U.S. DVDs. And foreign computer and business service firms are now "insourcing" to the United States; for instance, buying or establishing a U.S. affiliate so that they can better manage their interactions with U.S. customers.

Foreign outsourcing has also helped U.S. firms to lower their computer hardware, software, and other input costs by obtaining these items offshore. These cost reductions have given the U.S. economy an indirect boost by allowing firms to attract business they otherwise would not have had and therefore to employ people they otherwise could not have employed. Analysts do not know how many outsourcing-related hires have offset the 1 million outsourcing-related layoffs over this period. But it is clearly wrong to compare the estimated 1 million gross layoffs caused by outsourcing with the net loss of 2 million jobs between late 2000 and late 2003. That would be like comparing an apple with half an orange.

**In truth,** it should be no surprise that the economic impact of these recent job shifts has been pretty modest to date. For one thing, imports of "other private services," which include the business and professional services of most interest in the current debate, amounted to only 0.7 percent of GDP in 2003, while U.S. imports of "other private services" from all of developing Asia (not just China) amounted to less than 0.1 percent. That's far too small to have a significant impact on U.S. output or job growth.

Second, while the U.S. is running a huge trade deficit overall, the nation continues to export more services than we import. Indeed, our trade surplus in "other private services" is growing not just overall but vis-à-vis developing Asia as well. Clearly, U.S. workers remain highly competitive in high-value-added services—even in Asia.

Most important, these job flows must be viewed in the context of the truly extraordinary dynamism of the U.S. economy—an economy in which almost 1 million people leave an old job and almost 1 million people start a new one every week. From time to time, over periods of a year or two, job separations may slightly exceed hires, and employment falls. But over the long haul since World War II, hires have exceeded separations and employment has grown decade after decade, despite our increased exposure to international trade. This relationship held during the period of U.S. business expansion in Europe in the late 1960s and 1970s, when the Europeans were sure that Americans would wind up owning all of Europe. The relationship also held in the 1980s, when the land under the Emperor's palace in Tokyo was worth as much as the state of California and Americans thought the Japanese might buy up much of the U.S. And it held in the NAFTA years, despite that giant sucking sound. None of these episodes had any perceptible lasting impact on long-term U.S. job growth. The same will surely be true of the developing world's emergence as an economic power. ✳



