*Who should decide what is "best execution"?*

# From Orders to Markets

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AMONG THE CLEAREST RULES IN U.S. securities law is the duty that brokers have to "seek the best execution that is reasonably available for its customers' orders." This legal duty of best execution is derived from the common law fiduciary duty of loyalty, which requires brokers to maintain undivided allegiance to the interests of their clients. Brokers, who are supposed to act as agents on behalf of their customers, are barred from using their position in any manner that allows them to garner a personal profit or a personal advantage. Over time, the legal duty of best execution has shifted from a duty owed by brokers to their counter-parties to a duty owed by brokers to the markets in general.

In our view, the problem with the current orientation of the policy discussion on best execution is that it has focused on the narrow, yet unanswerable, question of which venue provides traders with "best execution." As we observed in a 1997 article,

> The term "best execution" does not connote a single execution attribute, such as price, but rather attaches to a vector of execution components. These certainly include trade price, but they also involve the timing of trades, the trading mechanism used, the commission charged, and even the trading strategy employed. Such multifaceted concerns have long been a feature of institutional trade execution, but their emergence now even in retail trading reflects the reality that markets are a great deal more competitive and complex than in times past.

For example, it makes no sense to employ the same, or even a similar, legal definition of the duty of best execution for large institutional traders and for small retail traders. Institutional traders' concerns about best execution are focused on the impact of their trading on the average price at which their trades will execute. By contrast, retail traders are more concerned with the transaction costs of their trading because, unlike institutional traders, retail trades will not influence the underlying price of the securities being traded.

In this article, we examine the alternative institutions most likely to generate optimal rules regarding best execution. The most likely choices include:

- the trading venues themselves (in their capacities as self-regulatory organizations),
- the government (in its administrative capacity as the Securities Exchange Commission),
- individual shareholders and institutions (in their capacities as principals to securities transactions), and
- issuing firms (in their capacity as issuers of securities who contract with investors via their articles of incorporation).

Although no institution is ideal, for a variety of institutional and incentive-based reasons, the issuing firm is by far the best place to locate the decision-making authority over trading venue.

## THE LEGAL OBLIGATION OF BEST EXECUTION

The duty of best execution is firmly grounded in the common law principle of agency, from which the common law fiduciary duties of care and loyalty are derived. A broker-dealer's duty to seek the best execution of customer orders derives from the common law duty of agent loyalty, which obligates an agent to act exclusively in the principal's best interest. The agent also is under a duty to exercise reasonable care to obtain the most advantageous terms for the customer.

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Consistent with those common law duties, the New York Stock Exchange and the National Association of Securities Dealers both have rules requiring member firms to execute all customers' orders at the best available prices. The rules require only that the price the customer receives be the best possible under the circumstances. According to NYSE Rule 123A,

> In any transaction for or with a customer, a member . . . shall use reasonable diligence to ascertain the best inter-dealer market for the subject security and buy or sell in such market so that the resultant price to the customer is as favorable as possible under prevailing market conditions.

