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The Evolution Of The Philadelphia Stock Exchange

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BY JOHN P. CASKEY

The Philadelphia Stock Exchange (PHLX), the nation's oldest, has survived alongside much larger and more liquid securities markets. How has it managed to do so? In this article, John Caskey explains some of the factors that account for the PHLX's long life and how their importance has varied over time. Although Caskey focuses on the evolution of the PHLX, he also profiles some of the seismic shifts in U.S. securities markets in recent decades and illuminates the role of the largely overlooked regional stock exchanges.

Conventional wisdom holds that securities trading will shift to the most liquid markets. After all, all else being equal, people buying a security would like to direct their orders to the market with the largest number of sellers, and people selling a security would like to direct their orders to the market with the largest number of buyers. This maximizes the chances that buyers and sellers get the best price possible for their trades and that they will complete their trades quickly.

Market professionals have long acknowledged this effect and have succinctly captured it in the common phrase "liquidity attracts liquidity." This point has also been recognized by academic economists, who refer to it as an "order flow externality," or more generally, a "network externality."[1] It is an externality because when one person directs an order to a particular market, it benefits other people trading in the same market.

Over most of its long life, the Philadelphia Stock Exchange (PHLX) has survived alongside much larger and more liquid securities markets. This article explains how it managed to do so despite order flow externalities.[2] In brief, a number of factors played a role, including communication costs, membership standards on dominant exchanges, incentives to avoid fixed trading commissions, a differentiation of trading technologies, an unwillingness to permit markets to compete in the trading of equity options, and the development of new products that were not traded on other markets.

The importance of these factors has varied over time. While focusing on the evolution of the PHLX, in the background, I will profile some of the seismic shifts in U.S. securities markets in recent decades and illuminate the role of the largely overlooked regional stock exchanges.

PRE-1960: COMMUNICATION COSTS AND NYSE MEMBERSHIP AND LISTING STANDARDS

The Philadelphia Stock Exchange dates its founding to 1790, making it the country's oldest stock exchange.[3] Although the New York Stock Exchange (NYSE) was founded two years later, it soon surpassed all other stock exchanges in trading volume. By the late 1830s, for example, the reported share volume on the PHLX was about 14 percent of that on the NYSE. Undoubtedly this reflected the fact that by the 1830s, New York City had become the major center for commerce.

Over the 19th century, an increasing share of the trading in financial securities, especially for the largest

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[1] The book by Larry Harris contains an excellent nontechnical discussion of order flow externalities as well as competition among centers for trading securities.

[2] This article draws heavily on my working paper, which contains a much more detailed and more fully documented discussion of the evolution of the PHLX.

[3] A stock exchange is a place where buyers and sellers meet to trade securities (see the Glossary on page 28).

firms or public projects, migrated to the NYSE because of the liquidity and depth of that market. But relatively high communication costs enabled the regional exchanges to compete in the first half of the century. Philadelphians could not quickly discover the prices of securities trading in New York, nor could they quickly transmit orders to trade to that city. In other words, communication costs offset the tendency for the trading of securities to concentrate in one market center, and regional securities exchanges flourished.

The development of the telegraph in the 1850s and the ticker tape in the 1870s began to change this situation. The Philadelphia Stock Exchange, and other regional exchanges, responded by increasingly listing and trading the securities of firms that could not meet the listing requirements of the NYSE, such as an exchange-specified minimum aggregate market value of publicly held shares or an exchange-specified minimum number of public shareholders. The firms that were unable to meet the NYSE listing requirements tended to be younger and smaller firms little known outside their local markets. In addition, many states exempted any company listed on an exchange, including the regional exchanges, from their "blue sky" laws. These laws offered some protection against fraud by requiring that securities sold within a state be registered with that state. The exemption created a strong incentive for firms that were unable to meet NYSE listing standards but that did not want to incur the costs of registering their securities in multiple states to list on a regional exchange.

In the 1920s, the volume of trading on the PHLX, as on many other regional exchanges, increased dramatically. In the subsequent stock market crash and economic depression, many of the firms listed on the regional exchanges failed or were absorbed in mergers, and trading volume fell precipitously. In addition, states changed their blue sky laws to limit exemptions for securities listed on regional exchanges, and the newly created Securities and Exchange Commission (SEC) required the exchanges to impose stricter listing requirements. These developments greatly decreased listings and trading volume on the regional exchanges. Gradually, the over-the-counter (OTC) market (see the Glossary) replaced the regional exchanges as the location where newly issued equities would trade and become "seasoned" before the issuing firm might seek a listing on the NYSE or the American Stock Exchange (AMEX).

As the regional exchanges lost listings and trading volume, they responded by starting to trade securities listed on the NYSE and the AMEX. In 1931, for example, the PHLX allowed trading to begin in any security listed on the NYSE or the AMEX. Since these securities were generally not listed on the PHLX, this was called "unlisted" trading. By 1961, only 1.2 percent of the dollar volume of stock trading on the PHLX came from the 88 stocks that had sole listings on that exchange (SEC, 1963, Table VIII-76). The vast majority of stocks traded on the PHLX were ones listed on the NYSE.

