

The Economics of Stock Exchange Listing Fees and Listing Requirements

Jonathan R. Macey and Maureen O'Hara¹

*Johnson Graduate School of Management, Cornell University, 447 Sage Hall,
Ithaca, New York 14853*

Received January 30, 2001

This paper investigates the once and future role of listing fees. We consider the theory of listing fees and why such a pricing structure initially evolved. We show how capital market developments have changed the desirability, and even viability, of this pricing structure. We then analyze the economics of listing fees. While providing revenue to the exchange, listing fees impose large (opportunity) costs, and we analyze this trade-off, presenting evidence from the New York Stock Exchange. We also discuss what types of listing requirements make economics sense for exchanges (or perhaps regulators) to impose on companies. Finally we consider whether listing fees will continue to survive. *Journal of Economic Literature* Classification Numbers: G10, G18, K22, K23.

© 2002 Elsevier Science (USA)

Key Words: listing fees; listing requirements; stock exchanges; market microstructure.

1. INTRODUCTION

A curious feature of most stock exchanges is that a company must pay to have its shares listed for trading. These listing fees, which are charged both at the time of the initial listing of the shares and annually for the continued trading of shares, can be quite substantial for the company and quite lucrative for the exchange. The New York Stock Exchange (NYSE), for example, generates approximately 40% of its revenues from listing fees. Yet, a number of puzzles surround these listing fees. Why, for example, do listing fees differ so dramatically across exchanges, with some charging almost nothing and others imposing hefty

¹ Macey is the J. DuPratt White Professor at the Cornell Law School. O'Hara is the Robert W. Purcell Professor of Finance at the Johnson Graduate School of Management, Cornell University. The authors thank William Christie (the editor), two anonymous referees, David Easley, Tim McCormick, George Sofianos, Hans Stoll, and seminar participants at Cornell, the NYSE, and the Stockholm School of Economics for help and comments. We are particularly grateful to Robert Jennings for his help in providing historical data. The views expressed in this paper are strictly those of the authors.

levies?² Why must companies pay to list their stocks when their options (and typically their bonds) pay no such fee? Why do exchanges charge larger firms higher listing fees when such firms actually generate most of the revenue (and profits) for the exchange? And, why, given the proliferation of trading venues for a company's stock, do companies pay listing fees to a single exchange at all? In the increasingly competitive environment of equity trading, the survival of listing fees seems peculiar.

This paper investigates the once and future role of listing fees. We develop the thesis that listing fees and listing requirements were part of a complex relational contract that existed between a stock exchange and its clients, the corporations listing their shares for trading on the exchange. This relational contract involved a wide array of services provided by the exchange and a codependency between the issuing firms and the exchanges. Technology has transformed equity trading, however, changing what was fundamentally a benevolent monopoly into a competitive industry. Stock exchanges are now a commodity business, not a relationship business. We argue that these changes undermine the case for listing fees and that these institutional vestiges are increasingly incompatible with exchange survival in the competitive world of equity trading.

Our research investigates three issues. First, we consider the theory of listing fees and why such a pricing structure initially evolved. We argue that listing fees at one time made sense: when exchanges were monopolies providing an array of economic and regulatory services, listing fees could be explained as a part of the price listing companies paid for these services. We consider how recent capital market developments have changed the desirability, and even viability, of this pricing structure.

We then analyze the economics of listing fees, and we focus, as a particular example, on the listing fees and requirements of the New York Stock Exchange. An interesting feature of listing fees is that while yielding substantial revenues for the exchange, they also impose large (opportunity) costs. This is because to induce listed firms to pay up, the exchange must also restrict trading in shares of companies who have not paid the listing fee. We analyze this trade-off, presenting evidence on the opportunity cost that the NYSE faces, given these listing fees. A related issue is that of listing requirements, and in this section we also discuss what types of requirements make economics sense for exchanges (or perhaps regulators) to impose on companies.

Finally, the third issue we consider is whether, given their apparent state of economic anachronism, listing fees will continue to survive. Here we argue that listing fees have evolved over time to play a dominant role in the way exchanges like the NYSE are financed. Changing the nature of exchange funding creates divergences between the interests of the exchange and that of some of its members.

² The Luxembourg Exchange, for example, generates almost 100% of their revenues from listing fees, while for the Deutsche Bourse listing fees are less than 10% of revenues. For a detailed list of European exchange listing fees see Cybo-Ottone *et al.* (2000).

Of particular importance is that currently the exchange benefits from the listing fees, with others, particularly the specialist firms, bearing the opportunity costs. We present evidence of this trade-off by drawing on both historical data and on data for specialist firm profitability taken from the recent IPO filing of a large NYSE specialist firm, LaBranche & Co.

One way to interpret our analysis is as a vivid example of how institutional form must follow economic function. While listing fees and requirements have a long tradition in equity markets, such traditions may prove both costly and difficult to maintain as markets become more competitive. The decoupling of the listing and trading functions makes the survival of listing fees particularly doubtful, and this, in turn, has important implications for the way stock exchanges are operated and financed.

This paper is organized as follows. The next section analyzes the origins of and the economic justification for listing fees. In Section 3, we provide a more precise analysis of the economic costs and benefits of listing fees. In this section, we also consider how listing fees and requirements have differential effects across firms. Our analysis here shows that exchanges would benefit from removing or drastically altering exchange listing fees and requirements. Section 4 then considers how such fees affect the various constituencies of the exchange. This final section discusses the implications of our analysis for the operation of exchanges, and it suggests why listing fees are unlikely to survive.

2. THE ORIGINS OF LISTING FEES

Exchanges are firms that generate revenues by sponsoring trading in financial instruments. Exchanges, like other firms, compete for market share, and for stock exchanges, market share comes in two forms. First, there is the exchange's market share of eligible firms, defined as the percentage of firms eligible for listing who choose to list on the particular exchange. The second aspect of market share is the percentage of trading in the stock of listed firms that actually takes place on the exchange.

Traditionally, listing and trading of a firm's shares were inextricably linked, but that is now changed. Alternative trading venues such as electronic communication networks (ECNs), broker-dealer firms executing orders in-house, and regional exchanges now actively trade the shares of firms listed elsewhere. Consequently, listing exchanges have struggled to get new business in the form of listings and to retain their historically dominant position in the trading of the shares of listed firms.

To understand the fundamental change that exchanges now face, it is useful to consider the complex product that exchanges traditionally offered to its listing-firm clients. Historically, a stock exchange provided: (1) the provision of standard-form, off-the-rack legal rules to reduce transaction costs for investors; (2) clearing services to ensure that secondary participants receive timely payment for securities

sold and timely delivery of securities purchased; (3) a signaling function to inform investors that the issuing company's stock is of high quality; (4) monitoring of exchange trading against manipulation and insider trading; and (5) the promise of liquidity, which is backed up by an affirmative obligation on the part of exchange specialists to "maintain fair and orderly markets" in the stocks in which they specialize.³

This complex array of products and services meant that the contract between the stock exchange and listing firms was highly contextual and relational.⁴ The Exchange depended on the listing for fees and trading revenues; the listing firm depended on the Exchange as a source of liquidity in its shares. Such interdependence was not typically found in other types of exchange markets. For example, futures exchanges trade commodities, and listing fees were never part of their revenue structure. Similarly, option markets, which also do not charge listing fees, have no relationship with the underlying companies whose options they trade. Thus, futures and options exchanges' entire focus was on the production of liquidity; stock exchanges traditionally did much more.

