COMPETITION AMONG THE EXCHANGES BEFORE THE SEC: WAS THE NYSE A NATURAL HEGEMON?

Abstract

Improved information technology and higher volume should drive orders to be concentrated in one market, lowering the costs of transactions. However, the opposite occurred during the bull market of the 1920s when rapid technological change spawned a flood of new issues. This paper employs newly recovered data for 1900-1933 on the volume and seat prices of regional exchanges to examine how these rivals successfully competed with the NYSE, leading to its relative decline at the zenith of the market.

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Eugene N. White
Department of Economics
Rutgers University
New Brunswick NJ 08901
white@economics.rutgers.edu

Very Preliminary---Please do not city---Comments welcome.

Why isn't there one market for trading securities? Should the markets of the European Union be merged into one? Who will win the struggle for hegemony if not monopoly in the United States, the NYSE or Nasdaq? The complicated contemporary regulation of markets and the apparent joint endogeneity of key elements in microstructure make identification of an optimal architecture difficult. In this paper, I look back to the largely unregulated pre-Securities Exchange Commission era in the United States. I focus on the years between 1900 and 1933, when there was vigorous competition among exchanges during a period of rapid technological change, both in production technologies and the information technologies used by the financial markets. Surprisingly, instead of leading to a concentration of trading in the largest market, there was fragmentation. The NYSE was largest and most transparent market, but it struggled with other established markets and new rivals who attracted volume by their willingness to list new issues and quickly adjust their microstructure.

Determinants of the Trading Venue

Why there is not one market can be cast as a network externality puzzle (Madhavan, 2000). If a security is traded in two markets and order processing costs are a decreasing function of volume, higher volumes will produce shorter holding periods and lower inventory costs in a quote-driven market (with market makers/dealers) or yield a faster matching of orders in an order-driven market. If one market has a cost advantage, its lower bid-ask spreads will attract more volume and lead to consolidation in a single market. Liquidity thus attracts more liquidity, and this positive trading externality should result in one trading venue. Yet, this simple prediction has not been realized, as there are

multiple dimensions to the choice of trading venue problem. Additional issues---the heterogeneity of traders, listing rules, bundling of orders and capacity constraints play key roles in the formation of exchanges.

Most basic models of security market microstructure (Kyle, 1985; Pagano, 1989, and Admati and Pfleiderer, 1989) assume that there are two basic types of traders: small and traders (or liquidity traders) and large, active traders, typically institutions. In quote-driven markets, there is a third class of agents, dealers or market makers. Large traders are assumed to have better information about the financial conditions of firms compared to small traders because of economies of scale and scope in collecting the asymmetric information that pervades financial markets. Large traders would naturally like to exploit their superior information by trading with either small traders or dealers. While lacking the detailed and perhaps inside knowledge about firms, dealers generally thought to have better information relative to small traders because they monitor the order flow of trades. Most models depict them as recouping any losses from trades with large traders by widening their spreads with small traders who pay a premium to be in a market where there is rapid disclosure of information. The problem for a large trader is that placing orders discloses information that is picked up the rest of the market. Large traders would like to avoid high transparency. They may seek to cloak their moves by dispersing orders in high volume markets or sending them to non-transparent over-the-counter or "upstairs" markets Nevertheless, large and small traders need one another. The less well-informed small traders need to trade in a venue with large institutions to obtain better price information, while large traders need the mass of small traders to absorb their large trades. Consequently, there is a tendency for both large and small traders to congregate

in the same trading venue. Specialist market makers may help to establish a venue by anchoring liquidity with their promise to provide it, contributing to the positive trading externality that concentrates activity in one venue.

The listing decision also influences the choice of trading venue. The listing decision is determined both by the issuing firm and the exchange. Whether a security will be listed by an exchange depends on the riskiness of the firm and the degree of disclosure required by the exchange. Even the best firms do not like to disclose their true risk because the absence of disclosure allows the insiders in the firm to trade using their inside information about the firm. Given their information disadvantage, small traders should prefer exchange-based rules that compel disclosure of information that would otherwise be expensive for them to acquire. While some have argued that if stock exchanges were allowed to set their own disclosure standards, "a race for the bottom" would occur (Cary, 1974; Alford, 1993), as exchanges lowered their standards to attract new listings. Lower standards would benefit insiders, and market makers would respond by increasing their spreads to the disadvantage of other traders. Yet, Huddart, Hughes and Bunnermeir (1999) contend that this fear is mistaken and we would more likely observe a "race for the top," where disclosure requirements would be raised and trading costs would fall. They argue that although corporate insiders control the listing decision for a firm and seek to exploit their information advantage and desire to list where there are weaker disclosure requirements, but they will be attracted to the high disclosure exchanges because the greater depth provided by the liquidity traders who seeks these markets, which gives them a disguise to conduct their trades. By setting high disclosure rules, an exchange can attract small traders; in turn, this may attract large traders who

need the former to absorb their trades, thus generating good price information and liquidity. In the competition between exchanges, a higher disclosure exchange may dominate because it attracts more liquidity, from small and then large traders. If issuing firms prize increased liquidity, the insiders may decide to list on a high disclosure exchange, accepting that they will have to imperfectly cloak their inside information-based trades. In competition between exchanges with high and low disclosure standards, the low risk, established or mature firms should be attracted to list on the high disclosure exchange and the high risk, new firms will list on the low disclosure exchange. The low disclosure exchange will have fewer small traders and presumably less liquidity.

Another key feature of competition between exchanges is capacity constraints, which in turn affects management of order flow and listing. All exchanges imposed some limits on entry. Minimally, the purpose of these requirements should act to control counterparty risk. If there is not an immediate exchange of certificates and cash, there is always the risk, the counterparty risk, that the opposite number in a trade will default. Some screening and monitoring of members is needed, in addition to a punishment mechanism to reduce this risk. The London Stock Exchange maintained very limited entry requirements, although all American exchanges eventually fixed the number of members. While limiting entry may enhance the ability to control counterparty risk, it may have facilitated members' ability to extract some rents from the positive externality that concentrated trading. The value of the seats will reflect the value of access to the restricted trading floor and the rents that accrue to members. However, this constraint will reduce the effectiveness of an exchange to efficiently process order flow and list securities.

