Electronic Quotation Systems and the Market for Government Securities

Since 1973, the trading structure of the Government securities market has undergone a remarkable transformation. The origins of this transformation can be traced to the introduction of electronic quotation systems into the market by private entrepreneurs. These systems disseminate quotations for the purchase and sale of Treasury and Federal agency securities so rapidly and widely that what was once a partially fragmented dealer market has evolved toward an integrated auction. This article reports on the electronic quotation systems currently used in the Government securities market and on their consequences for the trading structure of the market.[1]

Electronic quotation systems

All the electronic quotation systems used in the Government securities market have been developed by private entrepreneurs. The systems do not receive any subsidy from, nor are they regulated by, the United States Treasury, the Securities and Exchange Commission, or the Federal Reserve System. Rules governing the use of each system are established by the respective sponsors. The electronic quotation systems currently in use can be divided into two categories: billboard systems and execution systems.

Billboard systems

A billboard, as the name implies, is a system through which a market participant can show on video screens his bid and offer quotations simultaneously to a large number of other participants. Billboards are a relatively recent development in the Government market. One system became operational in 1977 and a second is now under development. Participants who show their quotations on a billboard are called contributors. At the present time, both systems are soliciting only reporting dealers[2] to become contributors. Market participants, including both dealers and nondealers, who rent video screens displaying contributor quotations are called subscribers or recipients.[3]

A dealer showing his quotes on a billboard system enters bid and offering prices on a standard run of issues (see box on page 14). A billboard identifies by name the dealer submitting a particular quotation. A customer interested in acting on a quotation must contact the contributing dealer directly, *i.e.*, outside the

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[1] The market for United States Treasury and Federal agency securities is described more fully in Christopher McCurdy, "The Dealer Market for United States Government Securities", *Quarterly Review* (Winter 1977-78) pages 35-47 See also the description of the Federal agency market in Lois Banks, "The Market for Agency Securities", *Quarterly Review* (Spring 1978) pages 7-21

[2] In this article, we use the term "dealer" in the sense of a broker-dealer firm or commercial bank which reports its positions and transactions in Government securities to the Federal Reserve Bank of New York for inclusion in the data published by the Bank At present, there are thirty-five reporting dealers

[3] Currently, a dealer cannot be a recipient unless he is also a contributor.

Video Screens for Electronic Quotation Systems

Pictured below is a representation of the bid and offered discount rates for three Treasury bills and bid and offered prices for seven Treasury coupon issues quoted by four dealers as they appeared on the video screen of a billboard system at about 2:30 p.m. on June 7, 1978. Prices for coupon issues are quoted in percentage of par value, with fractions of a percent expressed in 32nds. The bid of 99.29+ by dealer A on the 8 percent note maturing in May 1980 means a bid of 99 plus 29½/32 percent of par value. The numbers to the right of the decimal point are in 32nds, and the plus means an additional ½ of a 32nd of a percent.

Billboard screen

Issue	Dealer A Bid	Dealer A Ask	Dealer B Bid	Dealer B Ask	Dealer C Bid	Dealer C Ask	Dealer D Bid	Dealer D Ask
Three-month bill*	6 64	6 62	6 64	6 62	6 64	6 62	6 64	6 62
Six-month bill†	7 115	7 095	7.12	7.10	7.12	7 10	7.12	7 10
One-year bill‡	7 36	7 34	7 36	7 34	7 36	7 34	7.36	7 34
8 percent May 1980	99 29+	99 30+	99 29+	99 30+	99 29+	99 30+	99 29+	99 30+
8¼ percent June 1982	100 3	100 5	100 4	100 5	100 4	100 5	100 4	100 5
7⅞ percent May 1983	98 18	98 20	98 18+	98 20+	98 18+	98 20+	98.18	98 20
8 percent February 1985	98 23	98 27	98 23	98 27	98 24	98 26	98 24	98 26
8¼ percent May 1988	99 5	99 9	99 7	99 9	99 7	99 9	99 7	99 9
7⅞ percent February 1993	95 8	95 10	95 8	95 10	95.8	95 10	95 7	95 11
8⅜ percent August 2000	98 31	99 1	98 31	99 1	98 31+	99 1+	98 31	99 1

* Bill maturing September 7, 1978 † Bill maturing December 7, 1978 ‡ Bill maturing May 29, 1979

Video display screens for execution systems show only the highest bid and the lowest offer in each issue. If the same four dealers had entered the *same* bids and offers as those shown above into an execution system (which they need not have done), the video screen for that system would look like the representation below.