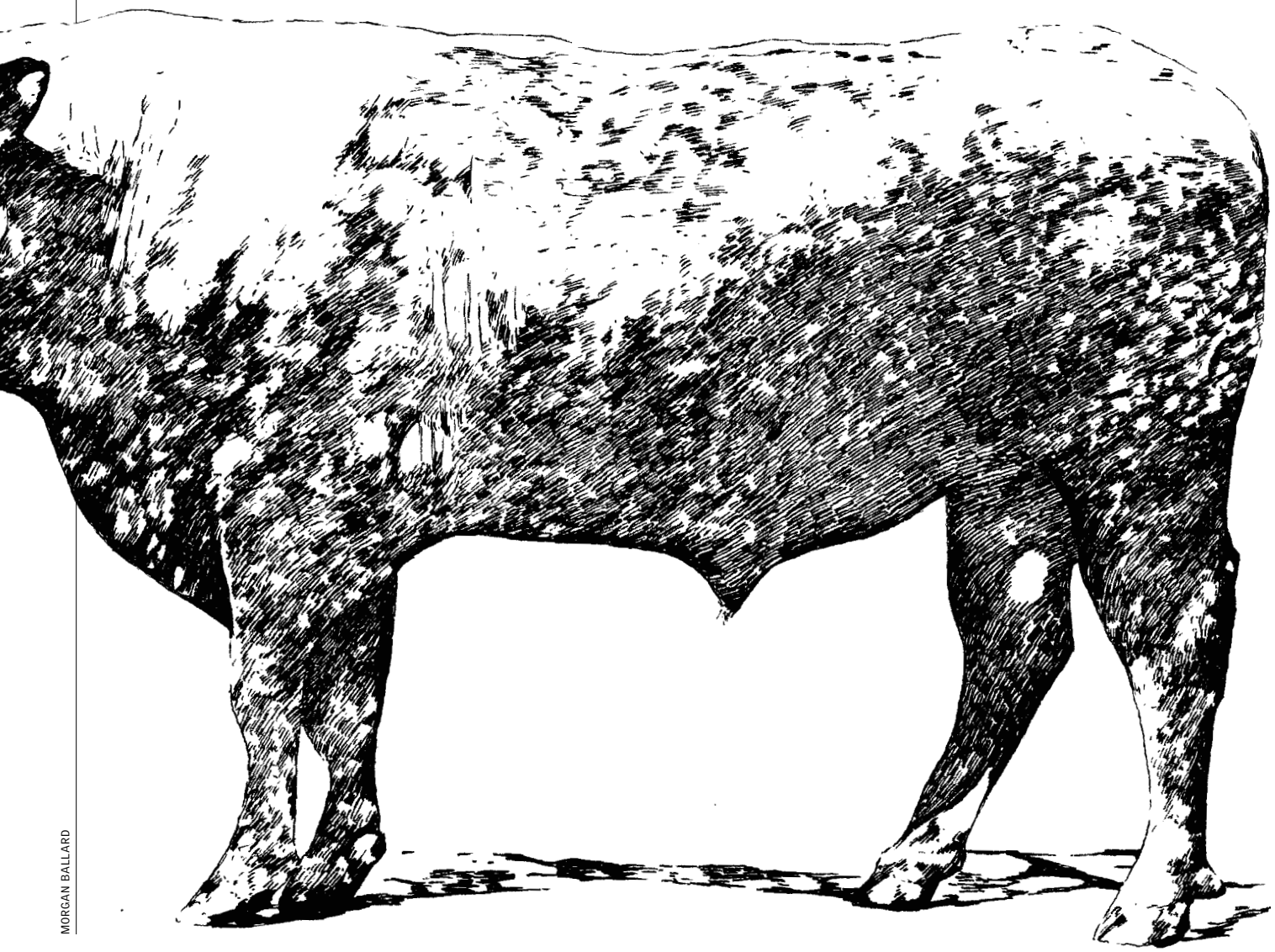
Thus, it is clear that best execution does not necessarily imply best price. As noted in an amicus brief submitted by the Bond Market Association in a 1998 case,

> Brokers have not been held . . . to an absolute requirement of achieving the most favorable price on each order. . . . What has been required is that the broker endeavor, using due diligence, to obtain the best execution possible given all the facts and circumstances.

In our 1997 article, we observed that the legal requirement appears to mandate only that the broker try to obtain the best price, not that he actually obtain the best price. For the purposes of the analysis here, the important fact is that the legal inquiry is particularized—that is, the legal inquiry is carried out on a case-by-case basis. Accordingly, the phrase "given all the facts and circumstances" means that, under the common law approach, each trade is to be evaluated on a case-by-case basis.

Such a narrow focus is relevant because the fiduciary principles of care and loyalty, which provide the historical underpinnings for the legal duty of best execution, are particularized duties based on the common law of agency. The rules, in turn, are contractual in nature: they flow from brokers to their clients on an individual basis. Consequently, it is no defense to a customer's claim that he or she was not given "best execution" for a broker to respond that some other customer, such as the customer on the other side of the transaction, received best execution. It also is no defense to respond that the marketplace in general was made better or more competitive as a result of a particular instance of best execution being denied in a particular circumstance. The duty of best execution is static, not dynamic; what matters is this trade, not trades in the future.