As the PHLX evolved into an exchange that mainly traded equities listed on the NYSE, it also evolved to resemble more closely a dealer market rather than an auction market. In most cases, the only person buying or selling a particular stock on the floor of the exchange was the designated specialist (see the Glossary). There were no competing market makers on the floor, and it was rare for brokers representing buy and sell orders to interact directly. The counterparty to nearly all trades was the specialist. This was true for the trading of unlisted securities on the other regional exchanges as well (SEC, 1963, p. 932).

Over the 1950s and into the 1960s, brokers directed orders to the PHLX rather than to the more liquid NYSE for a variety of reasons. For one, specialists on the PHLX would generally set their prices to within $0.125 of the price of the last reported transaction on the NYSE, thereby guaranteeing brokers that their prices were nearly as good, and sometimes as good, as those on the NYSE. This practice was common on the regional exchanges. In addition, small and medium-size brokerage firms with their headquarters in the mid-Atlantic region were often members of the PHLX but not the NYSE, since membership in the PHLX required far less capital. If such firms received an order to trade a security listed on the NYSE and they directed it to the NYSE for execution, they would have to pay the "public" fixed commission paid by all nonmembers. Alternatively, if such firms executed the order on the PHLX, they could keep most of the public commission paid by their customers, paying only a minor member commission to the PHLX.

Firms that were sole members of the PHLX would direct some

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orders to the NYSE, either because the trade was too large to be executed quickly on the PHLX or because the security was not traded on the PHLX. Since a member's cost of executing an order on the NYSE was well below the minimum public commission, members competed aggressively to attract orders from nonmembers. The NYSE did not permit its members to discount public commissions or offer cash rebates to compete in attracting orders; however, the members could reward nonmember brokerage firms that were members of a regional exchange by sending them orders to execute on the regional exchange. Such orders were referred to as reciprocal order flow, and they accounted for a significant share of the trades directed to the PHLX and other regional exchanges during the 1950s and 1960s. In this way, the brokerage firm that was a sole member of a regional exchange could indirectly earn public commissions for handling orders that it directed to an NYSE member.

With the decline of regional brokerage firms and the rise of the OTC market, between 1930 and 1960 most of the regional exchanges saw a fairly consistent decline in their market share, measured as a percentage of the value of equities traded on all exchanges. Many regional exchanges closed or were absorbed by other exchanges during this era. The PHLX managed to survive, but by the 1950s, its market share in exchange-traded equities hovered fairly consistently around 1 percent.[4] This is despite its absorption of the Baltimore Stock Exchange in 1949 and the Washington, D.C. Stock Exchange in 1953.

[4] Except where specifically indicated otherwise, I measure an exchange's market share using the dollar volume of trading as a percentage of overall exchange-based trading in dollars.

1960-74: A NICHE CREATED BY FIXED COMMISSIONS

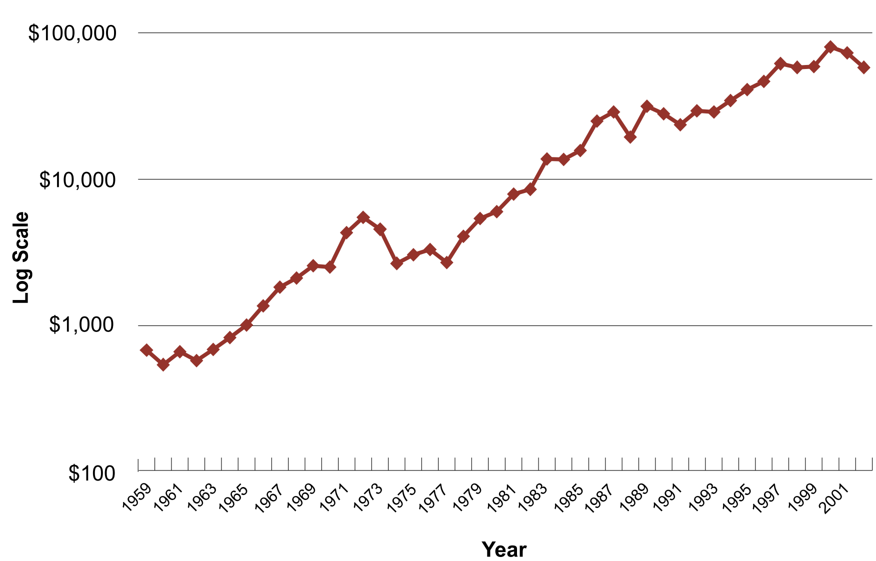
The dollar volume of shares traded on the PHLX grew rapidly between 1960 and 1972 (Figure 1).[5] By 1972, the market share of the PHLX in exchange-traded equities had risen to 2.5 percent. This rebound for the PHLX was largely due to its ability to exploit opportunities created by the fixed commission rules.