Execution screen

Issue	Bid	Ask
Three-month bill	6 64	6 62
Six-month bill	7 115	7 10
One-year bill	7 36	7 34
8 percent May 1980	99 29+	99 30+
8¼ percent June 1982	100 4	100 5
7⅞ percent May 1983	98 18+	98 20
8 percent February 1985	98 24	98 26
8¼ percent May 1988	99 7	99 9
7⅞ percent February 1993	95 8	95 10
8⅜ percent August 2000	98 31+	99 1

In contrast to billboard screens, bidders and offerers are not identified on execution screens. A transactor has to call a sponsor to complete a purchase or sale. The operational execution screens also show the size of a bid or offer, *e.g.*, $1 million of Treasury bills, although this is omitted above.

billboard system, to complete a transaction. Contact is typically accomplished by a telephone call to one of the dealer's salesmen or traders.

Since a billboard system is an advertising device with no capability for order execution, all billboard quotes are subject to change when a customer calls a contributing dealer. That is, a dealer makes no binding commitment to buy at the bid quote or to sell at the offer which he shows on a billboard screen. In the jargon of the market, quotes are "subject". This flexibility is important in rapidly moving markets when dealers may not be able to keep their quotations current. Of course, dealers who consistently fail to maintain current quotes, or who back away from their market by lowering their bids or raising their offering prices, face the likelihood that customers will begin to ignore their quotations.

Contributors pay a rental fee for the opportunity to show quotes on a billboard system. The attractiveness of a system depends directly on how many customers a dealer can reach through that system. At present, the single operational billboard system has a large base of subscriber-recipients outside the United States and is increasing its domestic subscriber list. The planned system will be exhibited through an existing telecommunications network with a substantial domestic subscriber base.

Recipients also pay a fee to rent billboard screens. They derive value from a screen because it reduces their cost of determining the bid and offer quotations of contributing dealers. This cost includes telephone charges, the implicit value of the time spent in getting quotes from different dealers, and the risk of a change in market prices during that time interval. The value to customers of a billboard hinges on the ease with which they can simultaneously check the prices of several competing dealers through the same system.[4] Thus, the ability of billboard vendors to sign up contributing dealers as well as recipients is critical to their earning enough on rental fees to cover the costs of their physical facilities

Execution systems

Execution systems also disseminate bid and offer quotations over video screens but do not disclose the identity of contributors (see box on page 14). When a participant wants to sell into a bid shown on an execution screen, he calls the sponsor of the screen and indicates his sale interest. The sponsor buys the security from the seller and simultaneously resells the same security to the original bidder. A similar process occurs when a participant wants to take an offering shown on an execution screen. Thus, a sponsor is on the other side of every trade completed in his system. Sponsors of execution screens are usually called brokers as a reflection of their intimate participation in transactions. Unlike sponsors of billboard screens, who only disseminate information, brokers provide "live" markets to their customers.

At the present time, there exist three operating electronic execution systems in the Government securities market A fourth system is under development. The first execution system began operating in 1973 and is available on an equal basis to both reporting dealers and some institutional nondealer investors such as savings and loan associations and nondealer commercial banks. The second and third execution systems (introduced in 1974 and 1975, respectively) and the planned system are available only to dealers. Market participants must be dealers before they can enter new quotations or act upon existing quotations in those systems. These systems service the interdealer market in Government securities. We will call the first system the "institutional execution system" to distinguish it from the interdealer execution systems.[5]

Sponsors of execution systems do not charge rental fees but rather earn revenues in the form of brokerage commissions.[6] They make those commissions only when trades are executed. The commission is paid by the participant initiating a transaction. Thus, buyers who enter bids on a screen buy at their bid prices if their bids are "hit". Participants who initiate trades by "hitting" bids receive the bid price less a brokerage commission to the sponsor A participant who takes an offering pays the quoted price plus a commission, while the ultimate seller receives the full offering price which he quoted.

