

# Best Execution and Portfolio Performance

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○ What Constitutes Best Execution?

Wayne H. Wagner  
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○ Defining Best Execution

Joanne M. Hill  
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○ The Changing Role of the Intermediary

Robert Werner  
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○ Measuring Transaction Costs

Peter W. Jenkins  
Scudder Kemper Investments

○ Evaluating Cost-Measurement Tools

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○ Internet Information for Trading-Cost Control

Brian T. Pears  
Wells Capital Management

○ Old and New Sources of Liquidity

Harold S. Bradley  
American Century Investment  
Management

○ Views of an "Informed" Trader

Erik R. Sirri  
Babson College

○ The Future of Stock Exchanges

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# AIMR Conference Proceedings

## Best Execution and Portfolio Performance

Proceedings of the AIMR seminar "Improving Portfolio Performance through Best Execution"

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**Association for Investment Management and Research**

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# Contents

Foreword .....	iv
Katrina F. Sherrerd, CFA	
Biographies .....	v
Overview: Best Execution and Portfolio Performance .....	1
Kathryn Dixon Jost, CFA	
What Constitutes Best Execution? .....	4
Gene A. Gohlke, U.S. Securities and Exchange Commission	
Defining Best Execution. ....	13
Wayne H. Wagner, Plexus Group, Inc.	
The Changing Role of the Intermediary. ....	25
Joanne M. Hill, Goldman, Sachs & Co.	
Measuring Transaction Costs. ....	37
Robert Werner, Frank Russell Securities, Inc.	
Evaluating Cost-Measurement Tools .....	45
Peter W. Jenkins, Scudder Kemper Investments	
Internet Information for Trading-Cost Control. ....	52
David J. Leinweber, Codexa Corporation	
Old and New Sources of Liquidity .....	62
Brian T. Pears, Wells Capital Management	
Views of an "Informed" Trader .....	70
Harold S. Bradley, American Century Investment Management	
The Future of Stock Exchanges. ....	81
Erik R. Sirri, Babson College	
Selected Publications	

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# Foreword

The effort to achieve best execution for investors is a key element in AIMR's dedication to the highest standards of ethics, education, and professional practice in investment management. The obligation to seek to obtain best execution is grounded in the common law principle of fiduciary duty to clients—that all professionals in the investment management process have a duty to put client interests above their own.

The U.S. SEC defines the duty of best execution as requiring a broker/dealer "to seek the most advantageous terms available under the circumstances for a customer's transaction."<sup>1</sup> AIMR defines best execution in the AIMR Soft Dollar Standards as "executing client transactions so that the client's total cost is the most favorable under the particular circumstances at that time."<sup>2</sup> In both cases, in evaluating a broker's capability to provide best execution, an investment manager should consider not only the trade-off between the best price in the shortest time but also the broker's responsiveness and the range of services offered by the broker.

Recognizing the many ambiguities and complexities surrounding the concept of best execution, AIMR recently formed the Best Execution Task Force. The task force's mandate is to develop guidelines that address growing SEC concerns about the ability of investment managers to prove that they are fulfilling their fiduciary obligations of seeking to obtain best execution. These forthcoming guidelines will focus on how a firm can establish processes, disclosures, and documentation that form a systematic, repeatable, and demonstrable approach to proving it is consistently seeking to achieve best execution. The ultimate goal of the guidelines will be to facilitate a firm's ability to maximize the value of client assets while operating within a "best execution" framework that also enables the firm to show compliance with its fiduciary responsibilities.

AIMR also promotes discussion of the issue in our conferences and by making available the proceedings of our conferences on best execution and

best practices in controlling trading costs. The proceedings of the 1993 conference on trading, *Execution Techniques, True Trading Costs, and the Microstructure of Markets*, is still available in printed form, and selected pieces from the 1999 conference, *Best Execution*, are available online for AIMR members at [www.aimr.org/memberservices/private/pdf/bestexecution.pdf](http://www.aimr.org/memberservices/private/pdf/bestexecution.pdf).

But continued changes in the investment industry make discussion of best execution and trading costs as recent as 1999 seem almost out of date. Some of the most far-reaching changes have come about as a result of the rise of the Internet. Internet technology has been extremely conducive to the opening of new trading venues (most obviously, electronic communications networks) and the empowerment of the retail investor. In addition, the implementation of new regulations and the demise of old ones have changed the level and expanse of the trade-execution playing field.

Thus, the time seemed right to us to bring together traders, brokers, investors, and regulators to discuss how firms can and should be pursuing best execution today. We hope you benefit from these timely, sometimes provocative presentations, and we are grateful to all those who contributed to this proceedings: Theodore R. Aronson, CFA, of Aronson+Partners, who moderated the conference; Harold S. Bradley, American Century Investment Management; Gene A. Gohlke, U.S. SEC; Joanne M. Hill, Goldman, Sachs & Co.; Peter W. Jenkins, Scudder Kemper Investments; David J. Leinweber, Codexa Corporation; Brain T. Pears, Wells Capital Management; Erik R. Sirri, Babson College; Wayne H. Wagner, Plexus Group, Inc.; and Robert Werner, Frank Russell Securities, Inc.

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<sup>1</sup>"Order Execution Obligations," SEC Release No. 34-37619A (September 6, 1996):171.

<sup>2</sup>*Standards of Practice Handbook*, 8th edition (Charlottesville, VA: AIMR, 1999):98. Available online at [www.aimr.org/memberservices/private/memberpubs/soph.html](http://www.aimr.org/memberservices/private/memberpubs/soph.html). The AIMR online site provides a great deal of information and discussion of the use of soft dollars in trade execution—see [www.aimr.org](http://www.aimr.org) and [aimrpubs.org](http://aimrpubs.org).