Things have changed. While stock exchanges need revenues to cover operating costs, the proliferation of unlisted trading shows that listings are not required to obtain such funds. Instead, what exchanges need is trading volume. And listing firms are less reliant on exchanges for liquidity, since trading can, and does, take place in other venues. What caused this turn of events? To understand this transition, we consider how alternatives have developed for virtually all of the traditional exchange activities.

2.1. Standard-form, Legal Rules

Stock exchanges once served as an independent source of corporate governance rules for listed firms. The NYSE, for example, supplied rules regarding disclosure, capital structure, voting rights, and other aspects of corporate governance long before the Securities and Exchange Commission (SEC) even existed.⁵ However, the NYSE's role as a source of legal rules for listed firms has all but disappeared. Securities laws and the SEC are the most important alternative providers of legal rules for public firms in the United States, but they are by no means the only source of such rules. State legislatures, particularly Delaware, and a wide range of independent legal organizations including the American Law Institute (ALI, which promulgated the ALI Principles of Corporate Governance), the American Bar Association's Committee on Corporate Laws (which promulgated the Model

³ These economic characteristics are identified and discussed at length in Macey and O'Hara (1999a, 1999b). See also Lee (1999).

⁴ Macey and O'Hara (1999a) argue "The complex bundle of services provided by exchanges to listing firms resulted in a relationship characterized by long-term mutual dependency. Each side had asset-specific relations with the other that raised the specter of exploitation through opportunistic behavior. But the fact that such specific investments were reciprocal reduced the incentives for one-shot opportunism."

⁵ See Benston (1973) and Stigler (1964).

Business Corporation Act), and the Financial Accounting Standards Board all provide rules of corporate governance and practice that are more important than the rules provided by the NYSE. While firms may list in the United States, in part, for the legal rights it conveys to the shareholders, this legal structure is dictated by the courts and Congress, and not by the exchanges.

2.2. Clearing Services

A significant risk facing traders is whether they will receive timely payment for securities sold and timely delivery of securities purchased. While historically clearing and settlement were the purview of exchanges, markets have developed to the point that clearing services can be separated (unbundled) from trading services. In the United States, the Depository Trust Company (DTC) handles clearing and settlement for both the NYSE and the Nasdaq. Thus, this aspect of traditional exchange services has been outsourced. Moreover, specialized firms such as Bear Stearns Securities Corp. provide clearing services for other broker-dealers who do not want to invest in creating and maintaining their own clearing services. While clearing services remain an important business for some markets (such as the Stock Exchange of Hong Kong), this typically reflects the scale economies of combining stock, futures, and options clearing.

2.3. Signaling

Historically, in return for listing fees, stock exchanges served as reputational intermediaries. Investors who knew nothing about a particular firm derived information from the very fact that a particular exchange had agreed to list the firm for trading. Thus, a NYSE listing served as a signal that the firm had a substantial market presence (because it met the Exchange's listing criteria) and also that it had agreed to abide by the NYSE's rules and regulations regarding corporate governance and appropriate trading.

Today, however, this reputational role is diminished. One reason is simply the emergence of other, effective information intermediaries who provide signals about the quality of firms whose shares trade in secondary markets. These rival information intermediaries include investment banks, law firms, accounting firms, rating agencies, and the SEC (which approves registration statements and enforces rules against false and misleading statements in connection with the purchase and sale of securities). A second reason is that technology, particularly the use of the Internet, has lowered the cost of research about traded companies, reducing the need for exchange certification.

While listing firms must still satisfy certain listing criteria, the old-fashioned generalization that a NYSE listing is a guarantee of a substantial market presence no longer holds. The generalization is now both underinclusive, because many substantial firms choose not to list, and overinclusive, because many firms traded on the NYSE are not particularly substantial by modern standards. Furthermore, as alternatives to listing have developed, exchanges have founded it increasingly

TABLE I
Listed Firms on the New York Stock Exchange^a

Year	Total listing	Foreign	Domestic	Foreign listings as % of total listings
1960	1143	24	1119	02.09%
1965	1273	N/A	N/A	N/A
1970	1351	33	1318	02.44%
1975	1557	33	1524	02.12%
1980	1570	37	1533	02.35%
1985	1541	54	1487	03.5%
1990	1774	96	1678	05.4%
1991	1885	105	1780	05.6%
1992	2089	120	1969	05.7%
1993	2361	153	2208	06.5%
1994	2570	216	2354	08.4%
1995	2675	247	2428	09.0%
1996	2907	304	2603	10.5%
1997	3047	356	2691	11.7%
1998	3114	379	2735	12.2%
1999	3025	406	2619	13.4%
2000	2862	434	2428	15.2%

^a Note. Data are the total number of listings on the NYSE. The data are drawn from the New York Stock Exchange Fact Book.

difficult to enforce the rules that presumably support this signaling function. Thus, when a number of NYSE listed firms found it undesirable to comply with the NYSE's rules prohibiting dual class voting stock, the firms simply ignored the NYSE's rules. The NYSE declined to enforce its rules by delisting the offending firms, which included such notable clients as General Motors and Dow Jones, Inc. In the end, the NYSE capitulated and agreed to permit listing firms to have dual classes of stock.⁶

There are, of course, some firms that still value and benefit from the reputational capital associated with an exchange listing. Smaller domestic firms are one such example, as are foreign firms (large or small), particularly those with historically undeveloped equity markets, such as Germany, Italy, and India.⁷ But while the benefits of exchange listing may remain for these firms, we would argue that they are diminishing for larger domestic firms who have little need for the reputational function of the exchange.

Evidence consistent with this hypothesis can be found in the types of firms opting to list on the NYSE. Table I shows that foreign listings are playing an increasingly important role for the NYSE, accounting for more than 15% of all listed firms

⁶ "Big Board Agrees to Let Companies List More Than One Class of Common Stock," *Wall Street Journal*, July 7, 1986, p. 1.

⁷ For example when Canandaigua Brands, Inc. listed on the NYSE, Richard Sands, its chairman and CEO, defended the decision on the grounds that "[t]he move to the NYSE will support our growth by enhancing our visibility throughout the world." See NYSE (1999a).

in 2000 (see also Bacidore and Sofianos (2002) for an analysis of NYSE-listed non-U.S. firms). Conversely, domestic listings have fallen over the past five years, a time period coincident with the rise of ECNs and other trading alternatives.⁸ While there are undoubtedly many factors behind these numbers, we would argue that the changing nature of the exchange “product” is certainly one of the most important.

2.4. *Monitoring*

Investors clearly value fairness in trading. Confidence that their trades are executed at market prices, and that insiders and market professionals do not engage in insider trading, front-running, or market manipulation, is crucial to a trader’s decision regarding where to trade. At one time, the fixed-site locations of exchanges gave exchanges an unrivaled ability to monitor trading on behalf of investors. Indeed, the legislative decision to make exchanges self-regulatory organizations (SROs) reflected, in part, this natural advantage.

