

Order Flow Imbalance

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1 Questions

- **What’s the motivation behind measuring OFI at multiple depth levels of the order book?**

Answer: Including deeper book levels often improves predictive power. Xu et al. (2019) show that a regression of mid-price change on the multi-level OFI (MLOFI) vector has progressively higher goodness-of-fit as more levels are added. In other words, order flow beyond the best quotes carries significant information about price formation. Similarly, Cont et al. (2023) find that combining multiple levels into an “integrated OFI” via PCA explains price impact better than using only the top level. The intuition is that liquidity and pressure at several levels influence short-term price moves, so capturing multi-depth imbalance yields a richer signal than a single-level measure.

- **Why do the authors use Lasso regression rather than OLS for estimating cross-impact?**

Answer: In multi-asset models of cross-impact, the number of potential cross-terms can be large, but many of them are likely negligible. Cont et al. therefore assume a sparse structure for the cross-impact coefficients and use LASSO (L1-penalized regression) to estimate them. LASSO performs both shrinkage and variable selection, setting many small coefficients to zero. This enhances prediction and interpretability when the true cross-impact structure is sparse. In fact, Cont et al. explicitly note that under a sparsity assumption, LASSO is preferred to avoid overfitting and to select the relevant cross-asset OFI predictors. In contrast, plain OLS would include all cross-terms and suffer from high variance when the design is high-dimensional or multicollinear.

- **Why is OFI considered a better predictor of short-term returns than trade volume?**

Answer: OFI often outperforms raw trade volume in predicting short-term returns. Prior work shows that price changes correlate almost linearly with the order flow imbalance at the quotes, whereas the relationship with simple trade volume is noisy. Cont et al. (2011) find that OFI (net supply/demand at the best bid/ask) explains price moves with a stable linear impact model, whereas the connection between price changes and signed trade volume is much weaker and less robust. Intuitively, OFI captures not just how much was traded but where in the book supply and demand shifted, making it a more direct measure of temporary price pressure than aggregate volume. Thus OFI tends to be a stronger, more reliable predictor of immediate price moves than volume alone