As noted earlier, the NYSE and the regional exchanges specified minimum public commissions with no volume discounts. NYSE rules prevented cash rebates by members to nonmembers, but members could share commissions with other members. In the early 1960s, the regional exchanges had similar rules. At the same time, the Investment Company Act of 1940 placed a cap on the commissions that mutual funds could pay retail sales organizations. Mutual funds often wished to exceed this cap in order to sweeten the incentive for retail brokerage firms to sell shares in their funds. They found several ways to evade the cap. If a firm that sold shares in the mutual fund was a member of the NYSE, the mutual fund could reward it by asking it to execute trades on its behalf, paying the firm the fixed commission for this service. If the mutual fund preferred to use its traditional NYSE-member firm for executing trades, it could direct that firm to share its trading commission with another NYSE-member firm that the

[5] The data for all of the figures come from the annual reports of the Philadelphia Stock Exchange. Figures 1 and 2 present the data using log scaling, also called ratio scaling, since this allows a clearer picture of percentage changes. For example, an increase in volume from $100 to $1,000 represents the same percentage change as an increase from $1,000 to $10,000.

FIGURE 1

Volume of PHLX Equity Trades in Millions of Dollars



mutual fund wished to reward. This was known as a give-up.

But many small brokerage firms that sold shares in mutual funds to retail clients were not members of the NYSE. If they were members of a regional exchange, there was a way to reward them for these sales. Assuming the firm that traditionally executed trades for the mutual fund was not only a member of the NYSE but also a member of the regional exchange in which the smaller brokerage firm was a member, the mutual fund could ask its brokerage firm to execute some trades on that regional exchange and share commissions with the smaller firm. In the early 1960s, such arrangements accounted for a substantial share of the order flow on regional exchanges (SEC, 1963, p. 316-17). The regional exchanges could handle the associated large block trades because the trades were generally pre-arranged off the floor of the exchange.

In 1965, to attract even more business based on mutual fund-directed give-ups, the PHLX changed its rules to permit commissions to be shared with brokerage firms that were not members of the PHLX (1965 PHLX Annual Report). Some small brokerage firms that sold shares in mutual funds were not members of any exchange, so mutual funds could direct trading orders to the PHLX in order to reward them.

The New York Stock Exchange was, of course, unhappy to see trades that would normally be executed on its floor diverted to regional exchanges. It lobbied the SEC to halt all cash give-ups. The SEC agreed with the NYSE that give-ups could undermine fixed trading commissions and the cap on mutual fund sales commissions. In December 1968, all commission splitting ended when the exchanges agreed to ban the practice under pressure from the SEC.

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The loss of institutional business associated with the end of give-ups could have been a major blow to the PHLX. It was not, however, because the PHLX instituted two new measures to attract institutional trades. In the 1960s, the NYSE did not allow institutions active in a wide range of activities to become members of the exchange. Membership was open only to entities whose *primary* purpose was serving the public as brokers or market makers. In addition, the NYSE did not permit foreign-owned securities firms to become members. This forced large foreign banks, many of which actively traded American securities on behalf of clients, to pay the public commission to trade on the NYSE.

Prior to 1967, the PHLX had similar policies. However, beginning in 1967, the PHLX allowed securities firms that were owned by mutual fund companies, insurance companies, and foreign-owned financial institutions to become members.[6] By early 1971, 39 such institutionally affiliated securities firms had joined the PHLX and began to trade on behalf of the institutions that owned them.[7] The institutional investors still had to pay the minimum public commission, but they paid it to firms owned by the institutions themselves. In this way, the institutions effectively received a discount from public commissions. Not surprisingly, this strategy was very successful for the PHLX. As reported in the PHLX *Annual Report* for 1969, 37 percent of its stock trading volume came from institutional trades in 1968 and 45 percent in 1969.[8]

Trading on the PHLX boomed between the early 1960s and 1972 as the exchange employed these means for institutional investors to evade caps on mutual fund sales commissions and minimum public trading commissions. But by the late 1960s, many influential policymakers and policy analysts had become very critical of exchange-specified minimum trading commissions, and they advocated price liberalization. In April 1971, the SEC approved negotiated commission rates on orders above $500,000. This led institutions to redirect some of their large trades to the NYSE, since they could negotiate discounted commissions. With this change, the PHLX's market share fell slightly between 1972 and 1974.

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[6] See the book by Joel Seligman.

[7] See the Elkins Wetherill reference.

[8] At this time, there was another interesting development in the history of the PHLX. In December 1968, in response to a fiscal crisis, Philadelphia imposed a $0.05 per share stock transfer tax for all transactions on the PHLX. On January 2, 1969, the PHLX moved its trading floor to an office building just across the street from the city boundary to avoid the tax. In February 1969, a court ruled that the tax was illegal, and the PHLX moved its trading floor back to its headquarters in the city.

AFTER 1975: SURVIVAL BY DIFFERENTIATION, INNOVATION, AND UNIQUE OPTION LISTINGS

Equities. In May 1975, all of the exchanges eliminated minimum public trading commissions. This led to a rapid fall in commissions, especially for institutions with large trading orders. Institutions that had been directing some of their trades to the PHLX to evade the fixed commissions began to return to the NYSE because of its superior liquidity and price competition.