Technology, however, is changing this equation. Now that off-exchange trading takes place via computer rather than via telephone, it is possible to monitor off-exchange trading very effectively. Indeed, as early as 1976, the Securities and Exchange Commission recognized that over-the-counter trades were not “intrinsically more difficult to monitor than exchange transactions.”⁹ Thus, the NYSE no longer enjoys a unique ability to monitor that cannot be matched by the NASD or even by proprietary trading systems such as Instinet.¹⁰ Indeed, as trading fragments across trade locales, it could be argued that multimarket trading systems such as Instinet provide enhanced monitoring ability relative to that of single market centers.

Another factor undermining the monitoring role has been the shift in exchange trading clientele from individuals to institutions. Currently, institutional customers represent 70% of the Exchange’s transaction volume, a dramatic change from their virtually negligible role earlier last century.¹¹ When those purchasing NYSE shares were largely individuals, the NYSE’s function as monitor held greater importance. But sophisticated institutional investors use their own analysis, including direct measurement of trade execution costs, to determine execution quality.

Finally, regardless of where a firm’s shares trade, traders are bound by the SEC’s rules barring manipulation and insider trading and mandating the best execution of customer orders.¹² These SEC rules have eroded the NYSE’s dominant position

⁸ Note that over much of this period delisting by firms was not really feasible due to NYSE Rule 500, known as the “roach motel” rule allowing firms “to check in but not check out.” Recent changes to Rule 500 may alter this flow in the future.

⁹ Securities Exchange Act Release 34-11,942, 41 Fed. Reg. 4507 4512 (1976).

¹⁰ Nor has the NYSE been immune from complaints about the quality of its own monitoring services, for example the recent scandal on the NYSE involving front-running by floor brokers. See Sofianos and Werner (1998) for a discussion of the role of floor brokers on the NYSE.

¹¹ See NYSE (1999b).

¹² For an analysis of best execution obligations see Macey and O’Hara (1998).

by creating a trading environment in which investors have the same protections both on the exchange and in alternative trading venues.

2.5. *Liquidity*

We have argued above that the case for exchange listing as a means of achieving better monitoring, better signaling, superior legal rules, and more reliable clearing is no longer compelling. When it comes to providing liquidity for listing firms, however, exchanges are, arguably, different from ECNs and other alternative venues. Liquid markets allow investors to buy and to sell their shares quickly and with minimal price effects. And it is here that the NYSE is most proficient; virtually all studies of trading costs find the NYSE to be the least cost venue in which to transact (see, for example, Christie and Huang (1994); Christie and Schultz (1994); Huang and Stoll (1996); Bessembinder and Kaufman (1997); or Bessembinder (1999, 2000). This cost efficiency arises both from the lower spreads found on the NYSE and from the higher probability that public orders will cross with other such orders.

In the over-the-counter markets, liquidity is provided via competition among dealers and other market professionals. In these markets, professional market participants must develop reputations for fair dealing, and they must keep trading spreads low to attract the order flow they require to survive. The recent Nasdaq price-fixing scandal suggests that this does not always occur. On alternative trading systems, liquidity arises from the interaction of customer orders. Because liquidity arises endogenously (there is no source of liquidity other than customer orders), when market conditions turn adverse, liquidity may vanish.

On the New York Stock Exchange, the Allocation Committee assigns a specialist to each listed firm. In turn, the specialist has an affirmative obligation to "maintain fair and orderly markets" in the stocks they handle. According to the Exchange's rules:

In connection with the maintenance of a fair and orderly market, it is commonly desirable that a member acting as a specialist engages to a reasonable degree under existing circumstances in dealings for his own account when lack of price continuity, lack of depth, or disparity between supply and demand exists or is reasonably to be anticipated.¹³

Whatever the ability of specialists to maintain fair and orderly markets in the past, they are less able to do so now that listed stocks trade on multiple venues. This is because specialists need to earn sufficient profits during the easy times when volatility is low and trading volume is high, so that they can afford to take the losses when market conditions become more uncertain and their regulatory obligation becomes costly. However, when trading can occur on multiple venues, the affirmative obligation of market makers is problematic. The specialist who attempts to make sufficient profits during times of low volatility and high trading

¹³ *NYSE Guide*, (CCH)para 2104.10 at 2705.

volume will find himself or herself losing market share to rival venues. This market share will only return when market conditions change and the specialist must incur the costs of maintaining a fair and orderly market.¹⁴ Stoll (1998) concludes that requiring market makers to make continuous two-sided markets makes no sense because the rule either imposes (debilitating) costs on market makers, who will then avoid the rule, or it is ineffective, in which case there is no need for the rule.

But even if the affirmative obligation of the specialist is not chimerical, it is needed least for large firms with heavy trading volumes. This is because firms with large numbers of shares outstanding and heavy trading provide the greatest number of trading opportunities and the largest number of profit-making opportunities for market professionals. For these firms, it is the aggregation of their orders that provides the liquidity arising on the exchange, rather than the admittedly limited participation of the specialist. Madhavan and Sofianos (1998) show, for instance, that for the largest NYSE firms the specialist participation rate in trades is below 10%.¹⁵

This observation leads to two important conclusions about the economics of exchanges and exchange listing fees. First, it is the largest firms that have the most liquidity, and it is these firms that any exchange would most want to list. But it is these firms who have the least to gain from exchange listing as their shares are already liquid. Thus, Microsoft, a prominent firm not listed on the NYSE, has little reason to pay the NYSE a fee to list its shares. Second, the firms that the exchanges do not want to list are the small firms whose shares do not enjoy much liquidity. But it is these firms that would benefit most from (and be willing to pay for) the affirmative obligation of the exchange specialist to maintain a continuous two-sided market.

In summary, we have argued that listing fees made sound economic sense when the contractual relationship between exchanges and listing firms was complex and relational. Now, however, being an exchange is a commodity business, and the commodity involved is trading volume. In this competitive environment, listing fees deter the firms that are the best, most profitable customers from trading on the NYSE, while listing requirements prevent the firms that would benefit the most from associating with an Exchange from doing so. Thus, listing fees and listing requirements, at least in their current incarnation, are not efficient. In the next section, we consider the economic effects of listing fees and requirements in more detail.

¹⁴ If anything, during turbulent trading periods, specialists' efforts may impede liquidity by slowing down price changes and halting trading. Stoll (1998) argues exchange specialists "have little ability to dampen large price changes while the obligation to maintain price continuity may slow down price adjustments. At the same time, volatility appears to be greatest around exchange openings and after trading halts (requested by specialists)."

¹⁵ In particular, Madhavan and Sofianos find that 17% of their sample stocks have specialist participation rates below 10%. Looking at volume deciles, the most actively trading decile has a median specialist participation rate of 15.4%.

