JOIM
www.joim.com

Journal Of Investment Management, Vol. 19, No. 4, (2021), pp. 136–137

BOOK REVIEW

Mark Kritzman, Senior Editor

TRADING AT THE SPEED OF LIGHT: *HOW ULTRAFAST ALGORITHMS ARE TRANSFORMING FINANCIAL MARKETS*

by Donald Mackenzie
(*Reviewed by Hanbin Im*)

Financial markets have gone through extraordinary changes in last few decades from the days of "pit" traders to automated trading run by computer algorithms. At a glance, such changes seem like natural consequences of advances in technology, but at its core lies complex relationships among different stakeholders and their interests. As a result of such complexity, different segments of financial markets—namely futures, shares, sovereign bonds, and foreign exchange—have evolved similarly and differently at the same time. This book, "Trading at the Speed of Light: How Ultrafast Algorithms Are Transforming Financial Markets", by Donald Mackenzie approaches this important evolution of financial markets from a social science angle through hundreds of insightful interviews and fieldwork.

The book first depicts how the electronic trading markets were shaped in futures, shares, sovereign bonds, and foreign exchange in great detail. In each market, the interests of regulators, traditional broker-dealers, and high frequency traders (HFT) interacted and collided differently with respect to emerging technologies and their consequences. It is particularly fascinating to see how such difference in interactions and collisions has resulted in different landscapes for HFT today in these asset classes. For example, while HFTs are major providers of liquidity in the futures and shares markets in both the United States and Europe, HFTs are almost non-existent in European government bond markets. On the other hand, HFT's presence is relatively greater in the United States Treasuries market due to different stances of regulators towards the entrance of HFTs. The foreign exchange market is further differentiated from the others. Its lack of centralized clearinghouse made the rise of an anonymous order book difficult, and as a result, a strong consortium of broker-dealers in this market maintained strong influence on how the market operates. While the technologies employed by HFTs in these markets may be similar in essence, factors other than the technology such as politics, geographic locations of data centers, existence of a centralized clearing place, and regulation contributed to the divergence in HFTs' presence and

thus today's electronic trading landscape in these markets.

Not all HFTs operate equally, and the book categorizes HFTs into two species—the 'Makers' and 'Takers'. Makers "make" the markets by continuously posting bids and offers while mitigating the risk of having staled quotes, which will lead to incurring a loss. Therefore, speed is utmost priority for the makers, and having an excellent engineering and infrastructure is crucial. On the other hand, takers "take" the bids and offers posted by makers by capturing different forms of profitable opportunities. The author groups takers into three categories by strategies they implement: use of more sophisticated quantitative models for better price predictions, picking off stale quotes, and predicting the behavior of making algorithms. As the profitable opportunities for takers do not continuously arise, takers tend to focus more on the mathematics and models for prediction rather than speed. Just like the establishment of HFT's presence, interactions between making and taking algorithms are influenced by a variety of factors such as politics, regulation, and different interests of stakeholders.

Throughout this book, the author analyzes the world of HFT through the notion of "material political economy." HFT's materiality is highlighted, for example, via its sensitivity to locations of data centers and the physical limit on how fast the signals can be transmitted. At the same time, HFT is political because the conflicts between challengers (HFTs) and incumbents (traditional broker-dealers), as well as the decisions by politicians and regulators, affect HFT's existence and operation. The book connects how HFT firms make profits and how their profitability is linked to the state of the market structure as one of the economic aspects of HFT.

Those who are new to the world of "HFT" will certainly benefit from this book, but so will industry experts. The author provides an inside view based on a range of industry perspectives and in-depth interviews that would be hard to find anywhere else. The book is also a great guide for those who want to learn both the operation and driving factors of today's electronic trading markets in different asset classes. By not only focusing on technicalities and strategies of HFT, but also on how the actual market system has formed and why certain strategies are implemented, the book guides readers to learn the "why", not just the "what" of ever-transforming financial markets.