The deregulation of brokerage commissions also led to the rise of "discount" brokerage firms that charged low fees for providing basic retail trading services. Since they charged low commissions for handling the trades, they had to execute these trades at a very low cost in order to make a profit. Since the profit on each trade was small, they sought to handle a high volume of retail trades. The discount brokers therefore valued fast and reliable executions of their trades more than they valued a time-consuming search for the best possible price. Discount brokers argued that, in most cases, their customers gained more from low commissions than they would from the slightly improved prices they might get from slower executions.

The PHLX responded to the changes that diminished its order flow from institutions by developing systems to meet the needs of the discount brokers. In other words, it hoped to overcome the order flow externality by offering a trading system that was intentionally differentiated from that of the NYSE and designed to better meet the needs of a subset of traders.

To attract the order flow from the emerging discount brokers, the PHLX had to offer automated, reliable executions at prices close to the best prices available anywhere. To do so, in 1975 the PHLX introduced a computerized order-handling and execution system called PACE. PACE would route a retail order to the proper specialist. Orders that met predetermined criteria could be executed automatically by the specialist. The specialist would frequently guarantee that the price of the trade would match that of the best bid or offer quoted on any other exchange. As they bought and sold shares, the specialists hoped to profit from the spread between the bid and ask prices.

Matching the best quoted bid or offer shown on other exchanges did not necessarily mean that orders sent to a PHLX specialist received as favorable a price as they might have, had the order gone to the NYSE. Often, competitive bidding on the floor of the NYSE would lead to price improvements over the best quoted price. Such price improvements were infrequent on the regional exchanges, since their specialists rarely faced competition on their floors.

Partly in response to the automation of retail order flow by several of the regional exchanges and third market dealers, the NYSE also moved to automate much of its retail order flow. But for many years its system had built-in delays to allow competing bids or offers from the floor of the exchange. PACE did not have this feature, making its system faster. PACE succeeded in attracting a new flow of retail orders to the PHLX, but the exchange continued to lose market share as large institutional orders returned to the NYSE following the 1975 deregulation of fixed trading commissions.

As noted earlier, specialists on the regional exchanges and OTC dealers competed with each other to attract retail order flow since they could profit from the spread between the bid and ask price. Not surprisingly, in competing for this order flow, specialists on the regional exchanges and OTC dealers began to offer financial incentives to brokerage firms that were willing to direct orders to them. This became known as payment for order flow. It is not clear who initiated the practice and when, but by the mid-1980s, there were reports that the practice was widespread.[9] Discount brokers, who were competing with each other to charge the lowest trading commission, were particularly likely to seek payments for order flow. These

[9] See the article by Jane Sasseen, and *Securities Week*, February 17, 1986.

payments enabled them to cover their operating costs by means other than commissions. Many people took a dim view of payment for order flow out of concern that it could lead brokers to direct trades on the basis of the payments rather than their clients' best interests.

Over most of the 1980s and 1990s, the PHLX saw the volume of its equity trading grow, as did all stock exchanges in the generally booming markets. But for the management of the PHLX and its traders, there were also worrying trends. During this era, the PHLX slowly lost market share. In 1980, the PHLX handled 1.6 percent of the dollar value of stocks traded on exchanges. By 1999, this had declined to 0.65 percent. In addition, the per-trade profit margins of the specialists declined as competitive pressures forced them to pay to attract orders. Plus spreads had narrowed because of the move to pricing stocks to the penny, rather than in fractions of a dollar, by 2001. Not only did the PHLX specialists compete with specialists on other exchanges for orders, but in late 2001, the PHLX also permitted more than one specialist to be designated for a stock, leading to potential competition within the exchange for orders.

Options. By 2001, however, the PHLX was trading more than just stocks. In June 1975, the PHLX began to trade options on equities.[10] It was the third exchange to do so. The Chicago Board Options Exchange (CBOE) had pioneered this path when it began to trade stock options in April 1973. In January 1975, the American Stock Exchange became the second exchange to trade equity options. It was followed shortly afterward by the PHLX and the Pacific Stock Exchange. These later entrants could overcome the order flow externality because the exchanges generally did not trade options traded on another exchange.

When the PHLX introduced options trading, it started on a limited basis and expanded slowly over time. The main reason that the PHLX was slow to add new equity options was that the CBOE and the AMEX had already listed the most desirable options by the time the PHLX began to look for listings. Prior to 1977, although there was no rule that prevented the exchanges from doing so, the exchanges rarely listed options contracts that were already traded on another exchange.

Over most of the 1980s and 1990s, the PHLX saw the volume of its equity trading grow, as did all stock exchanges in the generally booming markets.

As I discuss below, people later charged that the options exchanges did not list each other's options because of an implicit agreement to limit competition among the exchanges. In addition, the SEC and the exchanges expressed concerns about multiple listing of options contracts, since, unlike the equity exchanges, the options exchanges were not "linked": that is, there was no organized system to tell traders instantly on one exchange about the quoted bid and offer prices and volumes on other exchanges. Furthermore, there was no process to ensure that an order directed to one exchange would not trade at a price less favorable than the quote on another exchange. The SEC worried that public investors might be taken advantage of in such "fragmented" markets.

