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The New York Stock Exchange versus NASDAQ

The landscape for stock trading worldwide had undergone dramatic changes in the 1990s, and more changes were expected ahead as market structures continued to be in complete flux. Much of this was driven by changes in technology, regulation, and ultimately shifts in the needs and wants of end customers—institutional and retail investors.

The New York Stock Exchange (NYSE) and the NASDAQ, the two largest stock markets in the world, were keen on adapting and taking advantage of these changes to ensure their dominance of the world equity markets. At issue were what resulting market structure was most likely and what strategies the NYSE and NASDAQ should adopt to influence and take advantage of the changes to come.

This was true at the domestic level where traditional business models for exchanges had been under attack from emerging alternative trading mechanisms and marketplaces. But this was also true at the international level. With a fairly saturated domestic market, the NASDAQ and the NYSE had both invested considerable resources in global expansion. However, it was still unclear which strategy would work best and what industry structure would emerge. In particular, as capital started to flow seamlessly across national borders, the question of having one gigantic global stock exchange instead of several national exchanges became more pertinent.

What is a Stock Market?[1]

Stock markets provide a mechanism where people who want to own shares can buy them from people who already own those shares. For this reason, stock markets are also called secondary markets, in contrast to the primary market, in which companies sell shares directly to investors (this is usually done through an initial public offering [IPO]).

Stock markets provide a number of vital economic functions in our economy. First, the primary market allows companies to access the capital needed to finance their development. Second, stock markets provide investment and diversification opportunities to investors. Finally, stock markets play an important role in capitalist societies by aggregating information on supply and demand conditions for stocks. This helps channel financial resources to their most productive uses.

The first stock market was set up in Amsterdam in 1602. As of 2002, there were hundreds of stock markets worldwide, and more than 90 countries had at least one exchange.[2] According to the

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International Federation of Stock Exchanges, 55 exchanges covered 97% of the world's market capitalization at a value of over $35 trillion.[3] Though most of the exchanges were mutual companies or associations, more than half of these exchanges were run as for-profit entities.[4]

In the United States, the two major stock markets were the NYSE and the NASDAQ. (**Exhibit 1** provides some comparative statistics for these two exchanges.) In addition, the U.S. securities market industry included the American Stock Exchange (Amex) and a number of regional exchanges. Some of these regional exchanges had a few exclusive "local" securities, but most competed in the business of trading the more active NYSE-, NASDAQ-, and Amex-listed securities. The regional exchanges included the Boston, Chicago, Cincinnati, Pacific, and Philadelphia exchanges. (**Exhibit 2** summarizes the U.S. securities market structure in 2002.)

Workings of a Stock Market

Exhibit 3 illustrates the different steps in the process of buying and selling a stock. First, buyers and sellers instruct their brokers to buy or sell a security. The broker, directly or through another intermediary, then carries out the order on a marketplace.

Each marketplace has its own rules covering which securities can be traded, who can participate, and what mechanism is used to match supply and demand and determine the transaction price. There are two broad categories of trading mechanisms: quote driven and order driven.

Quote-driven markets (also known as dealer markets) are markets where dealers compete by posting bid-ask quotations, prices at which they commit to buy and sell given securities. Buy and sell orders never interact with one another in a quote-driven market. Instead, buyers and sellers trade with the dealer. Dealers derive their profits from the bid-ask spread (the difference between the bid price and the ask price), which is their remuneration for the risk they take by holding inventories of the traded security. Dealers revise their quotes periodically in order to reflect market conditions, the state of their inventory, and competition with other dealers on the same security. In the United States, the NASDAQ was the largest quote-driven market.

Order-driven markets are mechanisms where buy and sell orders interact directly. In continuous markets, orders are executed as they arrive, subject to some time and price-priority rule. The price adjusts continuously to changes in the ratio of buy and sell orders, usually according to a computerized algorithm. Continuous markets can be volatile, but they offer the advantage of transparency and instant execution. In call or batch markets, orders are accumulated for a given period, and then the market is "called." All orders are aggregated and executed at a single clearing price (the intersection between supply and demand). Call markets are more orderly and less volatile than continuous markets, but they offer lower liquidity. In addition, information transmission takes place only when the market is cleared.

In the United States, the Chicago Open Outcry was a continuous order-driven market. Traders stood in a circle around the "trading pit." There was no time or price priority for orders, so traders communicated with each other by shouting, gesticulating, and flashing elaborate signals, hoping to attract the attention of the party with whom they wished to trade. The NYSE was a hybrid version of a continuous market. Each stock was assigned to a specialist with the responsibility for matching buy and sell orders for that particular stock and for maintaining a fair and orderly market.

Clearing and Settlement

Once a trade has been executed, the clearance and settlement process begins. The details of the trade (quantities and prices) are sent to a clearinghouse. Clearinghouses register and aggregate trades to establish who owes what to whom. Netting—the process by which net positions of market participants are derived by summing up all their buy and sell orders—reduces settlement values and transaction costs dramatically and enhances the efficiency of the industry. At the end of the day, instead of making and receiving hundreds or even thousands of payments, firms have only a single payment obligation.[5] Clearinghouses also offer other services, such as acting as central counterparty (the buyer to every seller and the seller to every buyer). By this process, known as novation, a clearinghouse replaces the original bilateral contract by two bilateral contracts and, through this process, guarantees the trade. If a buyer defaults in the midst of settling a trade, the clearing corporation guarantees that the seller will be paid. If the seller defaults, the clearing corporation guarantees that it will obtain the requisite securities for the buyer. Given the associated risks, clearinghouses operate by strict membership.

Settlement is the process by which the legal ownership in the traded asset is transferred. It is carried out by a depositary. The depositary acts as a "securities bank" that holds physical securities in custody and from which those securities can be traded.

In the United States, the Depository Trust & Clearing Corporation (DTCC) was the holding company for the National Securities Clearing Corporation (NSCC) and the Depositary Trust Company (DTC). It provided the primary infrastructure for the clearance, settlement, and custody of the vast majority of equity, corporate debt, and municipal bond transactions in the United States. DTCC was a mutual company and was owned by its principal users—major banks, broker-dealers, and other companies within the financial services industry, including the National Association of Securities Dealers (NASD) and the NYSE.[6]

The New York Stock Exchange (NYSE)

History[7]

The NYSE traced its origins to a founding agreement in 1792. Twenty-four stock brokers signed an agreement to trade with one another beneath a buttonwood tree outside 68 Wall Street. By 1817, the securities market had grown considerably and the organized brokers adopted a constitution, creating the New York Stock & Exchange Board. The New York Stock & Exchange Board attracted the elite of the brokerage community, who excluded undesirable candidates for membership. It held two auctions per day, one in the morning and one in the afternoon, where brokers sat in their assigned seats to participate in the stock "call."[8] The president read the list of securities while members made bids and offers.

Stock exchanges emerged throughout the country in the 19th century, with the Boston Stock Exchange as the dominant place for trading stocks of industrial companies for most of the century. Several key steps helped the NYSE establish itself as the premier exchange. The exchange established the first disclosure requirements for listed companies, in 1853. Companies that could not meet these requirements had to trade their stocks elsewhere. In 1869, the exchange merged with a rival, the Open Board, and adopted the specialist system of the latter.[9] Continuous trading replaced the call market in 1876. In the 19th century, information traveled slowly and markets tended to be local, with traders in distant cities at an informational advantage. The NYSE revolutionized market

communications by introducing the stock ticker in 1867 and using the telegraph to distribute price information and create greater liquidity in the market. The introduction of the telephone in 1878 was another major innovation; it helped brokers handle the rising volume of orders. By the early 1920s, the NYSE accounted for three-quarters of all listed securities transactions in the United States.