Given a fixed number of brokers on the floor of the exchange and the need to trade a variety of securities at different geographically dispersed posts, higher order flow at some point will produce a type of congestion, where the number of counterparties available at a post for a trade is reduced and consequently the bid-ask spread is increased. Higher volume here does not lower but raises costs, reducing the attractiveness of the trading venue, and inciting a fragmentation of trading rather than concentration, as customers seek lower cost exchanges. Given the capacity constraint, the exchange may try to control flow by, for example, limiting orders to lots of 100 shares, forcing customers with odd lots to use other trading venues. In addition, fixing the number of brokers may lead them to become more selective, listing fewer securities. The highest disclosure exchange with a fixed number of brokers may exclude securities that would be included if there were no restriction on entry. Other trading venues may thus obtain higher quality securities than they would otherwise. Not only may these rivals gain business from these listings but they may also increase their trading in the high disclosure exchange's securities because they may pick up odd lot orders that are excluded. Orders for a trade from a customer may bundle several securities; and if there are any costs to splitting orders, may send some trades to higher cost exchanges.

These factors inhibit the concentration of trading at one exchange. The tendency towards a fragmentation of trading will be aggravated there is a technology shock, which creates new industries and firms, which require new listings and where it is not possible initially to distinguish between low and high risk firms. Consequently, either because of capacity constraints that limit listings or because new firms cannot provide the necessary information, new securities will not conform to the high disclosure exchange's rules and

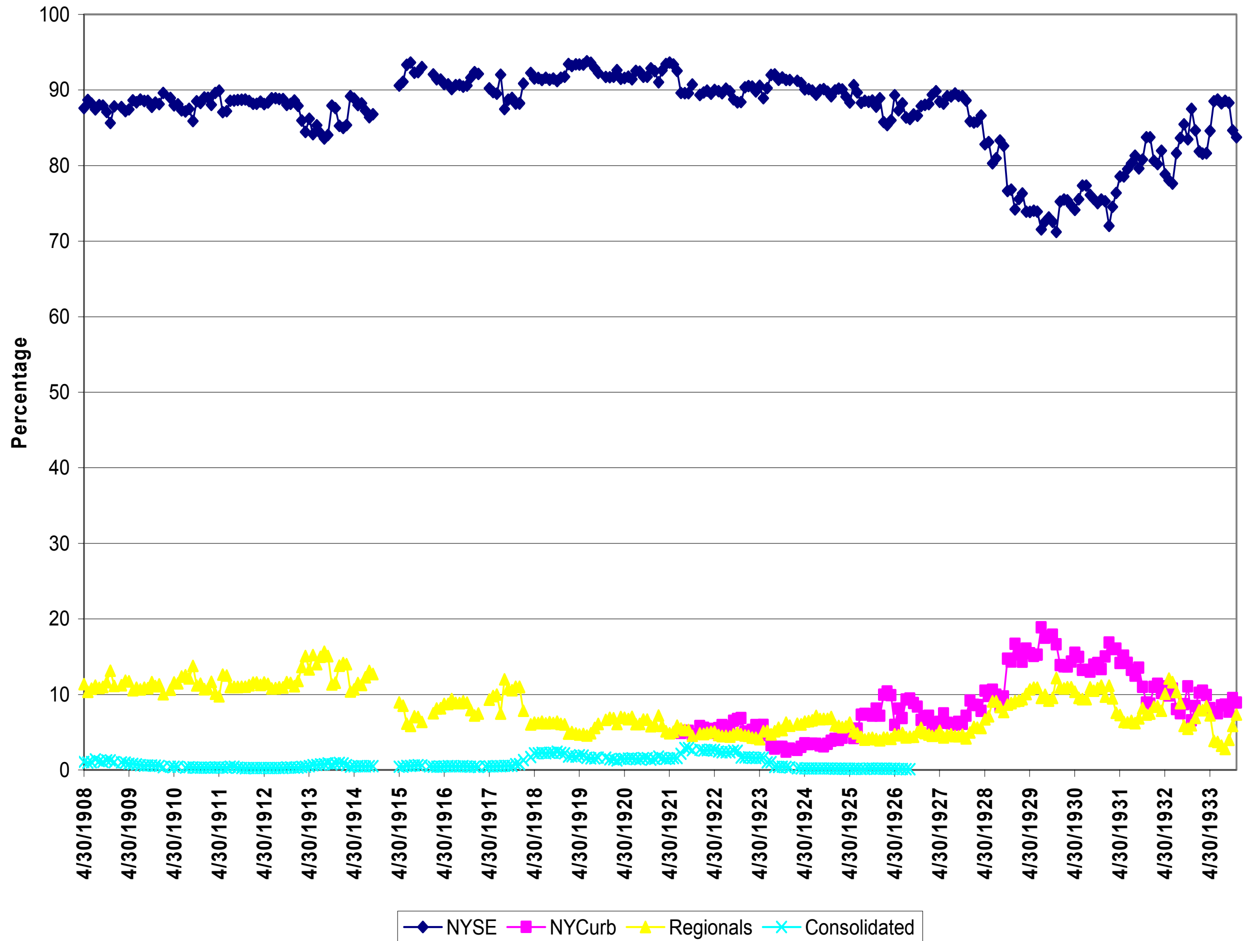
they will list on the low disclosure exchange. If small traders are risk averse, they will already engage in some trading of high risk firms on the low disclosure exchange, even if they are at an information disadvantage. When the low disclosure exchange expands with new issues, it will attract more business from large and small traders, increasing its potential liquidity for any security. This development is potentially dangerous for the high disclosure exchange as its rivals typically trade a small fraction of its stocks. If liquidity rises enough, it may be harder to attract the new firms when information that they are low risk arrives. The result will be increased competition for the high disclosure exchange and a threat to its dominant position. It must then provide more attraction for the new industries through a number of strategies. It may devise some subsidiary trading venue with lower disclosure standards when it is not possible to discriminate between low and high risk firms. If enough firms in the new industries meet its standards, the high disclosure exchange may try to merge with their rivals, even if this threatens to reduce some of members' rents. But it must meet the challenge; if enough liquidity builds up in the other exchanges, it may tip in favor of the rival exchange, leading to the demise of the dominant exchange. Competition serves to keep the dominant exchange up to date in terms of its technology and the stocks it lists.

A Natural Hegemony?

It is usually assumed that the NYSE has always been the dominant market. However, it position prior to 1933 was constantly challenged, reflecting the dynamics of the competition between the exchanges where entry of brokers was limited and where frequent booms and productivity shocks drove up order flow and listings. Figure 1

shows the competitive position of the NYSE between 1908 and 1933 by looking at the shares of the aggregate value of all U.S. stock exchanges.

Figure 1
The Relative Shares of the Aggregate Value of U.S. Stock Exchanges
1908-1933



Source: Bond and Quotation Record (1908-1933)

While volume of trading might seem to be a more natural measure, the value of a seat on the exchange, like any financial asset, provides a measure of the expected future value. The value of each exchange---the number of seats times the last trading price of

a seat---is available beginning in 1908. The Bond and Quotation Record, a publication of the Commercial and Financial Chronicle, provided a monthly report on exchange seats for stock markets and commodities exchanges. Usually the number of seats on the exchange, the last sale and sometimes the bid and asked prices were provided, although information was often missing. The Record did not give a complete list of the exchanges, but instead provided information on the leading exchanges. Some exchanges appear and disappear depending on their prominence and the activity of seat trading. When an important new market emerged or grew to importance it was included. The exclusion of the small exchanges is assumed to be a minor problem, as many of the small exchanges recorded were very small in terms of value compared to the larger exchanges. For many of the minor exchanges, there were no priced seats, only fees to cover the costs of operating the exchange.

