

# Increasing Use of Electronic Trading Systems and Its Implications on Japanese Financial Markets

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# Market Review

*With the advances in IT technology, more and more transactions are shifting to electronic platforms even in financial markets. Electronic trading systems were first adopted in the United States, and have subsequently spread to Europe and Japan. More and more products are traded electronically, including government securities as well as equity and foreign exchange. This paper examines recent developments in electronic trading systems and their implications on the Japanese government securities and foreign exchange markets, taking cue from a recent study by the G10 central banks ("The Implications of Electronic Trading in Financial Markets", January 2001). In Japan, electronic trading accounts for a large percentage -- about 90 percent -- of all trades between foreign exchange dealers. In contrast, electronic trading has not yet captured a large share of neither foreign exchange transactions between dealers and customers nor transactions in government securities (in neither interdealer nor dealer-customer segments). While electronic trading has the potential to enhance operational efficiency and price discovery functions, such issues as enhancing market liquidity, automating operation processes, and ensuring the contestability of electronic trading services need to be addressed to obtain the full benefits.*

## **BIS CGFS Working Group on Electronic Trading**

The Committee on the Global Financial System (CGFS)<sup>1</sup> of the G10 central banks at the Bank of International Settlements (BIS), released a working group report on electronic trading in January 2001.<sup>2</sup> The Report focuses on how the development of electronic trading systems might affect financial market structure, price discovery mechanisms, and financial market stability. The Report identifies several characteristics of financial transactions that are more adaptable to electronic trading including the ease of standardization, high market liquidity, relatively weak concerns over the creditworthiness of counterparties, and small market impact (for example, small-lot trading).

## **Implications on Financial Market Structure**

### *Enhancing Operational Efficiency*

Electronic trading systems can enhance operational efficiency through two main channels. The first is the decrease in transaction charges reflecting the lower staffing costs resulting from the extensive use of computers, and the reductions in the costs related to maintaining a branch network made possible by the utilization of internet technology. The second is enabling the integration of all processes from the front-office to the back-office, or Straight Through Processing (STP),<sup>3</sup> beginning with electronic order transmission, followed by the confirmation of transactions, monitoring of positions, and final settlement. In order to realize STP and take full advantage of electronic trading systems, however, progress is also necessary in the standardization of confirmation, settlement, and data management processes. Meanwhile, electronic trading offers cost efficiencies to customers as well, by lowering search

costs for the best price available at the time of placing orders.

### *Replacing Basic Broking Services*

Electronic trading systems enhance efficiencies in relaying and processing information. As a result, electronic trading systems have the potential to replace basic broking services, relaying customer orders to other market participants or exchanges. On the other hand, market making services of dealers involve dealers taking active part in the price discovery process, by providing liquidity through filling customers' orders, and assuming the resulting positions, depending upon their market outlook.<sup>4</sup> Such services require a certain amount of risk taking by dealers, based on their reading of inventory and market developments, and such value-added functions -- providing liquidity to the market and ensuring immediacy of execution -- are less likely to be replaced by electronic trading systems. Nevertheless, certain parts of market making are now being replaced with new technology, as seen in the use of pricing engines for generating quotes. Similar to what is happening in the broking business, profitability of market making services is said to be under pressure as competition intensifies with the introduction of electronic trading. The broking industry now faces structural changes, and market makers would probably face similar challenges when lower profitability of market making services becomes more evident.

### *Blurring of Distinctions between the Interdealer Market and the Dealer-Customer Market*

The wider use of electronic trading systems enables customers to directly access a larger number of markets, which in turn blurs the distinctions between

interdealer markets and dealer-customer markets. Even where customers may not have direct access to interdealer markets, they may still enjoy benefits. For instance, higher transparency in dealer-customer markets, and trading at prices closer to interdealer market prices, reflecting higher transparency in the interdealer market and the introduction of electronic trading systems for customers that quote prices closely linked to the interdealer-market prices.