To illustrate why this issue is important, suppose that a trade sent to a particular electronic trading network (referred to as



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an "electronic communication network" or ECN) has a very low probability of being executed at a price better than the best exchange-posted quote or the "national best bid–best offer" (NBBO) price, while a trade sent to the NYSE has a reasonable probability of executing at a price better than the NBBO. It is not a valid defense to an alleged violation of the legal duty of best execution for a broker to claim that requiring each trade be deployed to the NYSE (or any other particular trading venue) makes that venue a monopoly, and thus results in other (future) traders receiving inferior prices because of the monopoly pricing power of the venue going forward.

The duty of loyalty encompasses more than just price. This legal duty also addresses issues of conflicts of interest and confidentiality. It is improper, for example, for a broker to use his or her position to advance a personal interest by front-running a customers' order or by using the information embedded in the order for the advantage of other customers or traders associated with the firm. For example, in December of 2004, Knight Securities settled a lawsuit brought against it by the SEC and agreed to pay $79 million in disgorgement and penalties for defrauding its institutional customers. Knight was accused of extracting excessive profits from customers' orders and failing to meet the firm's duty to provide "best execution" to the institutions that placed those orders. The SEC found:

> Between January 1999 and November 2000, Knight—which was, at the time, one of the largest market-makers on the NASDAQ—earned over $41 million in illegal profits by failing to provide best execution to its institutional customers. . . . During the relevant time period, Knight, upon receipt of an institutional customer order, would acquire a substantial position (in the same security) in its own proprietary account. Rather than fill the order promptly on terms most favorable to the customer, Knight would wait to see if its proprietary position increased in value during the trading day. When the prevailing market price for the stock moved significantly away from Knight's acquisition cost, Knight then filled the customer's order and pocketed the difference as its profit on the transaction.

The Knight scandal, along with other front-running scandals such as those that periodically plague the New York and American stock exchanges, should be regarded as "old fashioned" best-execution scandals. The crime arises because it is extremely difficult for any investor, even sophisticated institutional investors, to monitor the agents charged with executing their orders. Market discipline works poorly in this setting because it is impossible for the client to know if the price received is the result of agency problems or stochastic market fluctuations beyond the broker's control. Just as the customer finds it difficult to monitor and control this behavior *ex ante,* the SEC has problems formulating rules to deal with the problem *ex post*.

Another critical point that has been ignored in the current discussions of the legal duty of best execution is the effect of the legal rules regarding best execution on market structure. From a market structure perspective, use of the traditional, case-by-case approach to best execution poses a collective action problem. Individual traders acting rationally and in pursuit of their own self-interests may direct order flow in such a way as to damage the quality of secondary markets generally by generating trading patterns that give a particular trading venue a monopoly over the provision of secondary market liquidity.

This puts regulators in a very difficult position. To maintain high-quality markets, regulators must ensure that there is robust competition among rival trading venues. Otherwise, spreads will widen and liquidity will deteriorate, leading to higher capital costs for investors. The common law approach to best execution, however, does not allow for this consideration.

Another problem with the traditional common law approach is that it ignores the fact that, once the decision to buy or sell has been made, the gains from improvements on the market bid-asked spread are zero-sum. Gains to the seller from receiving more than the best bid translate directly into losses for the buyer, who ends up paying more. What then is best execution for firms executing in-house agency crosses or for trading venues that make continuous two-sided markets? This point is particularly strong under the traditional view of best execution, which would require that customers placing orders with brokers receive the best price available, not just a price that is "generally good" or "better than available in other markets." But even where trading venues are highly efficient and offer customers "rebates" on their trades (payment for order flow), such markets do not necessarily offer best execution merely because the execution is good or even excellent. (See "Much Ado About Order Flow," Spring 2002.) The legal requirement is that the execution be the best of all available alternatives.

Adding yet another layer of complication is the conflict between the interests of retail customers and institutional investors. Even at the system-wide level, this conflict stymies the search for the illusive grail of "best execution." The controversy manifests itself in the current debate over the rights and responsibilities of customers and markets regarding whether customers and/or markets can have their orders "trade through" the prior, better orders of other customers. A "trade-through" is the execution of an order in a market at a price that is inferior to a price displayed in another market. Trade-through rules bar traders from trading at worse prices in faster electronic markets when there is a better quote in the slower exchange market.