Figure 1 reveals the key trends in the competition between the American exchanges in the first third of the twentieth century. Before the First World War, the NYSE's value accounted for nearly 90 percent of all the exchanges, with regional exchanges accounting for approximately 10 percent. This dominant position had been forged by a long struggle. The old New York Stock and Exchange Board was formed in 1817. It restricted membership and operated indoors with a call rather that a continuous market. Those brokers who were not admitted carried out business on the curb, taking business that the NYSEB either ignored or that the curbstone brokers could capture. During the boom of the 1830s, the market grew faster than the brokers of the NYSEB could handle, and rival brokers formed a New Board in 1835, which handled many railroad securities. It prospered until the crisis of 1837 when a majority of its members

were ruined and it never recovered, disappearing in 1848. The securities boom and trading in gold and other assets during the Civil War found the NYSEB woefully unprepared to handle increased trading and new securities, it admitted few new brokers and held only two calls a day. In reaction a group of brokers formed the Open Board of Stock Brokers in 1864. This group of younger and more energetic brokers introduced many innovations, opening sessions to public observation and establishing a governing committee. Te Open Board was only one of many exchanges that formed and disbanded during and after the Civil War. They were open to the public and membership simply required an annual subscription fee. They provided a key service by offering a continuous market between the formal calls of the NYSEB. Recognizing the need to provide a continuous market, the NYSEB with its 533 members merged with the 354 member Open Board of Brokers and the 173 member Government Bond Department in May 1869. Outside brokers were expelled from its building and membership was fixed at 1,060 brokers with membership becoming salable in the newly named New York Stock Exchange (Garvey, 1944). The only additional increase in size of the exchange occurred when 40 new memberships were sold in 1879, bringing the number of brokers to 1,110, to finance the purchase of additional property to expand the exchange.

While this new NYSE was clearly dominant in size it faced many challenges from new rivals, most notably when new industries emergence, whose capital needs required the issue of new securities. Concentrating on the railroads, the NYSE admitted very few mining stocks, which began to appear in the 1860s. In this void, several exchanges emerged. The New York Mining Exchange appeared in 1864 and the New York Petroleum Stock Board in 1865. They merged in 1866 only to founder because of

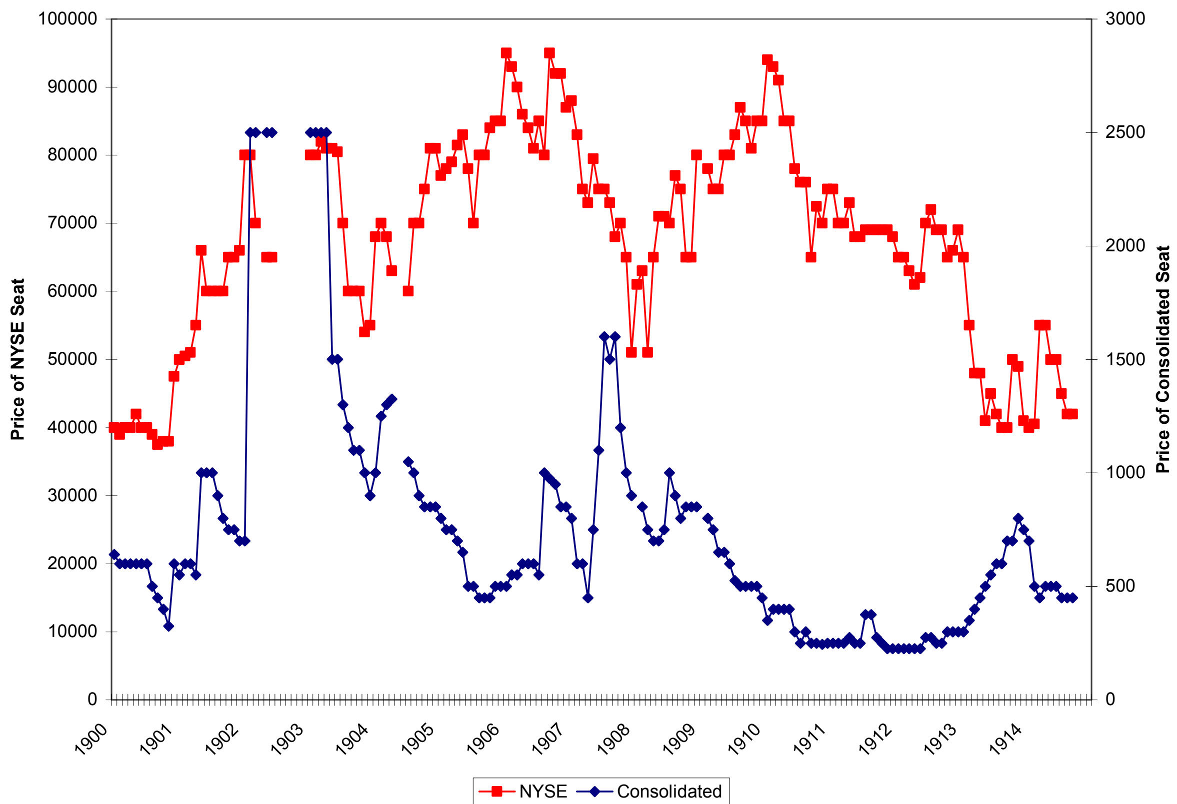
fraudulent dealings. In 1875 the New York Mining and Stock Board was formed, followed by the American Mining and Stock Exchange in 1876. Concerned about this growth, the NYSE encouraged the revival of the New York Mining Exchange, concluding an agreement with its members not to deal in securities listed on the NYSE while the latter would not list any more mining stocks. This cooperative arrangement undermined the American Mining and Stock Exchange which merged with the New York Mining Exchange in 1877. Outside of New York City, there was heavy activity on regional exchanges including San Francisco, Boston, Philadelphia and Denver, focused on mining and industrial stocks. The outmaneuvered New York Mining Exchange found a new source of securities with the development of the petroleum industry and reorganized in 1883 to become the New York Mining Stock and National Petroleum Exchange. In addition, a Miscellaneous Securities Board was formed focusing of the new industrial securities (Garvey 1944).