In 1977, the SEC conveyed its concerns about market fragmentation by placing a moratorium on the listing of new equity options while it studied the options market. In June 1980, the SEC initiated a lottery for allocating the right to trade any new options on equities. Under this system, the exchanges would let the SEC know which equity options they wished to list. The SEC then used a lottery to allocate the exclusive right to trade these options to specific exchanges.

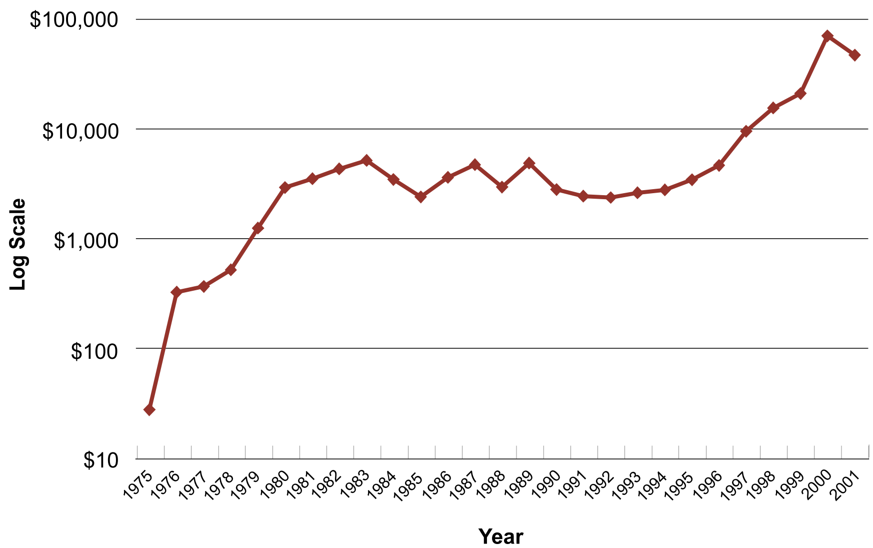
Under the SEC lottery system, the flow of option trades to the exchanges depended on their ability to attract business for the options they had listed prior to the moratorium of 1977 and their luck in obtaining the right to list desirable equity options through the lottery. By these measures, the PHLX did well. The market share that the PHLX had in equity options hovered around 3 percent between 1976 and 1978. During this period, the CBOE, with its first-mover advantage, had over 70 percent of the market. The AMEX's share hovered around 20 percent.

But the rapid growth in equity option trades on the PHLX between 1978 and 1983 led to a tripling of its market share (Figure 2). By 1983, it had almost 9 percent of the overall volume of equity option trades on exchanges. This created bustling activity on the options floor because unlike the equity floor, it was active with market makers trading for their own accounts alongside brokers and specialists. In addition, in 1983, the PHLX began to trade options on stock indexes. Over time, these would become a significant part of its options business.

[10] A stock option gives the purchaser the right, but not the obligation, to purchase or sell a stock at a specified price on or before a specified date.

FIGURE 2

Volume of PHLX Equity Options Trades in Millions of Dollars



Reportedly, a substantial share of option orders in the 1980s came from individuals and institutions speculating on possible takeover targets. The PHLX, along with other options exchanges, experienced a slump in the volume of options trading between 1990 and 1992. This is commonly attributed to the end of the corporate takeover era associated with the 1990 failure of the investment bank Drexel Burnham and the creation of more effective corporate takeover defenses.

Beginning in 1996, there was a renewed boom in equity option trading, much of which represented speculation or hedging in the stocks of high-flying technology companies. Since many of these firms were relatively young, the CBOE and the AMEX had not generally listed options on their stocks prior to the entry of the PHLX into options trading. Thus, the PHLX had almost as substantial a listing of options on the stocks of these firms as did any other exchange. When the boom began, the PHLX was well positioned to participate. Whether measured in absolute trading volume or market share, between 1996 and 1998, the PHLX saw rapid growth in trading on its equity options floor.

Throughout the 1980s and into the 1990s, the system of listing an equity option on only one exchange was constantly threatened. While it held the lotteries, the SEC pressured the options exchanges to create a linkage system. But the options exchanges failed to do so. Frustrated, the SEC decided to end the exchanges' monopolies in options listings.

The SEC took an incremental approach. In 1985, it decided that the right to trade options on OTC stocks would not be allocated through a lottery. These options could be listed on multiple exchanges. In January 1990, the SEC ended its lottery system for allocating options on exchange-listed stocks. The SEC ruled that henceforth any options listed for the first time on an exchange could be listed on another exchange.

These changes in policy had only modest effects. By the mid-1990s all restrictions on multiple listings had been lifted, but the exchanges still chose not to list options that had been allocated to other exchanges under the lottery system. In mid-1999, about 60 percent of equity options still traded on only one exchange, and these included most of the more active options.[11] The PHLX, for example, was the only exchange to trade options in Dell computers prior to late 1999. This was an extremely active option — it alone accounted for 30 to 50 percent of the volume in equity options on the PHLX during much of 1999.

