



Special Issue on Computerized and High-Frequency Trading: Guest Editor's Note

Michael A. Goldstein*

Babson College

Unlike established topics in finance, such as dividend policy, capital structure, or asset pricing, computerized and high-frequency trading is a new, emerging, and rapidly evolving area for the markets, regulators, and the public. The use of computers to facilitate high-speed and high-frequency trading continues to be a significant topic in the popular press and public policy debate, including very recently.¹

While some are experts, many in academia are relatively unfamiliar with the relatively new and ever changing issues and research related to high-speed trading. Therefore, when the editors of *The Financial Review* (Robert A. and Bonnie F. Van Ness) asked me to be a guest editor for this special issue on computerized and high-frequency trading, I was not sure we should compile a “typical” special issue, which

*Corresponding author: Finance Division, Babson College, 231 Forest Street, Babson Park, MA 02457-0310; Phone: (781) 239-4402; Fax: (781) 239-5004; E-mail: goldstein@babson.edu.

¹ The U.S. Securities and Exchange Commission issued a concept release (SEC, 2010) discussing issues related to computerized and high-frequency trading and the U.K.'s Government Office for Science sponsored an entire Foresight project on “The Future of Computer Trading in Financial Markets” (Foresight, 2012). This area continues to be an area of interest for regulators and the popular press: in December 2013, SEC Commissioner Michael Piwowar called for a comprehensive structural review of current computer-driven equity markets (Piwowar, 2013), and in the first six days of January 2014, the Financial Industry Regulatory Authority (2014) specifically mentioned algorithmic trading, trading systems, and high-frequency trading in its list of market regulation and enforcement priorities (FINRA, 2014) and the *Wall Street Journal* covered a story on rapid trading and high-speed traders creating a lobbying group (Hope and Patterson, 2014).

tends to be a collection of stand-alone empirical and theoretical papers on a similar topic. Instead, I wanted to put together a portfolio of papers, with some introducing the topic, some discussing regulatory issues, some more traditional empirical papers, and some highly technical papers that examine some issues specific to this new world of high-speed trading in a unique and unusual way. My hope was for the special issue to be like a buffet, with papers for all finance academics interested in this topic to sample, whether their background is in corporate finance, market microstructure, or physics.

The twelve papers in this special issue are collected to meet this goal, and are basically grouped by topic, going from computerized trading, to issues with speed, to high-frequency trading, with each section started by an introduction/discussion paper. The first paper (by Pavitra Kumar, Frank C. Graves, and me) can serve as an introduction to the entire issue, and as reference to interested readers from all fields on the current state, topics of debate, and academic research on computerized and high-frequency trading. Jeffrey H. Harris and Mohsen Saad then show how today's electronic messages "mimic" sound from trading floors. Laura Cardella, Jia Hao, Ivalina Kalcheva, and Yung-Yu Ma next introduce computerized trading on a variety of markets, including derivative markets, and Tina Viljoen, P. Joakim Westerholm, and Hui Zheng show the effects of algorithmic trading on futures markets over the course of the day.

The next three papers specifically deal with speed. James J. Angel introduces the physical limitations on current trading due to Einstein's theories and relates quantum physics to finance. Gregory Laughlin, Anthony Aguirre, and Joseph Grundfest use Einstein's theories and the provision of U.S. Federal Communications Commission licenses to show how the addition of microwave towers reduced transmission delays and execution latencies and affected price discovery from the Chicago futures markets to the New York/New Jersey equity markets, and show that information transmission from Chicago to New York is rapidly approaching the theoretical limit of 3.92 milliseconds based on the speed of light, the great circle of the Earth, and the current microwave tower array. Shengwei Ding, John Hanna, and Terrence Hendershott then demonstrate that proprietary data feeds provide meaningfully faster information about the market than the official National Best Bid or Offer, resulting in millisecond price dislocations.

The last group of papers address high-frequency trading. Albert Menkveld introduces and reviews issues related to high-frequency trading. Jonathan Brogaard, Terrence Hendershott, Stefan Hunt, and Carla Ysusi examine if changes in speed on the London Stock Exchange (LSE) affected institutional trading costs. The next two papers examine order submission strategies: Elvis Jarnecic and Mark Snape on the LSE and Björn Hagströmer, Lars Nordén, and Dong Zhang on the NASDAQ-OMX Stockholm exchange. Finally, Ryan Davis and Bonnie F. and Robert A. Van Ness show that high-frequency trading orders cluster less than those from humans. Collectively, these twelve papers make for an interesting issue and should provide an entry point to any academic, regardless of their prior knowledge of the topic.

All of the papers submitted to this special issue (including mine) were peer-reviewed by one or more anonymous referees. I am very grateful to the referees for their service; without their help, this special issue would not have come to fruition. I would also like to thank Bonnie F. Van Ness and Robert A. Van Ness, the editors of *The Financial Review*, for serving as the editors for my paper, for asking me to serve as a guest editor for this issue, for teaching me how to use the electronic editorial system, and for answering my many (almost daily) questions. Finally, I would like to thank all authors in this issue (all of whom had to undergo multiple rounds of revisions) for putting up with my first effort at editing and, in particular, with the rush of e-mails and revisions at the end to get these papers submitted on time.

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