At this point, the brokers excluded from the NYSE made a bold move to seize the Big Board's huge railroad securities business. In 1885, the New York Mining Stock and National Petroleum Exchange merged with the New York Petroleum Exchange and Stock Board and the Miscellaneous Securities Board to form the Consolidated Stock and Petroleum Exchange with a membership of 2,403, twice the size of the NYSE. Then this new giant began an assault on the NYSE. First it broke off negotiations with the NYSE over dividing up the market, as it had done with the New York Mining Exchange, and began to deal in railroad securities, charging lower commissions. The NYSE responded by forcing 400 of its members and partners of its members who had held seats on the Mining Exchange to resign from the Consolidated and prohibited its members from

having transactions with the Consolidated. Recognizing that its exclusion of various types of securities offered rivals an opening, the NYSE created an Unlisted Department where securities could be listed providing only limited financial information. These efforts did not meet with immediate success and a long period of trench warfare ensued.

Unfortunately, there is relatively little data for this period. Figure 2 provides data on the seat prices of the NYSE and Consolidated Exchanges, which in 1908 had roughly the same number of seats, 1,100 and 1,240, respectively. As is immediately apparent, the value of business on the NYSE vastly exceeded that on the Consolidated, as reflected in their seat prices. In addition they both are driven by the general movements of the market as visible in the jump in seat prices during the boom of 1902-1903.

Figure 2
Seat Prices on the NYSE and Consolidated Exchanges
1900-1914



According to most contemporary sources, it appears that the NYSE market still had greater depth than the Consolidated, as the latter often relied on NYSE quotations to trade NYSE listed securities. The struggle between the two exchanges reached a climax when the Consolidated began to directly obtain quotations, using Western Union's ticker service and charging only half the NYSE commission. The NYSE responded by inserting a clause in it 1900 contract with Western Union, forbidding the transmission of quotations to organizations and exchanges in New York City that competed with the NYSE. When the courts upheld an injunction, forbidding removal of the Western Union ticker from the Consolidated in 1909, the NYSE began to vigorously enforce its rule that prevented members from doing any business with a member of another exchange. This boycott reduced the Consolidated's business and led to a slow decline. According to Garvey (1944), the Consolidated had a membership of 1,225 about a third of whom were active. Following this action, there was a gradual decline of the Consolidated. This movement is witness in Figure 2, where there is a steady decline in seat prices on the Consolidated, while those on the NYSE rise. So confident was the NYSE that it abolished the Unlisted Department in 1910, admitting many of its securities to the official listing.

Yet, the NYSE was well aware that there remained a potential for a new rival exchange, particularly among the brokers on the Curb who usually did not compete with the NYSE but cooperated and only traded unlisted securities. The Curbstone brokers served as a complementary market, with members of the NYSE placing orders for unlisted stocks with the Curb brokers. One estimate put 75 percent of all transactions on the Curb before World War I as originating with NYSE members (Garvey, 1944). In a

pre-emptive move in 1906, the NYSE tried to list all important securities dealt on the Curb. Then following its successful assault on the Consolidated it listed many mining securities traded on the Curb, charging a commission for those stocks selling under $10 that was half the usual rate. The NYSE's objective was to prevent the Curb from organizing into a formal exchange. Nevertheless, the New York Curb Market was formed in 1911, but it submitted its constitution for approval to the NYSE. In its founding document, the Curb agreed to prohibit its members from dealing with brokers on the Consolidated.

Not only did, the NYSE weaken the Consolidated Exchange and secure the obeisance of the Curb, but it also seems to have gained ground on the regional exchanges, although the reasons for this development are opaque. At about the time of the outbreak of World War I, the share of the regionals of total value of the markets fell below 10 percent in Figure 1 while the NYSE's share rose about 90 percent. This increase in the concentration of trading, with activity moving to the NYSE, may reflect the long-term gradual improvement in information technology. Focusing on Baltimore, Boston, Chicago, Philadelphia, and Pittsburg, the largest markets, for which there is generally continuous data, Figure 3 shows the proportion of shares traded by these five markets and the NYSE and the proportion of the face value of bonds traded from 1900 to 1920. Although relative modest in size compared to the NYSE, there are pronounced declines in their market shares beginning around the First World War. As seen in Figure 4, which displays data on the total shares and total value of bonds, there is an absolute decline in 1914 (and in New York as well) with the closure of the markets and a recovery afterwards, which the NYSE dominates. Both Boston and Philadelphia seem to have

followed the lead of the NYSE and created Unlisted Departments to compete with outside brokers and then closed them shortly after the NYSE closed its Unlisted Department. If these were included in the totals Boston's and Philadelphia's shares traded would be largely flatter over time. It appears that these exchanges are losing ground to the NYSE. The low expectation for these exchanges is seen in Figure 5, which shows the prices of seats on each of these exchanges.

Figure 3
Regional Markets Proportion of Volume
Shares Traded and Face Value of Bonds
1900-1920