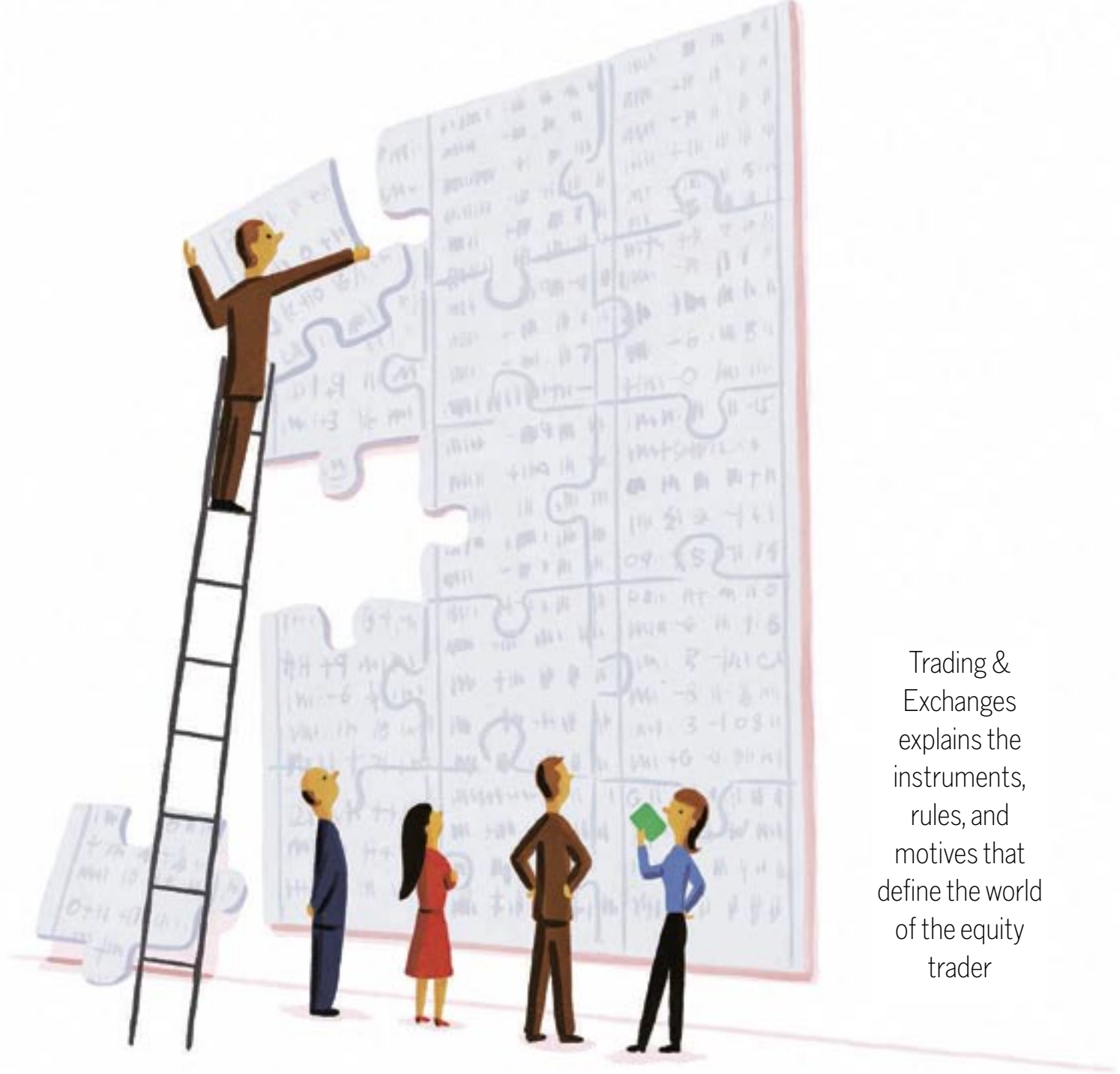
# book review

## Rules of the game

*RADING & EXCHANGES: Market Microstructure for Practitioners* is hefty both in size and in merit. Written by Larry Harris, a prominent financial economist at the University of Southern California currently serving as the chief economist for the Securities and Exchange Commission (SEC), *Trading & Exchanges* is a must-read for anyone interested in the good, the bad, and the ugly of securities trading. It clearly explains the details of the instruments, the institutions, the rules, and the motives that define the world of the equity trader. Harris illuminates the features of an interactive system in which the often-conflicting interests of traders and the market's institutional arrangements affect the prices of securities and define the winners and losers in the trading game.

***Trading & Exchanges: Market Microstructure for Practitioners***
By Larry Harris
599 pages plus extensive bibliography and index
Oxford University Press, 2002

By Peter Fortune
Illustrations by Dan Yaccarino



Trading & Exchanges explains the instruments, rules, and motives that define the world of the equity trader

The book is well timed, coming in the midst of investigations of trading activities at mutual funds and at major exchanges, at a time of intense competition between different exchange mechanisms (the New York Stock Exchange's specialist system and Nasdaq's electronic system), and in an atmosphere of debate about the fundamental rules that have long proscribed traders' decisions. A thorough reading will enhance the practice of the practitioner, the economics of the economist, and the finances of the financier. Whatever one thinks about the recent travails of the SEC, it clearly has a remarkably well-informed chief economist for these trying times.

While it certainly has a scholarly foundation and a bit of algebra, the book is written for practitioners; a Ph.D. in economics or finance is not required. Rather, Harris guides the reader skillfully through an extremely complicated subject. Each chapter begins with a clear statement of its goals and ends with a clear summary of its achievements. Meaningful terms are italicized to let the reader know that they will be used in subsequent discussion. In the early chapters, for example, the reader is introduced to a taxonomy of trading motives, such as *hedging*, *bluffing*, *arbitrage*, *news trading*, *utilitarian trading*, and so on. This taxonomy is not gratuitous—the terms define and highlight the different trading styles that exchanges and trading institutions must incorporate and serve, and the italics provide road signs that keep the reader on track. Harris has obviously thought carefully about how to help the reader carry a heavy load without unnecessary huffing and puffing.