By the 1940s, the NYSE's toughest competition came not from other exchanges but from the over-the-counter market (OTC).[10] The OTC market challenged the specialist system of the exchange by offering lower transaction costs. In 1955, the specialists responded by securing from the NYSE Rule 390, which forbade members from competing in OTC markets for NYSE-listed stocks.[11] As traded volumes continued to grow and the NASDAQ made the OTC market more efficient, the NYSE adopted new technologies to automate data processing, monitor potential securities violations, and create an inter-market trading system.

Ownership Structure and Governance

In 2002, the NYSE was mutually owned by its members. A member firm was a company or an individual that owned a "seat" on the trading floor. Only member firms were allowed to buy and sell NYSE-listed securities on the exchange. The number of seats had remained constant at 1,366 since 1953. A person or firm could join the NYSE only by purchasing the seat of a retiring member or leasing one. The price of a seat fluctuated with supply and demand. In 2001, seats traded between $2 million and $2.3 million. (**Exhibit 4a** summarizes the NYSE's membership in 2001, **Exhibit 4b** is an income statement for member firms in 2001, and **Exhibit 4c** shows the historical trend of membership prices.)

A governing committee was the primary governing body until 1938, at which time the exchange hired its first paid president and created a 33-member board of governors. In 1971, the exchange was incorporated as a not-for-profit corporation. At the end of the 1990s, there was talk about the possibility of demutualizing the NYSE and making it a for-profit public company, but this talk had subsided by 2002.[12]

Listing and Trading Requirements

A stock had to be listed on the NYSE to be traded on the NYSE. Of the exchanges in the United States, the NYSE had the most stringent listing requirements. To be listed, a company had to have a market capitalization of at least $60 million and $6.5 million in earnings over the previous three years. (**Exhibit 5** contains the listing requirements for the NYSE and the NASDAQ.) Even if a company met these requirements, there was no guarantee that the NYSE would list it. Each case was examined individually to ensure the company provided for a stable business. As of 2002, there were around 2,800 companies listed on the NYSE.

How it Works

Investors placed orders through stockbrokers, who then sent those orders to floor brokers. Stockbrokers were "registered representatives" of the NYSE. They had to pass a qualifying examination and be registered with the NYSE and the Securities and Exchange Commission (SEC). Floor brokers were the largest single membership of the NYSE. They were responsible for completing the trade with a "specialist" who then executed trades in the stock of the specific company.

The specialist was central to the working of the NYSE. Every stock listed on the NYSE was assigned to a specialist—a "special" broker who acted as an auctioneer for his or her stock. Specialist

units were independent companies. There were 10 firms employing 482 specialists. Specialists conducted trading in equities across a range of industries. The number of stocks traded by an individual specialist varied according to the total activity of the stocks. Most specialists managed between five and 10 stocks. A specialist managing one of the most active issues would normally specialize in that stock and, perhaps, one less active stock.

At the beginning of each trading day, specialists established a fair market price for each of their stocks based on the best bid and ask prices and supply and demand for the stock. All the buying and selling of a stock during normal market hours occurred at the specialist's trading post. Buyers and sellers—represented by the floor brokers—met face-to-face at the trading post to determine the best price for a given security for each trade.[13] Bids to buy and offers to sell were made by open outcry to provide interested parties with a chance to participate. When the highest bid met the lowest offer, a trade was executed and the clearance and settlement process began.

Specialists were also responsible for maintaining a fair, competitive, orderly, and efficient market. This meant that all orders had an equal opportunity to interact and receive the best price. It also meant that once auction trading began, a customer should be able to buy or sell a reasonable amount of stocks at close to the last sale price. Therefore, specialists worked to avoid large price variations between consecutive sales. In practice, almost 98% of all trades took place at one-eighth of a point or less from the last sale.[14] If order-flow imbalances threatened to disrupt an orderly market, a specialist could halt trading in a specific stock. The specialist was also a "trader of last resort" who acted as a *principal*, or traded stock for its own account in case he or she could not match buyers and sellers seamlessly. In 2000, less than 30% of the share volume was traded with the specialist as principal.[15]

Business Model

In 2001, the NYSE's main sources of revenues were listing fees (33.4%), market data fees (18.1%), regulatory fees (17.2%), and trading fees (16.4%). Companies paid initial fees when they first listed on the NYSE and paid continuing fees on a yearly basis afterwards. Both fees depended on the number of shares in the company. For example, the original fee for a company with 50 million shares would amount to $242,100. Its annual fee would be $35,000.[16] The NYSE also sold its market data to data vendors like Bloomberg and others. As a self-regulatory organization (SRO),[17] the NYSE was responsible for its own regulation and enforcement. Its cost was borne by members through regulatory fees. Finally, members paid trading fees. These were proportional to the volume traded. (**Exhibit 6** contains more detailed financial information for the NYSE.)

The NASDAQ

History

In 1961, Congress authorized the SEC to conduct a study of fragmentation in the OTC market. Companies whose securities were traded in the OTC market generally did not meet the listing requirements of the NYSE or could not afford the NYSE's listing fees. As a result, OTC securities were traded by a loose network of broker-dealers who served as market makers. Those dealers used their own capital to buy and sell the stocks in which they made markets and tried to make a profit from the spread. Market makers were inefficiently connected, and fragmentation was leading to low liquidity, poor information transmission, and slow execution.

The SEC proposed automation as the solution and charged the nonprofit, self-regulated NASD with its implementation. The NASD's Automated Quotation system, or NASDAQ, began trading in 1971. The NASDAQ's central computers initially connected terminals in 500 market makers' offices across the country. In addition to providing connectivity and a means of displaying quote information, the NASD also used its mandate to create the rules by which the market would operate.

The NASDAQ brought transparency to the OTC market by aggregating quotes from all the dealers making a market in a particular stock and displaying that information to all market participants. As traded volume increased, the NASDAQ introduced other innovations in order to make the market work as smoothly and efficiently as possible. It introduced the Small Order Execution System (SOES) in 1984. SOES was limited to nonprofessional investors who placed orders with qualifying brokers. Market makers receiving SOES orders had to honor their bids for automatic execution up to 1,000 shares (in contrast to non-SOES orders, where dealers retained some discretion). SOES became compulsory following the October 1987 stock market crash, when many small investors lost money by not being able to trade fast enough. In 1990, the NASDAQ introduced SelectNet, an order-routing and execution service for institutional investors. SelectNet allowed brokers and dealers to communicate through NASDAQ terminals as an alternative to the phone. Once the two parties agreed to a trade on SelectNet, execution was automatic.

Ownership Structure and Governance

In 2000, the NASD membership voted overwhelmingly to restructure the organization in order to streamline corporate governance, avoid conflict of interests between the NASD and the NASDAQ, and raise capital to fund technology investment and marketing. As a result, the NASDAQ was spun off into a for-profit corporation. NASD-member firms, some large institutional investors, and NASDAQ issuers were offered the chance to purchase up to 5% stakes in the NASDAQ. The NASD retained voting control over the NASDAQ until the NASDAQ's application for exchange status was approved.[18]

Listing and Trading Requirements

The NASDAQ provided two levels of listing, each associated with their specific requirements. The NASDAQ National Market (NNM) required at least $15 million in equity[19] to be listed, while the NASDAQ Small Cap Market required $5 million (see **Exhibit 5** for details). As of December 2001, 4,109 companies were listed on the NASDAQ, of which 3,351 were listed on the NNM.[20]

NASDAQ-listed securities were traded on the NASDAQ. In addition, the NASDAQ provided transaction services for securities listed on other exchanges through NASDAQ Intermarket, as well as for nonlisted securities trading through the OTC Bulletin Board. In 2001, NASDAQ Intermarket accounted for approximately 7% of trades in NYSE-listed securities and 33% of Amex-listed securities.[21]

How it Works

The basic philosophy of the NASDAQ was one of "open architecture." Trading on the NASDAQ was not limited to any fixed number of participants. The only condition firms trading NASDAQ stocks had to satisfy was to be certified with the SEC and registered with the NASDAQ and NASD Regulation. As a result, a large number of firms with widely different business models and trading technologies connected to the NASDAQ network.