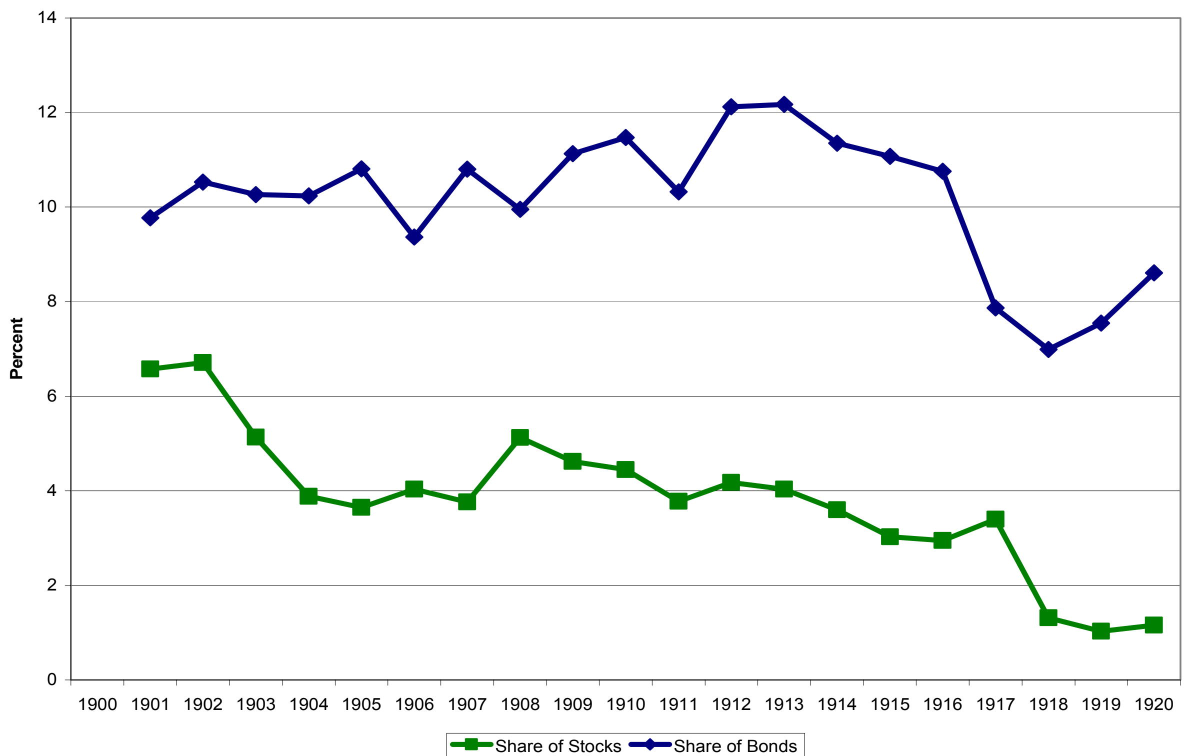


Figure 4
Activity on the Regional Exchanges
1900-1920

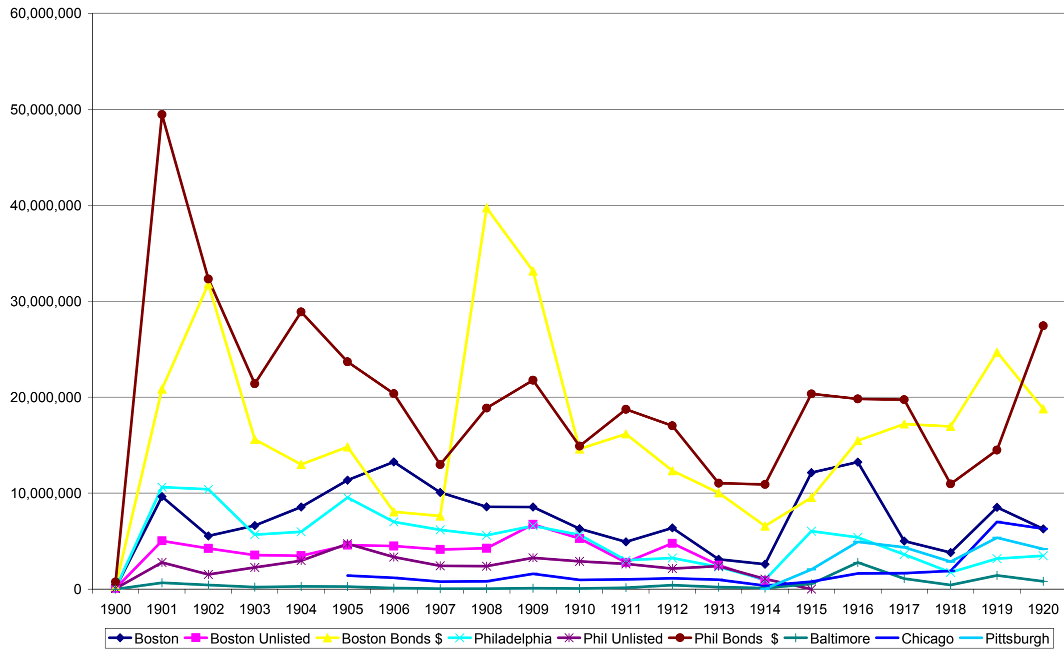
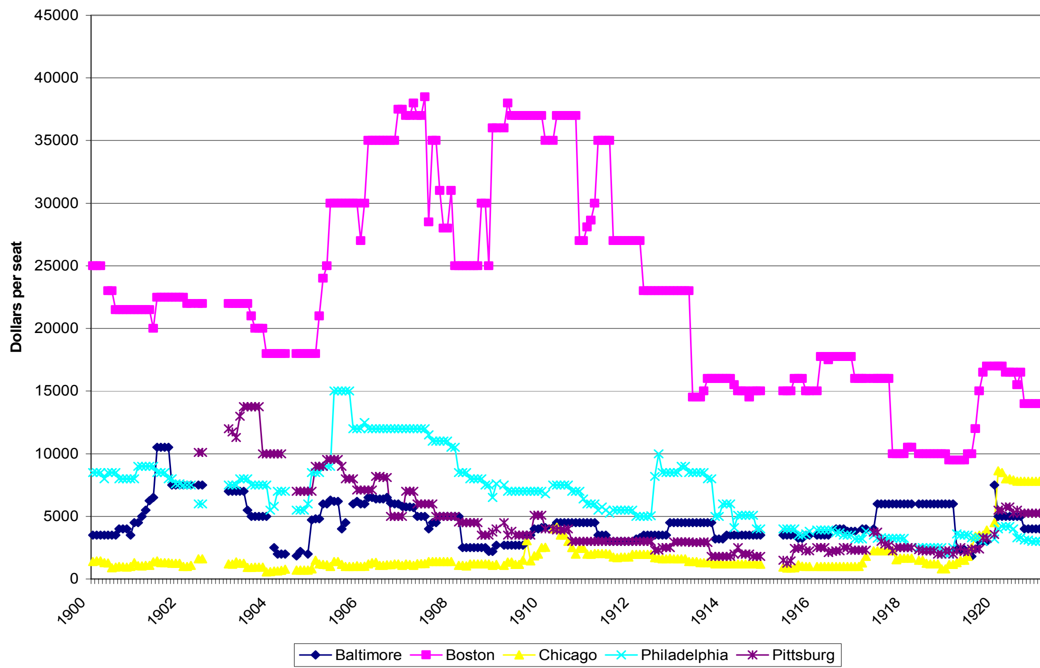


Figure 5
Seat Prices on Regional Exchanges
1900-1920



From the vantage point of the members of the NYSE, the exchange entered the 1920s in an unenviable position. The Consolidated Exchange had been weakened; in 1922 there was a trading scandal from a series of brokerage failures that implicated its president. It rapidly lost business to the NYSE and finally closed in 1926 (Sobel, 1972). The Curb market was tamed and a useful complement, while the regional were losing business. It appeared that the increasing liquidity of the New York market was attracting more transactions, leading to a further concentration of business. It looked like the NYSE would secure its dominant role in any future boom.

Fragmentation of Markets in the 1920s

Yet, the twenties proved an even greater challenge to the NYSE. In the boom years of the 1920s, the New York Stock Exchange found its position as the dominant securities market rapidly eroding. It had enjoyed an enviable position, earning substantial returns for its members who had privileged access to the floor. The value of their position was reflected in the fast rising price of a seat on the exchange. New technologies made processing orders and the dissemination of price information easier, increased order flow. Rising order flow should have served to lower bid-ask spreads, inducing further order flow and thus concentrating volume more in the NYSE.