The book is also liberally dosed with examples—real and hypothetical—that illustrate the concepts developed in the text. Many are anecdotes about market manipulations, deals gone

good or bad, and trading experiences. Want to read about *front running*? Or *quote matching*? You will find simple, clear examples in the sidebars, with supporting details in the text. Just reading the sidebars is an education.

So much for style. What can a reader get from this book? The answer is, more than any reviewer can report. The first quarter of the book sets the background by identifying the key elements of market microstructure—the instruments (primarily equity-related); the institutional arrangements and actors that facilitate trades (dealers, brokers, exchanges, specialists, floor traders, clearing and settlement agents); the key trading styles (investor, speculator, bluffer, hedger, arbitrageur, news trader); the types of orders that exist (market, limit, stop, market-not-fill, fill or kill); and the acronymic parties that regulate the securities industry (the SEC, the SROs, the CFTC). This portion of the book is not unique—plumbing diagrams for markets and transaction mechanisms are covered in many books. What makes Harris's treatment so valuable is the depth of the detail, the careful crafting of concepts used throughout the book, and his skillful application of economic insights.

One way to convey the flavor of the rest of this encyclopedic volume is to highlight some of the lessons that can be learned.

The trader's bread and butter is the ability to mask motives and hold information close to the chest

This review focuses on insights that crop up repeatedly in Harris's book. One is the crucial role that information plays in shaping trading behavior and setting prices. Each trader is in competition with every other trader, and the ability to mask motives and hold information close to the chest is a trader's bread and butter. The second is the role that exchanges and other institutional arrangements play in providing liquidity—they make their money by giving traders a way to convert a security to a more liquid asset (such as cash) quickly and at low cost.

### INFORMATION, ADVERSE SELECTION, AND THE BID-ASKED SPREAD

There are many economic situations where buyers and sellers are aware that they have access to different information. For example, a health insurance company knows that its customers have more information about their own health and habits than does the company. It also knows that customers who decide to buy insurance are more likely to have poor health than those who do not—an example of what economists call *adverse selection*. At a given premium, the insurance company would rather transact with healthy customers; but since it can't always distinguish them from unhealthy customers, it must charge a higher premium to everyone.

A security dealer is in a similar position. Its customers include both *informed* and *uninformed* traders. Informed traders have special information about the fundamental value of a security, perhaps from access to inside information or from highly developed forecasting skills. Informed traders typically profit from their information by buying when dealers set the price at which they are willing to sell too low, and selling when dealers set the price at which they are willing to buy too high. Uninformed traders, among whom Harris would count *dealers* (because they make their living on trade-making, not on special knowledge), *utilitarian traders* (who trade for reasons unrelated to knowledge of futures prices, such as diversifying a concentrated portfolio), and *noise traders* (whose trades are conditioned by whim, enthusiasm, and irrelevant information), will lose money in the long run to informed traders. Because trading is a zero-sum game—one gets above-average returns

only because someone else gets below-average returns—the money that informed traders make comes from uninformed traders.

Harris uses these insights to analyze the *bid-asked spread*—the spread between the price at which a dealer will buy (the bid price) and the higher price at which he or she will sell (the asked price). He identifies two components to the spread. The first is the minimum spread that covers the dealer's expenses: If the cost of financing inventory, renting space, acquiring trading technology, setting up shop, and the opportunity cost of time is 25 cents per share traded, the bid-asked spread can't long fall below 25 cents or the dealer will go out of business.

But to this the dealer adds an extra amount to reflect the differences in information that exist because the dealer trades with informed and uninformed traders, often without knowing which type is on the other side of the trade. That is, the dealer faces an adverse selection problem similar to the one faced by the health insurance company. Dealers would rather trade with uninformed traders and avoid informed traders—the mere fact that someone wants to trade with the dealer might reveal that the dealer's quotes are out of line. But when asked for a quote, dealers typically don't know if the other trader is informed or uninformed (although they do their best to find out). To be compensated for the risk that the trader is informed, the dealer will widen the bid-asked spread and collect more from both informed and uninformed traders. In effect, uninformed traders are paying the dealer for his losses on trades with informed traders. Moreover, trading costs are higher than in a world where informed traders are easily identified, and the volume of trading is lower. Differences in information result in markets that don't always work efficiently.