Sponsors of execution systems require contributors to stand on their quotations for some minimum interval of time, usually two or three minutes.[7] Unlike quotes

[4] As indicated in the box on page 14, the operational billboard system displays bid and offer quotations arrayed by dealer rather than in order of high bids and low offers The National Association of Security Dealers Automated Quotation System (NASDAQ), which is a computer-based billboard system for the over-the-counter equities market, automatically sorts dealer bids and offers on an issue by price priority

[5] The video screens showing bids and offers in the institutional system are available for *information* purposes to the public generally, but market participants must demonstrate acceptable creditworthiness before they are allowed to *trade* through that system Interdealer execution screens are not available to nondealers even for information purposes

[6] One sponsor does charge a monthly rental fee but reduces that fee by brokerage commissions paid by a customer

[7] Quotations submitted to one execution system are good until canceled, but employees at that system know contributors well enough to kill quotations after an interval of time which varies according to the style of individual contributors

on a billboard system, which are always "subject", quotes on an execution system are initially firm and may be acted upon without the sponsor recontacting the contributor. After an interval of time, quotations shown on execution systems turn stale and become subject If somebody calls a sponsor to act on a stale quote, the sponsor has to check with the party who submitted the quote to see if it is still good.[8]

Electronic quotation systems and the size of transactions

In any market, purchasers and sellers are concerned not only with the prices at which they can trade but also with the size of a transaction. In a billboard system, customers make direct contact with contributors and the size of a transaction is a matter for their private negotiation. In practice, dealers will usually buy at their bid price (or sell at their offering price) at least one unit of a conventional-size block of securities, such as $5 million of a recently auctioned Treasury bill, $1 million of a short-maturity Treasury coupon issue, or $½ million of a Federal agency or long-maturity Treasury coupon issue. Dealers may also be willing to transact, at their quoted prices, in modest multiples of a conventional block However, a customer request for an unusually large trade will generally bring forth a lower bid or a greater offer quotation than a dealer may be showing on a billboard screen. The less favorable price to the customer reflects the dealer's perception of greater risk in positioning a large block of securities in his own inventory.

Direct negotiation between buyers and sellers is not feasible in an execution system since transactors do not know each other's identities. Quotations submitted to execution systems are for multiples of a conventional-size block of securities. Most contributors initially submit quotations for only a single conventional block, even if they have larger purchase or sale interests. Multiblock orders can, however, be completed through any of the existing execution systems. When, for example, a buyer calls a sponsor to take an offering, he can indicate that he has an interest in further purchases at the same price. The sponsor will then call the original offerer and ask whether he has any further selling interest at that price. If the offerer has more securities to sell, the sponsor will show them to the buyer. This process of "working up" the trade continues until either the buyer or seller is satisfied.

[8] Sponsors of execution systems call contributors to encourage them to renew or "refresh" their stale quotes If a contributor declines to renew, a sponsor will usually remove the quote from his screen entirely

Dealer markets

To understand the impact of electronic quotation systems on the Government securities market, it is useful to consider first the nature of dealer markets. Although the word "market" connotes some unified whole, prior to 1973 the Government market was much more like a collection of somewhat fragmented and partially independent market centers. This section identifies those forces that reduce fragmentation and foster market integration. The next section relates those forces explicitly to electronic quotation systems.

What dealers do

Dealers provide liquidity to their customers by making available bid and offer quotations at which a customer can secure immediate execution of an order.[9] As long as dealers actively make markets, customers are saved the expense of searching directly among other investors for compatible trading partners. The dealer community thus serves as a focal point for the exchange of securities. Moreover, by buying and selling for their own accounts, dealers use their inventories as a buffer to moderate transient fluctuations in public purchases and sales. Dealers also trade with other dealers as well as with nondealer customers. Interdealer trading is an important facet of dealer markets and allows dealers to smooth out among themselves random and undesired inventory imbalances.

Although competition among dealers for customer orders is sharp, dealers infrequently quote identical prices. This phenomenon is known as price dispersion. At any particular time some dealers may be better bidders because they want to accumulate inventory, possibly to take advantage of speculative anticipations of price increases. Conversely, other dealers may quote aggressive offering prices because they want to reduce their positions.

In an extreme case, one dealer may bid at the offering price quoted by a competitor. If the two dealers get in touch, the bidder will buy securities until he lowers his bid or the seller increases his offering price. Thus, as long as dealers remain informed

[9] This definition of liquidity treats the interest of buyers in uncovering offerings of securities symmetrically with the interest of sellers in uncovering bids Although liquidity is most frequently considered a problem when prices are falling and bids are scarce, it is equally a problem when prices are rising and offerings are scarce It should be noted that dealers provide other services to their customers, such as economic analysis and portfolio advice They may also serve an important role in evaluating the credit risks of nondealer market participants Thus, two nondealers might prefer to trade with a dealer rather than directly with each other if they have confidence in the dealer's ability to evaluate the creditworthiness of the other nondealer In this article, we are concerned exclusively with dealers as providers of liquidity to the market

of the current quotations of their competitors, interdealer trading limits price dispersion to the extent that no dealer should be bidding at the offering price of another dealer. Less extreme price dispersion can persist, however, as long as it is small enough that no two dealers have mutually compatible purchase and sale interests.[10]