From the traditional legal perspective of best execution, the very concept that an order can execute at a price inferior to the price displayed in another market poses a problem, particularly where the transaction is consummated without the customer's knowledge or consent. But the problem also exists where the trade-through rule prevents a customer from executing an order at an inferior price on a faster electronic market in order to obtain better overall execution for a large block trade. For example, if the best bid anywhere for a stock is $100, a large block seller, under the current incarnation of the trade-through rule, must execute the trade at that price, even if the bid were for only 1,000 shares and the seller would prefer to sell the entire

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100,000-share block at an inferior bid of $99.75. Of course, if the block trader were permitted to "trade-through" the superior bid as the SEC proposed in 2004 and consummate the transaction at $99.75, the retail trader who entered the $100 bid might not obtain best execution if the market moves higher before the trade can be executed.

## TRADING THROUGH BEST EXECUTION?

The trade-through rule recently adopted by the SEC in a 3–2 vote requires that no market participant trade at a price inferior to a price displayed in another market. The trade-through rule dictates that a trading venue receiving an order must match a better price available elsewhere or route the order to the other market for execution.

At the market level, trade-through protection originally was intended to help enforce the general obligation of best execution discussed in the preceding section. A best-execution problem arises on the buy side when a specialist makes a risk-free profit by buying at a lower, preexisting price to fill the bid or by selling at a higher, preexisting offer price to fill an order. The trade-through rule was designed to promote best execution of customer orders by preventing specialists and other market makers from executing orders at inferior prices when superior prices are available elsewhere.

Under the trade-through rule, trades must be executed at the best price, which is defined as the current best price offer regardless of the size order. Controversy has arisen because many block traders would prefer to execute their trades automatically at inferior prices immediately if they can execute a trade that covers their entire block. That is because the delay itself poses the risk that the market will move prior to the block trader filling his or her entire order, raising execution costs. Moreover, the longer the delay, the more difficult it will be for the block trader to keep his or her identity and trading plans anonymous. Once the institutional identity and trading plans become known, rational traders will enter the market in advance of some of the block trader's orders, and this will deprive the block trader of best execution.

The SEC proposed, but declined to enact, rules that would have allowed traders to choose speed of execution over best price. The proposed rule would have limited the scope of the trade-through rule in two important respects. First, it would have enabled those placing orders to "opt-out" of the trade-through rule if the trader were able to "make an informed decision" to elect speed of execution over best price. Second, in automated markets where an order can be instantly filled by a computer system, the trade-through rule would not apply within a certain *de minimis* range of price discrepancy between the order price and the best bid or offered price in the system. This range would be from one to five cents per share, based on the total share price to be "trade-throughable."

The NYSE favored an expansive trade-through rule, arguing that trades be required to go to the market posting the best price, which traditionally has been the NYSE. The NYSE won something of a political victory with its proposal for a uniform trade-through rule that requires all market centers to establish, maintain, and enforce policies and procedures reasonably designed to prevent trading venues from executing orders at a price inferior to a price displayed in another market. The new rule extends the trade-through rule beyond the NYSE and certain other exchanges to the NASD, ECNs, and other "market centers." However, there is an important exception in the new trade-through rule that permits a fast or fully automated market to trade through a slow, non-automated market. This will require the NYSE to improve its technology in order to become a fast market and thereby qualify for the protections of the rule.

As Junius Peake observed prior to the passage of the new rule, the trade-through rule and its proposed "opt-out" exceptions were "by far the most controversial piece of proposed Regulation NMS" because they would "have a defining effect on the structure of U.S. equity markets." Peake explains,

> The New York Stock Exchange, which has been the principal beneficiary of the trade-through rule, is fighting tooth and nail to maintain the status quo. Its competitors (and would-be competitors, such as ECNs), believe the present iteration of the trade-through rule to be old fashioned because it frequently requires manual intervention before an order can be executed, and gives an unfair advantage to NYSE specialists, who have time to make up their minds whether or not to participate in a trade.