#### *Concentration of Trading in "Winner Systems"*

Electronic trading systems have two notable features. One is declining average cost, which means that costs incurred from additional trades would be marginal. The other is network externality, which signifies that once a sufficient number of trades is routed through a particular system, the system gains reputation for liquidity, which in turn results in more orders being routed through the system. These two features contribute to the concentration of trading into dominant winner systems.

#### **Implications on the Efficiency and Stability of Financial Systems**

Electronic trading may contribute to more efficient price discovery through enhanced transparency, accelerated transmission of information on trades, faster trade execution, and larger transaction volumes. Concerning its impact on the stability (resiliency) of markets, in the early stages following the introduction of electronic trading, liquidity in times of stress tended to flee from electronic trading to traditional trading methods such as voice broking. Recently, however, such phenomena are not observed where electronic trading systems have become the more dominant method of trading, with high liquidity. The reason for this may be that, in times of stress, liquidity tends to concentrate in markets with the highest liquidity. Electronic trading systems may also positively influence financial stability by enabling more heterogeneous players to access the markets. It should be noted, however, that markets where electronic trading has only been recently accepted have not withstood the test of acute stress. These markets should be closely monitored to see if they would keep on functioning even under stress conditions where concerns over counterparty credit risk are heightened.

#### **Increasing Use of Electronic Trading Systems in the Tokyo Foreign Exchange Market**

Spot transactions in the *interbank (interdealer)* market for foreign exchange are executed either via brokers or as direct dealing (DD), where banks (dealers) trade directly with each other. Electronic trading has gained early acceptance in the foreign exchange spot market compared with other markets, reflecting the uniformity of the product, which facilitated standardization, and the short settlement lag which leads to fewer concerns over counterparty risks.

In Japan, two broking systems, 'MINEX' and 'EBS', were established in the early 1990s, and rapidly

began to capture a large portion of transactions via brokers since the mid-1990s. 'EBS', even though it was not the first system, grew quickly. It not only captured customers from 'MINEX',<sup>5</sup> but also replaced traditional telephone trading ("voice broking"). Today, 'EBS' accounts for approximately 90 percent of foreign exchange spot trading in major currencies (such as the dollar/yen) carried out through brokers (Chart 1). Turning to DD transactions, the electronic trading system offered by Reuters seems to be used by about 90 percent of such trades in the market.<sup>6</sup>

Such a quick acceptance of electronic trading systems in the foreign exchange interbank spot market underscores the observations in the CGFS Report, that is, scalability (small marginal cost of additional transactions) and network externalities. In addition, the success of electronic trading in this market segment can be explained by 1) market participants' preference for transparency in terms of prices and order matching (first hit/first done), 2) relatively low transactions fees, 3) successful solicitation of liquidity by charging fees to the consumers of liquidity (market participants hitting limit orders) and not the providers of liquidity, and 4) relatively high liquidity and higher potential to reap the benefits of STP in trade confirmation, settlement, and risk management, reflecting progress in standardization of transactions compared with those in government securities markets.

**Chart 1 Share of Electronic Trading Systems in the Foreign Exchange Market: Spot Trading in the Tokyo Interbank Market**

	1995	1996	1997	1998	1999	2000
USD/Yen	27.4%	55.0%	70.1%	81.5%	85.7%	85.4%
USD/DM	52.6%	63.1%	77.3%	87.4%	89.0%*	94.9%*

*Source: Kinryu Jouhou Systems No.231.* Figures for 2000 were compiled from information available at the Bank of Japan and provided by the Money Brokers' Association.