# Biographies

**Theodore R. Aronson, CFA**, is the managing partner of Aronson+Partners, which manages funds for institutional investors. Previously, he was a member of the Quantitative Equities Group at Drexel Burnham Lambert, which provided innovative practical applications of modern portfolio theory and quantitative portfolio management. Mr. Aronson is a frequent speaker on Wall Street issues, especially on innovations in trading methods to minimize transaction costs. He serves as a Regent of AIMR's Financial Analysts Seminar and as chair of programs for AIMR's Annual Conference. Mr. Aronson holds an M.B.A. from The Wharton School at the University of Pennsylvania.

**Harold S. Bradley** is senior vice president of the Strategic Ventures Group for American Century Investment Management, where he previously directed the Equity Trading Group and served as a mutual fund portfolio manager. Prior to joining American Century, Mr. Bradley was a member of the Kansas City Board of Trade and served as marketing director of its exchange. A board member of several firms, he also serves on the Investment Company Institute Task Force on Market Structure and on the Pension Fund Advisory Committee of the New York Stock Exchange. Mr. Bradley is a graduate of Marquette University.

**Gene A. Gohlke** is associate director for investment company and advisor compliance in the U.S. SEC's Office of Compliance Inspections and Examinations. Before becoming associate director, he was acting director and held a variety of financial and accounting positions in the SEC's investment management division. Prior to joining the SEC, Mr. Gohlke worked at a management consulting firm, as an advisor for the U.S. Agency for International Development, and as an assistant professor of accounting at the University of Wisconsin. He is a Certified Public Accountant and a member of the American Institute of CPAs and the Wisconsin Institute of CPAs. Mr. Gohlke holds a Ph.D. and an M.B.A. from the University of Wisconsin.

**Joanne M. Hill** is head of Global Equity Derivatives Research and a managing director at Goldman, Sachs & Co., where she advises institutions in North America on strategies using portfolio trading or equity derivative products and on index-related issues. Prior to joining Goldman Sachs, she was on the finance faculty of the University of Massachusetts at Amherst. Ms. Hill has served as a managing editor of *Derivatives Quarterly* and on the editorial boards of the *Financial Analysts Journal* and *Financial Management*. She is on the board of the Futures Industry Institute. Ms. Hill holds an undergraduate degree from American University, an M.A. in international affairs from George Washington University, and an M.B.A. and Ph.D. in finance and quantitative methods from Syracuse University.

**Peter W. Jenkins** is managing director and head of the Global Equity Trading Desk at Scudder Kemper Investments. Previously, he was a senior trader with Cigna Investment Management and head of trading at Century Capital. Mr. Jenkins is an active member of the Investment Company Institute, the Equity Market Task Force, the Security Traders Association, the Institutional Traders Committee, and the New York Stock Exchange's Institutional Traders Advisory Committee, where he previously served two terms as chair. Mr. Jenkins holds a B.S. in finance from the University of Connecticut.

**David J. Leinweber** is CEO of Codexa Corporation, which he founded to build the tools investors and traders need to operate in the Internet era. Previously, he was managing director and partner at First Quadrant. Before becoming an institutional manager, he developed advanced information technologies for trading and investing for the Investment Technology Group and Integrated Analytics Corporation. Mr. Leinweber is the author of the forthcoming book *Markets and Technology: Forbidden Secrets of Nerds on Wall Street*. He is also widely published on the use of advanced technology in finance, and his papers are included in CFA readings on trading and quantitative investing. Mr. Leinweber received S.B. degrees in physics and electrical engineering from the Massachusetts Institute of Technology and a Ph.D. in applied mathematics from Harvard University.

**Brian T. Pears** is managing director of equity trading for Wells Capital Management, where he is responsible for block equity execution across all of the firm's accounts, with a focus on large-capitalization growth stocks. Prior to joining Wells, he worked for Morgan Stanley Japan on the derivatives trading desk and as an NYSE floor clerk for Robert G. Pears & Company. Mr. Pears is currently a member of the National Organization of Investment Professionals and the California Advisory Board of Institutional Investors. He holds a bachelor's degree in international relations and business from the University of Notre Dame and is an M.B.A. candidate at Saint Mary's College.

**Erik R. Sirri** is an associate professor of finance at Babson College and holder of the Walter H. Carpenter Chair. Previously, Professor Sirri was the chief economist of the U.S. SEC, where he served as the senior advisor to the SEC and as chair on major economic policy issues. He assisted in establishing regulatory policy and was responsible for evaluating the economic impact of proposed SEC actions on the capital markets. Professor Sirri was also an assistant professor of finance at Harvard Business School and has authored numerous articles, book chapters, and business school cases. He holds a B.S. in astronomy from the California Institute of Technology, an M.B.A. from the University of California at Irvine, and a Ph.D. in finance from the University of California at Los Angeles.

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**Wayne H. Wagner** is cofounder and chair of the board of Plexus Group, Inc., which provides implementation, evaluation, and advisory services to U.S. and global money managers, brokerage firms, and pension plan sponsors. Mr. Wagner was a founding partner of Wilshire Associates and served as chief investment officer of its Asset Management Division. He has written and spoken frequently on many trading and investment subjects and has received the Graham and Dodd Award of Excellence from the *Financial Analysts Journal* for excellence in financial writing. Mr. Wagner received a B.B.A. in management science/finance from the University of Wisconsin and an M.S. in statistics from Stanford University.

**Robert Werner** is director of transaction services for Frank Russell Securities, Inc., where he is responsible for Russell's global portfolio transition and institutional block-trading business and other transaction-based services. His major focus has been on researching the risks and costs associated with restructuring portfolios and developing and implementing transition strategies. Prior to assuming his current position, Mr. Werner was a trading specialist in the combined money market trading area of Frank Russell Investment Management Company and Frank Russell Trust Company. He received his B.A. in finance and economics from the University of Puget Sound and his M.B.A. from Pacific Lutheran University.