TABLE II
NYSE Listing Requirements

NYSE Minimum Quantitative Standards

Distribution and size criteria:

2000 round-lot (generally 100 shares) holders: 2000 U.S. or 2200 total shareholders
Average monthly trading volume: 100,000 shares (for the most recent six months) or 500 total shareholders *and*

Average monthly trading volume of 1,000,000 (for the most recent 12 months) Market value of outstanding shares: \$100,000,000 (\$60,000,000 for IPOs, spin-offs, carve-outs)

Public shares outstanding: 1,100,000

Financial criteria

Earnings: Aggregate pretax earnings over the past three years of \$6,500,000 achievable as: most recent year \$2,500,000 or \$2,000,000 in each of the two preceding years or \$4,500,000 in the most recent year (all three years must be profitable) or

Operating cash flow: For companies with not less than \$500 million in global market

capitalization and \$200 million in revenues in the last 12 months: Aggregate for the three years

Operating cash flow (each year must report a positive amount): \$25,000,000

3. THE ECONOMICS OF LISTING: COSTS AND BENEFITS

3.1. *Listing Requirements*

Not every company qualifies for an exchange listing. Each stock exchange typically sets minimum criteria that must be met, with the specific requirements of the New York Stock Exchange given in Table II. At a minimum, a firm aspiring to list on the NYSE must satisfy the Exchange that there is “national interest in the company,”¹⁶ that a minimum of 1.1 million shares is publicly held among not less than 2000 stockholders, and that the firm’s publicly held common shares have a minimum aggregate market value of \$18 million. In addition, the company must have net income in the current fiscal year of at least \$2.5 million before federal income tax and \$2 million in each of the preceding two years. This minimum profitability requirement precludes many fledgling high-tech companies from listing on the NYSE, and it explains why the number of IPOs was substantially higher on the Nasdaq (where requirements are less stringent) during the IPO boom of the late nineties.

In evaluating an applicant for a listing, the NYSE gives particular attention to another, more amorphous component. In the Exchange’s own terms:

The Exchange has broad discretion regarding the listing of a company. The Exchange is committed to list only those companies that are suited for auction market trading and that have attained the status of being eligible for trading on the Exchange. Thus, the Exchange may deny listing or apply additional or more stringent criteria based on any event, condition, or circumstance that makes the listing of the company inadvisable or unwarranted in the opinion of the Exchange.¹⁷

¹⁶ NYSE Web site, visited January 20, 2000, <http://www.nyse.com/listed/listed.html>.

¹⁷ NYSE home page, <http://www.nyse.com> (visited January 20, 2000).

From these listing criteria it is clear that the NYSE's primary concerns in determining whether to list a company are, first, the company's market presence and, second, whether the company is a viable going concern that is likely to survive in the future. Curiously, despite the signaling and certification roles noted earlier, the NYSE does not investigate firms or provide financial analysis of their prospects. Thus, listing signifies only that the firm is a going concern with a reasonable probability of survival; it does not signify that it is a good investment.¹⁸

This screening mechanism made sense when listing a firm involved the establishment of a long-term relational contract that included significant firm-specific investments by the Exchange in the listing company. There is no longer any justification for these requirements in the competitive environment in which the NYSE now finds itself. But, if neither the markets nor the NYSE is currently well-served by its listing requirements, what should become of listing requirements?

One possibility is to drop the listing requirements altogether. Indeed, this is what is currently occurring in the United Kingdom, where the ability to set listing requirements has shifted from the London Stock Exchange to the newly expanded Financial Services Authority (the U.K. counterpart of the U.S. SEC). Under this arrangement, it is the regulator who determines the minimum standards to access a country's equity capital market, leaving the exchange free to trade whichever companies it desires who meet these overall standards. This arrangement, reminiscent of the way in which bonds trade in markets, institutionalizes the decoupling of the listing and trading functions.

A disadvantage of this approach, however, is that it negates any distinctive features that attach to particular exchanges. As we have argued here, for some firms a listing on a particular exchange does convey information to investors, and this branding is an important feature of exchange competition. A better alternative for an exchange would be to revise its listing requirements to expand the number of firms eligible for listing, while still retaining what vestiges of the quality signaling function that remain.¹⁹ This could be done by looking beyond the mere size of listing applicants to factors such as their business plans and prospects, the integrity and quality of management, the firm's commitment to following sound, conservative accounting practices, and to good corporate governance. For exchanges in countries without the developed monitoring and legal frameworks found in the United States, listing requirements should be strengthened to enhance the investor protection benefits provided by the exchange.

¹⁸ This "going concern" rationale also underlies the exchange's delisting criteria. A firm entering Chapter 11, for example, is delisted even though this may greatly disadvantage the investors in its equity. Thus, the NYSE has delisted both Enron and Global Crossing.

¹⁹ Such an approach may underlie Nasdaq's recent decision to review its listing standards, particularly with respect to delisting. Nasdaq rules require delisting if a firm's stock price falls below \$1.00 for 30 days. As of July 2001, there were 279 delistings from Nasdaq in 2001, so relaxing this listing standard could help retain firms on Nasdaq (see "Nasdaq is reviewing its listing standards," *Wall Street Journal*, September 25, 2001).

3.2. *Listing Fees*

For those firms that qualify for exchange listing, the NYSE requires both an original listing fee and a continuing listing fee.²⁰ The original listing fee starts at \$36,800 and increases with the number of shares listed up to approximately \$1.5 million. The New York Stock Exchange also imposes a complicated set of continuing annual fees based on the number of tradable shares a firm has outstanding. The continuing annual fee is capped at \$500,000.²¹ By contrast, Nasdaq's original listing fees start at \$5000 and are capped at \$90,000 for firms with 16 million or more shares. Its annual fee is capped at \$50,000 for firms with over 100 million shares.

The difference in fees between Nasdaq and the NYSE is indicative of the disparity in listing fees found throughout the world. By virtually any measure, the NYSE is the outlier in term of listing fees and revenues. Listing fees constitute the largest single source of revenues for the NYSE, with \$290 million or 40% of the NYSE's total revenues of \$720 million coming from listing fees in 1998. Comparing across regions of the world, listing fees generate 32% of revenues for North American exchanges but only 19.3% of European exchange revenues, despite the fact that there are more listed securities in Europe (i.e., 13,392 listed companies versus 12,261 in North America).²²

Why do firms continue to pay these fees when cheaper alternatives exist? We suggest two possible answers. First, for some firms, exchange listing is still valuable. Bessembinder (2000) estimates for a sample of 190 firms switching to the NYSE in 1996 and 1997 that average execution cost savings totaled between \$0.9 million and \$3.2 million. For these firms at least, the value of the NYSE trading mechanism is greater than the cost of listing. A second explanation is simply that the size of listing fees is small relative to potential delisting costs.²³ Thus, while the NYSE charges some firms as much as \$500,000 a year for listing privileges, the average listing revenue in 1999 was only about \$88,000 per firm.

Why are listing fees so much more important for the NYSE than elsewhere? We address this question more directly in the next section, but we note here that while

²⁰ See NYSE Listing Standards: U.S. Fees (<http://www.nyse.com/international/domesticfees.html>) and NASDAQ, The NASDAQ Stock Market Listing Requirements (<http://www.nasdaq.com/about/FeeStruc.stm>).

²¹ The NYSE charges \$1650 for one million shares, \$3300 for two million, and an additional \$830 per subsequent million. The NYSE provides an exemption for these fees for issuers who have been subject to a continuing annual fee for 15 consecutive years. Thus, for example, a firm with 40 million shares outstanding must pay \$34,840 ($\$3300 + (830 \times 38)$), rather than the prescribed minimum fee of \$32,340 for a firm with that amount of equity. This annual minimum fee is in addition to the \$207,100 original listing fee the firm paid at the time of its listing.

²² Data are from FIBV (1999).

²³ These delisting costs could be substantial as Exchange rules required notification and vote by the firm's shareholders. Moreover, Rule 500 dictated that a delisting firm could never relist on the Exchange, thus making it virtually impossible for firms to check out. These delisting rules have been relaxed, leading to the first delisting of a stock moving to the Nasdaq in 2000.

the revenue derived from listing is large, listing fees and requirements are not without costs. Thus, we now turn to considering the optimality of this listing structure.