Market makers made up the core group of NASDAQ participants. Market makers competed for orders by quoting bid and ask prices for selected securities. Market makers were obliged to quote on a continuous basis, stand ready to trade for a minimum quantity at those prices, and make their quotes available to all market participants through the NASDAQ network. By acting as principals in the transactions, market makers committed their own capital to the traded securities. Depending on the market conditions and the state of their inventories, they adjusted their quotes and derived their profits from the spread. In 2001, more than 300 market makers displayed buy and sell quotes for NASDAQ-listed stocks in the United States, and, on average, a single issuer's stock was traded by 14 different market makers.[22] The minimum number of market makers for a NASDAQ-listed stock was two, and there was no limit on the maximum number. In fact, for Microsoft alone, Bloomberg listed over 200 market makers.[23] Market makers added liquidity to the NASDAQ's market by ensuring that there were always buyers and sellers for NASDAQ-listed securities.

The NASDAQ also connected *alternative trading systems* (ATS) such as Electronic Communication Networks (ECNs) into the market. ECNs were newcomers to the NASDAQ. They provided electronic order-matching facilities that investors could use to trade directly with one another (thus, unlike market makers, they did not hold an inventory of their own). As NASDAQ market participants, ECNs were required to display their best sell and buy order quotes on the NASDAQ. For the rest, ECNs were bound to fewer legal obligations than traditional market makers and could, for instance, choose to withhold certain services that market makers needed to provide. Different business models coexisted among ECNs, with some, like Archipelago, rerouting unmatched orders to the NASDAQ system and others, such as Island and Instinet, matching all orders internally. A key advantage of ECNs was the anonymity of trades. In addition, retail investors appreciated the transparency of their pricing mechanism and that they operated over longer hours than the NASDAQ and the NYSE. After the SEC clarified their status and obligations in 1998, ECNs experienced rapid growth. By 2001, ECNs handled 32.5% of the share volume traded on the NASDAQ (**Exhibit 7** provides information on the main ECNs).

Finally, *order-entry firms* entered and executed orders through the NASDAQ on behalf of retail and institutional investors and other brokers, but they did not maintain buy or sell price quotations. Like ECNs, order-entry firms did not commit capital to stocks, but they did increase the competition among market participants—helping to keep stock prices competitive and adding to the liquidity.

Business Model

The NASDAQ had three main revenue streams: transaction services, market information services, and corporate client group services. (See **Exhibit 8** for a breakdown.) Transaction-service revenue made up 47.7% of the NASDAQ's revenues in 2001 and came from SOES and SelectNet. In early 2001, the cost of SelectNet executions ranged from $0.50 to as low a $0.10 per transaction, depending on volume, and it was paid by both sides to the transaction.[24] SOES transactions were priced similarly, but the fee was charged only to the initiator of the transaction.[25] Market information service revenues made up 28.1% of the NASDAQ's total revenue in 2001 and came from data vendors who bought varying levels of quote and trade information for resale. Finally, corporate client group services corresponded to issuer services (18.2% of revenues in 2001). Listing fees depended on the market in which the company listed and on the number of shares outstanding. For example, in 2002, a company that wanted to list 50 million shares on the NNM segment would pay an entry fee of $ 125,000 and a continuing listing fee of $29,820.[26]

Other Market Participants

Issuers

IPOs were an important medium for companies to raise the capital necessary for their development (alternatives included debt and venture capitalists). When it satisfied the listing requirements of more than one market, a company had to decide on which market to list. If this was the case, the company—with the help of investment bankers—considered several factors. Liquidity and overall market efficiency (including transaction costs) were important because they affected the value of the company for investors. Traditionally, the NYSE had been considered to be more efficient, among other things because spreads tended to be lower. However, recent academic research had found that there was no significant difference in spreads between the NYSE and the NASDAQ in the case of the most liquid stocks. Listing on an exchange also provided visibility to a company. During the 1990s, the technology boom contributed to the NASDAQ's position as an exchange for innovative, high-growth companies. However, the NYSE had maintained its status as an exclusive exchange. For example, when Germany-based Bayer AG listed on the NYSE in 2002, a company spokesperson commented: "The NYSE represents the 'Who's Who' of companies."[27] Others noted the NYSE's perception of stability.[28] In any case, 85% of the *Fortune* 500 companies were listed on the NYSE[29] (**Exhibit 9** gives the top 10 companies on each market). Other factors that issuers considered included sector specialization (other things being equal, companies preferred to list on the market where their competitors listed) and listing fees.

A continued area of tension between the two markets had to do with the rules for delisting. Delisting from the NASDAQ was relatively easy, and indeed, several dozen companies switched from the NASDAQ to the NYSE every year. An amendment to the NYSE's Rule 500 in 1999 made it hard for companies to delist by requiring that the company obtain the approval of its board of directors and audit committee, publish a press release announcing the delisting, and send written notice to its 35 largest shareholders alerting them to the delisting.

Investors

Investors were the originators of buy and sell orders. Traditionally, they had valued liquidity, low transaction costs, speed and reliability of execution, transparency (which ensured that deals were done at the best possible terms and that the market was not rigged in favor of insiders), and anonymity. However, they did not weigh these factors equally. For instance, institutional investors who often dealt with large orders especially valued liquidity (the ability to trade large quantities at the same price) over speed.[30] Anonymity was another important factor for some institutional investors, as their mere presence on one side of the market could sometimes generate large swings in prices, making it harder for them to buy or sell at good terms.

Intermediaries

Brokers transformed investors' orders into transaction flows for exchanges. By law, brokers had to seek the best execution for these orders, but this left considerable room for interpretation as speed, execution quality, and price all entered into consideration. In practice, brokers could do one of four things with these orders. They could match the orders internally, act as a principal in the transaction and capture a spread, sell the order to a market maker who then acted as a principal and captured a spread, or send the order to an alternative venue (like an ECN). Market makers did not actually take in orders from investors but aggregated order flow from broker-dealers.

Consolidation in the industry had increased over time, with brokers buying out independent market makers and others integrating vertically to be able to act as brokers as well as market makers. In 2001, Knight Trading Group was the largest independent market maker. The other major market makers, Herzog Heine Geduld (purchased by Merrill Lynch), Mayer & Schweitzer (purchased by Schwab), Spear Leeds Kellogg (purchased by Goldman Sachs), and Sherwood Securities (purchased by Deutsche Bank), were no longer independent.[31] Intermediaries had also taken up strategic positions in ECNs and alternative exchanges. (See **Exhibit 7** on ECNs.)

