A Short and Vastly Simplified History of Modern Stock Trading

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Introduction

From the late 18th century until the last quarter of the 20th, the NYSE and the Curb Exchange (later known as the American Stock Exchange) dominated stock trading in the United States, which essentially meant the world. For almost 200 years, stock trading was highly concentrated in a limited number of visible markets where buyers and sellers physically met to make transactions. In 1971, the over-the-counter market was organized into The NASDAQ (National Association of Securities Dealers Automated Quotation) Stock Market, the world's first electronic stock market, and technology emerged as an irresistible force for change. In the thirty plus years since, stock trading has evolved from a highly centralized to a highly fragmented activity characterized by exchanges in major cities around the world, multiple electronic crossing networks and a growing number of "dark" pools of "hidden orders."

Information and the Cost of Trading

Theoretically, a central market where all buyers and sellers meet should be the best way to have price discovery. If someone wanted to buy five million shares of IBM and someone wanted to sell five million shares of IBM, the two would find each other and the trade would take place with minimal market impact. Unfortunately, theory in this case ignores the practical reality that supply/demand information is contained in the intention to trade IBM stock.

A large buy or sell order usually affects a stock's price since the supply/demand equilibrium is disturbed by the new trade intention. In other words, if a buyer reveals that she intends to buy five million shares of IBM, this information will put upward pressure on the stock and vice versa. Neither buyer nor seller knows that the other exists until they reveal themselves. However, neither has an incentive to reveal this information, since it's likely to hurt the party that reveals it. This is known as the liquidity cost of trading.

Stock prices are also affected by company-specific information that traders often believe lies behind a large order. For example, a seller's analyst may be the first to discover that one of IBM's competitors is launching a new product that competes in IBM's most lucrative market. That information, when widely recognized by other investors, would be expected to generate selling pressure on the price of IBM. Thus, potential buyers of IBM, fearing such a scenario, reduce the price they are willing to pay when faced with a seller who they suspect may know more than they do. This is known as the information cost of trading.

How Did The Traditional System Work?

Until late in the 20th century, the traditional market maker, stock exchange members known as a "specialists", had exclusive rights to the buying and selling intentions of the market participants (known as the specialist's book) and they dominated trading. It was each specialist's job to maintain an orderly market in a few stocks. Using his (there were no female members of the *NYSE* until 1967) firm's capital to buy and sell those stocks, the specialist acted as a buffer of supply and demand to smooth out short-term mismatches of investors' purchase and sale orders. Armed with exclusive information, specialists earned a very high rate of return on capital – some might say a monopoly return. The opportunity to generate trading profits based on legal "inside information" combined with fixed NYSE commissions, made stock exchange specialists some of the wealthiest brokers on Wall Street.

Modern Era Changes

Investors tend to be skeptical; most of the time they assume that large buyers or sellers have valuable company-specific information when, in fact, they seldom do. But, if both sides are reluctant to reveal themselves, then the trade may never occur. To break this logjam, the specialist served as a private matchmaker; however, the matchmakers were taking a distressingly high fee for their services. With the growth of institutional trading in the '60s and '70s, pressures began to build for lower trading costs. More and more traders for large institutions chose to work off the floor of the NYSE, taking, instead, their large orders "upstairs" to the "block desks". Brokerage firms with capital and competitive instincts traded as principals, thus providing an alternative to the increasingly unsatisfactory traditional floor trades.

In 1975, the SEC abolished fixed commissions and Congress did its part to stimulate change by requiring the SEC to amend any rule that imposed an unnecessary burden on competition in the securities markets. This requirement was aimed particularly at an NYSE rule that limited the ability of NYSE members to trade a NYSE listed stock in another market. This opened the door for the growth of trading in new venues such as *Instinet*, a company founded in 1969 to launch the first electronic block-crossing capability for institutions. In the last few years, at least a half dozen crossing networks have established a significant footprint. More recently, hidden private pools of liquidity, sometimes known as dark pools, have also emerged as important transaction sites where buyers and sellers can conceal their trade intentions until a matching order on the other side comes along. Dark pools, formed by institutions or groups of institutions with a substantial private order flow, are trading platforms where order matches can be sought before exposing them to "public" venues. For example, a transition manager who repositions portfolios that are being reassigned from one manager to another may seek to match trades internally.

Centralized Market versus Fragmented Market

The advantage of the crossing networks and dark pools is that the buyer and seller can remain anonymous. The best brokers combine exchange trading with crossing networks and dark pools to maximize liquidity for their customers. Almost every major Wall Street firm operates an electronic trading system that takes trades from clients and tries to find a match internally before turning to other brokers, electronic networks or the exchanges. Index funds have a fairly easy time convincing the market that there is no real information behind their trades; hedge fund managers, on the other hand, have considerable difficulty persuading other traders that theirs are informationless trades. Consequently, crossing networks and dark pools are eager to have index funds participate, while hedge funds are not always welcome.