Stock exchanges are believed to compete with one another to attract order flow. Economies of scale, where the costs of trading are a declining function of volume, lead the trading of securities to migrate to a single location.[1] Typically, the fragmentation of markets is explained by barriers that raise the costs of intermarket trading. Arnold et. al. (1999) claim that exchanges in the United States were not able to compete with one

[1] See Stigler (1961, 1964), Doede (1967) and Demsetz (1968).

another effectively until the 1940s because of communications and regulatory barriers. Cole (1944) identifies communications technology as the critical factor, citing the absence or high cost of telephones, telegraphs and teletypes as making face-to-face trading essential. Arnold et. al. believed that the key changes occurred in the 1920s and 1930s when stock tickers spread coast-to-coast, open-end teletype was introduced and AT&T slashed long distance rates. While these authors hold that these changes only began to integrate the markets and force exchanges to merge after World War II, these innovations were already having a profound impact in the 1920s.

While volume data for many exchanges is sketchy, the problems of the NYSE can be seen in relative aggregate value of American exchanges as measured by the prices of their seats. Given the forward-looking nature of asset prices, the price of seats assesses the future prospects of the exchanges. The bull market led to a general rise in the value of American stock exchanges. The aggregate value of the U.S. exchanges soared from $220 million in January 1927 to $372 million a year later, climbing to a peak of $912 million in September 1929 before collapsing. Although the NYSE increased in value from $192 to $687 million from January 1927 to September 1929, it steadily lost "market share" as seen in Figure 1. Averaging 89 percent of all exchanges' value in 1927, the NYSE's share of aggregate value dropped to an average of 76 percent in 1929. It is no surprise that many NYSE brokers were alarmed, as the New York Curb Exchange increased its share from 7 to 13 percent and the regionals from 5 to 10 percent over the same period.

In the bull market of the late 1920s, the NYSE's position as the dominant equity market was slowly eroding. Orders were rising because of climbing turnover and new

listings. However, the exchange's relatively tough listing standards limited new listing by the "high tech" firms of the day, which were more likely to appear on the New York Curb market and the regional exchanges. Although data on other exchanges are scarce for this period, Table 1 reveals the dimensions of the challenge faced by the NYSE. The New York Curb market was the NYSE's largest competitor but it also complemented the NYSE by taking listings that were below its standards.

Table 1
U.S. Exchange Listings and Volume
1925-1929

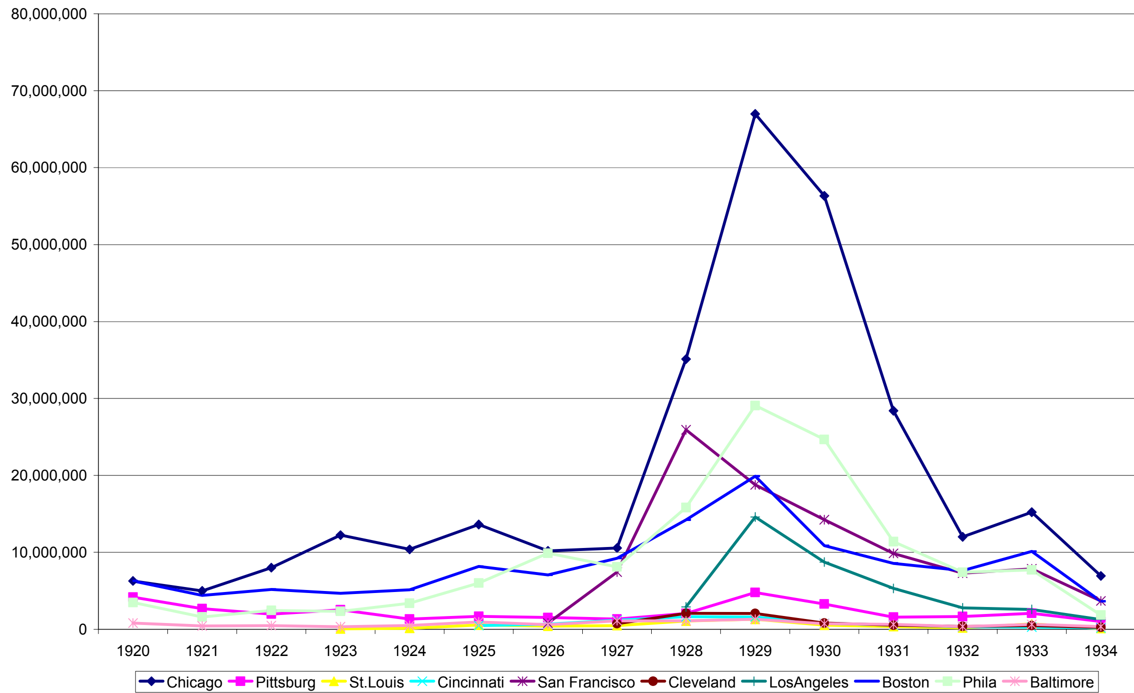
	1925	1926	1927	1928	1929
NYSE					
Listed Stocks	927	1043	1081	1097	1177
Number of Shares(millions)	433	492	585	654	757
Market Value (millions)	27,072	34,489	38,376	49,736	67,472
Annual Volume (millions)	452	449	576	921	1124
Turnover	1.04	0.91	0.98	1.41	1.48
NEW YORK CURB					
Annual Volume (millions)	88	116	125	236	474
Listed Stocks					534
Unlisted Stocks					1,758
CHICAGO					
Listed Stocks			237	238	426
Number of Shares(millions)			77.2	91.5	132
Market Value (millions)			5,200	6,069	9,328
Annual Volume (millions)	14.1	10.2	10.7	38.9	82.2
Turnover			0.14	0.43	0.62

Source: NYSE Report of the President, (1929), New York Curb Exchange (1929) Chicago Exchange (1930).

Chicago was one of the largest regional exchanges and the most agile. Before the boom, volume on the NYSE was five times greater than on the Curb and dwarfed activity on the Chicago exchange. Between 1927 and 1929, the NYSE's listings rose 12 percent, and turnover jumped from about 1.0 to 1.5. Yet, many more new issues were listed on

the Curb and its volume rose more quickly. The Chicago Exchange did not participate in the boom until 1928. It had only 237 stocks listed on January 1, 1927 and 238 a year later. But Chicago responded; and by January 1, 1929 there were 426 issues, increasing to 519 at the beginning of 1930. Turnover, which had been a mere 0.14 in 1927 rose to 0.62 in 1928. Figure 6 shows the annual volume of the leading exchanges, and Chicago tops the charts, leaving its peers behind after the mid-1920s.[2] Not surprisingly, its seat prices in Figure 7 move well above other regionals.