Dealers want to avoid informed traders and trade with uninformed traders, but can't always tell them apart

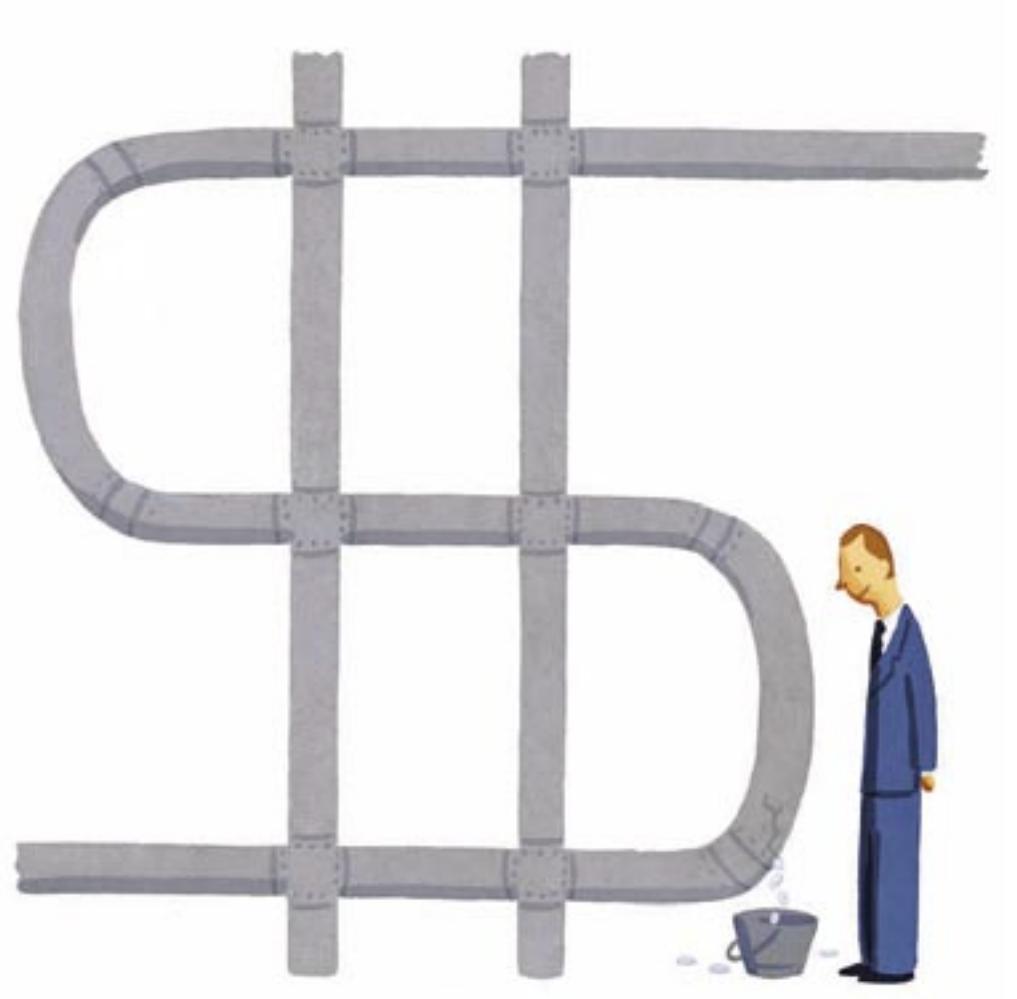
### LIQUIDITY, LIMIT ORDERS, AND EXCHANGES

Exchanges exist to facilitate trades and provide liquidity to traders. But if the traders who supply valuable liquidity don't receive compensation, they are likely to provide less of it than is efficient. So exchanges have an incentive to set rules that encourage those trades to provide liquidity—although in some instances, these rules have other consequences as well.

Market orders for securities, Harris notes, represent a demand for liquidity—traders submitting them want to trade quickly, and they are willing to pay a price to be able to do so. When there is an imbalance between market buy and market sell orders—more buys than sells, or the reverse—the demand for liquidity exceeds the supply. The missing liquidity can be provided by a *limit order book* that lists the orders to buy or sell specified quantities at specified prices.