In the presence of price dispersion, customers cannot be indifferent about the choice of a dealer with whom to trade. Suppose, for example, dealer-customer trading relationships were strong and customers consistently went to the same dealers to complete their purchases and sales. Those customers would have no guarantee that they could not get a better quote from another dealer. Markets characterized by strong dealer-customer relations are likely to be quite fragmented, in the sense that dealers would have little incentive to keep their bids and offerings in line with the quotations of their competitors. In a fragmented market, dealers can buy at bid prices lower than the best bid in the market and can sell at asking prices greater than the lowest available offering quotation.

Customer search for best execution

From the incentive to obtain best execution of their orders, customers search among dealers for favorable quotations. Their willingness to search tends to break down dealer-customer trading relationships. Moreover, their search increases the probability that a high bidding dealer will complete a purchase and decreases the chances of a customer selling to a weaker bidder. Customer search for best execution plays an important role in enforcing the integration of a competitive dealer market. Given this customer search for best price, dealers with a genuine purchase interest have to be cognizant of the bid quotations of their competitors. The more aggressively they quote their own bid relative to other bids in the market, the more likely they are to complete a purchase ahead of those competitors.

In view of the importance (to the integration of a dealer market) of customer search, identification of the determinants of those search efforts is of some interest. One important determinant is the cost of searching, *i.e.,* the cost of obtaining a bid or offer quotation on a transaction of a given size. This cost includes telephone charges, the implicit value of the time spent by a customer in getting a quote, and the risk that prices may move against a customer if he conducts a prolonged search. In general, the lower this cost the more intensively a customer will search and the more discriminating he will be in accepting or rejecting quotations.

Consequences of reducing the cost of searching

For analyzing the effect of electronic quotation systems on the market for Government securities, a crucial question is what happens to a market when customer search costs fall? Drawing upon the foregoing discussion, we can anticipate a greater propensity for customers to seek out favorable executions. By implication, those dealers quoting more aggressive bids and offerings will become more likely to execute transactions relative to their less aggressive competitors. Customers who previously felt further search worthwhile only if they thought they could get a bid 1/32 percent of par value better may, in an environment of cheaper search, be willing to look for improvements in price of 1/64 percent or even 1/128 percent. Thus, dealers who previously could expect to do business at a bid 1/32 percent below the best bid would find they have either to improve their bid to within 1/64 percent or to give up any expectation of attracting the interest of customers selling securities. As search costs decline, dealers experience increasingly severe price competition from other dealers.[11]

As search costs become negligible, the trading structure of a dealer market undergoes a qualitative change. When information is essentially free and instantaneously available, no customer will sell at any price below the best available bid and no customer will buy at a price greater than the lowest offering price. Transactions will not occur except in the order of their price priorities Price priority of execution is, of course, one distinguishing characteristic of an auction market. Thus, as search costs fall, a dealer market will evolve from a market of imperfectly competing dealers toward a purely competitive, integrated auction market.

The characterization of a market as an integrated auction implies the absence of any meaningful dealer-customer trading relationships. In particular, customers perceive every dealer as a potentially perfect substitute for every other dealer, and hence perceive the dealer

[10] Interdealer trading limits the range of dealer bid prices to the largest bid-ask spread quoted by any dealer This follows because the maximum bid must be less than the minimum offer, but the minimum bid must be at least as high as the minimum offer less the largest spread quoted by any dealer A similar argument shows that the range of dealer offering prices is also limited to the largest dealer spread

[11] As dealers are forced to quote closer to the best available bid and offer, they necessarily narrow the bid-ask spread between their quotes Such a reduction of spreads has occurred in the institutional sectors of the Government securities market but would not necessarily be evident from an examination of dealer quotation sheets, which report bid and offering prices for trades of a much smaller size

community as a whole as the provider of liquidity. The only characteristic which distinguishes different dealers is whether their bid and offer prices are or are not the best available.

What electronic quotation systems have done to the Government securities market.

Electronic quotation systems have reduced the cost of uncovering favorable bid and offer quotations on conventional-size blocks of Government securities. By the process outlined in the preceding section, they have thereby fostered the integration and efficiency of the market and have changed the pattern of trading to something approaching an auction process. This section considers in greater detail the impact of billboard and execution systems on the transactional structure of the Government securities market.