Regulators

The SEC, created in 1934, was the main regulator for financial markets in the United States. It continuously supervised markets and market participants to ensure fair and efficient trading. All exchanges and market participants had to be registered with the SEC and abide by its regulations. As a regulatory agency, the SEC, together with Congress, was also keen on encouraging market reforms and competitiveness of the industry, especially in view of the rapid modernization of stock exchanges in Europe. An important question for the SEC was how to strike the right balance between maximizing liquidity and maximizing competition. Competition among marketplaces and market makers forced transaction costs down, benefiting investors ultimately. On the other hand, centralization of orders increased liquidity and efficiency of transactions.

Financial regulations could have a huge impact on market structure. A primary example of this was, of course, the existence of the NASDAQ, which was created under the impetus of Congress and the SEC. Other examples included Regulation ATS, which clarified the legal framework for alternative trading systems and provided for the extraordinary growth of the ECN business model at the end of the 1990s. In addition, by 2002, the SEC was sitting on several applications for an exchange status by the NASDAQ and other ECNs, all of which could dramatically affect the domestic landscape for financial marketplaces and the predominance of the NASDAQ and the NYSE. Last but not least, Congress adopted the Sarbanes-Oxley Act in the summer of 2002 in response to a series of corporate scandals. The act intended to clean up conflicts of interest and boost transparency and accountability in financial markets in order to restore the public's faith in the corporate world. It too could have important repercussions for market structure.

Challenges Ahead

In the beginning of the new century, the NYSE and the NASDAQ were facing considerable challenges both at home and in international markets. In the United States, ECNs, with their low cost structure and speed of execution, were challenging the traditional market maker/broker model. ECNs had been particularly successful in capturing trade shares on the NASDAQ. They had achieved lower trading shares of NYSE-listed securities, in part because they did not have direct access to those trades (and, for a long time, Rule 390 did not allow NYSE members to trade NYSE stocks outside the NYSE) but also because of the huge liquidity advantage (and associated low transaction costs) of the NYSE. Nevertheless, three of them—Archipelago, Island, and NexTrade—had applied for or already been granted an exchange status. This would allow them to enter the NYSE's and the NASDAQ's other core businesses: listing and market data.

At the same time, the dot-com era bust, a series of corporate accounting scandals, and a bear market had all taken their tolls. The NASDAQ was particularly hard hit by these developments, as 30% of NASDAQ-listed securities had prices under the $1 bar, a requirement for continued listing.[32] But in the summer of 2002, the Sarbanes-Oxley Act, drawn up in response to the Enron and

WorldCom scandals, introduced stricter investor-information and corporate-governance requirements for listed securities. Though there remained considerable regulatory uncertainty by the end of 2002, the new rules were supposed to apply to all companies listed on U.S. exchanges, independent of their national origins.

Stricter corporate-governance and investor-information requirements were bound to affect both marketplaces' ability to attract new companies. Already smaller companies had started considering delisting in the face of the added burden of the new regulations,[33] and several foreign companies, among them Porsche from Germany, Fuji Film from Japan, and Benfield Group from the United Kingdom, had announced they were abandoning plans for listing in the United States.[34] At the same time, other marketplaces, especially the London Stock Exchange, were taking up this opportunity to pursue aggressively blue-chip companies around the world to list on their markets instead of on the NYSE and the NASDAQ.

On the international scene, the NYSE and the NASDAQ had adopted very different business models in response to the perception that there were growing opportunities in global capital markets. The NASDAQ broadly sought to replicate its business model by opening mini-NASDAQs in different locations worldwide. The NYSE sought to ally with other country exchanges. Both competed to attract companies to list directly in New York as well.

Glossary:

Alternative trading system (ATS)	Nontraditional, computerized trading system that competes with or supplements dealer markets and traditional exchanges. These private trading systems facilitate electronic exchanges in millions of shares of public issues every day but do not provide a listing service. ECNs and Electronic Crossing Systems (ECSes) are alternative trading systems.
Ask price	The price at which an individual is willing to sell a security.
Bid price (buy price)	The quoted bid at which a market maker is willing to buy a stock.
Bid-ask spread	The difference between the price at which a market maker is willing to buy a security (bid) and the price at which the firm is willing to sell it (ask). The spread narrows or widens according to the supply and demand for the security being traded.
Broker	An individual or firm that acts as an intermediary between a buyer and a seller, usually charging a commission.
Computer Assisted Execution System (CAES)	NASDAQ service that automates order routing and execution for securities listed on domestic exchanges in the Intermarket Trading System (ITS). When linked to ITS, market makers can execute trades in securities through CAES with specialists on an exchange floor.
Consolidated Quotation System (CQS)	An electronic service that provides quotations on issues listed on the New York and American Stock Exchanges and regional stock exchanges and issues traded by market makers in the NASDAQ InterMarket. The NASDAQ processes this data and provides it to subscribers as the Composite Quotation Service.
Electronic Communications Network (ECN)	An electronic facility that matches customer buy and sell orders directly through a computer. ECNs act on behalf of customers and do not buy and sell from their own account. ECNs are alternative trading systems.
Intermarket Trading System (ITS)	A computer system that interconnects competing exchange markets for the purpose of choosing the best market. ITS is operated by the Securities Industry Automation Corporation (SIAC).
Issuer	A corporation that has distributed to the public securities that are registered with the U.S. Securities and Exchange Commission (SEC).
Limit order	An order to buy or sell a security at a customer-specified price; a customer order to buy or sell a specified number of shares of a security at a specific price.
Liquidity	The ease with which the market can absorb volume buying or selling in a stock, without dramatic fluctuation in price.
Listing requirements	The minimum qualification standards a market requires for a company to list stock on that market.

Market maker	A market maker is an entity that creates a market by quoting an offer to buy (bid) or sell (ask). Market makers act as counterparties in these trades, risking their own capital until the opposite trade can be made with someone else.
Mutual	A corporation that is owned by a group of members and that distributes income in proportion to the amount of business that members do with the company.
NASDAQ InterMarket (formerly, Third Market)	The NASDAQ InterMarket consists of NASDAQ market makers and ECNs that quote and trade NYSE and Amex exchange-listed securities using NASDAQ proprietary systems and the Intermarket Trading System (ITS).
National Association of Securities Dealers, Inc. (NASD)	The largest securities-industry, self-regulatory organization in the United States. Through its subsidiaries—NASD Regulation, NASD Dispute Resolution, and the American Stock Exchange—the NASD develops rules and regulations, conducts regulatory reviews of members' business activities, disciplines violators, provides arbitration and mediation services, and regulates securities markets for the benefit and protection of the investor.
OTC Bulletin Board (OTCBB) Service	A regulated quotation service that displays real-time quotes, last-sale prices, and volume information in the over-the-counter (OTC) equity securities. OTCBB is a quotation medium for subscribing members, not an issuer-listing service.
Over-the-counter securities (OTC)	Originally, OTC stocks were any publicly traded securities not traded on the NYSE (listed securities). Today, OTC securities are securities that are not listed and traded on an organized exchange or market and are generally not subject to the same requirements.
Primary market	The market in which a company initially sells newly issued shares to investors, such as through an initial public offering.
Secondary market	Markets where securities are bought and sold subsequent to original issuance. Stock markets serve as secondary markets for shares of publicly owned companies.
Securities Act of 1933	The first act passed by Congress to regulate the securities markets. The disclosure statute requires companies to register stock offerings to the public and disclose important facts through a prospectus and additional information filed with the SEC.
Securities Act of 1934	This law created the Securities and Exchange Commission to regulate the securities industry. The law outlawed manipulative and abusive practices in the issuance of securities; it required the registration of stock exchanges, brokers and dealers, and the registration of exchange-listed securities; and it also required disclosure of certain financial information and insider activity. The law gave the SEC power to enforce the Securities Act of 1934 to allow regulation of over-the-counter markets through national associations registered with the SEC. The NASD is the only association ever to register under the act.