For example, suppose that a market order to buy 100 shares of ABC Corp. remains unexecuted for want of a matching market sell order. If a trader places a limit order to sell 200 shares of ABC at $75, the 100-share market buy order will be matched with the limit order and executed at $75 per share; a limit sell order for 100 shares at $75 will remain in the book awaiting a future market buy order for 100 shares or more. If no limit orders existed, ABC's price would rise to whatever level is necessary to generate a market sell order for 100 or more shares to match the buy order. Just as market orders represent a demand for liquidity, limit orders are a source of liquidity. Without limit orders, liquidity would be reduced and market buy orders would generate greater price volatility.

These limit orders have value to other traders—a limit order to buy 1,000 shares at $50 is a put option (the right to sell a security



at a specified price) for a trader who owns the security or wants to sell short; he knows that he can submit a market sell order for at least 1,000 shares that will be executed at a price no lower than $50. Similarly, a limit order to sell 1,000 shares at $50 is a call option (the right to buy a security at a specified price); a potential buyer knows she can buy at least 1,000 shares at a price no higher than $50. The limit orders have an option value because they allow market-order traders to make trades quickly—that is, to obtain liquidity—and diminish risk. But limit-order traders receive no compensation for this value, and thus they submit fewer limit orders than if they did receive compensation. This raises the number of market orders relative to limit orders—in other words, increasing the demand for liquidity while reducing its supply. As a result, the market is less liquid and prices are more volatile than is desirable.

Exchanges make money by providing liquidity—they let traders convert securities into cash

But because exchanges compete with each other for business, they have an incentive to adopt rules that increase the supply of liquidity and reduce the inefficiency. In the case of limit orders, there are a number of ways to accomplish this. Harris not only gives a flavor of the different methods, but also discusses some of their unintended consequences.

The approach adopted by the New York Stock Exchange and some others is to introduce a trader responsible for smoothing prices—a *specialist*. The specialist matches market buy and sell orders and keeps a limit order book. During periods when liquidity is especially low, the specialist is supposed to enter buy or sell orders for its own account, thereby directly providing liquidity. But the specialist's services are not without potential adverse consequences. Recently, some specialist firms have been charged with using the information at their command to extract unseemly profits from traders. One way of doing this is to use their monopolistic knowledge of the order book—of the options provided by limit orders—to their advantage, as in *quote matching*. Another technique is *front running*—knowing that a large market buy order has been placed, the specialist might buy for his own account ahead of the customer, execute the market buy order to drive the price up, then sell the shares he had just bought. In short, a specialist system can enhance liquidity, but at some cost—unless the exchange's rules and policing are sufficient to rein in the specialist's greed.

Another way to enhance liquidity is to halt trading during periods when demand for liquidity is high. Prior to 1987, trading halts were informally managed by the individual exchanges. Since then, formal *circuit breakers*, quantitative rules triggering trading halts, have become standard. While the effect of trading halts is controversial, a debate that Harris discusses in detail, they do allow new information to be obtained and assessed, and the reopening of trading can create more stable prices than if trading had continued. Why? Read Harris's sections on the differences between *call markets* and *continuous trading markets*.

Yet another way to encourage liquidity is to reduce the value inherent in limit orders. This might seem counterintuitive, but traders are more likely to submit uncompensated limit orders if the information they provide is less valuable.

One way to reduce the value of a limit order is to increase the *tick value*, the minimum price difference at which trades can occur. A tick value of 1/8 (12.5 cents per share) was once common; at present, a tick is a mere penny a share. At a penny, traders can make money more easily off the limit orders of other traders, because it is more likely that quotes will change by one cent

than by 12.5 cents, and thus more likely that an option will be exercised. In spite of this, major exchanges recently voluntarily "decimalized," reducing their ticks to a penny, after a price-setting scandal brought the threat of Congressional action.