Billboard systems

Both the existing and the planned billboard systems are compatible with the historical framework of the Government market. Through those systems, a dealer can advertise his bid and offer prices to a wide customer audience. Prior to the introduction of billboards, whenever a customer wanted a quote from a dealer he had to call a salesman employed by that dealer. For a customer to keep in constant touch with the Government market during the day was an expensive and time-consuming task both for the customer and for the dealer.

With billboard systems in place, dealers can advertise to a potentially unlimited number of subscribing customers at a fixed cost. Similarly, customers can use a billboard system to monitor changes in a dealer's bid and offer markets at little cost to themselves and at no direct cost to the dealer.[12] More importantly, when customers do decide to execute a purchase or sale, they can obtain comparative quotations from a number of dealers instantaneously and at virtually no cost.

The consequences of obtaining bid and offer quotes at zero cost are clear. No dealer can expect to receive requests to purchase or sell securities unless his quotations are at least as good as those of every other dealer. For transactions of a conventional size, billboard systems would appear to enforce price priority of executions.[13]

Billboard systems may have little or no effect on the structure of trading in issues not listed on the screens. In the box on page 14, bids and offers on only the most actively traded Treasury bills and coupon issues are displayed on the screen. Trading in less active securities depends entirely on more expensive direct dealer-customer communication. The markets for those securities are, consequently, more fragmented than the markets for securities listed on billboard screens.

Billboard systems may also have little effect on the markets for transactions in unusually large blocks of securities. Dealers are unlikely to quote large block purchases or sales at the same prices they show on a billboard screen for conventional-size trades. A customer seeking to trade a large block may, therefore, derive relatively little information from billboard quotations and consequently will have to contact individual dealers directly.

Execution systems

In describing the effect of electronic execution systems on the Government securities market, it is useful to consider first those systems available only to dealers and then to consider the system available to both nondealers and dealers. The latter system has opened some unique trading opportunities for nondealers.

Like the billboard systems, interdealer execution systems are compatible with the framework of the Government market which existed at the time they were introduced. Since about the late 1930's, brokers have facilitated trading between Government securities dealers. A dealer wishing to bid his competitors anonymously for an issue would call a broker and ask him to show his bid to those competitors. If the bid were hit, the broker would buy the issue at the bid price (less a commission for himself) and simultaneously resell the issue to the original bidder. Interdealer electronic execution systems follow this pattern but provide faster dissemination of new bids and offerings. In place of a broker calling several dealers sequentially, electronic systems permit the display of new quotations to all dealers simultaneously.[14] Moreover, the computer programs supporting the execution systems automatically displace old quotes with recently arrived better bids and offerings. Every dealer sees the best bid and offering prices which a sponsor has received on any given issue. Price priority of execution within a system is guaranteed. Since dealers can compare quickly quotes reported by competing systems, there is intersystem price priority as well. Electronic execution sys-

[12] Nondealers can also monitor changes in bids and offers on the institutional execution system available to nondealers. The video screens supporting that system are generally available for information purposes.

[13] This result may not hold in rapidly moving markets if dealers do not update their quotations on a timely basis.

[14] Sponsors of interdealer execution systems are in fact commonly called "screen brokers" to distinguish them from verbal brokers. The first screen broker entered the interdealer brokerage business *de novo*, but the second screen broker previously provided verbal brokerage.

tems have thus transformed interdealer trading of securities in conventional-size blocks into a virtual auction process.

Interdealer execution screens have also led to operational economies in the Government market. Prior to the screens, brokers called dealers to inform them of the bids and offerings of other dealers. A not insignificant fraction of a trader's time was devoted to listening to brokers' quotations. The screens have reduced the need for any verbal communication between a broker and a trader other than when a trader wants to enter a quotation or execute an order.

Since buyers and sellers do not communicate directly through an execution system, they cannot themselves negotiate the size of a transaction. However, as was pointed out in the first section, sponsors provide a vehicle through which trades can be "worked up". The combination of anonymous executions and the opportunity for "workups" may facilitate the completion of large purchases and sales in the interdealer market. If a buyer of $100 million of Treasury bills takes an offering of $1 million of those bills shown on an execution system, he can continue to buy until his order is filled or until the seller is satisfied. If the seller drops out first, the buyer can bid for additional bills at the previous transaction price with the hope of attracting further sellers At no point need the buyer disclose the full extent of his interest