# The Future of Stock Exchanges

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Trading venues are changing. Screen-only exchanges are trading on the turf of traditional physical exchanges, pushing the issues of market fragmentation and segmentation to the fore. The prominence of retail order flow is growing as broker/dealers vie for this profitable business. As the bulk of retail orders moves away from the NYSE, the retail execution model is incorporating innovative trading venues and strategies—vertical integration, internalized order flow, broker/dealer mutualization, and preferencing relationships.

**T**he exchanges provide execution, but they provide a lot more than execution. This fact is important when considering the issue of routing and allocating trades among various venues. It is also fundamentally intertwined with the notion of best execution. The macroscopic concept of best execution is a process that involves judgments, such as how to choose an intermediary that will provide the best execution. That intermediary must, in turn, have its own processes for deciding where the trade should be consummated—on an exchange, an electronic communications network (ECN), or another alternative trading system (ATS).

For an illustration, consider this example of how an organization can be in the exchange business and yet not charge for all its key products. I am a big eBay user and recently spoke about eBay with a colleague. This colleague had found a novel use for eBay. She had been trying to find an "Ithaca clock"—a large, expensive wall clock once made in Ithaca, New York, where she lives. After unsuccessfully trying to buy the clock from several dealers in Ithaca, she found the clock she wanted on eBay; then, she watched the bids for a week to learn the prices and qualities of these timepieces. Ultimately, she did not buy a clock on eBay, but she went back to a dealer in Ithaca, drove a harder bargain than she had before, and successfully purchased the clock. The point is that eBay, which can be considered a type of exchange, provided an important service to a person who was not even a customer of eBay. It provided the price. Of course, eBay did not get paid for providing that service to my colleague. But by producing the price, it performed

one of the most important functions of an exchange. To close the loop as far as best execution is concerned, a broker routing to an exchange must, therefore, carefully consider the combination of features offered by an exchange in deciding whether it is the best place for an order to be routed.

## Changes in Trading Venues

Much has changed lately in equity market trading venues. Recent impressions and activity to the contrary, the 20th century actually saw a net contraction in the number of markets. More than 40 exchanges have closed in this country since 1900. Numerous major and minor cities in the United States used to have exchanges of one form or another, but only seven now exist. A few years ago, mergers and consolidation among the exchanges was a popular topic; some went through, and some did not. But in general, contraction of exchanges, not expansion, characterizes the recent past.

Several novel methods of doing business have come into existence, however, that give the appearance of growth in the number of exchanges. Trading practices have evolved with the entrance of e-brokers and wholesaling brokers in the market. New trading venues have arisen, including ECNs, and investors now have better access to foreign markets. Some ECNs have filed for exchange status, and some exchanges want to become for-profit organizations. In addition to electronic trading systems organizing as brokers rather than exchanges for regulatory purposes, these new venues, most of which are electronic, have given brokers and traders greater control

over such facets as the degree of anonymity or visibility they wish to have in the market. This flexibility is valuable to traders. So, the brokerage firms have become active participants in the electronic trading systems. Doing so serves their interests.

The changes in venues have occurred for three reasons. One reason—technology—is given for almost any change today. Technology has promoted the upsurge in the number of trading venues through a significant reduction in the cost of collecting and routing order flow, which was expensive before the technological revolution. Many new entrants in the business of trading are automated and have business models that would not have been possible a decade ago. Another important change technology has brought about is a lowering of the barriers to entry in the trading business. The absolute cost of creating a new entrant in the trading market is low. Few bricks-and-mortar costs are associated with starting an electronic exchange.

The second catalyst for change in the market is the increased profitability of informationless retail orders. Although changes have occurred in the way institutional transactions are consummated, most of the new technology has been applied to retail order flow—thus the segmentation of order flow—and has perhaps been the most profitable area for many of the brokers in the retail business.

The third factor that has driven recent market change is a kind of “regulatory arbitrage.” Until the 1990s, an exchange connoted bricks and mortar, wood-paneled rooms, and people milling around trading floors. But the new entrants have chosen not to organize as exchanges. They have organized as “brokers,” and with good reason. The regulatory touch on a broker is much lighter than that applied to an exchange. The package of services brokers provide, however, may be nearly identical to those provided by exchanges. The result is arbitrage: If the organization can pay lower regulatory “taxes” than an exchange but provide exchange-type services, a trader would call the situation arbitrage. Therefore, regulatory arbitrage has led to the growth of trading venues.

Understanding current regulations concerning trading is important for understanding what has driven change and how the market is going to look in the future. Regulatory arbitrage has caused a significant blurring of the line between what constitutes a broker and what constitutes an exchange. The old model for trade execution was a broker with an order marching over (electronically or otherwise) to the exchange to get the order filled. But brokerages are buying up ATS and ECNs; the distance between the broker and the one executing the trade has definitely

shortened. The merging is occurring in organizational form as well as in function. So, broker-exchange interaction is evolving.

Finally, regulatory arbitrage occurs because the standard of best execution for adjudicating trade quality is murky. It is unclear in the sense that the standard is not designed to say which particular trade is acceptable and which is not. Judgment is involved, and best execution is at root a process. Thus, participants have substantial latitude in how they can consummate a trade and in how they choose to organize themselves.

## **Recent Regulation**

Important regulatory changes with respect to the U.S. exchanges have occurred since the mid-1990s. In the first phase, from 1994 to 1996, the U.S. SEC sanctioned the National Association of Securities Dealers (NASD) for failure to supervise Nasdaq. The importance of this action is that it opened up a “policy window,” a time when changes to market structure became feasible. In the world of Washington regulations, a good or needed change is not necessarily considered a priority, so the change is not automatically made. Many constituencies must be consulted. When the policy window opened, however, change to market structure came in two big steps—in 1996 and 1999.

