Opaque Trades

Randall Dodd

Not all financial innovations increase efficiency. Here are three with questionable effects

THREE innovations in electronic trading of stocks and options have been in the headlines recently: high-frequency trading, flash trades, and dark pools. Technical improvements such as these are usually assumed to raise efficiency, but these innovations challenge such assumptions and may pose some public interest concerns because of their effect on stability.

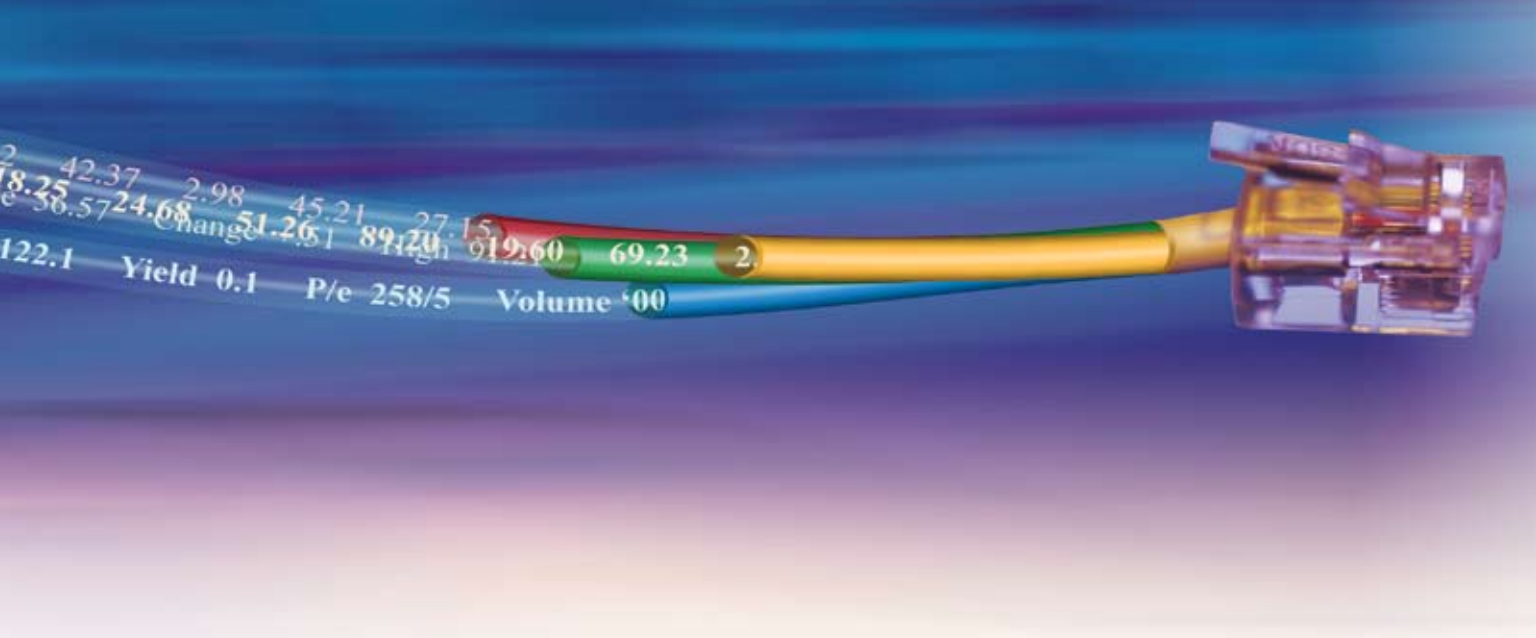
Studying market microstructures illuminates the processes through which prices are determined. Markets often appear to be magic black boxes. Supply and demand go into the box and an invisible hand pulls out the price—much like a magician producing a rabbit from a hat. But important things happen inside those boxes. In the case of electronic trading of securities and derivatives, the microstructure inside the box includes the mechanisms for submitting buy and sell orders (that is, bid and offer quotes) into a market, viewing of those quotes by market participants, and executing trades by matching orders to buy and sell. If this is done in an immediate and transparent manner that enables all market participants to see and trade at the same prices, then reality approaches the ideal of the efficient-market hypothesis. When markets become segmented and informational advantages are built into market mechanisms, efficiency is impaired and fairness undermined.

This article explores these financial policy issues to explain how they impact pricing efficiency at the market microstructure level and to discuss how corrective regulation can improve efficiency.