The primary effect of interdealer execution systems has been the transformation of interdealer trading to an auction process, but those systems have also had consequences for dealer trading with customers Prior to the advent of video screens showing dealer quotes continuously, a nondealer customer calling a dealer could get only the bid and offer quotes of that single dealer With the innovation of the screens, a customer can now ask a dealer for the best bid or offer showing in the interdealer market as well. (Nondealers cannot rent interdealer screens, and hence can neither observe nor trade in the interdealer market directly.) A customer is unlikely to be willing to sell a conventional-size block of securities to a dealer at a substantially weaker bid than that showing in the interdealer market. Thus, the existence of screens tends to set a lower limit on dealer bid prices to customers and an upper limit on dealer offering prices. Dealer prices on trades of a conventional size cannot differ from quotations on the screens by more than a reasonable spread earned by a dealer who trades with a customer and then immediately reverses the transaction in the interdealer market.

The ability of a dealer to turn over customer orders in the interdealer market is another manifestation of the principle that, in an environment where information on bids and offers is essentially free, liquidity for conventional-size orders is provided by the dealer community as a whole and not by individual dealers. If a customer's trade does not "fit" one dealer, it can be completed easily with a competitor. Through a billboard system, customers can determine for themselves the dealer who best fits their interests. With interdealer execution systems, if a dealer does not want to do a trade at his own risk at the best prevailing bid or offer, he can act as an agent for his customer and complete the trade in the interdealer market. In either case, the customer receives the benefit of the best available quote. These conclusions do not extend, however, to markets in inactive issues or large block transactions where dealer bid and offer quotations are not quickly and cheaply available on screens

That electronic quotation systems foster price competition among dealers has not gone unnoticed. Dealers lacking a strong base of traditional customers have been among the most enthusiastic users of the systems. A perennial problem experienced by such dealers was getting customer enquiries for bid and offer quotations. This problem reflected the stronger customer-dealer trading relationships which prevailed when search was more costly. Electronic quotation systems have increased the "visibility" of aggressive quotations and hence have given new dealer entrants in the Government securities market a greater opportunity to participate in trades.[15]

The institutional execution system, through which nondealer institutions as well as dealers can trade, exhibits the same characteristics as the two interdealer execution systems but has one important added feature: it offers a vehicle for nondealers to show their own bid and offer quotations to other nondealers.

The broad dissemination of nondealer bids and offerings permits nondealers to compete directly with dealers. Suppose dealers are quoting a Treasury bill at discount rates of 6.46 percent bid and 6.44 percent offered. A nondealer wanting to buy the bill can take the 6 44 percent offering but can also bid on the bill at, say, 6 45 percent through the institutional execution system In this case, his bid would improve upon the best dealer bid, so the nondealer becomes the best buyer in the market.

Although nondealers may not care to provide bid and offer quotations on a regular basis, there are occasions when they might find it in their self-interest to bid on an issue at a price below the best dealer

[15] A similar phenomenon was noted when NASDAQ was introduced into the over-the-counter equities market Dealers who previously enjoyed an entrenched retail business found themselves faced with aggressive price competition from dealers lacking a similar traditional customer base

offering price but above the best dealer bid. In the past, nondealers had no economically efficient way of advertising such bids. The institutional execution system gives them direct access to other investors and offers nondealers an added element of flexibility in completing their trades.

Conclusions

The introduction and development of electronic quotation systems during the past five years has led to fundamental changes in the Government securities market. The basis for these changes is the rapid, cheap, and widespread dissemination of bid and offer quotations.

Electronic execution systems have transformed interdealer trading into a virtual auction process. These systems permit the disclosure of new bids and offerings in the interdealer market to all participants simultaneously. Moreover, they keep information on active trading opportunities before the dealers continuously. Traders at dealer firms are thus always informed of the prices at which they can make changes (of a conventional size) in their portfolio allocations. By increasing the uniformity of information available to different dealers, electronic execution systems have reduced the fragmentation of the interdealer market.

Billboard screens are beginning to have a similar effect on dealer-customer trading in conventional-size blocks of active issues, although the transformation is not so complete as in the interdealer case because of the relatively recent introduction of the single operational billboard. It seems likely, however, as that system expands and rival systems appear, increasing numbers of customers will be able to locate, cheaply and quickly, those dealers quoting the best prices. This will reduce the costs previously borne by those customers who lacked complete information on all available purchase and sale interests. By facilitating the execution of sales at the highest bid (and purchases at the lowest offer) billboard systems, like execution systems, will contribute to the efficiency and integration of the Government securities market.

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