In 1996, the SEC instituted the order-handling rules, which did two things. First, the SEC imposed a limit-order display rule mandating that limit orders be displayed unless SEC provisions to the rule stated otherwise. So, when a broker/dealer sends an order to a market maker, the order has to appear in the quote. Second, the quote rule said that to be compliant, ECNs had to fold into the national market system, which took away the notion of a hidden market. The market was then brought out into the open much more than it had been. The notion of a two-tiered or private market was eliminated.

The second big step was Regulation ATS in 1999. The import of this regulation was that any large ATS had to be a full-blown, national securities exchange or else link up with a registered market and disseminate its best-priced orders in the public quote stream. And the ATS had to play by the priority rules for that market. The intention was to level the playing field and take away some of the regulatory arbitrage described earlier.

## **New Model for Retail Executions**

In relation to the economics of this business, the model for retail transactions has changed a great deal. Before the proliferation of ECNs and the rise of



regional exchanges as viable trading venues, the NYSE was the only game in town for listed transactions, especially small orders. This model has changed completely because of new regulations and new technology. Retail executions have found a comfortable home in the regional exchanges for a variety of reasons.

To understand how big the change has been, consider that the market share of the NYSE for retail transactions is now less than 50 percent. And this change is particularly significant in light of the fact that retail transactions generate extremely profitable volume. So, the increase in venues has had a lot to do with how and why the business model for retail trades has changed.

**Rents Generated by Small Orders.** Anyone would love to trade against someone like my grandmother. She does not have a clue about which direction, say, America Online is going to trade tomorrow. The greater profitability in the 500 shares that she might trade occurs because she knows nothing. An informationless trading partner is the most profitable person in the world to trade against. Suppose you are going out to buy a stock and have a target price of 40. You want 10,000 shares and manage to get them at 39 7/8. You are thrilled. Should you care who sold you the stock? Suppose the person who sold it was the company CEO? Are you still happy about the trade? If the CEO is selling, no one wants to be buying.

What has come to pass, however, is that even though my grandmother may not know anything about trading, the aggregation of the trades of all the grandmothers in the world is a powerful force. In other words, the aggregate of this informationless order flow, moving en masse, contains real information about future order flow and prices. The trading venue's ability to get this profitable uninformed order flow and handle it on an aggregated basis leads to the potential for profits—which underlies much of the structural change in the market for transactions.

Small orders, because they can be bundled, are particularly suited to automated execution. If a small order is being traded through an online broker, that broker is not touching the order with a human hand. That order is routed and handled on an automated basis.

And the brokers, as trading venues, are paying for that order flow. Payment for order flow refers to the practice of selling customer order flow on a share-by-share basis to some broker who will execute it and rebate 2–5 cents a share back to the broker, not to the person who placed the order. So, if an online broker has 500 shares of mine and routes it to some exchange that is a broker, that broker may rebate to my online broker, say, \$5 for my 500-share order. My broker can

keep the money, write me a check for it, or use it to pay for the nice graphical user interface that I enjoy every time I place an order.

This business model differs markedly from the old model for odd-lot trading. In the old days, odd lots were expensive to trade. They were too small to make shuffling the paper around worth the effort. In the old days, someone wanting to buy 67 shares found a real price tag associated with the trade. Today, someone who wants to buy 67 shares is recognized as certifiably uninformed. Who knows less than someone who wants to buy 67 shares? In fact, on an economic basis, someone with 67 shares is the most profitable counterparty around. The price has swung in the other direction; people will pay even more for that order, at least figuratively.

**Brokers and Retail Trading.** Institutional buy-side investors may think that retail order flow is not relevant to them, but they should care about retail order flow because it affects the business models of their primary intermediaries, the brokers. Retail order flow affects the brokers' cost of doing business because, when aggregated and handled, retail order flow enhances brokers' efficiency in managing positions acquired in the course of doing institutional business. When brokers have greater access to retail flow, they are then able either to make tighter bids or collect higher rents.

A desire to capture this benefit is apparent in some of the mergers and acquisitions happening now in the business. The securities firms have been purchasing or investing in entities that consummate trades, entities that are exchanges (or are like exchanges), or specialist units. They are doing so for good business reasons.

Under the old business model, the small trades of retail investors were simply routed to a central marketplace, such as the Nasdaq or the NYSE. Brokers routed them away and collected their commissions as introducing brokers. Today, retail brokers capture the rents out of that uninformed segment—retail order flow—through four mechanisms: preferencing relationships, vertical integration, internalization of order flow, and mutualization.

✱ *Preferencing relationships.* The first and most common mechanism is a preferencing relationship with a dealer. Preferencing has a slightly different context in the listed market than it does in the Nasdaq market, but the notion is the same. For example, if I get orders in, say, Xerox, and you and I have a preferencing relationship, I will route all my Xerox order flow to you. You will consummate it for me, and maybe you will rebate 1–2 cents a share to me. In contrast, a trader could not route the institutional orders of an actively managed mutual fund through

a similar preferencing-type relationship because no professional would be comfortable trading against a fund's orders, most of which are likely to be information laden. Trading against an uninformed individual is a different matter.

The reason order flow can be routed away for execution is that only one price exists in the market. A bid is out there, and the bid is the same, at least it should be, whether my grandmother or a growth fund manager arrives in the market to sell the stock. Each of them sees the same bid, but economically, that bid is too low for my grandmother's share. It is probably too high for that growth fund manager's share, but the markets work with an average. There is one highest bid, which is why side payments for order flow can arise in the market. So, a preferencing relationship with a particular entity is one way to capture the rents of retail trade.