Despite the SEC's assertion that the new rule does change a broker-dealer's existing duty to obtain best execution for customer orders, we believe the trade-through rule should be evaluated in the context of all of the other rules governing best execution. And here our point is purely positive: the SEC has, over time, engineered a seismic shift in the legal conception of the duty of best execution. The commission's traditional common law grounding in fiduciary duties and highly individualized contractual arrangements between customers and brokers has evolved into a generalized policy of promoting competitive markets, regardless of the effects on individual traders. This change can be seen most clearly in the SEC's own articulation of the general rules regarding the execution of trades by brokers on behalf of customers.

Under the SEC's conception of the rules regarding order execution, there is no duty of best execution. At a minimum, a duty of best execution would allow traders to direct their trades to the markets they prefer, but the new trade-through rules do not even permit that. Instead, brokers have "a choice of markets" in which to execute trades. Thus, for stocks listed on an exchange, it appears that brokers are free "to direct the order to that exchange, to another exchange (such as a regional exchange), to a 'third market maker' willing to buy or sell a stock listed on an exchange at publicly quoted prices, to an electronic communications network (ECN) that automatically matches buy and sell orders at specified prices, or even to another division of the brokerage firm receiving the customer's order such that the order is filled from the broker's firm's own inventory."

Of course, the SEC is also aware that regional exchanges and other market venues like ECNs often pay brokers for

directing order flow to their markets.

The SEC does not have the power to overturn or even to modify the state common law rules of fiduciary duty from which the general law of agency and the duties of best execution in particular are derived. However, the SEC has reinterpreted the duty of best execution as a general duty to the markets, rather than as a particularized contractual obligation between market participants.

The SEC observes, for example,

> Many firms use automated systems to handle the orders they receive from their customers. In deciding how to execute orders, your broker has a duty to seek the best execution that is reasonably available for its customers' orders. That means your broker must evaluate the orders it receives from all customers in the aggregate and periodically assess which competing markets, market makers, or ECNs offer the most favorable terms of execution.
>
> The opportunity for "price improvement"—which is the opportunity, but not the guarantee, for an order to be executed at a better price than what is currently quoted publicly—is an important factor a broker should consider in executing its customers' orders. Other factors include the speed and the likelihood of execution.
>
> Of course, the additional time it takes some markets to execute orders may result in your getting a worse price than the current quote—especially in a fast-moving market. So, your broker is required to consider whether there is a trade-off between providing its customers' orders with the possibility—but not the guarantee—of better prices and the extra time it may take to do so.

Here, the SEC reveals its position that brokers are, in its view, permitted to evaluate the orders it receives from its customers "in the aggregate" in order to determine where trading should be directed. The SEC's statement on best execution also reflects the view that even aggregate determinations must be made only "periodically." By contrast, under the traditional common law approach to best execution discussed in the previous section, each order must be evaluated individually, not "in the aggregate," and the determination of what constitutes best execution must be made at the time of each and every trade, not "periodically."

From an economic perspective, there are two implications to this analysis. First, while wealth transfers among various investors were clearly impermissible under the traditional common law duty of best execution, wealth transfers are permissible under the SEC's current approach. Second, while the traditional common law approach to best execution ignored the implications of the duty of best execution on market structure, the SEC's approach focuses primarily on issues of market structure. This is not surprising given the fact that the SEC's mandate is to maintain the integrity of the markets and to promote "fair competition" among market participants in the context of the 1975 National Market System legislation.

A few remaining vestiges of the traditional common law approach to best execution still remain. For example, customers may, if they specifically request to do so, direct their trades to a particular exchange, market maker, ECN, or other venue, although brokers are free to charge for that service or decline to execute the trade unless given discretion about where to execute the transaction. Some brokers offer certain customers the ability to direct orders in NASDAQ stocks to the market maker or ECN of their choice when they place their orders. And customers are permitted to obtain information about where their trades have been routed by their brokers during the previous six months, and to obtain information about their broker's policies on payment for order flow, internalization, and other trade-routing practices.