\*The USD/DM calculations for 1999 and 2000 are based on Euro/US dollar figures

At the same time, in the *customer market*, electronic trading was not embraced as much as the interbank market, but since the beginning of the year 2000, there are notable developments on a global scale. For instance, in the US and European markets, banks began to offer single-dealer electronic trading systems for small-lot transactions with corporates, in addition to traditional telephone channels.<sup>7</sup> In parallel with such steps by individual banks, two major consortia of the most globally active financial institutions have unveiled their plans for providing multi-dealer systems ('FXall', 'Atriaux').<sup>8</sup> In the customer market in Japan, several banks offer single-dealer systems for spot and forward transactions. Some Japanese financial institutions also participate in 'FXall' and 'Atriaux'.

Motivations behind the introduction of these systems in the Japanese foreign exchange customer market is in line with the analyses in the CGFS Report, and include 1) efficiency of operations (cost-cutting, benefits of STP), 2) shift away from basic broking (offering added-value services), and 3) competitive considerations (need to maintain or

increase market share against the introduction of electronic systems by rival banks).

Concerning the appropriate strategies for introducing electronic trading systems to the customer market, some stress the need for careful assessment of profitability, in view of some early initiatives which had to be withdrawn. On the other hand, there are others that recognize the perils of moving too slowly, where delays in entering the market may result in not only losing first-mover advantages, but also allowing market dominance by competitors, hence losing market share. Currently, Japanese financial institutions are taking cautious steps, eyeing the feasibility and profitability of electronic trading systems and timing their offers. Meanwhile, some foreign financial institutions, taking advantage of their relatively robust earnings, are adopting another strategy -- purchasing stakes or participating in as many systems as possible, so that they might maintain influence over whichever systems that emerge as the winners.

#### Issues surrounding Electronic Trading Systems in the Foreign Exchange Market

In the foreign exchange market, electronic trading is a mature technology in the interbank spot market, whereas it is still in its infancy in the customer market. As a result, issues facing the systems are different in each segment.

One important issue in the interbank market is the declining number of market participants that directly participate in the interbank market and the effects that this might have. Viewing the shrinking margins in the customer business, smaller banks which cannot take advantage of economies of scale in their FX businesses may decide to funnel any orders originating from their customer business to electronic dealing systems offered by larger institutions, rather

than to continue investing in trading systems and personnel to maintain their standing in the interdealer market. Against this background, some larger financial institutions have already targeted smaller financial institutions, as the potential users of their single-dealer electronic trading systems. If the larger institutions secure a sizable number of market participants as their customers, a significant proportion of order flows may be netted out within the institutions. This may, in turn, mitigate the need for covering positions (resulting from uneven order flows) by the larger institutions in the interdealer market. How the resulting decline in liquidity in interbank markets might affect the functioning of the foreign exchange market is an issue that would merit further examination.

As regards the customer market, it is expected that with the penetration of electronic trading, banks will reduce their sales staff and place priority on providing information to customers relating to investment strategy, and on "data base marketing" utilizing transaction logs.

#### Increasing Use of Electronic Trading Systems in the Japanese Government Securities (JGS) Market

Marked by the entry into Japan of operators of European and US electronic trading systems, 1999 was a watershed year. Since then, the development of electronic trading systems in the JGS market has accelerated remarkably.

##### *Systems for Interdealer Markets*

In December 1999, 'MTS (Mercato Telematico dei Titoli di Stato)', an Italian system, announced its intention of entering the Japanese market by establishing a Japanese subsidiary, MTS-Japan. This move by 'MTS' stimulated efforts by potential providers of electronic trading systems, both overseas and

**Chart 2 Examples of Electronic Trading Systems in the JGS Market\***

	<b>MTS Japan</b>	<b>eSpeed</b>	<b>BB Super Trade</b>	<b>ETC</b>	<b>eXpress</b>	<b>eJGB</b>
<b>System provider</b>	MTS <sup>1</sup>	Cantor Fitzgerald	Japan Bond Trading Co., Ltd	Garban Totan Securities	JP Morgan	Goldman Sachs
<b>Type of electronic trading system</b>	Interdealer system	Interdealer system	Interdealer system	Interdealer system	Single-dealer system in the dealer-customer market (small-lot trading for institutional investors)	Single-dealer system in the dealer-customer market (small-lot trading for institutional investors)
<b>Product-type (outright trading)</b>	Government securities	Government securities	Government bills <sup>3</sup>	Government securities	Government securities	Government securities
<b>Price formation method<sup>2</sup></b>	Quote-driven	Order-driven	Order-driven	Order-driven	Quote-driven	Quote-driven
<b>Start of operations in Japan</b>	January 2001	September 2000 for JGS	June 2000	January 2001	July 2000	July 2000

\* This chart is compiled based on information available in January 2001.