❖ *Vertical integration.* The second mechanism is vertical integration. A firm can go upstream and buy a market maker or specialist firm to perform the executions. For example, Fidelity Investments, one of the largest market-making firms on the Boston Stock Exchange, has vertically integrated into the specialist market. It has order flow of various types within the firm: institutional, passive, retail, and so on. Such vertical integration makes perfect business sense. Fidelity may receive no payments for routing its own orders to the Boston Stock Exchange, but as principal, it will be transacting on the floor of a national securities exchange, which is a legitimate way to capture that order flow. The distribution (size and volume) of trades done on the regional exchanges indicates that the regional exchanges are where retail trades are getting done and where this order flow is captured.

❖ *Internalization of order flow.* A third mechanism for capturing retail order flow is simply internalized orders. Brokers need never let the order flow out of their firms by routing to an exchange or an ECN. They have no obligation to take an order to an exchange to be transacted. Brokers can legitimately keep that order flow in their firms by executing within the firm. A number of firms have captive subsidiaries on the retail side that function this way. The Charles Schwab Corporation is probably the best known; it has Mayer & Schweitzer, one of the largest market makers in the Nasdaq market, to internalize Schwab's order flow, which is consummately retail. Internalizing is a profitable way to capture those rents.

❖ *Mutualization.* Finally, groups of brokers can join together in various forms to capture the retail trade order flow. For instance, purchasing a financial interest in an ECN is a straightforward economic way to capture the rents of retail order flow; accordingly,

several big-name brokers have shown up as investors in the ownership structures of certain ECNs. Other brokers with access to the order flow can join together in a pool or a kind of co-op to do the trading among themselves. All transactions, and thus all profits, are kept within this organization. Knight Trading Group, the largest market maker in the Nasdaq, was formed for exactly this purpose. Knight was created by a consortium of firms that realized they were routing profitable order flow away from themselves and decided to correct this leakage.

❖ *Summary.* All these mechanisms are different ways to capture the same thing, namely, the profitable position of trading against someone as uninformed as my grandmother at prices that are not truly appropriate for my grandmother. The bid to my grandmother is really the average bid that results from my grandmother and a growth fund manager going head-to-head, so the game is pretty clear: The market is trying to cut my grandmother's trade away from the growth fund manager's trade and price them separately. The grandmothers of the world love it, but the growth fund managers do not.

Should this type of trading segmentation be allowed? The answer is not obvious. The United States has social policies for life insurance, for example, that do not allow segmenting based on such characteristics as race or zip code. The reasons for prohibiting trading segmentation on the basis of trading traits, however, are, on a comparative basis, not as pervasively inequitable or associated with victimization, which may be where some of the controversy arises in addressing the segmentation issue.

## The Broker and Best Execution

The broker decides where a trade will be executed *after* the investor or manager decides the trade is warranted. And the broker must tell the client where the trade was executed. If the order was preferenced, say, to a market maker on the Boston Stock Exchange, the retail confirmation will say so. Various factors influence a broker's decision on where a trade should be executed, including the quality of execution desired for the customer, the characteristics of the trade, and the broker's business strategy. For instance, some firms want to report to their customers quickly, in real time, after a few seconds, but not all exchanges in the United States have invested in the technology that allows people to report back that quickly. Some exchanges take 15 seconds or more to respond, which is too long to fit the business model of some brokers. In that case, the broker will route the order to an exchange that has made the investment that allows a fast response. The price may differ, but the broker wants the speed. Brokers will always have

some amount of self-interest in where they route a trade. They may have a preferred place to trade, and they may get a better deal in some trading venues.

The following quotation is a cogent elucidation of what best execution should be:

The duty of best execution requires a broker-dealer to seek the most advantageous terms available under the circumstances for a customer's transaction.<sup>1</sup>

The key words are "most advantageous terms under the circumstances for a customer's transaction." This principle allows some latitude and breadth as to what constitutes best execution, but price is usually the mechanism we use to characterize best execution. The concept of best execution is an imperative to which all market participants with responsibilities for trading and giving trading direction must adhere. The crux of this responsibility originates in the common law principle of fiduciary duty. A salient issue, and one that must be guarded against, is that conflicts of interest can and do arise. Best execution, therefore, is primarily an attempt to settle what economists call "agency problems."

An agency problem arises when, for example, I as a wealthy investor hire you as a broker to perform an investment task for me. Even though I have hired you, I cannot be sure you are going to put my interests ahead of yours should a conflict arise. The standards for best execution were designed, I believe, to avoid this agency problem. For example, suppose my broker is lazy and is not working to execute my investment decisions—a classic example of an agency problem. Market forces might solve this problem merely by happenstance, but not necessarily. Self-dealing, fair dealing, soft dollars, and access to an underwriting calendar (which may affect an order-routing decision) are all agency problems that can interfere with best execution.

In a retail world, defining best execution may seem easy and straightforward—the best price for the asset at the fastest speed. And although the SEC has no precise definition for best execution and although factors other than price and speed are important, the parameters within which the retail brokerage community must deal are pretty clear. The SEC states that broker/dealers must "regularly and rigorously" assess the quality of competing markets in order to provide best execution.

For institutional investors, defining best execution is more difficult. Suppose you are an advisor managing other people's money and, one day, someone tells you the money is all yours. Would you

continue to work within your existing framework? Would you make any different decisions about the commissions you pay, the investments you make, whom you hire, and so on? Maybe you would, maybe you would not. If the money were yours, surely you would make your own allocation choices. And you might choose to pay up for research because, in your judgment, you would be receiving valuable research and this choice would be good for you. If you chose to hire a certain broker because your information flows and trade executions would be strong, this choice would also be good for you. Because the money is yours, you are making the right choices for you. Now, consider the world in which you are dealing with other people's money. In this case, adjudicating the potential problem of paying up for research, for example, can be difficult. Having standards for best execution is a way of addressing and solving that problem.