The large players rely on their trading "algorithms" or sets of rules to search various trading venues without giving away too much information. Their algorithms are implemented as a computer program aimed at revealing enough information to find out if there is another side to a desired trade, but hopefully not so much that the other side is enlightened with respect to the broker's full intentions. For example, a broker with five million shares of IBM for sale might reveal only 10,000 to see what sort of buying interest reveals itself on the other side. It may take many iterations of automated electronic trading offers ("pinging") in many venues to finally dispose of all five million shares.

To insure an adequate flow of transaction information in the market, the SEC requires trading venues that accumulate more than five percent of a stock's trading volume to provide open quotes to a national exchange or securities association. This effectively puts a cap on the size of a dark pool since exceeding the five percent limit would destroy the pool's advantage of trading out of the public eye. Consequently, buy-side traders and brokers are faced with managing numerous sources of liquidity off-exchange that are limited in size, all the while trying to attract more flow - but not too much - without exposing their inventories or client trading behavior.

As a consequence of the fragmented markets and the technology infrastructure that enables them to exist, the average NYSE trade has dropped from 1,600 shares in the late 1990s to 300 shares today. The decline in average institutional trade size has probably been even steeper. Big trades are being sliced into smaller and smaller pieces, and trading frequency has increased in lockstep. Five trades per minute in IBM may have morphed into 500 trades a minute.

What Does This Mean For Martingale?

Very few people talk about the full cost of trading. Typically, managers and their clients measure the cost of transactions – i.e., trades that are actually made – but ignore the opportunity costs associated with trades **not** made. Abandoning the attempt to buy an attractive stock or sell a mediocre stock because "the price got away" is a common occurrence in portfolio management, yet the foregone expected improvement in performance is rarely included in the cost of trading.

When Martingale trades, we implement a program of purchases and sales that is expected in its entirety to improve the risk/return characteristics of the portfolio. Consequently, it is beneficial to the client and important to us that all the desired trades take place and do so simultaneously. This would be difficult, if not impossible, to accomplish by "working the order" one stock at a time. By using brokers who act as principals, we are able to guarantee the completion of our trading program and precisely measure our trading cost – the difference between the prices at the time of investment decision and closing prices on transaction day (usually the same day).

Because Martingale's purchase and sale decisions are based on a relatively long investment horizon, there is very little short-term information driving our transactions. Consequently, many major brokers view our trades as a desirable order flow. They have the confidence to put their capital on the line to trade as principals, compete for our business and then use a wide range of venues at their disposal to execute the trades. We are able to obtain low trading costs and the brokers are able to use their transaction skills to generate a good return on their capital. Using this approach for almost all of our trading, we have been able to establish good long-term relationships with those brokers who have emerged as the leaders in this complex world of fragmented markets. Our strategy is to understand the evolving nature of the markets, diligently analyze trading costs and use competitive bidding to hire the agents with the best tools and resources to execute our trades at the lowest possible costs.

Summary

Pierre Paulden, writing for the April 2007 issue of *Institutional Investor* magazine, sums up the new world of trading with dramatic eloquence.

> *In the old regime, institutions turned to Wall Street brokerages that sent their orders to the NYSE floor or worked the phones in search of a match. That cigar-jabbing, alpha-male-braying world is all but extinct. First the cigars went; then the men. Taking their place is a virtual marketplace in which superfast computers run by rival firms and programmed by mathematics Ph.D.s compete fiercely to execute almost all trades automatically. It's an exhilarating, bewildering, frequently messy place where elements of a nascent market structure often work at cross-purposes; algorithms fragment trading interest into tiny, dispersed pieces even as dark pools facilitate private negotiation of giant transactions in one place. As a result, the long-established roles of brokerage firms, exchanges and customers are being redefined in extraordinary ways. "The world is not easy to understand anymore," says Timothy Mahoney, a 20-year veteran of Merrill's investment management unit who in October became CEO of Block Interest Discovery Service, a new dark pool formed by a consortium of big brokerage firms. "It seems you can be a competitor, a client and a collaborator to everyone that you do business with."*

Paulden's article, *Trading - Daggers, Dark Pools and Disintermediation* is an excellent place to start if you want to explore trading in more depth. http://www.iimagazine.com/Article.aspx?ArticleID=1325060&PositionID=24127

If you would like to go even deeper, visit *Advanced Trading* at its web site, http://www.advancedtrading.com. ■

About Martingale

Martingale Asset Management, founded in 1987 and based in Boston, manages equity portfolios for many of the world's most demanding corporate pension plans, foundations, endowments, public retirement systems, and multi-employer funds. Investing is our only business.

We believe that rigorous and insightful proprietary research conducted within a systematic and disciplined investment process by an experienced and collaborative Investment Team provides the best opportunity for consistent investment performance.