It is tempting to view customers' ability to direct order flow as a complete solution to the best execution problem. In theory at least, the problem could be solved simply by requiring brokers to ask customers where they want their orders sent and how they want them traded. Yet, this approach ignores a fundamental problem that the customer hires the broker to solve: how best to trade his stock? As we have argued above, agency problems give rise to the need for best execution duties.

## AN INQUIRY INTO INSTITUTIONAL COMPETENCE

As the recent spate of scandals illustrates, there are significant conflicts of interest associated with the broker-client relationship. Whether order flow is internalized or not, brokers can benefit personally at the expense of customers when they receive orders. The private contracting model does not offer a complete solution to this problem for two major reasons. First, it is extremely costly for most traders, particularly retail traders, to develop the information and expertise necessary to make an informed choice about trading venue. Second, and perhaps more importantly, individual traders face a collective action problem when deciding where to allocate their trades. The individual decision of each market participant about which trading venue is best may be the same at a particular point in time, giving that venue a monopoly.

If individual traders and regulators are unable to make the socially efficient, optimal decisions about best execution, where should the decision-making authority over trading be allocated? The remaining options are the trading venues themselves and the issuing firms.

**TRADING VENUES** Clearly, the trading venues are conflicted with respect to this issue. After all, it is the venues themselves that stand to gain the most from a decision that trading on their venue is consistent with the legal obligations of best execution. For years, off-board trading restrictions and prohibitions on delisting gave the organized exchanges effective control over the decision about where to trade, first by prohibiting exchange members from trading in listed securities off of the floor of an exchange and then by making delisting virtually impossible. With the relaxation of those rules in recent years, the decisional authority lies uneasily among brokers, bureaucrats, and the traders themselves. We also observe that the trade-through rules are perhaps the last vestige of venue-based trading restric-

tions, at least for the NYSE. The NYSE's trade-through rule, which prevents trade-throughs in New York–listed stocks, forces the execution of the vast majority of trades in NYSE-listed firms onto the floor of the Big Board.

**LISTING FIRMS** By process of elimination, we are left with the listing firms themselves. We recognize that principal-agent problems also plague the relationship between shareholders and the firms in which they exist. But the severity of the agency costs between firms and investors is not constant over time. For example, when firms are "in play" (that is, subject to hostile acquisition), managers have strong incentives to maximize firm value so the firms' share prices will be prohibitively high. Most importantly, when a firm's shares are sold to the public initially, the firm has extremely strong incentives to maximize the liquidity characteristics of the shares it is selling. After all, gaining liquidity is the whole point of going public for the prior owners and investors, particularly the firm's founding entrepreneur, private equity owners, merchant bankers, and venture capitalists. The quest for liquidity induces firms to incur the substantial costs and potential liability of registering their securities with the SEC and going public (as opposed to raising capital through private placement or via a private sale of control or other strategy).

Thus, at the time of an initial public offering, issuing firms have strong incentives to establish the rules of best execution that maximize value for all shareholders. Unlike the case-by-case decisions that individuals make when they conduct specific trades, firms must make decisions about best execution *ex ante*, or essentially before the shares begin trading. And those decisions must be made on an aggregate basis. But intriguingly, any inefficiency in the trading restrictions imposed by the issuer will be reflected in the share price that investors must pay. This means that issuing firms and their owners and venture capital providers, not subsequent investors, bear the costs associated with any inefficiency in the best-execution regime established by the firm.

If issuing firms, rather than bureaucrats, individual traders, or competing trading venues, are better suited to establishing what the rules of best execution should be, then we need to consider the twin questions of how this legal regime should be effectuated and what limits, if any, should be placed on firms' power to constrain shareholders' secondary market trading practices.

**IMPLEMENTATION** We propose that issuing firms decide for themselves the regime of best execution that best serves the interests of their shareholding population. Then, they can draft or amend their corporate charters accordingly. In our view, optimal share transfer restrictions define what, if any, restrictions should be placed on where firms' shares are traded.