Securities and Exchange Commission, U.S. (SEC)	The federal agency created by the Securities Exchange Act of 1934 to administer that act and the Securities Act of 1933. The statutes administered by the SEC are designed to promote full public disclosure and protect the investing public against fraudulent and manipulative practices in the securities markets.
SelectNet	An order-routing and execution service for institutional investors for NASDAQ. It allows brokers and dealers to communicate through NASDAQ terminals as an alternative to the phone. Once the two parties agree to a trade on SelectNet, execution is automatic.
Self-regulatory organization (SRO)	An entity responsible for regulating its members through the adoption and enforcement of rules and regulations governing the business conduct of its members.
Small Order Execution System (SOES)	A NASDAQ innovation to make the market work as smoothly and efficiently as possible. SOES is limited to nonprofessional investors who place orders with qualifying brokers. Market makers receiving SOES orders have to honor their bids for automatic execution up to 1,000 shares (in contrast to non-SOES orders, where dealers retain some discretion).
Specialist	A member of the NYSE through whom all trades in a given security pass.
Ticker symbol	The standard abbreviation used to identify a stock.
Underwriter	An investment banker who assumes the risk of bringing a new securities issue to market. The underwriter will buy the issue from the issuer and guarantee sale of a certain number of shares to investors, which is called firm-commitment underwriting. To spread the risk of purchasing the issue, the underwriter often will form a syndicate (underwriting group, purchase group) among other investment firms.

Exhibit 1 NYSE and NASDAQ: Summary Statistics

	NASDAQ	NYSE
Ownership Structure	For profit	Mutual (not for profit)
Number of Companies Listed	4,109[a]	2,800
Number of Newly Listed Companies[a]	145	144
Market Capitalization[a]	$2.9 trillion	$11.7 trillion
Dollar Volume of Equity Shares Traded[b]	$10.9 trillion	$10.5 trillion
Average Daily Dollar Volume[b]	$44.1 billion	$42.3 billion
Total Share Volume[b]	471.2 billion shares	307.5 billion shares
Average Daily Share Volume[b]	1.9 billion shares	1.2 billion shares
Number of Foreign Issuers Listed[a]	447	462
Number of Employees	1,276[c]	N/A

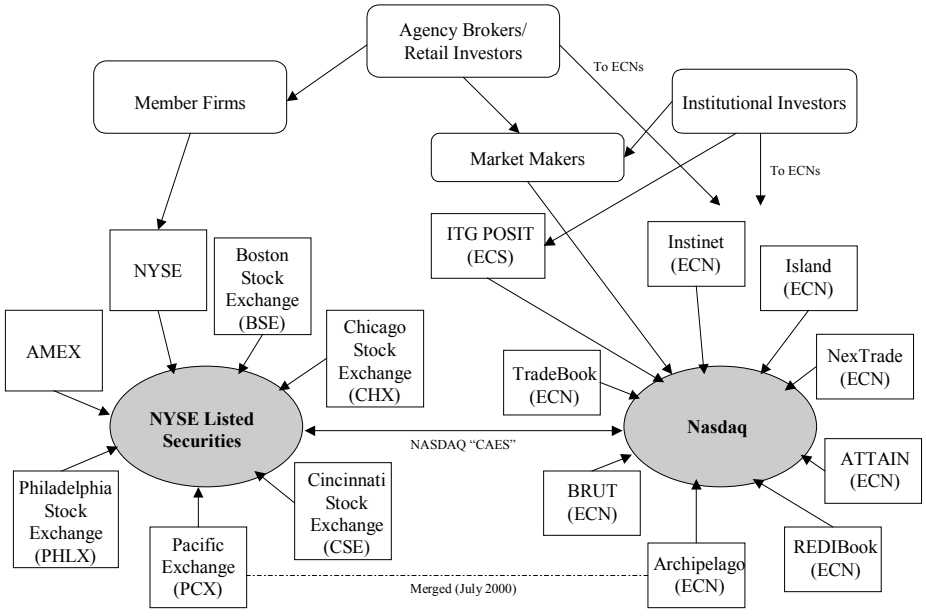
Source: NASDAQ 10-K, NYSE Factbook, NYSE Annual Report 2001.

[a]As of December 31, 2001.

[b]For the 12 months ended December 31, 2001.

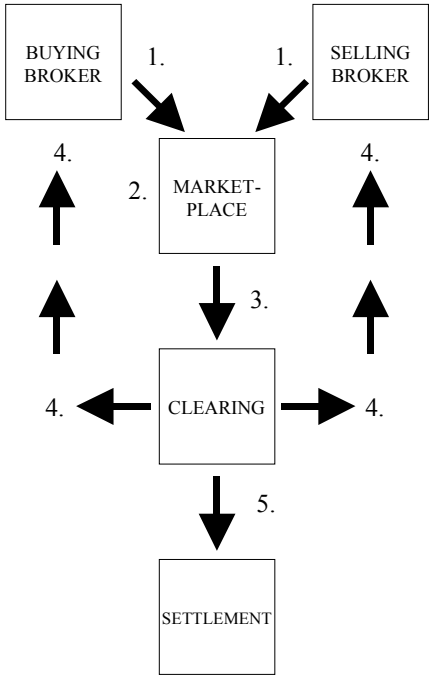
[c]As if March 1, 2002.

Exhibit 2 U.S. Equities Market Structure in 2002



Source: Adapted from Guy Moszkowski et al., "Trading Up 2.0," Salomon Smith Barney, March 22, 2001.

Exhibit 3 Flow Chart of a Stock Market Transaction



Source: Casewriter.

Exhibit 4a NYSE Membership 2001

Exchange Members		2001
Full Members	Own a "seat," which gives access to the trading floor and full distributive rights in the exchange's net assets.	1,366
Other Members	Pay an annual fee to have either physical or electronic access to the trading floor.	57
Member Organizations	Are members of the exchange who combine with other individuals to form a partnership or corporation.	365
Member Organizations Dealing with the Public		267