3.3. *Costs versus Benefits*

Currently, markets and exchanges have the ability to grant unlisted trading privileges to firms, thereby allowing firms to trade in many settings.²⁴ The Nasdaq and some regional exchanges such as the Chicago Stock Exchange allow extensive unlisted trading privileges for individual stocks, but the NYSE does not.²⁵ Allowing trading in unlisted firms creates a revenue-based dilemma for the NYSE: if it allows some firms to trade on the NYSE without paying a listing fee, how can it then collect listing fees from other firms? The traditional NYSE answer has been that to protect its listing fee revenue it will not trade unlisted stocks.

But would the exchange make more trading stocks that are not listed than it currently earns in listing fees? To evaluate this trade-off, we consider the simple experiment of what would happen if the NYSE extended unlisted trading privileges to Nasdaq stocks. Determining even a rough estimate of this revenue requires establishing three things: (1) how much trading volume takes place on the NASD, (2) how much of this trading volume the NYSE would be able to capture if it granted unlisted trading privileges to NASD stocks, and (3) how much the NYSE stands to make on this trading volume.

We note at the outset that our analysis here is more illustrative than definitive, but even these rough estimates are helpful in underscoring the opportunity costs associated with listing fees. It is certainly the case that what matters are potential profits, not revenues, but the absence of cost data on exchange operations precludes such a calculation. There is also a continuing debate regarding the comparability of volume figures between the NYSE and the Nasdaq. This debate centers on alleged double-counting of volume on Nasdaq, an issue that Nasdaq insists is inaccurate, but which academic research (see, for example, Atkins and Dyl (1997)) suggests may be important. We use data reported by the respective market centers to the SEC, but caution the reader to bear in mind these reporting issues.

3.4. *Trading Volume*

Data on the volume of shares traded on the Nasdaq is readily available. In 1998, 202 billion shares were traded on the Nasdaq, making the Nasdaq the largest market in the world. In 1999, the Nasdaq captured 55% of the total share volume traded on the three primary U.S. markets; a decade earlier, the NYSE enjoyed the dominant market position in terms of trading volume, with 77% of shares being traded on that venue.²⁶ Table III provides share volume statistics on the Nasdaq market.

²⁴ Interestingly, individual companies cannot block exchanges from trading their stock. The optimality of this practice is investigated in an interesting paper by Amihud and Mendleson (1996).

²⁵ Currently, all regional exchanges and the Nasdaq use their UTP privileges for NYSE-listed stocks, but only the Chicago Stock Exchange extends UTP privileges to Nasdaq stocks.

²⁶ Macey and Kanda (1990).

TABLE III
Share Volume Market Statistics: NASDAQ Stock Market

Nasdaq statistics	1998	1999	% change
Total share volume	201.5 billion	265.6 billion	31.81
Average daily share volume	799.6 million	1.054 billion	31.81
Year-end market value	\$2.6 trillion	\$5.2 trillion	100
Number of IPOs	281	484	72.24
Company additions	486	630	29.63

Source. *Nasdaq Fact Book*, 1998, 1999.

3.5. Estimating the NYSE's Market Share in NASD Stocks

The share of this prodigious trading volume that the NYSE would be likely to capture can be estimated by examining the share of trading volume that the NYSE captures in firms whose shares have been trading in multiple trading venues. Until December 1999, the NYSE maintained a rule barring broker-dealer firms that were members of the Exchange from executing trades in Exchange-listed stocks off of the floor of the Exchange.²⁷ This rule, which, in its last incarnation, was NYSE Rule 390, had gradually been eroded by incremental adjustments in the Exchanges trading rules that were encouraged by Congress and the SEC.²⁸ In particular, Rule 390 applied primarily to over-the-counter trading, since trading on regional exchanges had long been allowed by the SEC.

By the time Rule 390 was formally rescinded, the Rule covered only 27% of NYSE listed firms.²⁹ However, these companies accounted for 48% of the NYSE's trading volume. The rule first evolved to allow NYSE members to trade NYSE stocks on other (regional) exchanges (but not over-the-counter). Then, the SEC relaxed the regulations governing stock trading to permit certain stocks, the so-called 19c-3 stocks, to trade both on exchanges and over-the-counter, such as on Nasdaq. These 19c-3 stocks included all shares listed for trading on the NYSE after April 26, 1979.³⁰ For example, when several regional telephone companies were created in the United States as a result of the settlement of antitrust litigation between ATT and the Department of Justice, the resulting companies all were 19c-3 corporations. Their shares trade simultaneously on the NYSE and on the

²⁷ See Ip (December 3, 1999) for a discussion of the NYSE's decision to remove the rule.

²⁸ The most important of these were the 1975 amendments to the Securities Exchange Act of 1934 that added Section 11A to the Act. Section 11A was designed to create a "National Market System" by, among other things, promoting "fair competition among brokers and dealers and among exchange markets and between exchange markets and markets other than exchange markets." Securities and Exchange Act of 1934, Section 11A(1)(C), 15 U.S.C. Section 78k-1(a)(1)(C).

²⁹ On May 2, 2000, the SEC issued its formal order approving the rescission of Rule 390. See Securities Exchange Act Release No. 34-42758.

³⁰ Securities Exchange Act Release No. 16,889, 45 Fed. Reg. 41, 157 (1980). In addition, Rule 19c-3 prohibits the NYSE and other exchanges from placing trading restrictions on stocks that listed on the exchange prior to April 26, 1979, but which later delisted.

TABLE IV

Revenue Estimates to the NYSE from Allowing Unlisted Trading Privileges in Nasdaq Listed Stocks

Percent of Nasdaq volume captured by the NYSE	Share volume (billions)	NYSE total revenue (millions) if per share revenue is				
		.5 cents	1 cent	1.25 cents	1.5 cents	2.0 cents
10	20.2	101	202	252	303	404
15	30.3	151	303	378	454	606
25	50.5	252	505	631	757	1010
40	80.8	404	808	1100	1212	1616
50	101	505	1010	1262	1515	2020
65	131.8	659	1318	1643	1977	2636
80	161.8	809	1618	2022	2588	3236

Note. Revenue numbers are given in millions of dollars.

Nasdaq, although ATT's shares, which were listed prior to 1979, trade only on the NYSE.³¹

The NYSE retains a market share of approximately 83% in the trading volume of these securities that trade on multiple trading venues.³² Would the NYSE achieve an 83% market share for all NASD firms if it were to extend unlisted trading privileges to all such firms? We think this unlikely for several reasons. First, some Nasdaq firms are small, and the Nasdaq may have a comparative advantage in trading the shares of such firms. Second, and more important, the 19c-3 firms described above all voluntarily elected to be traded on the NYSE. It stands to reason that the firms that do not elect to be traded on the NYSE are likely to be the firms that stand to benefit the least from the NYSE specialist system.

How much volume the NYSE could capture from extending unlisted trading privileges to Nasdaq stocks is thus debatable, but we believe it is likely to be substantial. Table IV lists the resulting volume to the NYSE under a range of possible outcomes. Even assuming that the NYSE captures only 15% of the current 202 billion shares traded on Nasdaq results in a stunning addition to the NYSE's trading volume of 30,300,000,000 shares. With greater market share inroads, the volume numbers become even more staggering.