By 1999, two developments finally led to the breakdown of the practice of listing equity options contracts on only one exchange. First, in 1998, several large securities firms announced that they were investing in the creation of an all-electronic options exchange, to be known as the International Securities Exchange (ISE). The backers of the ISE also announced that this exchange would trade the most active options contracts traded on other exchanges. In other words, it planned to break the monopolies that the exchanges had enjoyed in many options listings. Second, the SEC and the U.S. Justice Department charged that there was a "gentleman's agreement" among the exchanges not to compete in equity options, and they filed lawsuits against the exchanges.

By late 1999, the litigation threat and the threat by the ISE to list other exchanges' options contracts

[11] *Financial Times*, August 19, 1999, p. 28.

finally had the result the SEC desired. In August 1999, the CBOE and AMEX broke the alleged gentleman's agreement when they began to trade options in Dell computers. They immediately attracted a significant share of the Dell order flow away from the PHLX. Not surprisingly, the PHLX retaliated by listing several of the most actively traded options listed on the CBOE and AMEX.[12]

By early 2000, the four options exchanges (CBOE, AMEX, PHLX, and Pacific Stock Exchange [PSE]) were increasingly listing the options contracts that were active on other exchanges. This competition became even more heated when the ISE options exchange opened for business in May 2000. As its backers had pledged, it listed the most active options contracts from other exchanges.

Many people had argued that multiple listing of options contracts might be particularly damaging to the PHLX, since it had a relatively small market share and depended heavily on a small number of active options contracts. Contrary to these concerns, the move to multiple listings benefited the PHLX in the near term, partly because of the way the PHLX managed it. When the CBOE and the AMEX began to trade the Dell options that were the backbone of the PHLX in the late 1990s, the PHLX immediately retaliated by permitting several of its specialists to begin trading some of the options contracts from other exchanges.

After that, however, the PHLX proceeded at a more deliberate pace. The exchange would announce plans to trade an options contract active on another exchange. But rather than allocating the specialist position to one of the firms already active on the PHLX, it would offer it to a large specialist operation that had not previously traded on the PHLX. In this way, the PHLX used the opportunity to list desirable new options contracts to entice the largest and best capitalized specialist firms to become active on the PHLX. Since these firms could attract a high volume of order flow, this brought new orders to the floor of the PHLX.

Although the PHLX demonstrated foresight in moving relatively early to trade equity options, it cannot claim to have pioneered this development.

As the exchanges competed for each other's order flow, it is perhaps not surprising that the specialists on the various options exchanges began to pay for order flow.[13] In July 2000, the CBOE escalated this competition by instituting a system that effectively taxed all its specialists and market makers to raise funds for order flow payments. In August 2000, the PHLX retaliated, instituting a system similar to that of the CBOE but with even higher fees on its specialists and market makers and higher order flow payments. This policy, along with the increasing presence of large specialist firms trading on the PHLX, helped feed a boom in PHLX order flow in late 2000 and early 2001. Between mid 2001 and late 2003, the CBOE, the PHLX, and the AMEX stopped their exchange-sponsored payment for order flow systems. But they re-instituted them as they lost market share to the PSE and the ISE, which had maintained their systems.

Currency Options. Although the PHLX demonstrated foresight in moving relatively early to trade equity options, it cannot claim to have pioneered this development. It simply copied the innovation that the CBOE had launched. In the case of currency options, the PHLX was the innovator.

In the late 1970s, there was a huge spot market in foreign exchange and active over-the-counter forward and exchange-based futures markets. There was no organized market for foreign exchange options. A staff member of the PHLX proposed that the PHLX initiate trading options on foreign currencies. Following his suggestion, the PHLX started a long and complicated process to obtain approval from the SEC.

The PHLX opened its currency options trading floor in December 1982. Trading volume started small and grew slowly but steadily. Orders came from small-scale speculators and from nonfinancial and financial businesses, many based in Europe, that used the exchange to hedge risks. In the first year of trading, the product appeared to be headed for success.[14]

As the PHLX worked to promote its fledgling currency options market, large commercial banks and investment banks increasingly began to write tailor-made currency options contracts for their corporate customers who were looking for better ways

[12] *New York Times*, August 24, 1999, p. C3.

[13] *Wall Street Letter*, October 25, 1999.

[14] *Financial Times*, October 6, 1983, p. I16.

to hedge exchange-rate risks.[15] The banks hedged their own net risk exposures by taking appropriate positions in the spot market or futures market, by trading currency options with each other in a developing OTC market, and by trading options on the PHLX. When the banks traded on the PHLX, their orders were generally far larger than the specialists and market makers could handle. The banks would therefore use a broker to find another institution, generally another bank, willing to take the other side of the trade. Once the two parties agreed to the terms of the trade, they would execute it on the floor of the exchange. This practice enabled the exchange to handle large trades smoothly, and it contributed to a rapid growth in trading volume between 1983 and 1987 (Figure 3).