High-frequency trading, flash trading, and dark pools all have their origin in two key marketplace innovations—*electronic trading* and the closely related *alternative trading systems* (ATS). Electronic trading has quickly come to dominate traditional trading, both on exchanges and in over-the-counter markets. Computer systems automatically match buy and sell orders that were themselves submitted through computers. Floor trading at stock and derivatives exchanges has been eliminated in all but the largest and most prominent markets, such as the New York Stock Exchange (NYSE), and even in those markets floor trading coexists with electronic trading. ATS are computer-automated order-matching systems that offer exchange-like trading opportunities at lower costs but are often subject to lower disclosure requirements and different trading rules.

High-frequency trading

High-frequency trading (HFT), also called black box trading, uses high-speed computers governed by algorithms (or instructions to the computer) to analyze data, identify investment opportunities, and manage order flow to the markets. An HFT firm can submit a thousand orders a minute to an exchange and just as quickly cancel them and submit different ones. An estimated 90 percent of orders submitted by high-frequency traders are canceled. For example, if a share has a $9.90 bid price (to buy) and a $10 offer price (to sell), an HFT firm might seek a small but low-risk profit by raising the bid to $9.91 and lowering the offer to $9.99 (an 8-cent spread) if the algorithm deems that these changes will have a sufficiently high probability of triggering immediate trades. If these improved quotes indeed result in immediate trades, the HFT firm gains the 8-cent bid-ask spread on each share traded in this manner. The risk is that only one leg of the deal will be executed immediately, with a delay in fulfilling the other leg after a change in market prices that results in a loss. If the HFT firm buys at $9.91



but finds no takers for the offer at $9.99, and the market prices drop below $9.91, the HFT firm has a short-term loss.

HFT amounts to big money. The TABB Group, a financial markets research firm, estimates that profits from HFT were $21 billion in 2008—not an easy year for financial markets. The top broker-dealers, such as Goldman Sachs; top hedge funds, such as Citadel; and independent firms, such as GETGO, invest heavily in supercomputers and in software designed for the business. The considerable cost explains the high-profile legal cases filed last summer after Goldman Sachs charged a former employee with stealing the computer code to its trading algorithm. Competition for lucrative HFT business is so fierce that firms pay to locate their computers as close as possible to those of the exchanges and ATS to minimize "latency," or delays in communication. Some pay to locate at the same place as the order-matching engines. A microsecond delay in submitting an order can mean the difference between being at the front of the line—and executing the trade—and being back in the queue with an unfulfilled executable order. The gain on each trade may be small—Rosenblatt Securities estimates that the average revenue for HFT in equities is between $0.001 and $0.002 a share—but the volume is enormous, and some exchanges and ATS pay rebates to the HFT firm for generating the volume. HFT firms received $3.7 billion in such rebates in 2008. Today, HFT generates an estimated 73 percent of the total trading volume on U.S. stock markets and about 20 percent at options exchanges.

There are public interest concerns with HFT. Some critics contend that the extremely rapid pace of this trading results in larger and more sudden changes in market prices in response to significant events and news. These concerns are similar to those raised following the 1987 stock market crash, when attention became focused on program trading that automatically generated sell orders in stock index futures trading on the Chicago Mercantile Exchange whenever the price of the related stocks on the NYSE dropped.

Another concern is that HFT makes the playing field less competitive, putting dealers (also known as market makers or specialists) at a disadvantage compared with the rest of the market (known as customers). The orders submitted to the market by customers have priority over those submitted by dealers. This priority is grounded in the mandate that markets exist primarily for customers; the role of dealers is to step in only when needed to provide trading liquidity or to maintain a two-sided market of bid and offer quotes. The problem is that sometimes HFT orders function in the same way as market makers by providing liquidity and a tight bid-ask spread, but high-frequency traders can withdraw from a market that is too volatile or trading too slowly. In this way, they take business from dealers during normal times when there are normal risks and leave dealers with the obligation to make markets when it is more risky and less profitable—especially during a disorderly market.

Flash trading

A standard stock trade consists of an order to buy (or sell), either at the prevailing (market) price or at some predetermined (limit) price. The order is submitted to an exchange (or ATS), where it is automatically matched with a standing offer or an incoming order to sell. The sell order that is matched to the original buy order may come from another exchange or ATS that is part of the national market system. In any case, all the orders—and any transactions that result from those orders—are public and can be observed equally by all market participants.

That's not so with a flash trade, which occurs when an incoming order to one ATS or exchange is revealed (flashed) for a fraction of a second before being sent to the national market system. If a trader at the venue that received the flash can match the best bid or offer in the system, then the trader can pick up that order before the rest of the market can see it. The result is a flash trade. The NYSE used to allow its designated dealers, called specialists, to benefit from an advance look at incoming orders, but the exchange has ended the practice in favor of giving all market participants equal access to all price quotes.