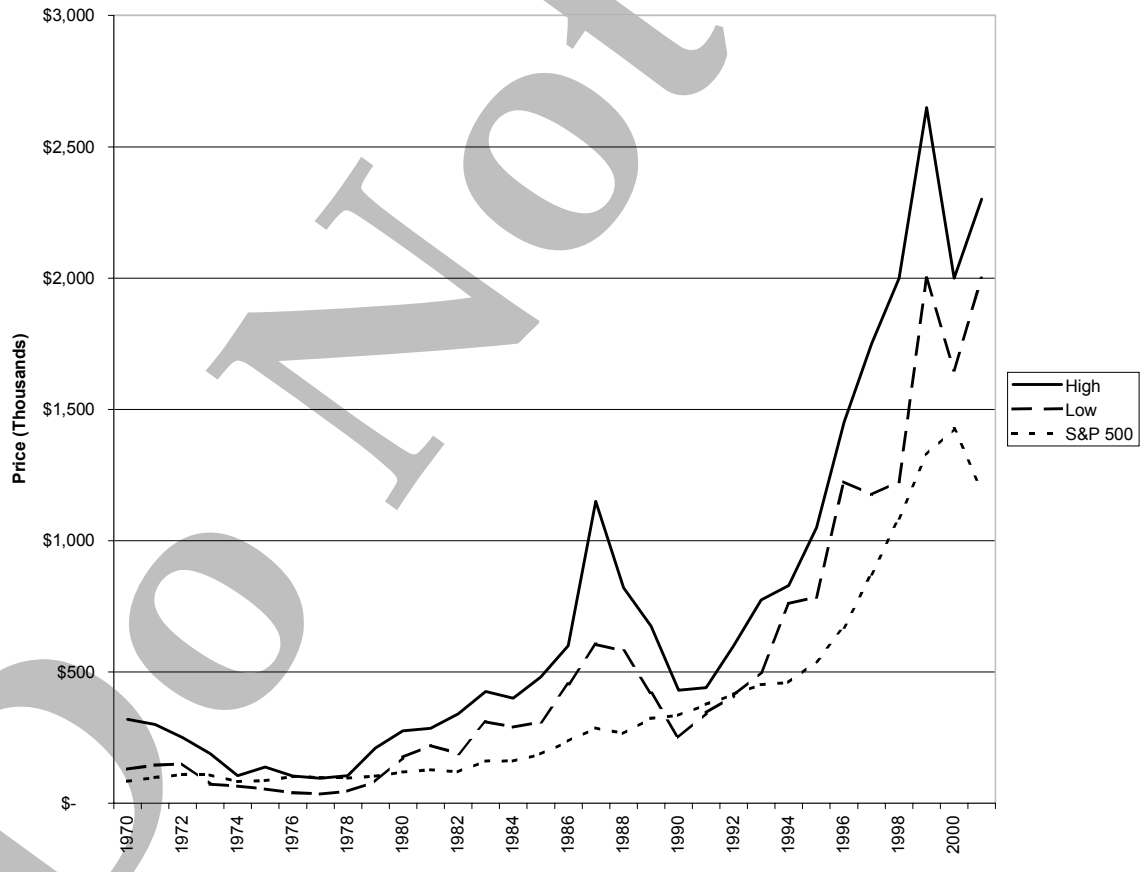
Source: Compiled from NYSE Factbook 2001.

Exhibit 4b Income Statement for NYSE Member Firms Dealing with the Public—Sources of Gross Income ($ in millions)

Item	Full Year 2001	
Securities commissions	$ 26,833	13.8%
Trading & investments	25,211	13.0%
Interest on customers' debit balances	12,865	6.6%
Underwriting	15,631	8.0%
Mutual fund sales	6,330	3.2%
Commodity trading revenues	4,908	2.5%
Other income:		
Related to the securities business	93,096	47.8%
Unrelated to the securities business	9,916	5.1%
Gross Income	$194,790	100%

Source: Compiled from NYSE Factbook 2001.

Exhibit 4c Historical Trends for NYSE Membership Prices



Source: Adapted from NYSE Factbook 2001.

Exhibit 5 Minimum Listing Criteria for NASDAQ and NYSE

	NASDAQ[a]		NYSE[a]	
	Initial Listing	**Continued Listing**	**Initial Listing**	**Continued Listing**
Number of Publicly Listed Shares[b]	1.1 million	750,000–1.1 million	1.1 million	600,000
Market Value of Publicly Held Shares	$8 million–$20 million	$5 million–$15 million	$60 million–$100 million	$15 million–$50 million
Pretax Income (Past Year)	$1 million (only applies for standard 1)	N/A	$2.5 million–$4.5 million	N/A
Minimum Bid Price	$5	$1–$3	N/A	$1
Number of Active Market Makers	3 to 4	2 to 4	N/A	N/A

Source: "Listing Requirements and Fees," NASDAQ, 2002; and "Listed Company Manual," NYSE, sections 102 and 802, 2002.

[a]Range indicates different sets of rules used to evaluate potential issuers.

[b]Publicly listed shares refer to total shares outstanding minus any shares held by officers, directors, or beneficial owners of 10% or more.

Exhibit 6 Financials for the NYSE ($ in thousands)

NYSE	**2001**		**2000**	
Listing Fees	294,840	*33.4%*	278,194	*34.1%*
Trading Fees	160,269	*18.1%*	142,152	*17.4%*
Market Data Fees	144,637	*16.4%*	140,046	*17.2%*
Regulatory Fees	152,385	*17.2%*	129,567	*15.9%*
Facility and Equipment Fees	47,927	*5.4%*	45,958	*5.6%*
Membership Fees	11,608	*1.3%*	10,594	*1.3%*
Investment and Other Income	72,339	*8.2%*	68,778	*8.4%*
	884,005	*100.0%*	815,289	*100.0%*
Systems and related support	291,981	*33.0%*	262,086	*32.1%*
Compensation	298,965	*33.8%*	260,408	*31.9%*
G&A	49,112	*5.6%*	39,045	*4.8%*
Professional Services	64,629	*7.3%*	51,989	*6.4%*
Advertising	49,835	*5.6%*	17,726	*2.2%*
D&A	39,698	*4.5%*	38,291	*4.7%*
Occupancy	28,608	*3.2%*	28,812	*3.5%*
Staff Reduction	19,002	*2.1%*	-	*0.0%*
	841,830	*95.2%*	698,357	*85.7%*
Pretax	42,175	*4.8%*	116,932	*14.3%*
Tax	10,384	*24.6%*	44,075	*37.7%*

Source: Adapted from <www.nyse.com>.

Exhibit 7 The Major ECNs

Qualified Equity ECNs	Owners/ Partners	Hours of Operation	Direct Transaction Cost	Target Subscribers	Number of Subscribers	Notes and Recent Developments
Archipelago (ARCA) Jan-97 www.tradearca.com (can view order book)	Gerald Putnam, Pacific Exchange, Terra Nova Trading, Townsend Analytics, Reuters, Goldman Sachs, Merrill Lynch, E*Trade, JP Morgan, American Century, Instinet, CNBC,BNP Cooper Neff, Virago Enterprises	8 a.m.–8 p.m.	$0.005 to $0.025 per share	Investment managers, market makers, broker-dealers	> 125	One of the original four ECNs. August 9,1999—files w/ SEC to become a national securities exchange. CEO, Gerald Putnam, argues (to SEC) for intermarket linkages built by the market players but NOT aggregated at one point like ITS w/ NYSE or SelectNet w/ NASDAQ. March 2000, ARCA announces agreement w/ Pacific Exchange to create nation's first, fully electronic national stock exchange for NYSE and NASDAQ stocks. Has high-speed links w/ INCA, ISLD, & REDI (outside of SelectNet). ARCA maintains a "best execution" model routing most trades outside its ECN to the trading venue with the best price. Merger with REDIbook announced November 29, 2001.
Attain (ATTN) Feb-98 www.attain.com	All-Tech Investment Group	8 a.m.–6:30 p.m.	$0.005 to $0.015 + ECN fee up to $0.015 per share	Day traders, broker-dealers, hedge funds	> 40	Revenues have declined recently and trading volumes stagnated vs. other ECNs.
Bloomberg Tradebook (BTRD) Dec-96 http://www.bloomberg tradebook.com/	Wholly owned subsidiary of Bloomberg (Merrill owns 20% of Bloomberg)	7 a.m.–6:30 p.m.	$0.02–$0.06 per share depending on volume and category of client	Institutions, broker-dealers, and market makers	> 4000	Strategic partnership formed 5/99 w/ ITG creating Tradebook SuperECN. - Blending ECN w/ the POSIT crossing market. Alliance formed 5/99 w/ CLSA Global Emerging Markets to create a global pure agency broker in 65 markets worldwide. 65%-70% of orders executed w/ SelectNet, balance matched internally. Executes both NASDAQ and NYSE orders (NYSE = 10% of its volume).
Brass Utility (BRUT) May-98 www.ebrut.com	Post merger—30 equity partners including SunGard Data Systems (20%), Bear Stearns, Bridge Trading, Goldman, Herzog Heine Geduld, Knight/Trimark, Lehman, Merrill, Morgan Stanley, Salomon Smith Barney	7:30 a.m.–6:30 p.m.	Rebate of $.10/100 shares up to $1; $1.50/first 1,000; $3/1,200; $4 for 300 share and above	Broker-dealers & Institutions	> 290	Merged w/ Strike—2/00. Expanded to trade NYSE stocks—4/00. August 13, 2002, Brut establishes a daily NASDAQ share volume record by obtaining 5.94% of NASDAQ's total trading volume.