3.6. NYSE's Per Share Profit

How much revenue would the NYSE make off of such volume? Here, the calculation becomes complex. The NYSE makes money directly from trades via print revenue, which is a per trade charge from distributing information about its trades. These charges can be assessed in a number of ways, with firms either paying a fee for each piece of information purchased or for each display device capable

³¹ Haddock and Macey (1985).

³² An alternative view of market share is to focus on the number of trades. Here the NYSE's market share is 67% (it is greater under the volume definition because the NYSE handles larger trades than alternative trading venues). For discussion see Stoll (1998).

of receiving such information. More commonly, firms pay the NYSE a monthly fee for information access.³³ In addition to print revenue, the exchange collects trading fees from trade executions.

Table IV provides estimates of the total revenue flowing to the NYSE for a range of per share revenue estimates. The lower bound estimate of one-half cent a share seems unrealistically low given the multiplicity of exchange revenue sources. What the table clearly shows is that even under the most conservative estimates, extending unlisted trading privileges to Nasdaq stocks would generate extensive revenues for the NYSE. Indeed, capturing only 15% of the Nasdaq volume and assuming revenue of one cent per share generates over \$300 million in revenue, a not insignificant number when compared to the NYSE's total 1998 revenue of \$720 million. Capturing a quarter of the Nasdaq volume under these same conditions would generate over half a billion dollars in revenue. Indeed, comparisons to Instinet, one of the largest ECNs, suggest that such revenue estimates may be too low. In 2000, Instinet reported revenues of \$1.4 billion dollars, much of this derived from trading Nasdaq stocks. As Instinet does not charge listing fees, this represents income derived from trading fees.³⁴

These figures suggest that the NYSE would improve its competitive position by eliminating listing fees. An even more attractive alternative would be to invert its current pricing structure. By this we mean that the Exchange should charge its highest prices to the firms most in need of the constellation of services (including, most of all, the liquidity services of the specialist and the reputational services of the NYSE's branding function) and dramatically reduce, or even waive fees altogether, for its most actively traded firms. This pricing structure provides incentives for such valuable firms to remain on the exchange, while allowing the exchange to trade unlisted firms that are actively traded elsewhere.

The benefits of this scheme can be seen by illustrated by the following experiment. Suppose that the NYSE began trading in the following six Nasdaq stocks: Intel, Cisco, Microsoft, Oracle, Dell, and MCI Worldcom. These stocks have consistently traded in the top 10 by volume on Nasdaq in the years 1994–1998. Table V lists their volume numbers, as well as the volume of the top 10 firms in each of those years. For 1998, these six firms had a combined volume of just over 26 billion shares. Given the large institutional holdings in these stocks, it seems likely that the NYSE could capture a substantial fraction of this volume. For sake of argument, let us assume that they trade 50% of the total volume. Again, assuming

³³ These fees can be substantial. For example, the NYSE charges an enterprise *monthly* maximum fee of \$500,000, which is available to “registered broker/dealers in respect of their monthly liability for display device fees incurred in respect of their employees, offices and partners, plus device fees due in respect of services provided to their qualified nonprofessional customer account holders, plus quote fees due in respect of usage based services delivered to their qualified nonprofessional customer account holders” (see NYSE Price List, p. 12).

³⁴ We caution, however, that Instinet trades in 31 markets and they do not report total shares traded in specific markets. Nonetheless, our point is merely that it is feasible to generate extensive revenues without listing fees.

TABLE V
Trading Volume of Active Nasdaq Stocks, 1994–1998 (in thousands of shares)

	1998	1997	1996	1995	1994
Intel	4,411,128	3,887,851	2,338,855	2,106,254	1,184,123
Cisco	4,072,600	2,693,288	1,789,884	1,082,164	1,007,533
Microsoft	3,837,555	2,097,889	1,261,365	1,204,183	841,594
Oracle	2,305,883	1,970,157	1,161,632	818,472	565,516
Dell	8,524,598	1,859,496	903,925	437,177	395,595
MCI/Worldcom	2,893,328	1,457,699	944,600	755,091	772,992
Volume of Top 10 Active Stocks	32,395,213	21,729,474	12,476,886	9,798,246	7,240,807

Source. Nasdaq Fact Book, assorted years 1994–1998.

revenue of one cent a share, this results in revenue to the NYSE of \$130 million for 1998 alone.³⁵ Over the 5-year period 1994–1998, the revenues to the NYSE would have been approximately \$260 million. Alternatively, if the NYSE traded the top 10 Nasdaq firms in every year from 1994 to 1998, their revenues using our assumed market share and per trade numbers above would be \$420 million dollars.

Of course, offsetting these revenues would be the lost and foregone listing fees. However, in 1998 only seven listed firms traded more than 1 billion shares on the NYSE. With continuing fees capped at \$500,000 (and waived altogether for firms listed more than 15 years), forgiving listing fees for such active stocks would have a negligible effect on revenues. Waiving fees for even the top 200 firms would still result in the lost listing fee revenue being only a fraction of the trading revenues. Our analysis suggests that the Exchange might go even farther and adopt a sliding fee structure in which it charges small firms for the provision of its trading services and then *pays* larger firms in exchange for being allowed to have exclusive trading privileges for their shares.

4. THE FUTURE OF LISTING FEES: IMPLICATIONS FOR EXCHANGES

The analysis above suggests that listing fees are a two-edged sword: they provide a source of income for the exchange, but they simultaneously preclude earning income by trading unlisted stocks. Exchanges have traditionally solved this trade-off by opting for listing fees, but there is evidence that this is changing. The Deutsche Borse, for example, now waives all annual listing fees for foreign listings, as part of an explicit strategy to attract foreign listings. The success of the strategy is evident, with 2784 foreign firms listed as of the end of 1998.³⁶

If listing fees are anachronistic, why then has the NYSE not dropped them as well? We suggest that the answer may lie in some features peculiar to the exchange

³⁵ Since institutional trades are larger, it may be that this revenue estimate is too high, but even assuming one-half cent per share revenue results in an inflow of \$65 million.

³⁶ See FIBV (1999, p. 45).

TABLE VI
NYSE Revenues and Profits

	Total revenue	Member dues	Listing fees	Profit	Member dues (Real \$1983)	Listing fees (Real \$1983)
1935	7.049	1.375	.954	.172	10.110	7.017
1940	5.090	1.375	.495	(.981)	9.892	3.563
1945	7.509	.993	1.718	.856	5.582	9.655
1950	7.290	1.031	1.717	.643	4.387	7.309
1955	14.932	1.031	4.195	N/A	3.862	17.854
1960	20.142	1.031	5.567	.501	3.519	19.003
1965	35.398	2.049	8.202	.612	6.567	26.288
1970	69.333	2.049	13.832	N/A	5.420	36.592
1975	71.621	2.049	22.688	.041	3.932	43.547
1980	132.490	4.75	43.520	15.521	5.712	55.938
1985	257.706	9.055	77.534	18.16	8.582	73.491
1990	348.597	6.753	119.057	(3.008)	5.313	93.451
1991	374.521	6.087	138.581	32.298		
1992	418.390	6.148	169.0	40.84		
1993	445.037	6.148	179.152	53.93		
1994	452.279	6.125	180.561	43.97		
1995	500.815	6.157	193.354	56.684	4.096	128.645
1996	561.503	6.561	162.902	74.4		
1997	638.732	7.246	182.153	86.0		
1998	728.674	7.361	296.022	101.2		
1999	735.468	8.505	267.455	75.21		
2000	815.289	10.594	278.194	72.857	6.276	164.806