Flash trades are an important part of the business model for some exchanges. The NYSE banned the practice because it is inconsistent with the exchange's level-playing-field policy. However some of the ATS compete toe-to-toe with the established exchanges for trading volume, and they have adopted the use of flash trades to pull trading business away from the exchanges.

There are several public interest concerns with flash trading. Flash trades allow a privileged market segment to trade ahead of the rest of the market or trade with earlier order-flow information than the overall market has. This violates the principle of market fairness—which is enshrined, for example, in U.S. regulations—and the efficiency it generates. It also discourages market makers from posting quotes that expose them to risk without guaranteeing them trading priority. Although a fraction of a second may not seem like much, it is a long time given that decision making and order routing in electronic exchanges and trading systems operate in microseconds.

Dark pools

Dark pools are electronic trading systems used by broker-dealers, institutional investors, and hedge funds to negotiate large securities transactions outside formal exchange trading rules—including the rules that require that bid and offer quotes be broadcast to the entire market. Instead, using dark pools, participants can narrowcast (to a restricted audience) an "indication of interest" to buy or sell a specific quantity of securities at a set price or a price to be determined. For example, a dark pool participant might indicate interest in buying 40,000 shares of IBM at the 2 p.m. or at the closing price that day. In this way the dark pool participant can arrange a large purchase with less risk of pushing up the price by doing so.

There are other ways to handle large purchases or sales. One is to break the transaction into many smaller ones and trade them on the open market in a manner that does not signal the full scale of the investment decision. This method carries with it the risk that a large purchase or sale will move the price. Another option is to conduct a "block trade," which is negotiated bilaterally off the exchanges but reported immediately to the exchange to minimize the loss of transparency. The standard process for negotiating a block trade is more work, and the process is less liquid too.

Dark pools—which are owned by exchanges, broker-dealers, or independently—use a more efficient electronic trading platform to negotiate large deals and do not require a firm to identify itself or the prices at which it is willing to trade. Transactions made through dark pools are recorded as over-the-counter, not exchange, transactions, and the size, price, and time of consummation are not publicly disclosed.

Trading in dark pools allows firms to make large trades without the risk that their large order will move the market price away from their preferred price. In open trading, firms expose their orders—that is, they disclose them to the public when they are displayed through exchanges. When large orders are exposed, market participants could react by raising their offers or lowering their bids. HFT has accelerated the speed at which the market price responds to new orders.

There are several public interest concerns with dark pools as well. One is that the trading volume, as well as the disclosure of bid and ask quotes, is cloaked from the price discovery process that occurs on exchanges and related ATS. This activity also fragments the market and allows those participating in dark pools to observe "intent," which does not show up as quotes on the public markets. This creates differential access to relevant market information. It robs the public-market system of the full depth of the market's willingness to buy or sell. Moreover, trading in dark pools circumvents surveillance authorities that monitor trading activity.

Tilting the balance

Technical innovations, especially in the area of electronic trading (that is, data processing), can offer powerful means of raising productivity. But the changes brought about by such innovations can also make former institutional rules and market arrangements obsolete. The new ways of conducting business may profoundly change the balance of market power and tilt the playing field. HFT is also a contest of man versus machine. Although by itself it does not create asymmetry or an uneven playing field—and it does add to market liquidity—HFT seems to put the pace of human deliberation at a disadvantage. HFT can reduce the benefits of stop orders for regular investors who employ them as a means of managing their risk. It can turn an error, such as a mistaken large sell order, into a systemically disruptive event by almost instantaneously triggering other automatic responses to the initial mistake. The interaction of competing HFT programs may have unforeseeable consequences.

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Flash trades create privileged access to certain information for a segment of the market and create disincentives for dealers to quote and quote aggressively. Flash orders generate only private benefit to the ATS that seek to take trading volume from other venues. Dark pool trading arises from a deliberate effort to avoid the transparency of exposing bids and offer quotes to the public marketplace.

Regulatory authorities, some of which were welcoming these innovations a few years ago, are now subjecting them to scrutiny. The U.S. Securities and Exchange Commission is proposing rules to prohibit flash trades and subject dark pool trading to higher disclosure requirements. The U.S. Commodity Futures Trading Commission has reported that it is continuing to study these trading developments and is considering the proper regulatory response to ensure that all investors have fair access to markets and that stability is not threatened. ■

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