To illustrate the issue, consider a recent advertisement from the *Wall Street Journal* for the Chicago Stock Exchange's new CHX equity exchange. The ad says:

No, the Chicago Stock Exchange isn't going public. But it is helping to create a new spirit of equity for investors everywhere. With access to more stocks—over 4,500—including NYSE, Amex and Nasdaq issues. More stocks than any floor-based exchange in the U.S. And more hours to trade them than the primary markets. Plus the perfect blend of technology and a specialist system. The CHX. Serving all segments of the market. Retail. Institutional. And online.

Who are the targets of this ad? The ad cannot be aimed at retail investors because retail investors cannot pick the exchange they want to trade on; a customer of E\*TRADE Group cannot decide to trade on the CHX rather than the NYSE but must trade wherever the order is routed. Brokers can direct trades to the CHX, however, so this ad is clearly targeted to them, and it is marketing best execution. The ad implies, "If you route to us, you will have access to many stocks, long trading hours, and technology. And we have special systems that can give you the best of both worlds." In claiming to serve all segments of the market—retail, institutional, and online—the CHX is advertising best execution in all segments. It implies, "Route to us because we are providing the right basket of services." It is claiming to be a one-stop shop for all but is targeted to brokers looking for best execution.

## Institutional Trading Concerns

Institutional trading behavior is more complicated than retail trading behavior. First, institutions want

<sup>1</sup> "Order Execution Obligations," SEC Release No. 34-37619A (September 6, 1996):171.

to hide their own order flow but at the same time know what others are doing. The reason is that orders carry information—information about the prospects of a company (which is basic fundamental information) or information about future order flow (for example, a trade may be the first part of an even larger order). Both types of information are valuable, and the details are closely guarded. So, the touchstone of institutional trading is keeping one's own order flow hidden while finding out what the other trader is doing.

Considering these rather countervailing aims, institutions are satisfied with some aspects of the current market structure and dissatisfied with other aspects. Institutional investors are particularly unhappy about the lack of quote-based competition. For example, the exchanges are considered to be auctions. (Here, when I refer to an "exchange," I mean the Nasdaq, ECNs, and upstairs block desks as well as the NYSE, Amex, and other traditional venues.) In a traditional auction, however, such as eBay, whoever agrees to pay the most for the item being auctioned will get the item. The exchanges, which are supposed to be continuous auctions, do not share this trait—the highest bidder does not necessarily win the shares. In particular, only 15 percent of the time are the quoting buyers of stock on Nasdaq at the high bid when they purchase their shares. Clearly, the order flow was routed for reasons other than the price that was bid. The naive model of an exchange is that buyers get order flow by bidding up for the stock of interest. The Nasdaq market might be working extremely well, but order flow is not moving based on the price quoted; it is moving for some other reason.

Second, institutions complain that when they do choose to place the highest-priced offer in the market, it may not be sufficient to attract order flow. If a trader is the high bid on one of the exchanges or through a market maker, that trader may not, in fact, attract orders just because he or she is the highest bid in the market. Again, order flow is clearly not moving based on the price quoted. Such situations are frustrating to institutions.

The third complaint, which may or may not be temporary, is that liquidity, although it continues to increase, has generally not reached sufficient levels. ECNs have contributed to an improvement in liquidity, but most institutional investors think ECNs are not ready to handle the kind of volume that would alleviate the liquidity constraints in today's market.

## The Exchange: Function, Not Form

The basket of functions that an exchange provides, not its institutional form, is the most salient aspect of the exchange. Whether the form of the exchange is an ECN or the NYSE, the important issue is the collection of services it provides.

**Exchange Services.** Considered from the point of view of function, exchanges may perform six functions—a counterparty search, dissemination of pretrade information, transaction consummation, publication of post-trade information, clearing and settling of trades, and certification of the integrity of participants. **Exhibit 1** highlights the differences among exchanges along these six dimensions.

*Search for counterparties.* This first function—a venue to search for the counterparties to a trade—is for many the most crucial. In a sense, exchanges resemble dating services; the exchange is where trading partners find the other side.

*Dissemination of pretrade information.* Exchanges also disseminate market intelligence before a trade occurs. The information may be "hard," such as a price quotation, or "soft," such as a clue that the person selling 10,000 shares has 30,000 or 40,000 more shares behind the order. (The seller may not want that information coming out, but that is a separate issue.) Some entities are much better than others at this function. Certain exchanges will disseminate much more information than price and quantity in the bid or the offer. And some exchanges claim this superiority as a competitive advantage.

*Transaction and publication of post-trade information.* Exchanges clearly consummate the trade. And after the trade, they also provide certain kinds of information. Publication of the price and quantity

**Exhibit 1. Functions of Example "Exchanges"**

Exchange	Search	Pretrade Info	Execution and Price Discovery	Post-Trade Info	Clearing and Settlement	Issue Guarantees
eBay	High	Medium	High	Low	None	Minimal
NYSE	High	High	High	High	High	High
ECNs	Medium	Medium	Medium	Low	Medium	None
aluminium.com	Medium	Medium	Medium	High	None	For a price

is required of all exchanges, but some exchanges also produce other kinds of information—indication of whether more volume is behind the trade or of the identity of the trader. Some exchanges excel at providing such information, whereas others do not provide it at all.