Note. Data on the total revenues, profits, membership dues, and listing fees for the New York Stock Exchange. The data are taken from the Consolidated Statements of Income and Expenses, NYSE, various years 1935–2000. The last two columns give listing fees and membership dues paid on the New York Stock Exchange all adjusted to 1983 dollars based on the U.S. Department of Labor Statistics, Consumer Price Index, U.S. City Average, (CPI-U). Numbers are in millions of dollars.

structure. The NYSE is a not-for-profit corporation owned by its members. The membership of the exchange is diverse, with some members acting as specialists, others as independent floor brokers, and still others as agents of larger broker-dealer firms. Although the membership as a whole benefits when the exchange prospers, this need not be true for each of the subgroups.³⁷ For example, the advent of electronic order routing benefited specialists but generally disadvantaged floor brokers.

This divergence in interests extends to how the exchange is financed as well. The costs of running the exchange must be covered by exchange revenue, and this in turn comes from either fees imposed on the members (membership dues and trading fees), revenues derived from its listing firms, or income from ancillary products. Table VI provides data on the relative contributions of these listing

³⁷ The issue here is that property rights to the exchanges' revenue streams are not divided optimally. The difficulties of doing so have been investigated by numerous authors starting from Coase (1960). In the exchange setting, these issues have been investigated by Hart and Moore (1997).

firm and member revenue streams historically to NYSE revenues, as well as total exchange profit. The table shows the dramatic change that has taken place in the exchange's operations, and profitability, over the past decade.

What is also apparent is the change in how the exchange has been financed over time. The table's last two columns adjust the membership dues and listing fee revenues to constant (1983) dollars so as to facilitate comparison across time. Until 1945, membership dues were a larger source of exchange revenue than listing fees. But since then, membership dues have played little role, and in 2000 dues were only 62% of their real 1935 level. Instead, it is the listed firms that play an increasingly important role in the exchange's operations. Listing fee revenue in 2000 was more than 25 times as large as membership dues and is, in real terms, 2300% larger than it was in 1935. While member firms indirectly contribute to exchange revenues in other ways (such as trading fees), listing fees provide a direct source of revenue to cover more than one third of the costs of the exchange.

If the NYSE changed its listing fee structure, how would this affect the operations of the exchange? In the long run, as we have argued, increased trading revenues should be enough to offset the revenue loss of listing fees. But in the short run, without some compensatory increase in exchange revenues, dropping listing fees would bankrupt the exchange. How then to finance the exchange in the interim? The difficulty here is that the various constituencies of the exchange are affected in different ways by such a change, making any simple solution unlikely. For example, exchange specialists would benefit from the proposed changes because they would be able to trade stocks that currently are unavailable to them. However, broker-dealer members who currently make markets in these stocks would lose because of competition from the exchange specialists. Another divergence is between the interests of the member firms and those of the exchange, *per se*. Currently, all listing fee revenue accrues to the exchange, but the gains to trading largely accrue to the specialist firms, as do the opportunity costs of not trading unlisted stocks. For the year 2000, total listing fee revenue for the NYSE totaled \$278 million, but the combined after-tax profits of the NYSE specialist firms were estimated to be \$708 million.³⁸

This dichotomy between the interests of the exchange and the specialist firms is illustrated by information released by the NYSE specialist firm LaBranche & Co. as part of its Initial Public Offering disclosures in 1999. In 1998, LaBranche specialists handled 14.2% of NYSE dollar volume, making them the largest specialist firm on the exchange. In 1999, LaBranche continued this dominance, making markets in 280 common stocks, including 5 of the Dow 30 stocks. Table VII provides data on these operations annually for 1994–1998 and for the first six months of 1999. LaBranche had total 1998 revenues of \$126.4 million dollars, with most of this revenue (\$95 million) derived from gains made on proprietary trades. The first six months of 1999 were even more successful, with revenues of \$103.4 million including proprietary trading gains of \$78.6 million. Deducting the costs of running

³⁸ See Ip (March 12, 2001).

TABLE VII
Operating Data for LaBranche & Company, Inc.

	1994	1995	1996	1997	1998	1/1998–6/1998	1/1999–6/1999
Total revenue (millions)	29.8	37.1	49.9	67.6	126.4	52.1	103.4
Gain on proprietary trading (millions)	23.4	26.2	37.1	47.8	95	40.8	78.6
Income before taxes and managing director compensation (millions)	20.7	26.2	32.7	47.7	91.6	37.7	79.3
Exchange, clearing, and brokerage fees (millions)	1.33	1.55	1.51	2.04	2.89	1.36	1.99
Number of stocks in which they are specialists	122	125	132	202	284	207	280
Dollar volume (billions)	112	133	201	476	950	326	657
Share volume (billions)	3.4	4.0	5.6	10.9	20	7.5	12.9

Source. SEC filing #333-81079, LaBranche & Company, Inc. IPO filing, August 18, 1999.

the business, total 1998 income before taxes and managing director compensation was \$91.6 million (and it was \$79.3 million for the first six months of 1999). With only 36 managing directors, LaBranche is clearly a very profitable specialist firm.

What the data also show is that the gains from trading flow primarily to the specialist firm and not to the exchange. LaBranche pays the NYSE an annual fee for the right to be the specialist in a stock, as well as fees based on the volume of transactions it executes as agent and principal. For the first six months of 1999, however, total exchange, clearing, and brokerage fees paid by LaBranche were less than \$2 million, while these fees totaled approximately \$2.9 million for all of 1998.³⁹ Certainly, given these overall revenues, LaBranche could afford to pay higher fees to the NYSE, particularly if trading unlisted stocks generated additional income for the firm. But raising fees is unlikely to be popular with specialist members, even if it presages needed reforms.

And there remain other internal incentive problems to such a change, most notably those arising from the broker-dealer members. Broker-dealers already trade unlisted securities, either through their operations on the Nasdaq or internally in their own trading rooms. Such member firms would directly lose if the NYSE traded unlisted securities, and so they might be expected to oppose allowing unlisted

³⁹ An interesting calculation is to determine the per-share traded revenue of the specialist. Using data from the first six months of 1999, LaBranche had revenues of \$103.4 million dollars on trading volume of 12.9 billion shares. This translates into average revenues of approximately .8 cents per share traded. We can also derive a simple measure of profit per share traded. Using income before managing director compensation and taxes of \$79.3 million, this results in per share profits of .61 cents per share.

trading privileges from a purely competitive motive. The recent acquisition by Fleet Boston Financial Corp. of M. J. Meehan, one of the largest NYSE specialist firms, however, suggests that at least some broker-dealers are positioning themselves to act as specialists.⁴⁰ To the extent that the broker-dealer firms and the specialist firms unite, their divergence of interest becomes moot. But otherwise, the gains of the exchange will have to be bought at the expense of the broker-dealers, and this is again unlikely to be popular.