By mid-1984, the PHLX had become the dominant trading center for what could become a very large market. Financial officers at large and internationally active firms that never knew Philadelphia had a stock exchange were now acutely aware of its presence.[16] The success the PHLX was having with currency options was not lost on other exchanges, several of which also began to trade them. The CBOE, for example, began to trade currency options two years after the PHLX initiated the market. But it could never overcome Philadelphia's first-mover advantage, and few traders could see any reason to divert order flow from the PHLX. In August 1987, the CBOE withdrew from the business.

After several years of rapid growth, the volume of trades on the PHLX leveled off between 1987 and 1990. This was primarily due to the growth of the over-the-counter market and the creation of exchange-rate bands for the European currencies that belonged to the European Monetary System. The reduced volatility of these currencies relative to each other reduced the demand to hedge currency risks and opportunities for speculation. Nevertheless, this was a halcyon era for many PHLX currency options traders, who reaped substantial profits from market-making and speculating on the floor of the exchange that dominated currency options. Growth in trading volume resumed with the turmoil among European exchange rates of the early 1990s.[17]

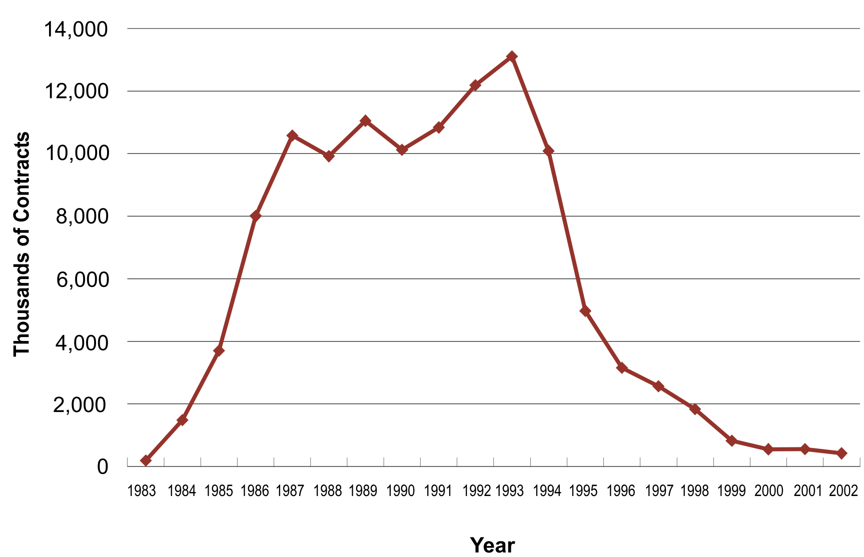
After the peak in 1993, the volume of trading in currency options on the PHLX started a precipitous decline. By 2000, trading volume was so low that currency options represented an insignificant part of the business of the exchange. This decline was mainly caused by the continued growth of the OTC market. Many corporations preferred to hedge in the OTC market, since banks would tailor contracts to their specific needs. In addition, the major international banks that had provided much of the order flow to the PHLX began to deal exclusively in the OTC market. By the early 1990s, this market was well developed, with numerous very well-capitalized market makers. As the market had developed in the mid-1980s, the options contracts that banks traded among each other to hedge their net exposures became standardized, adding to their liquidity.[18]

LESSONS FOR THE FUTURE

This brief account of the evolution of the PHLX illustrates

FIGURE 3

Volume of PHLX Currency Options Traded



[15] *American Banker,* January 24, 1984, p. 1.

[16] *Financial Times*, October 2, 1984, p. I13.

[17] *Philadelphia Inquirer*, September 18, 1992, p. A16.

[18] *Financial Times*, December 11, 1985, p. III6. In a report issued by the International Monetary Fund, Garry Schinasi and co-authors (2000, p. 64) describe the forces that led the OTC market to displace much of the exchange-traded derivatives market.

two basic points that should be kept in mind as financial markets continue to evolve and policymakers face difficult decisions about setting or altering regulatory parameters. First, competition among financial institutions can promote beneficial changes. With the fall in communication costs in the mid-19th century, stock exchanges in different geographic regions began to compete with each other. At various points, the PHLX successfully competed for order flow against the much larger NYSE by listing firms unable to list on the NYSE, by opening membership to brokerage firms that could not afford membership in the NYSE, by altering its rules to attract trades from institutions seeking to reward brokerage firms for mutual fund sales or to avoid the high fixed commissions that prevailed prior to 1975, and by offering fast automated executions for discount brokers. The PHLX also competed with larger exchanges by creating a new product, currency options, that enabled firms to hedge unwanted risks.

Although some of these competitive steps, such as the lax listing standards of the 1920s, may have had adverse social implications, most were probably beneficial to the broader public interest, for they led to lower trading commissions, faster trading technologies, and new mechanisms to reduce risk. The alleged gentleman's agreement among the options exchanges not to compete in the case of equity options contracts already listed on an exchange illustrates the second point: Competition among financial institutions should not be taken for granted, especially when a small number of firms co-exist in markets where regulations or other factors create barriers to entry.