Finally, the value of a limit order depends upon other traders knowing that the order exists. If a trader can place a limit order without revealing its size, he or she has a chance to improve the average price received by selling first to the most optimistic and highest bidders, then to successively lower bidders until the block is gone. Alternatively if a trader wants to use limit orders to sell a large block of shares but is required to place a single order in the book, other traders know that buy orders can be executed at a price no higher than the price in the limit sell order. To encourage large orders, some exchanges, such as the Euronext Paris Bourse and two major Electronic Communications Networks (*ECNs*), Archipelago and Island, allow traders to hide the size of their limit orders.

### EXCHANGE RULES AND ETHICAL BREACHES

Harris also devotes time to outlining the ways that breaches of ethics affect market prices and trading rules. Major exchanges have adopted rules to limit abuses by brokers and specialists. The *public precedence rule* prohibits a broker from placing an order for its own account ahead of an order for a public customer's account; this prohibits front running. The *time precedence rule* prohibits execution of a market order before an earlier-submitted order has been executed for another customer; this prevents brokers from allowing one client's order to front-run another's. Brokers also are prohibited from *fraudulent trade assignments*, in which orders from different clients are executed at different prices, but the broker assigns the more profitable trades to favored clients (the allegation against Hillary Clinton's commodity broker). In short, brokers cannot favor their own accounts or the accounts of preferred clients. Nor can a broker engage in *tipping* one client to the activities of another (think Martha Stewart). Sometimes honored in the breach, these practices will get the attention of the SEC—or of Eliot Spitzer.

Harris also documents practices classified as market manipulation. *Gunning a stock* occurs when a trader buys either the stock or a derivative of it (such as a futures contract) with the intent of triggering others to buy and to drive up the price. *Stop orders* facilitate stock gunning because they become market orders if the stock price reaches the stop level. Similarly, any strategy that introduces momentum into the demand for stocks, such as portfolio insurance, will serve the same purpose.

Harris does a thorough job of laying it all out. There are plenty of useful lessons in this book for the reader who is willing to pay attention, to be patient, and to read carefully—or who is looking for an excellent reference book when questions about market microstructure arise. ✻

## Trading Shenanigans

**FRONT RUNNING** A broker-dealer receives a large buy order but executes a buy order for its own account or for a favored client before executing the first order, thereby profiting from price changes induced by that order.

**GUNNING A STOCK** A trader who knows that stop-buy orders[1] have been submitted buys the stock or a related derivative to trigger the stop-buy orders, then sells the stock after the price rises.

**BLUFFING** A trader with a large long position to sell submits a buy order hoping that other traders will interpret this favorably, creating a price increase after which he/she can sell his/her large position. Bluffers might also use wash trades[2] to create the appearance of increased volume.

**TIPPING** Also called inappropriate order disclosure, this is a form of insider trading in which a broker feeds a client privileged information, such as that a large order has been submitted by another client who is a senior manager of the company. Tipping of stop orders can also lead to gunning the stock.

**FRAUDULENT TRADE ASSIGNMENT** A broker receives multiple buy orders that are executed at different prices, but gives best prices to favored clients rather than assigning correct prices to each order.

**RUMOR MONGERING** Creating misinformation about stocks to profit from price changes.

**PREARRANGED TRADING** A broker arranges a trade with another broker without exposing the order to other traders who might give better prices. Allowed in some markets under certain conditions.

**KICKBACKS** A broker sends an order to be filled at a poor price, then takes a cut of the gains enjoyed by the other broker.

**UNAUTHORIZED TRADING** A broker trades on a client's behalf without informing the client.

**CHURNING** A broker advises a client to buy or sell in order to increase commission revenues. Inattentive clients can be victimized by churning through unauthorized trading.

**QUOTE MATCHING** A quote matcher has information on the order book and uses it to limit losses. If he/she knows that there is a limit order to buy at $75 or less, he/she can buy at $75.05. Potential profits are unlimited but potential losses are capped at five cents per share.

Examples used are buy orders, but the same tactics work with sell orders.
**1** A stop-buy order becomes a market order to buy when the price of the last trade rises to the stop price. Stop-buy orders tend to create upward momentum by inducing price increases after prices have increased. Stop-sell orders work in the opposite fashion, becoming market-sell orders when the price falls to the specified stop price.
**2** Wash trades are the prearranged simultaneous submission of buy and sell orders for equal quantities. They create an illusion of increased volume without affecting prices or traders' net positions.