Figure 6
Volume on the Regional Exchanges



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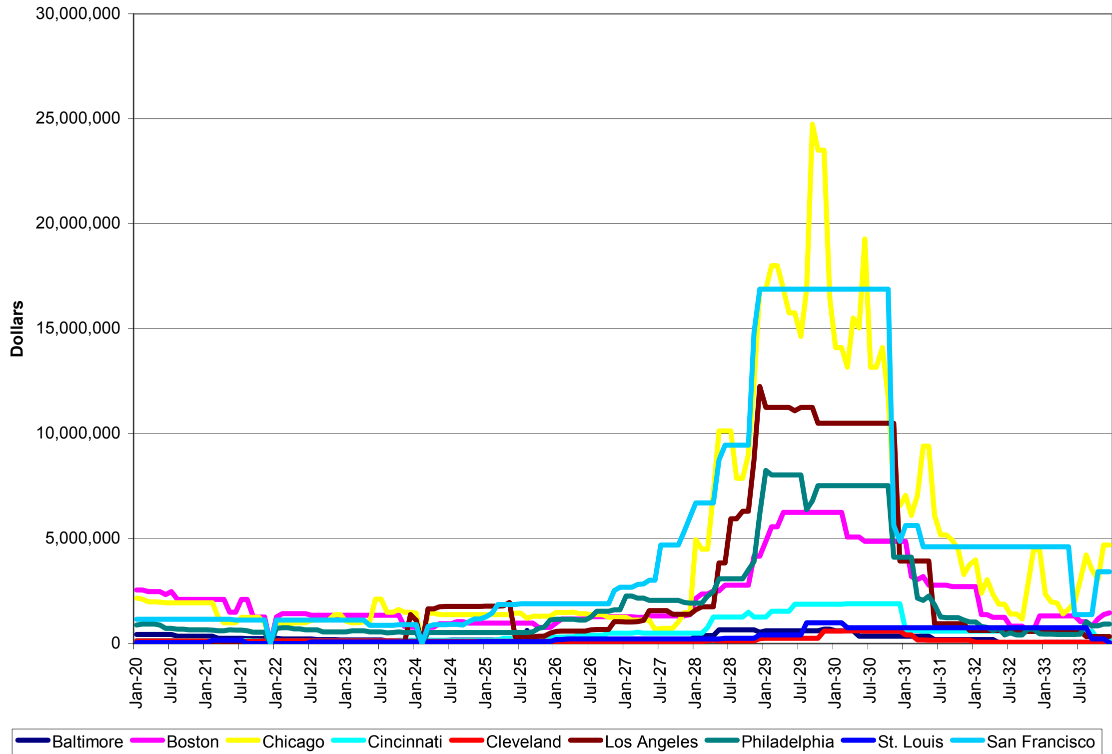
[2] The volumes here are annual aggregates obtained from weekly data in the Commercial and Financial Chronicle. This data appears to substantial underestimate annual volumes, which are officially but only occasionally reported by the exchanges themselves.

Figure 7
Seat Prices on Regional Exchanges



To accommodate the demand for new industries' listing, some exchanges opened subsidiaries. The San Francisco exchange created a curb exchange to trade securities that did not meet its listing standards in 1928. On June 4, 1928, the Los Angeles Curb Exchange was opened, sponsored by the Los Angeles Stock Exchange. The Los Angeles exchange created its own Curb to expand capacity to handle new stocks and securities that did not meet the exchange's requirements.[3] The parent exchange saw its total volume increase from 27.1 million in 1027 to 49.4 million in 1928, with the total volume for both Los Angeles exchanges reaching 67.8 million in 1928. (Commercial and Financial Chronicle Vol. 18, pp. 1647-1649. March 16, 1929). If added to the "big regional boards" in Figure 6, the curb volumes would substantially increase volume and

[3] To increase the speed of executing orders, a post system replaced the call system (Commercial and Financial Chronicle May 26, 1928, pp. 3229-3230.)

match seat price developments more closely. Aggressively pursuing new business, the Los Angeles exchange played a central role in the opening of the San Diego Stock Exchange in March 1929; and its members took half of the forty San Diego seats. (Commercial and Financial Chronicle Vol. 28, March 23, 1929, p. 1827).

These exchanges not only handled new regional business but poached trading from New York. Examining the volume reported in the Bank and Quotation Record for the Baltimore, Boston, Chicago, Cleveland, Detroit, Los Angeles, Philadelphia, Pittsburgh and San Francisco exchanges, Arnold et. al. (1998), found that there was a significant overlap of trading on the U.S. stock exchanges. In January 1929, 8.6% of the trading volume on the NYSE occurred in securities traded on regional exchanges, while the Curb had 27.7% of its volume in such securities. However, trading in New York stocks was much more important for the regional exchanges, where regional stocks only accounted for 63.7% of their trading volume, with NYSE and Curb market-listed securities representing the remainder. If the NYSE began to experience difficulties in processing orders, the regional exchanges would have been only be too happy to seize its business.

The NYSE had a multi-dimensional challenge. First, as a mutual, it found it difficult to expand its capacity. Thus, in the face of soaring demand, it had to decide what securities to list and trade. One response was to reallocate posts on the floor of the exchanges from bonds to stocks, with municipals gradually being pushed off the floor of the exchange and into the over-the-counter market. During the stock market boom of the 1920s, retail investors abandoned the bond market for the stock market, leaving the large traders to dominate bonds (Biais and Green, 2005). Accommodating the small traders

made for the NYSE, which desired to be the most liquid market. Yet, given a fixed number of brokers that fixed its peak capacity, a surge in trading could raise costs for customers, increasing the competitiveness of other exchanges. When these exchanges gained order flow, they attracted additional liquidity, threatening the hegemony of the NYSE. Davis, Neal and White (2005) document that surges in trading widened the bid-ask spread until the NYSE increased the number of seats by 25 percent, raising the capacity constraint.

The other dimension to the competitive challenge faced by the NYSE was stock listing. The NYSE had the strictest listing requirements compared to any other exchange. These were more precise and detailed than the regulations of any state blue sky law.[4] Even critics lauded them and eventually the rules formed the basis for the standards established by Schedule A of the 1933 Securities Act (Seligman, 1995). The NYSE's Committee on Stock List consisted of five members who had the power to receive and consider applications to list securities and to place on the list securities that it had approved without report and recommendation to the Governing Committee. Before a security could be listed on the NYSE, a firm had to file an application that described its capital structure, liabilities, property, officers, and provide five years of financial statements.[5] In addition, copies of its charter, by-laws, and resolutions were required plus

[4] A key problem for investors was determining the quality of securities---given the difficulty of transparency. The problem of the issuance of fraudulent securities in the nineteenth century led to state laws to protect investors, beginning with Kansas' Blue Sky Law in 1911, which required prior approval of the state bank commissioner before any security could be issue or sold in the state. In the next two years, twenty-three states adopted similar laws, and after the Supreme Court upheld the constitutionality of these laws in 1917, all states adopted them except for Nevada. However, these laws seem to have been largely ineffective as they did not police interstate sales, the laws had many exemptions and Seligman (1995) argued that only eight states appropriate sufficient funds to support a commission to carry out the necessary work to make the laws effective.