In the case of the PHLX, its future is uncertain. In equity trading, its market share of exchange-traded equities had fallen to well under 1 percent by 2003. In the trading of equity options, all of the floor-based exchanges must be worried by the rapid success of the all-electronic ISE. By early 2003, the ISE had displaced the CBOE as the exchange with the highest volume of equity options orders. In addition, the Boston Stock Exchange, in partnership with others, launched its own fully electronic options exchange in February 2004.

The management of the PHLX is acutely aware that the exchange is a small operator in a highly competitive and increasingly automated trading environment.[19] Management has stated that it sees strategic partnerships, and perhaps mergers, with automated trading platforms and other exchanges as the best way to continue to attract the order flow and the technology that will enable the PHLX to compete successfully in the future. As part of this strategy, the PHLX is in the process of converting from a mutual institution to a for-profit stock corporation. Until recently, all securities exchanges in the U.S. were set up as mutual organizations, meaning that the members of the exchange were also its owners with the right

[19] In recent testimony before Congress, the chairman of the PHLX (see Frucher reference) succinctly presented his views on the role of the regional exchanges, the challenges facing the PHLX, its business strategies, and the regulatory environment in which it operates.

to approve or disapprove of proposed fundamental changes in an exchange's operations. If the exchange were a for-profit corporation, its owners would be its shareholders, who could include individuals and organizations far removed from the securities trading business. PHLX management believes that this organizational change will enable the exchange to implement new initiatives more quickly, facilitate the formation of strategic relationships, and strengthen the exchange's financial position, since it will be able to tap new sources of capital.[20]

Given the remarkable changes that the PHLX — and securities markets generally — has made over its history, it would be foolish to forecast the future of the nation's oldest stock exchange. Perhaps the only safe statement is that more changes, undoubtedly, lie ahead.

[20] The article by Roberta Karmel provides a nice summary of the motivations for a securities exchange to switch from a mutual organizational structure and reviews the process some exchanges in the U.S. have followed to achieve this end.

GLOSSARY

Securities Exchange: A securities exchange is a centralized physical or electronic location where all buyers and sellers of a security can meet to trade using some type of auction process. Generally, the buyers and sellers must conduct their trades through brokers who are members of the exchange. By centralizing securities trading and setting the trading rules, securities exchanges reduce investors' search costs (the cost of finding a counterparty for the trade) and transaction costs (the cost of exchanging the securities and the funds).

Over-the-Counter (OTC) Market: An over-the-counter securities market is a decentralized market consisting of designated dealers who quote prices at which they are willing to buy or sell a specified quantity of a security. By ensuring that dealers always quote buy and sell prices, an organized OTC market provides continuous liquidity for small traders.

Broker: A broker conducts a trade on behalf of a public investor. The broker traditionally charges a commission for handling the trade.

Specialist: A traditional specialist is responsible for maintaining well-functioning markets for a designated security traded on an exchange. The specialist sometimes functions as a broker, directing incoming orders to the best counterparty. The specialist also maintains the limit order book, a list of orders with designated prices that cannot be filled at current market prices. Finally, the specialist trades for his or her own account but is supposed to do so only when this improves the market.

Market Maker: A market maker is anyone who quotes prices and quantities at which he or she is willing to transact. Many floor-based exchanges authorize market makers to operate on the floor, competing with each other and the specialists and providing additional liquidity. Market makers, like specialists, hope to profit over time by always quoting buying prices that are somewhat below their selling prices. This gap is called the spread.

REFERENCES

Caskey, John P. "The Evolution of the Philadelphia Stock Exchange: 1964-2002," Federal Reserve Bank of Philadelphia Working Paper 03-21, August 2003.

Frucher, Meyer S. Testimony before the House Subcommittee on Capital Markets, Insurance, and Government Sponsored Enterprises, October 16, 2003. Available at http://www.phlx.com/news/pr2003/CEOletter.pdf.

Harris, Larry. *Trading and Exchanges: Market Microstructure for Practitioners.* (Oxford University Press: New York), 2003.

Karmel, Roberta S. "Motivations, Mechanics and Models for Exchange Demutualizations in the United States," in Shamshad Akhtar (ed.), *Demutualization of Stock Exchanges: Problems, Solutions, and Case Studies.* (Manila, Philippines: Asian Development Bank), 2002.

Philadelphia Stock Exchange. *Annual Report*, 1962 through 2002.

Sasseen, Jane. "Dirty Little Secret," *Forbes*, June 17, 1985, p. 203.

Seligman, Joel. *The Transformation of Wall Street: A History of the Securities and Exchange Commission and Modern Corporate Finance.* (Boston: Houghton Mifflin), 1982.

Schinasi, Garry J. et al. "Modern Banking and OTC Derivatives Markets: The Transformation of Global Finance and Its Implications for Systemic Risk," Occasional Paper 203 (IMF: Washington, DC), 2000.

U.S. Securities and Exchange Commission. *Report of the Special Study of Securities Markets of the Securities and Exchange Commission.* (Washington, DC: U.S. Government Printing Office), 1963.

Wetherill, Elkins. Testimony in *Securities Industry Study, Part 1*, hearing before the Subcommittee on Securities of the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, 92nd Congress, September 21, 1971.