■ *Clearing and settling.* This function should not be minimized. Clearing is a big concern for the exchanges, and those who are in the business of setting up exchanges focus a great deal of attention on the issue. The problems that can arise with clearing and settling are illustrated by the clearing issues associated with the business-to-business (B2B) exchanges. For example, one reason my friend who was trying to buy the clock did not use eBay was a fear that the sale would not clear. If she paid \$1,000 for that clock to someone in, say, Wichita, Kansas, she would have no idea whether that clock was going to be shipped. When no intermediary exists to take that risk, clearing and settlement problems arise. An exchange can be an important part of avoiding such problems. Some exchanges clear and settle the trade themselves; others outsource those functions completely.

■ *Certification of participant integrity.* Finally, exchanges provide some assurance of the integrity of issuers, traders, and the process itself. Without question, the certification and the value associated with being a NYSE-listed company is high, especially outside the United States. The NYSE is an important brand name. Advertising that a stock trades on some XYZ ECN has nowhere near the same certification value.

**Comparison of Exchanges.** Not all six functions are present in all exchanges. The character and origin of each of the exchanges and trading venues differ, and certain forums are better suited to particular trading situations than are others.

Returning to Exhibit 1, consider eBay, which carries out its search for a counterparty on the Web and produces good pretrade information. After the trade, however, eBay does not disclose any additional information to the counterparties. It does tell the public the price at which the trade occurred, although eBay does not have to disclose this information and could ask traders to pay for it. The eBay venue does not aid with clearing and settlement at all, and it does not issue any guarantees when someone trades through the site.

The NYSE is a one-stop shop. It ranks high on all six functional dimensions. In contrast, the six functional dimensions vary greatly among ECNs. In terms of the search for counterparties, ECNs rank low to moderate because they do not have a search function. Buyers and sellers must find each other. The

only post-trade information the ECNs provide is price and quantity, and they offer no guarantees about participants in the trade.

Finally, I put aluminium.com, an online aluminum exchange, in the exhibit as an interesting example of a B2B exchange. It has separated the issue of guaranteeing the transaction from the other functions. If a trader makes a trade on aluminium.com, buying or selling ingots of aluminum, aluminium.com will, for a price, guarantee that transaction. If you are a buyer, you can pay aluminium.com to finance the trade, and the exchange will buy the aluminum for you and deal with you as a counterparty. If you are the seller, it will front you the money and then accept the risk of nonpayment from your counterparty, but this service has a cost. So, aluminium.com has disaggregated the guarantee and imported some of the clearing function. It is an interesting business model: Traders can assume the risk or pay the exchange to assume it. This model gives aluminium.com an important competitive advantage as an exchange, but most financial exchanges have not chosen it.

**Cherry-Picking Exchange Functions.** The six exchange functions provide a framework for considering the innovations in this area and how the various exchanges compete. One insight is that some of the new entrants are cherry-picking the exchange functions—in most cases, the profitable ones—they wish to provide.

A major exchange function is price discovery. William Bratton, president of the NYSE in the 1960s, said that the NYSE's business is to produce the price at which a transaction will occur. Price determination is the primary product of an exchange. Bratton's observation is enlightening: If traders could not see the price on a primary market, they would have much less confidence transacting on one of the new (perhaps marginal) entrants to the trading venues. The public price established on a traditional exchange, such as the NYSE, gives traders a safe indication of where a stock is trading at any given time. As with a counterparty search, providing price discovery is an expensive undertaking. If Bratton is right, then the bricks-and-mortar investment at the NYSE provides price discovery for the entire market so that other exchanges need not duplicate that investment. Traders have free price discovery, so why pay for it?

Some exchanges have opted out of the time-consuming and expensive search for counterparties. Obviously, this search is not required if your customers are one side of the trade and you are the other side. Schwab, for example, internalizes order flow. Searching is an expensive function, so being your own "date" can save a lot of money. Schwab

knows it is providing the date, so it has no need to search for the other side. For Schwab, internalizing order flow is part of the marketing plan. Schwab paid the search cost to get those customers through advertising on TV and in print and does not need to pay those costs again on an exchange.

The anonymity, or lack of information, associated with an open limit-order book is desired by market participants—both institutions and brokers. To them, having more information available about their trade is not desirable. New entrants in the trading venues generally produce less information precisely in the areas where brokers and institutional investors most value anonymity. Thus, one of the benefits of ECNs is that they produce less information than traditional exchanges. In addition, broadcasting pretrade information is cheaper on an ECN system.

**Business Issues.** Both new and old exchanges trying to compete in today's market must consider several business issues. The first decision is the customer base—retail, institutional, or other. A new exchange has the benefit of being able to segment its appeal; it can design a set of rules that serves small investors, large investors, or block traders.

Then, the venue must decide how to organize for regulatory purposes. An ECN is required to join a self-regulatory organization, such as NASD, and play by the rules of that system, or else it must register as an exchange. Some blurring of the distinctions between organizational forms has been evident, but one advantage of forming as a traditional exchange remains: An exchange can set its own rules. For example, an exchange can instigate new forms of order flow and new rules for priority.

One of the most important issues is how to share the ownership of and economic rights to the exchange. Many exchanges outside the United States have "demutualized"—that is, gone to private ownership. All the new entrants in the U.S. exchange arena are privately owned. In the United States, the NYSE has talked about privatizing, and the Nasdaq is in the process of going private. The Nasdaq will have 60 percent of its ownership shares held by more than 2,900 investors, most of whom will be NASD members. The goal will be to raise this ratio in the future.

**Foreign Market Access.** The ability to trade in foreign markets is important, and accessibility to foreign markets has greatly improved because of technological advances. For an institutional or retail investor, access to trading in a foreign market is easier, in part, because a number of the exchanges

have organized to keep an open limit-order book where prices and quantities are transparent. As a result, the disadvantage of being physically distant from those markets has decreased. A nonlocal investor's access to foreign markets is now roughly equivalent to a local's access to the market. If the local market were completely electronic and had a central limit-order book, an outsider's access would be fully equivalent to that of a local.

