

Modeling Information Revelation and Trading In Centralized Markets

Paul Pfleiderer
Graduate School of Business
Stanford University

2019 FTG Summer School at Wharton

A long-standing notion in economics — going back at least to Hayek’s famous AER article¹ — is that markets aggregate dispersedly-held information and reveal that information through prices. It is often claimed that financial markets are the most likely settings for information aggregation and revelation through prices to be achieved at a high level. Over the past half century this has motivated a large theoretical and empirical literature that has explored the conditions under which financial markets perform well (and not so well) in being “informationally efficient.”

In this session we will look at some of the challenges that one faces in modeling how information comes to be revealed in trading and impounded in prices. A number of modeling approaches have been taken based on different sets of assumptions regarding, among other things, the nature of the information motivating trade, the trading mechanisms and protocols, and the extent to which informed and other traders are strategic. Several “canonical” models were developed early on (e.g., the Glosten and Milgrom model and the Kyle model) and a fair amount of the later work took the form of variations on these models. In the session we will focus mainly on the early work that lay the foundations for much of what followed, but we will discuss some of the extensions that were subsequently developed.

We will attempt to look at the big picture issues as well as the nuts and bolts details. Modeling almost always involves difficult tradeoffs (e.g., how much should one be willing to make less realistic assumptions in order to make things simpler and more tractable?). Given the inevitable simplifications that must be made, how should we interpret the results of the model and how can they be applied to actual market settings? Specifically, what implications can we draw from theoretical modeling for policy issues concerning market design and regulation? More generally, how do we aggregate the results of these many models and to what extent can we rely on empirical testing to sort things out? Let me say at the outset in order to establish “rational expectations”: I have no simple answers to any of these questions, but they are questions that are always worth asking.

¹, Hayek, F. A, “The Use of Knowledge in Society,” *The American Economic Review*, Vol. 35, No. 4. (Sep., 1945), pp. 519-530

The following papers will be the focus of much of the session.

- 1) Grossman S. and J. Stiglitz, (1980), "On the Impossibility of Informationally Efficient Markets," *American Economic Review*, 393-408
- 2) Hellwig, M. F. (1980): "On the Aggregation of Information in Competitive Markets," *Journal of Economic Theory*, 477-498
- 3) Admati A. and P. Pfleiderer (1985), "A Monopolistic Market for Information," *Journal of Economic Theory*, 400-438
- 4) Glosten, L. and P. Milgrom (1985), "Bid, Ask, and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders," *Journal of Financial Economics*, 71-100.
- 5) Diamond D. and R. Verrecchia (1987), "Constraints on short-selling and asset price adjustment to private information," *Journal of Financial Economics*, 277-311
- 6) Kyle A. (1985), "Continuous Auctions and Insider Trading," *Econometrica*, 1315-1336
- 7) Admati A. and P. Pfleiderer (1988), "A Theory of Intraday Patterns: Volume and Price Variability