Demutualizing through going public is one way to solve the political obstacles to reform. As Roberta Karmel has observed, demutualization generates the capital necessary to "buy out the vested interests" that create obstacles to modernization.⁴¹ The NYSE had announced plans to convert to a for-profit status, but the status of this move is uncertain. Such a transition, while radical for the NYSE, is now a familiar occurrence for stock exchanges worldwide, with virtually all major stock exchanges either converted or in the process of converting to proprietary status.

Finally, a more neutral strategy to generate exchange revenue is to develop new products. The NYSE has made major steps in this direction by initiating trading of exchange traded funds (ETFs). ETFs are securities representing baskets of stocks that can be traded throughout the day. These securities are heavily traded, with the most active, the Nasdaq QQQ, averaging more than 65 million shares a day. Indeed, the QQQ contract alone accounted for more than 45% of the American Stock Exchange's daily volume over the past year. The NYSE's decision to trade these products is historic, representing the first time that the Exchange has ever traded securities that it has not listed. On its first day of trading ETFs, July 31, 2001, the NYSE captured 11% of the volume in QQQ.⁴²

And so it may be that the success of these unlisted index products, in turn, leads to the trading of other unlisted products and thus to the demise of listing fees. In this article, we have argued that listing fees and listing requirements are manifestations of a much different era in the history of securities trading. In the increasingly competitive environment in which stock exchanges operate, we predict that either listing fees, or the exchanges, will not survive.

REFERENCES

- Amihud, Y., and Mendelson, H. (1996). A new approach to the regulation of trading across securities markets, *New York Univ. Law Rev.* **71**, 1411–1466.
- Atkins, A., and Dyl, E. (1997). Market structure and reported trading volume: Nasdaq versus NYSE, *J. Finan. Res.* **20**, 291–304.

⁴⁰ The resulting firm, Fleet Meehan Specialists, will handle 504 stocks, making it the largest specialist firm in terms of number of stocks traded and the second largest (behind Labranche) in term of volume. The *Wall Street Journal* (July 25, 2000) notes that "the specialist business remains highly profitable, with a return on capital that dwarfs that earned by big brokerage firms."

⁴¹ Karmel (1999).

⁴² See "Big Board Captures 11% of QQQ Volume," *Wall Street Journal* (August 1, 2001).

- Bacidore, J. M., and Sofianos, G. (2002). Liquidity provision and specialist trading in NYSE-listed non-U.S. stocks, *J. Finan. Econ.* **63**, 133–158.
- Benston, G. J. (1973). Required disclosure and the stock market: An evaluation of the securities exchange act of 1934, *Amer. Econ. Rev.* **63**, 132–155.
- Bessembinder, H. (1999). Trade execution costs on Nasdaq and the NYSE: A post-reform comparison, *J. Finan. Quant. Anal.* **34**, 387–407.
- Bessembinder, H. (2000). "On Assessing the Costs and Benefits of Exchange Listing," NYSE Working Paper 2000-01, January.
- Bessembinder, H., and Kaufman, H. (1997). A cross-exchange comparison of execution costs and information flow for NYSE-listed stocks, *J. Finan. Econ.* **46**, 293–319.
- Big board agrees to let companies list more than one class of common stock, *Wall Street J.* (July 7, 1986), p. 1.
- Christie, W., and Huang, R. (1994). Market structures and liquidity: A transactions data study of exchange listings, *J. Finan. Intermediation* **3**, 300–326.
- Christie, W., and Schultz, P. (1994). Why do NASDAQ market makers avoid odd-eighth quotes? *J. Finance* **49**, 1813–1840.
- Coase, R. (1960). The problem of social cost, *J. Law Econ.* **3**, 1–44.
- Cybo-ottone, A., Di Noia, C., and Murgia, M. (2000). The consolidation of securities exchanges: Is there any lesson from the European experience?, in "Brookings-Wharton Papers on Financial Services 2000" (R. Litan and A. Santomero, Eds.), pp. 223–282. Brookings Institution Press, Washington, D.C.
- FIBV, (International Federation of Stock Exchanges), (1998). "Annual Survey of Stock Exchanges," FIBV, Paris.
- Haddock, D., and Macey, J. (1985). Shirking at the SEC: The failure of the national market system, *Univ. Illinois Law Rev.* **1985**, 315–362.
- Hart, O., and Moore, J. (1996). The governance of exchanges: Members' cooperatives versus outside ownership, *Oxford Rev. Econ. Policy* **12**(4), 53–69.
- Hechinger, J., and Ip, G. (July 25, 2000). Deals & deal makers: Fleet Boston is set to buy M. J. Meehan & Co., creating largest specialist firm on NYSE floor, *Wall Street J.*, p. C18.
- Huang, R., and Stoll, H. (1996). Dealer versus auction markets: A paired comparison of execution costs on Nasdaq and the NYSE, *J. Finan. Econ.* **41**, 313–357.
- Ip, G. (March 12, 2001). Floor show: If big board specialists are an anachronism, they're a profitable one, *Wall Street J.* p. A1.
- Ip, G. (December 3, 1999). "The Wall Street Journal Interactive Edition," available at <http://www.wsj.com>.
- Karmel, R. (1999). Stock exchange demutualization in Sweden and Australia, *New York Law J.* **222**, 3.
- Kelly, K. (August 1, 2001). Big board captures 11% of QQQ volume, *Wall Street J.*, p. C21.
- Lee, R. (1998). "What Is an Exchange?: The Automation, Management, and Regulation of Financial Markets," Oxford University Press, Oxford.
- Macey, J., and Kanda, H. (1990). The stock exchange as a firm: The emergence of close substitutes for the New York and Tokyo stock exchanges, *Cornell Law Rev.* **75**, 1007–1052.
- Macey, J., and O'Hara, M. (1997). The law and economics of best execution, *J. Finan. Intermediation* **6**(3), 188–223.
- Macey, J., and O'Hara, M. (1999a). Globalization, exchange governance, and the future of exchanges, in "Brookings Wharton Papers on Financial Services—1999" (R. Litan and A. Santomero, Eds.), pp. 1–23. Brookings Institution Press, Washington, D.C.
- Macey, J., and O'Hara, M. (1999b). Regulating exchanges and alternative trading systems: A law and economics perspective, *J. Legal Stud.* **28**, 17–54.

- Madhavan, A., and Sofianos, G. (1997). An empirical analysis of NYSE specialist trading, *J. Finan. Econ.* **48**, 189–210.
- Nasdaq is reviewing its listing standards, *Wall Street J.* (September 25, 2001), C2.
- NYSE (1999a). Canandaigua Brands, Inc., *The Exchange* **6**(11), 6.
- NYSE (1999b). NYSE launches competitive initiatives, *The Exchange* **6**(10), 1–2, 5.
- NYSE Functions of specialists Rule 104 para 2104.10, *NYSE Guide (CCH)* **2**, 2711–2714.
- Sofianos, G., “Specialist Gross Trading Revenues at the NYSE,” Working Paper 95-01, NYSE, New York.
- Sofianos, G., and Werner, I. (1997). “The Trades of NYSE Floor Brokers,” NYSE Working Paper 97-04, NYSE, New York.
- Securities Exchange Act Release 34-11942, 41 Fed. Reg. 4507 4512 (1976).
- Stigler, G. J. (1964). Public regulation of the securities markets, *J. Business* **37**, 117.
- Stoll, H. (September/October 1998). Reconsidering the affirmative obligation of market makers, *Finan. Analysts J.* **54**(5), 72–82.