## Forces Shaping Change

A number of forces are shaping change in the world's trading venues:

- centralization—the desire of clients for one price,
- competition—the desire of clients for better venues and services,
- segmentation—the desire of clients for specialized trading systems to match investor needs, and
- connectivity—the desire of clients to fluidly transfer orders within the nexus of exchanges.

The benefits of centralization and of segmentation are at odds. Segmentation—the breaking apart of markets, the development of new venues, and the availability of more venues—is controversial. These market changes are often viewed disapprovingly and are accused of leading the market to greater fragmentation. The critics argue that a centralized venue (a central limit-order book), with all trades funneled to the same place at the same time to arrive at a single price, is better. The forces of change are charging full tilt against that notion, however, as the new trading-venue entrants magnify the segmentation and fragmentation in the market.

Many traders and investors want to have their cake and eat it too. The system interface that sits on their desks symbolizes greater anonymity and efficiency—but also decentralization. Competition generates new services, but it does not coexist well with centralization.

The prevailing current in the market is sweeping steadily forward to the day of global—electronic and continuous—trading. Yet, nothing is more fragmented than the global trading network. It encompasses a multiplicity of places and time zones. So, although critics of fragmentation exist, they clearly have, at some level, some degree of comfort with fragmented markets. The crux of the dilemma is that economic intuition, which suggests that pooling orders leads to better prices, supports centralization but intermarket competition for orders is what has spurred the most innovation.

## **Conclusion**

In relation to the future of exchanges, three points are important. First, the restructuring of the exchange business has been driven by an attempt to segment markets to capture the rents provided by profitable trades, such as retail trades, index trades, and rebalancing trades. These types of trades are made by uninformed investors.

Second, the scope of investment management firms has broadened. Firms are vertically integrating and absorbing what were once freestanding exchanges. So, the future of exchanges depends, in part, on the direction of these firms.

Third, the form of an exchange derives from its ownership, which follows from the function of the exchange. The ownership of exchanges and modern

trading venues is currently in a state of flux. Who should own them, whether they should be public or private, and how they should be structured are not easily answered questions. Nevertheless, certain key forces can be identified that are driving the changes—globalization, technology, growth in the numbers of retail investors, and coordination and cooperation among broker/dealers to strengthen their competitive positions.

Money managers are the primary customers of the exchanges, and even though they may not dwell on the interdependence of best execution and exchange functionality, money managers need to be informed about the developments in trading venues and how these developments relate to liquidity, costs, and services.

## Question and Answer Session

Erik R. Sirri

**Question:** What is the nature of the information contained in aggregated informationless retail order flow?

**Sirri:** First, aggregated retail order flow contains information about future order flow. To the extent that individuals tend to act together, seeing what some individuals are doing gives me a better idea of what some individuals are going to do in the next 5 or 10 minutes. If you are a broker, positioning yourself to trade ahead of the herd can be profitable.

In addition, knowledge of the aggregate can help you in your risk management. For example, if you find out that several investors want to buy a lot of some risky Internet stock—say, Yahoo!—at \$255 this afternoon and you are providing a guarantee of liquidity, you know it is risky for you to fill the orders and take on a big position in the stock. That kind of risk needs to be managed, and seeing all the orders at once can improve your risk management.

Retail order flow, when aggregated, may contain some fundamental information, but that benefit is secondary to the benefit of revealing future flow and lowering the costs of inventory management.

**Question:** Do you have concerns about price discovery in the listed market now that NYSE member firms can internalize their orders?

**Sirri:** The concern is as follows: If many people have orders and the orders are put into the same pot, shaken, and traded, the result is the right price. But if most firms hold their orders back in their own firms, then no one is (or few are) setting the price for what goes into the central market, even though we are all trading at that price. Retail volume, however, is currently only about 30 percent of total volume, and because it is uninformed, keeping it in-house is like keeping grease out of the system. Retail volume doesn't contribute directly to price formation. The orders of institutions, which carry information, are the most important factors in price formation. So, no, I do not worry about price setting. Keeping some of the retail order flow out of the system might make prices somewhat more volatile and frenetic in terms of trading, but it does not necessarily harm the price-discovery process.

**Question:** Do you think payment for order flow increases trading costs for institutions?

**Sirri:** No. Retail order flow, or informationless order flow, is cheaper to trade than institutional order flow. Some institutions are already paying to get this order flow. They may pay a penny a share because they have a marketing arm and run a big retail brokerage operation. Perhaps they have a lot of customers, sell mutual funds and other things, and have a retail customer base that allows them to

to pay for the order flow. A stand-alone advisor who has only a fund or a series of portfolios does not often pay for order flow and wants to capture all the rent. Payment for order flow would cause that firm's costs to rise. The people who have the retail order flow now did not previously have a way to capture it. They were giving the order flow away for free, but technology now allows them to capture that flow. The landscape has changed. Those without the prepaid or captive order flow don't like the change, but that is simply a part of the evolution in the market.

**Question:** Many believe that broker participation (i.e., liquidity) is the key to an electronic trading system's success. Do you believe that a buy-side-only system is viable?

**Sirri:** Instinet, which began as a buy-side-only system, did not blossom until it allowed brokers to participate. For whatever reason, and I think there are many, trading buy side to buy side does not generate sufficient liquidity to perpetuate itself. Brokers have already become major users of ECNs. Their willingness to buy or sell at almost all times provides critical stop-gap liquidity in the absence of a real buy-side counterparty, which makes all the difference in the world to these systems. Brokers are now, and will continue to be, important participants in electronic venues.