Qualified Equity ECNs	Owners/ Partners	Hours of Operation	Direct Transaction Cost	Target Subscribers	Number of Subscribers	Notes and Recent Developments
Instinet (INCA) 1969 www.instinet.com	Wholly owned subsidiary of Reuters	Institutional & brokers 24x7; direct via E*Trade until 6:30 p.m.	Typically $0.03/share on a 50,000 share order; also negotiable	Broker-dealers (70%) & institutions (30%), some access via discounts	> 21,400 globally	Acquired Island ECN September 20, 2002.
Island (ISLD) Jan-97 www.island.com	Bain Capital, TA Associates, Silver Lake Partners, Datek Online	7 a.m.–8 p.m.	$.0025/sh paid by liquidity detractors, $.0010/sh rebate to liquidity providers	Primarily discount broker-dealers	> 350	Pure electronic, central auction market that automatically matches buy & sell orders on strict time/price priority. If no instant match, order is placed in limit-order book. Accepts only limit orders. As opposed to Instinet, Island does not specialize in block orders. Acquired by Instinet on September 20, 2002.
MarketXT Jan-00 www.marketXT.com	Dreyfus Brokerage, Hertzog Heine Geduld, Madoff Investment Securities, Morgan Stanley Dean Witter, Salomon Smith Barney, SOFTBANK, Tradescape.com	6 a.m.–9 a.m.; 4:01 p.m.–8 p.m.	$.01/sh - $1.50 minimum; $5.00 maximum	Individual investors, broker-dealers, retail brokers	N/A	Acquired by Tradescape.com, 2/00.
NexTrade (NTRD) Nov-98 www.nextrade1.com	NexTrade Holdings	24x7	$.005/sh during market hours; $.015/sh after hours	Broker-dealers, discount brokers, mutual funds, hedge funds, market makers	> 109	Interacts simultaneously w/ all ECNs and market makers. Also provides a matching session for NYSE-listed stocks from 5:15 p.m. to 9:00 a.m. Founded Matchbook FX LLC, a matching system for spot foreign currency trading. Filed w/ the SEC to become a for-profit electronic exchange in January 2000.
REDIbook (REDI) Nov-97 www.redibook.com	Spear, Leeds & Kellogg, Goldman Sachs, Fidelity Investments, Schwab, DLJ, TD Waterhouse, CSFB, National Discount Brokers, Lehman Brothers, Fleet Securities, Bank of America	8 a.m.–10 p.m.	Negotiable	Institutions, broker-dealers, retail brokerages, REDIPlus—professional traders, hedge funds, and money managers	> 5000	Developed by Spear, Leeds & Kellogg (SLK), which was acquired by Goldman Sachs. Now accesses order flow from Goldman as well as SLK and partners. REDIBook ECN now directly routes to ARCA, INCA, ISLD, and MarketXT, bypassing SelectNet. Merger with Archipelago announced November 29, 2001.

Source: Adapted from Guy Moszkowski et al., "Trading Up 2.0," Salomon Smith Barney, March 22, 2001; and information on individual company Web sites.

Exhibit 8 Financials for NASDAQ ($ in thousands)

NASDAQ	2001		2000	
Transaction Services	408,770	*47.7%*	395,123	*47.5%*
Market Information Services	240,524	*28.1%*	258,251	*31.0%*
Corporate Client Group Services	156,124	*18.2%*	149,297	*17.9%*
Other	51,814	*6.0%*	30,040	*3.6%*
Total Revenues	857,232	*100.0%*	832,711	*100.0%*
Compensation and benefits	183,369	*21.4%*	137,284	*16.5%*
Marketing and Advertising	28,017	*3.3%*	45,908	*5.5%*
D&A	93,400	*10.9%*	65,645	*7.9%*
Professional and contract services	76,049	*8.9%*	61,483	*7.4%*
Computer operations and data communications	174,939	*20.4%*	138,228	*16.6%*
Travel, meetings, and training	14,593	*1.7%*	12,113	*1.5%*
Occupancy	27,183	*3.2%*	14,766	*1.8%*
Provision for bad debts	15,459	*1.8%*	5,554	*0.7%*
Publications, supplies, and postage	11,998	*1.4%*	7,181	*0.9%*
Disaster related	23,208	*2.7%*	-	*0.0%*
Technology transition cost	9,200	*1.1%*	-	*0.0%*
Other	37,883	*4.4%*	20,007	*2.4%*
Total Expenses	695,298	*81.1%*	508,169	*61.0%*
Operating Income	161,934	*18.9%*	324,542	*39.0%*

Source: NASDAQ 2001 Form 10-K.

Exhibit 9 Top 10 Companies on NYSE and NASDAQ by Market Capitalization

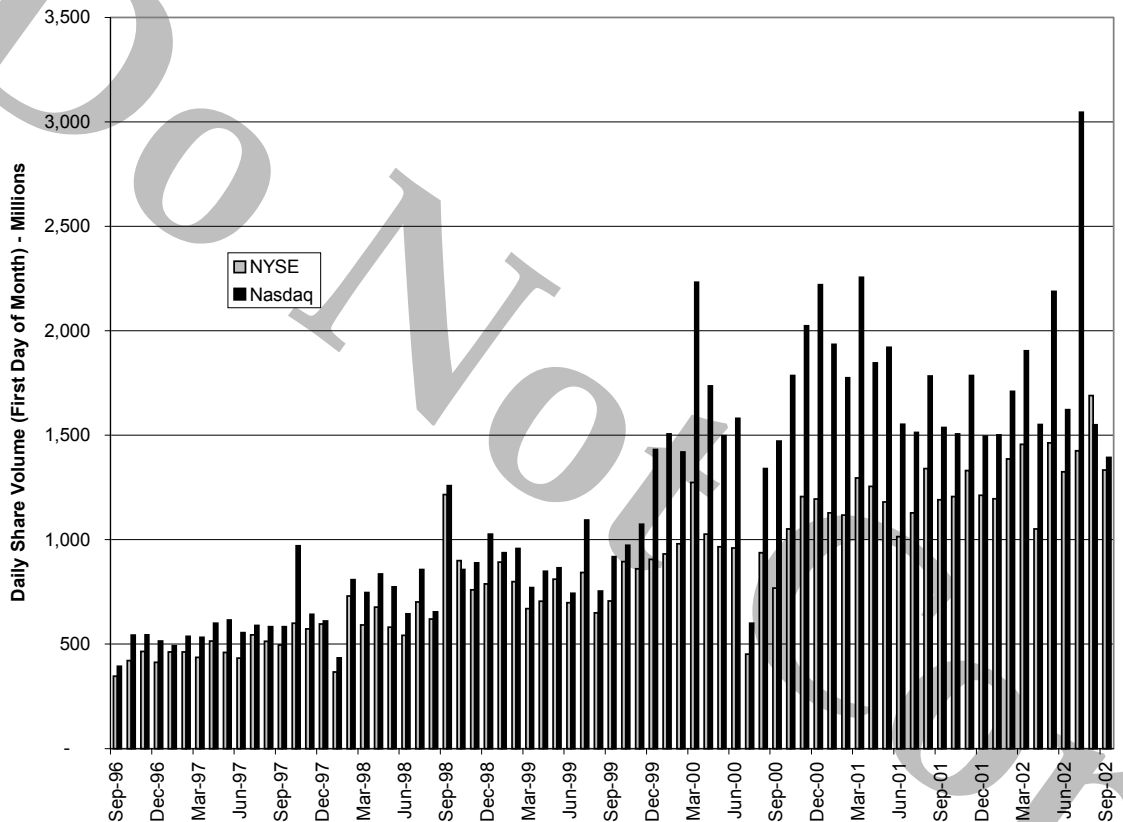
NYSE-Listed Companies	Market Capitalization ($bil.) September 2002	NASDAQ-Listed Companies	Market Capitalization ($bil.) October 30, 2002
1. General Electric Co.	245.3	1. Microsoft Corp.	284.9
2. Wal-Mart Stores	217.8	2. Intel Corp.	113.3
3. Exxon Mobil Corporation	215.6	3. Cisco Systems Inc.	79.8
4. Pfizer Inc.	179.6	4. Dell Computer Corp.	75.3
5. Johnson & Johnson	160.9	5. AMGEN Inc.	61.4
6. Citigroup Inc.	150.1	6. Oracle Corporation	53.6
7. American International Group	142.8	7. QUALCOMM Inc.	26.2
8. Coca-Cola Co.	119.1	8. Applied Materials Inc.	25.2
9. Procter & Gamble Co.	116.2	9. Comcast Corp.	21.4
10. Merck & Co.	102.8	10. eBay Inc.	19.1

