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Miscellany

Volume Discovery: Leveraging Liquidity in the Depth of an Order Driven Market

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Abstract

Electronic order book trading has evolved in being recognized as the best-practice for trading small and mid-sized orders. Yet, this mechanism does not properly address the needs of large-sized orders which tend to execute off order book in over-the-counter markets. Order book trading provides for public price discovery but not for quantity discovery. Off book executions generally fragment the order flow which again adversely impacts price discovery.

We propose a market model innovation to close this gap: ‘Volume Discovery’ introduces the new order type ‘volume order’ to integrate large sized orders into the book. The volume order builds on the concept of iceberg order but is enhanced by two parameters ‘hidden limit’ and ‘minimum volume’, which continuously search order book depth for matching quantity.

For large orders, Volume Discovery leverages already existent liquidity to benefit block trading by increased likelihood of execution and reduced opportunity costs. For all orders, Volume Discovery promotes the integration of OTC markets and order book trading in order to improve liquidity while protecting price/time priority.

Keywords:

quantity discovery | block trading | market microstructure | order book | iceberg orders | OTC

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Notes

1. As Nasdaq was traditionally a dealer market, dealers' quotes along with their identities were displayed on Nasdaq screens. Execution was not automated, trades had to be executed on the telephone (with some exceptions provided by the SelectNet order routing system or SuperSOES, the small order execution system). As Nasdaq introduced the hybrid trading system SuperMontage (which combined an electronic order book with dealers providing quotes) in October 2002, the display of dealers' identities was not compulsory from a market model perspective, as SuperMontage provided for automated matching. Anecdotal evidence indicates that dealers understand the identity display as prestigious as it offers them an opportunity to show the quality of their market making service. However, as a special feature, Nasdaq enables traders to hide their identity from the market. In this case, the identifier ‘SIZE’ is displayed instead of their market participant ID.

2. This technical delay is not to be confused with the delay in execution an order might face when no corresponding trading interest is present in the market. Within the scope of a dealer market, there is always trading interest (‘immediacy’) provided by the dealers, but the order is not executed within milliseconds after reception of the order (delay due to non-automated execution).

3. In the US, however, the price and time priority rule is not as widely accepted, which is partly explained by the advent of decimal pricing in 2001. The subsequent decrease in the minimum tick size made penny-jumping (stepping ahead the best bid or offer by improving it by one cent) more attractive. This, in turn, might deter liquidity providers from exposing their trading interest in an open order book (SEC 2004: 11166).

4. An iceberg order peculiarity regards to time priority, which is lost whenever the visible part is fully executed. Then, the visible part is 'refilled' from the remaining volume, and the new peak receives a new timestamp which eventually leads to a loss of time priority.

5. See D'Hondt et al. (2003: table 4).

6. It must be noted that the data set used by Pardo and Pascual (2003) does not include hidden orders flagged as such. Instead, the authors operate with publicly available order book information, whereas they compare reported executions with the order book information available for the respective execution time. On this basis, the existence of hidden orders is reconstructed. One assumption underlying this methodology is that the findings 'are conditional on the implicit assumption that the sub sample of executed iceberg orders is representative of the whole sample of iceberg orders submitted' (Pardo and Pascual 2003: 14).

7. figure 5 in Nasdasq Economic Research (2003) indicates that about 40 per cent of total liquidity is hidden.

8. The trivial approach compares total iceberg order volume to total submitted volume. In terms of nominal (i.e., Euro) volume, the overall share of iceberg orders on Xetra is about 10 per cent.

9. Within the scope of this paper, XLM for the indices is calculated on the basis of naïve averages. In contrast, the XLM usually calculated by Deutsche Börse is on the basis of the respective index weights. For example, the DAX XLM for the [euro]25k-volume class amounted to 9bps in October 2003. As the purpose of this illustration is to point out the differences in hidden and visible liquidity, the naïve average might serve as a fair proxy for the usually performed, weighted calculations.

10. An example for this execution opportunity is provided in figure 4 which will be presented in the next section.

11. This parameter is in addition to (and not to be confused with) the minimum volume for an iceberg order.

12. Harris (2003: 323–7) discusses four problems of block initiators in executing large order sizes: Latent demand, order exposure, price discrimination and asymmetric information. Addressing these problems reflect block initiators key requirements in trading. Whereas the problems of price discrimination and asymmetric information are often in the nature of large order sizes and hardly solvable at all, Volume Discovery addresses the problems of latent demand and order exposure. The latent demand problem refers to high search costs for block initiators to find a matching counterparty. Volume Discovery addresses this problem with the simultaneous double exposure of volume orders within a single liquidity pool. The order exposure problem refers to the increased market impact costs that block initiators can expect by unintended information spill over if they expose their large trading interest to other market participants. Volume discovery addresses this problem as volume orders are not disclosed to the market with their full size in the order book.

13. NYSE Rule 127 (Block Positioning) facilitates public limit orders on the Floor to participate in block crossing transactions at the clean-up price if the crossing shall take place outside the prevailing quote (NYSE 2005).