[5] In more detail, these requirements were to provide: (1) earnings for preceding five years, if available; (2) income account of recent date for at least one year, if available; (3) balance sheet of same date; (4) similar accountings for predecessor, constituent, subsidiary, owned or controlled companies; (5) corporations

the opinion of an outside legal counsel on the legality of the organization and its securities issues (Meeker, 1922). The purpose of these listing rules appears to have been to attract the small or liquidity traders and ensure that the NYSE would provide the deepest market. Discriminating in favor of large well-known issues where there was good information offered the less-well informed trader a less risky venue for investment. This position is evidenced by the attitude of the exchange in its exercise of its right to suspend or de-list securities. According to the testimony of H. K Pomeroy, president of the NYSE, before the Money Trust investigation, the exchange was concerned that if an issue was too small it would be a danger to its customers because "a small quantity of stock is more easily subject to manipulation than a large quantity." (quoted in Meeker, 1922). Thus, if a security's value plummeted, it might be quickly de-listed or suspended by the Committee on Stock List.

The NYSE appears to have tightened its standards during the boom. In 1923, more than 30 percent of NYSE listed firms were not required to provide shareholders with annual or quarterly financial statements, and only 242 of the 957 listed firms provided both. By 1933, all 1157 listed firms provided annual reports and over 60 percent also gave their shareholders quarterly reports. In addition, by 1933, 85 percent of the listed firms were audited by independent certified public accountants (Seligman, 1995).[6] However, there was no uniform system of financial accounting and the staff of

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consolidated within one year previous to date of application, income account and balance sheet of all companies merged and balance sheet of applying corporation; (6) if in hands of receiver within one year previous to date of application, (a) income account and balance sheet of receiver at time of discharge, and (b) balance sheet of company at close of receivership. (Meeker, p. 578 and see Davis, Neal and White, 2003, Appendix A).

[6]After the Crash, critics chastised the NYSE for its laxity. In the Pecora hearings, the Stock List committee explained that it did not make an independent investigation for securities of a firm already listed unless there was something suspicious in the application. Pecora contended that the Stock List Committee failed to investigate Ivar Kreuger's application for a 30 year debenture for his Kreuger and Toll Company in

the Stock List Committee often complained that corporations often hid as much as they revealed in their reports. (Seligman, 1995, pp. 48-49.)

In contrast, the New York Curb Exchange had weaker accounting and listing requirements. For an original listing, only one recent balance sheet and an income statement for the last three years were required. Smith (1937) found that information on subsidiaries, constituents, owned and controlled companies, dividends paid by subsidiaries was not required by the Curb. The rules for "unlisted stocks" were much weaker. These issues could be admitted on application of a member and the information for admission could be taken from financial manuals or "authoritative sources," such as Moody's (Seligman, 1995). Accounting requirements were imposed on unlisted issues, but the Curb did not have any contact with the issuer and they were inferior to those of the listed department. Statements presented to stockholders were to be certified by independent accountants and companies were to maintain a policy of furnishing at least annual reports of the balance sheets profit and lost statements. Not surprisingly, there were only 534 listed stocks on the Curb, but 1,758 unlisted in 1929 (New York Curb Exchange, 1929). According to Smith (1937), the accounting requirements of the San Francisco, Chicago, Philadelphia and Boston exchanges were similar to but weaker than those of the NYSE, requiring a statement of earnings for five years if available, one recent income account, balance sheet at ending date of income statement, and similar accounts for predecessor, constituent, subsidiary owned or controlled companies

With its relatively high standards, the flood of new securities of the market presented the NYSE with a difficult choice. The number of applications to list on the

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1929, where the right to substitute collateral for the the securities listed in the application. Kreuger substituted French debentures with less valuable Yugoslav ones, after approval. The head of the Stock List Committee testified that the exchange had been deceived. Seligman (1995, p. 47).

NYSE soared during the boom. There were 300 stock applications in 1927, 571 in 1928, and 759 in the first nine months of 1929. Very few of these were accepted. Assuming that de-listings were small, the small rise in the number of stocks traded on the exchange speaks to a very exclusive policy. In 1927 there were 927 stocks listed on the exchange, and by the end of the year there were 1,043 or an increase of 116 when there were 300 applications. For 1928, there was only an increase in 16, securities. And in 1929, 80 stocks more were list while there had been 759 applications, suggesting very strict limits being imposed (NYSE yearbooks. 1929-1930).

The NYSE felt constrained by several factors. As in the past, it was hesitant to list new technology industries. Its listing process served as a certification process and the absence of a strong record made these industries questionable candidates. The traditional method would have been to allow them to mature while being traded on the Curb or in regional markets before admitting them. However, the rival exchanges proved very adept at accommodating these new industries and their listings were quickly growing. Their markets showed improved liquidity, attracting additional liquidity. Whether more new issues could have been accommodated by the NYSE is uncertain because of the capacity constraint. By the mid-1920s, it became apparent that the exchange found it increasingly difficult to process the flow of orders for its listed stocks on peak days, with bid-ask spreads widening significantly (Davis, Neal and White, 2005).

This development, in turn, facilitated the growth of alternative exchanges, which blossomed in the late 1920s. The value of these exchanges, reflecting their prospects for garnering more volume in the future, grew so quickly that the share of the NYSE's value relative to all exchanges plummeted. These exchanges appear to have been less

concerned about diluting their members' seat values with the Chicago and Detroit exchanges doubling the number of seats and the Los Angeles and San Francisco exchanges creating new curb markets. In New York, two new exchanges were formed, the Securities Market of New York Produce Exchange in 1928 (until 1941) and the New York Real Estate Securities Exchange (1929-1935). These exchanges attempted to create organized markets for securities not traded on either the NYSE or the Curb, with the former providing a public market for other-the-counter securities (Garvey, 1944).

The crash brought a halt to the decline of the NYSE's position but it did not fully recover its position by the end of 1933. The SEC called a halt to the competition between exchanges. The playing field was leveled in the wake of the crash of 1929 when regulators effectively raised the listing standards of the regional exchanges to the level of the NYSE. Firms that could to list on the NYSE moved to New York, and those that could not meet the new standards migrated to the OTC market. New entry was effectively barred, weakening competition and gradually returning the NYSE to its former position of dominance.

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