As the name implies, a share transfer restriction is a provision in the articles of incorporation of a company that restricts, in some way or other, the ability of shareholders to transfer their shares to other investors. For example, share transfer restriction can require that the firm's general counsel or its board (or, if the firm is small enough, the shareholder) give permission for shareholders to sell. Alternatively, firms might impose no share transfer restrictions or require that trading be restricted to a particular exchange or constellation of exchanges and ECNs. Changes to the best-execution rules contained in a firm's corporate charter could be amended from time to time as technology changes the nature of the trading environment.

In general, stock certificates (and other more modern indicia of share ownership) are regarded as personal property and are subject to the traditional common law rule that there be no unreasonable restraint on alienation. Share transfer restrictions, however, are widely used by corporations and serve a number of valid purposes. For example, they ensure that a corporation will continue to satisfy certain regulatory requirements such as Subchapter S of the Internal Revenue Code, which grants preferred (pass-through) tax treatment to corporations but requires them to have no more than 35 shareholders. They also ensure that the company retains exemptions from the Securities Act of 1933's registration requirements, which prohibit the public offering of unregistered securities. In addition, share transfer restrictions are commonly used to maintain a family's control over a particular corporation, to maintain the status quo ownership structure among shareholders, or to permit shareholders in closely held corporations to regulate the identity of new investors.

While the general rule is that shares of stock are freely transferable, share transfer restrictions are valid in the vast majority of states so long as the restrictions they impose are reasonable under the circumstances. The modern rule of share transfer restrictions, in other words, "balances two conflicting corporate tenets: free alienability of corporate ownership interests and private corporate structuring to meet the participants' needs."

**LIMITS** As Yakov Amihud and Haim Mendelson correctly observed in a 1996 *New York University Law Review* article, the SEC has taken a dim view of issuers' efforts to restrict the trading venue of their securities once those securities have been issued and already are being traded. In particular, the SEC routinely grants so-called "unlisted trading privileges" to securities exchanges. Unlisted trading privileges, as the name implies, are rights that give a particular trading venue the privilege of trading a security in situations in which the issuer of the securities has not asked permission for its securities to be traded in that venue.

Under the Unlisted Trading Privileges Act of 1994, regional stock exchanges were encouraged to extend unlisted trading privileges to stocks listed on other trading venues. That statute merely codified a long-standing SEC policy of acquiescing to requests by regional exchanges for unlisted trading privileges.

Occasionally, issuers have tried to control trading in their securities after the securities were issued, but those efforts have been uniformly unsuccessful. The SEC's reluctance to block the grant of unlisted trading privileges, at least in some cases, has furthered shareholder interests by blocking managers' efforts to entrench themselves in office. For example, in *In re Providence Gas Company*, managers of a public utility wanted to limit stock ownership in the company to its customers. The managers sought to effectuate this policy by limiting trading in the firm's securities to the local over-the-counter market. This policy was upset when the New York Curb Exchange (now the American

Stock Exchange) granted unlisted trading privileges to the company's stock. Providence Gas unsuccessfully tried to block the New York Curb Exchange's move to extend those unlisted trading privileges. The interests of management in restricting trading were unlikely to have been shared by the company's shareholders, whose interests were in expanding the investor base to improve liquidity in the company's shares. Management, on the other hand, was more interested in limiting outsiders' access to the company's shares in order to reduce the possibility of a hostile takeover attempt.

Thus, in this context at least, the liberal use of unlisted trading privileges serves shareholder interests and reduces agency costs. However, even though unlisted trading privileges are liberally granted, issuers are not helpless to effectuate restrictions on the venues on which their securities trade. Share transfer restrictions, imposed as part of the initial stock issuance, can require stock to be traded in certain settings, effectively allowing issues to influence the best execution of their securities.

## CONCLUSION

We have considered, from a law-and-economics perspective, how best to achieve the elusive goal of best execution of trades in today's increasingly fractured and complex trading markets. In earlier work, we observed that despite "the seeming simplicity of this concept, few issues in today's securities markets are more contentious than the debate surrounding best execution."

The quest for a workable legal rule is confounded by issues such as:

- whether clearing a trade in one market at the best available current quote constitutes best execution if trades frequently clear between the quotes in another market,
- whether trade size should be considered when determining what constitutes best execution,
- whether brokers and investment advisers are in compliance with their legal right of best execution obligation if the trade price they are giving to investors reflects a fee for payment for order flow, and
- whether allowing one investor to "trade through" a price sacrifices best execution for the other trader.

