefer to consume liquidity when it is cheap and the spreads are narrow. However, spreads consist of a liquidity as well as an information component (O'Hara, 1995), which constitutes the compensation of market makers for the probability of trading with better informed agents. A high probability of trading with better-informed agents is an undesirable condition for limit orders due to their option features (Copeland and Galai, 1983), especially when these orders are mispriced (Bae et al., 2003).

These two price components are also the main drivers of intraday volatility (e.g. Madhavan et al., 1997), which is also found to have a significant impact on order-type selection. Although market orders are generally accepted not to be suitable during periods of high volatility (Peterson and Sirri, 2002), the literature makes a distinction between the liquidity (transitory) and information (permanent) components of variance, suggesting that a higher transitory volatility should attract more limit orders (e.g. Handa and Schwartz, 1996), while higher information-related volatility would only attract limit orders from informed agents with information advantages that decay slowly (Keim and Madhavan, 1995). Consequently, previous literature recognizes spreads and variance to be the main determinants of the suitability of different order types.

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Previous literature (e.g. Harris and Hasbrouck, 1996) confirms empirically the impact of spreads and volatility on order selection, but this is mostly done in a descriptive way, e.g. identifying under what conditions limit orders are mostly submitted, considering spreads and variance as two separate factors. This is the primary concern of our study, in which we try to unify the impact of spreads and variance on order selection, by focusing on a more granular level, modelling the liquidity and information-price components, their impact on spread and variance and ultimately on order selection. In more detail, we employ an observable variable, i.e. trading intensity, in order to identify how informative each trade is and to extract the liquidity and information-price components. Then we use these components to develop an order-selection rule, which is derived solely by realized price changes and has the evident advantage of being tradable and conditional on committed market conditions and publicly available information.

Considering the importance of the Carbon market for meeting global emission reduction targets, as well as the strong patterns in return (e.g. Benz and Hengelbrock, 2008), volatility (e.g. Kalaitzoglou and Ibrahim, 2013a) and order flow (e.g. Medina et al., 2014), which could render a discretionary limit-order strategy profitable, we develop and apply our order-selection rule in the European Carbon Futures market. We observe that the economic performance of limit orders is consistently superior to market orders in all market conditions. However, we find that market makers should prefer to derive their profits when trading intensity is low and, therefore, the price of liquidity is high and the probability of informed trading is low. In contrast, an off-floor discretionary limit-order strategy, which cannot compete with the liquidity advantages of market makers or the information advantages of informed agents, would only be competitive when trading intensity is at a medium level and, therefore, the balance between information and liquidity premia can adequately compensate execution and price risk.

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