Total market capitalization for all companies on the NYSE as of August 31, 2002: $9.4 trillion.

Total market capitalization for all companies on the NASDAQ as of August 31, 2002: $1.9 trillion.

Source: NYSE Web site, <www.nyse.com>, accessed October 30, 2002; NASDAQ Web site, <www.NASDAQ.com>, accessed October 31, 2002.

Exhibit 10 NYSE and NASDAQ Trading Volume, September 1996 to September 2002



Source: NASDAQ and NYSE Web sites, <http://www.marketdata.NASDAQ.com/mr4b.html#2002>, and <http://www.nyse.com/marketinfo/nysestatistics.html>, accessed November 1, 2002.

Endnotes

[1] A glossary of financial terms is included on p. 11.

[2] Matthew J. Clayton, Bjorn N. Jorgensen, Kenneth A. Kavajecz, "On the Formation and Structure of International Exchanges," The Wharton School, Working Paper No. 022-99, September 23, 1999, p. 5.

[3] World Exchanges Web site, <http://www.world-exchanges.org>, accessed April 7, 2002.

[4] FIBV 2000 Annual Report found at <http://www.world-exchanges.org>, accessed April 7, 2002, p. 43.

[5] The compression rate refers to the amount by which clearing reduces the settlement value. In the United States, compression rates are of the order of 90%–95%. From <http://www.dtcc.com/2000annual/clearance.htm>, accessed April 11, 2002.

[6] DTCC Web site, <http://www.dtcc.com/about/aboutus.html>, accessed April 11, 2002.

[7] This section draws from "The New York Stock Exchange," in Newman, Milgate, and Eatwell (eds.), *The New Palgrave Dictionary of Money and Finance*, Vol. 3 (New York: Stockton Press, 1994), pp. 33-34; and James J. Angel, "Consolidation in the Global Equity Market: An Historical Perspective," Georgetown University, unpublished, dated February 19, 1998.

[8] This is the origin for the term "seat," which has signified membership to the NYSE ever since.

[9] Specialists organize the market for individual stocks on the NYSE. Their primary responsibility is to match buy and sell orders for their assigned securities, but they may be called upon to take a position in their stock when market order requires it.

[10] At that time, the OTC consisted mainly of stocks of companies that did not meet the listing requirement of the NYSE or the other exchanges. However, NYSE-listed stocks could also be traded on the OTC market if a market maker was ready to provide a market for it.

[11] Rule 390 was repealed in December 1999.

[12] "Stock Exchanges: The battle for efficient markets," *The Economist*, June 17, 2000.

[13] By 2002, 95% of the orders (representing 65% of the volume) were actually routed electronically to the specialist's order book. "The NYSE: A Guide to the World's Leading Securities Market," available at <www.nyse.com>, accessed October 20, 2002.

[14] NYSE Web site, <www.nyse.com>, accessed April 7, 2002.

[15] Guy Moszkowski, et al., "Trading Up 2.0," Salomon Smith Barney Research, March 22, 2001, p. 12.

[16] NYSE Web site, <www.nyse.com/listed/domesticfees.html>, accessed October 7, 2002.

[17] The SEC allowed market members to self-regulate provided that all market participants were members of the self-regulated organization (SRO).

[18] A stock market had to be either an exchange or a national securities association. To separate from the NASD and to complete the transition to become a stand-alone entity, the NASDAQ had to

become a self-regulatory entity in its own right (thus far, the NASDAQ had been under the NASD SRO umbrella). This is the reason the NASDAQ was applying for exchange status. "What Market Participants Need to Know About NASDAQ's Registration as a Stock Exchange," <www.NASDAQ.com>, accessed October 20, 2002.

[19] Alternatively, any of the following criteria needed to be satisfied: (1) market value of equity at least $ 75 million, (2) total assets of at least $ 75 million, and (3) total revenue of at least $75 million.

[20] The NASDAQ Stock Market, Inc., December 31, 2001 10-K, p. 3.

[21] In 2001, the Intermarket and the OTC Bulletin Board activities represented respectively 3.9% (mainly from data sales) and less than 1% of NASDAQ's revenues. (The NASDAQ Stock Market, Inc., December 31, 2001 10-K, pp. 16-17).

[22] NASDAQ 10-K, p. 2.

[23] Bloomberg information for MSFT, accessed April 21, 2002.

[24] Andre Perold and Austin Scee, "The NASDAQ Stock Market," HBS No. 202-008 (Boston: Harvard Business School Publishing, 2001), p. 4.

[25] Ibid.

[26] "Listing Requirements and Fees," NASDAQ, 2002.

[27] Karen Kroll, "Bidding without Boundaries," *Industry Week,* April 2002. Available from Proquest, May 1, 2002.

[28] Sergio G. Non and Tiffany Kary, "NYSE, NASDAQ joust for Tech Companies," CNET News.com, May 28, 2001.

[29] Fred Vogelstein, "The Man Who Saved the New York Stock Exchange," *Fortune,* April 15, 2002, p. 168.

[30] Bill Breen, "Stock Futures," *Fast Company*, June 2002.

[31] Guy Moszkowski, et al., "Trading Up 2.0," Salomon Smith Barney Research, March 22, 2001, p. 15.

[32] Mary Chung, "NASDAQ $1 listing review draws fire," *The Financial Times*, October 14, 2002, p. 1.

[33] Robert Clow, "Companies may delist to avoid new governance rules," *The Financial Times*, October 24, 2002, p. 30.

[34] Bettina Wassener, "Porsche pulls NY listing plan," *The Financial Times*, October 17, 2002; and Vincent Boland and Andrei Postelnicu, "New corporate rules will harm NYSE, says chief," *The Financial Times,* December 5, 2002.