Indeed, the issues surrounding best execution are complex.

Even the concept of best execution is becoming untenable. Increasingly, trading takes place in multiple venues and large orders are split and completed in stages. Where there are multiple trade executions taking place over a number of days, not only does the concept of best execution become extremely imprecise, but it becomes difficult to defend the common law idea of using fiduciary principles and viewing each trade on a case-by-case basis in isolation. Moreover, whatever regime of best execution is selected, that legal regime should be organized to reflect the fact that the rules governing best execution will profoundly affect not only the costs associated with individual trades, but also the ultimate market structure as a whole.

Thus, it is simply not possible to derive a single, operational legal definition of best execution in today's complex markets where traders' preferences are heterogeneous and where trading venues offer a wide variety of benefits for traders. For all of those reasons, we believe that the critical question to answer in formulating a best execution regime is where to allocate the decision over trading, rather than what particular rules should be applied to particular trades.

There are flaws in all of the various potential places to locate the decision about the ideal regime of best execution. Between the individual traders, the SEC, the trading venues, and the issuers, clearly the issuers are the institution with the strongest incentives to formulate efficient rules of best execution. Perhaps the best regulation of best execution lies not at the order level or the market level, but at the issuer level. R

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# A GROWING TECHNOLOGY ECOSYSTEM

Despite a hesitant global economy and the burst of the dot-com bubble, the information technology market is poised to exceed $1 trillion this year and is expected to grow another 40 percent by 2005.

With millions of people employed at hundreds of thousands of information technology companies around the world, it's clear that the high-tech industry continues to serve as an engine of global economic growth and opportunity.

In just the last two decades, we have seen the tremendous growth of a global "technology ecosystem" of companies that create hardware, software and services for businesses, governments, educational institutions and consumers worldwide. A recent study by IDC found that from 1995 to 2001, growth in the IT industry outpaced the broader economy in all 28 countries they studied, and is expected to grow 45 percent or more over the next several years in at least half of those countries.

***The global technology ecosystem is an engine of economic growth and opportunity that will exceed $1 trillion this year.***

The introduction of the PC in 1981 was one of the catalysts for this tremendous growth. Prior to this, few computers were compatible with one another. The software and hardware you bought would only work reliably on one model of computer, and it was difficult to share information with partners and colleagues who used a different model. The expense of creating products for dozens of different computers prevented many companies from taking risks to create innovative new products; and the wide range of incompatible software and peripherals from a number of different companies left many companies dependent on a single vendor for everything from hardware to services. The result was fewer choices and higher prices for consumers.

The PC's industry-standard blueprint for hardware and a compatible operating system changed all that. Hardware companies could then compete to build better PCs for their customers, confident that they could run all the popular applications. Software companies could create products that would work well on the greatest number of computers. Other companies introduced development platforms and tools that worked with these standard computers and operating systems, making it even easier for developers to write innovative software. And still more companies offered printers, modems and other peripherals that were easy to configure and use.

Today, more than 750,000 companies around the world design, manufacture and sell PC systems, create compelling software for everything from household finances to advanced scientific research, and build the printers, digital cameras, media players and other peripherals that make computers even more useful. The opportunities surrounding the PC are incredible—the IDC study showed that Microsoft partners generate $8 in revenue for every $1 earned by Microsoft.

The same industry that made the PC a success is now embarking on the next computing revolution—a world in which intelligent devices will connect people, businesses, information and services wherever and whenever needed. This next transformation—building on open Internet standards such as XML (eXtensible Markup Language)—will offer incredible new computing experiences for people and businesses and vast new growth opportunities for tens of thousands of companies around the world.

As the world of computing expands to encompass everything from handheld devices to computer servers that make the world's largest corporations more efficient, agile and secure, Microsoft is committed to enabling people and businesses to fully realize their potential—and to nurturing technology's role in economic growth and prosperity around the world.

*One in a series of essays on technology and society. More information is available at microsoft.com/issues.*

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