Note: 1. Ownership includes MTS-Italy, as well as 9 foreign and 5 domestic securities firms operating in Japan.

2. There are mainly two types of price formation methods. "Quote-driven method" is where market makers post quotes for each issue and customers trade based on this price information, and "Order-driven method" is where all orders placed on the order matching book are matched according to a pre-specified method.

3. TB and FB.

domestic, to enter the JGS market (Chart 2). 'MTS' is an interdealer system originally established in Italy under the leadership of the Italian Ministry of Finance and the Bank of Italy in 1988, in order to enhance liquidity in the government securities market and hence increase the demand for government securities, against the background of growing government debt. This system has carved out a market not only in native Italy but in other European countries as well.<sup>9</sup> In Japan, 14 Japanese and foreign securities firms have provided equity capital to 'MTS' in June 2000, and in January 2001, the system obtained approval as a Proprietary Trading System, or PTS (Box).

Meanwhile, 'eSpeed', a system operated by a subsidiary of Cantor Fitzgerald -- a major interdealer-broker in the US government securities market -- has entered the European market in July 1999. It then launched its service for European and US government securities trading in Japan in March 2000, and

extended its coverage to JGS trading in September 2000. Following the revision of PTS regulations by the Japanese Financial Services Agency, Cantor Fitzgerald has filed for PTS approval. Garban Intercapital plc., a British broker, will introduce 'Electronic Trading Community (ETC)' in Japan through Garban Totan Securities. Garban Totan Securities has received PTS approval for its electronic trading system for JGS in January 2001. Against these developments, Japan Bond Trading Co., Ltd.(JBT) the biggest domestic interdealer broking firm, has started to offer a partially electronic trading system, 'BB Super Trade' in June 2000 for trading in short-term government bills (TB and FB). This system has filed for PTS approval reflecting the change in the PTS regulations. In September 2000, JBT has also announced a strategic alliance, involving electronic trading of other debt securities, with 'Instinet', a US firm aiming to offer electronic trading systems for JGS.<sup>10</sup>

### **Box Electronic Trading Systems and Exchanges**

Electronic trading systems may closely resemble authorized exchanges in their functions, such as matching orders submitted from a large number of market participants, and are expected to induce efficiencies in dealing and broking services as they compete with existing exchanges. Meanwhile, considering that existing exchanges are subject to a variety of regulations aimed at investor protection and fair trading, it has become necessary to ensure consistency between these regulations and regulations over electronic trading systems.

In Japan, it became possible to conduct trading outside the exchanges when dealers were no longer mandated to funnel orders into exchanges in December 1998. At the same time, electronic trading systems which have similar functions as exchanges, such as 1) crossing,<sup>i</sup> and 2) standing between customer negotiations, and 3) any other forms stipulated by the regulations of the Management and Coordination Agency, were deemed to be Proprietary Trading Systems (PTS), which were considered a form of securities business requiring approval from the regulators under the Securities Exchange Act (Article 2-8, Article 29). PTS regulations do not obligate market participants to perform self-regulatory functions unlike authorized exchanges, which need to obtain government licenses.<sup>ii</sup> However, only two PTS filings have been approved in the subsequent two years.<sup>iii</sup>

In anticipation of further development of diverse electronic trading systems, the Financial Services Agency revised portions of the securities regulations, including those pertaining to PTS approval standards, effective December 2000. In addition to the then existing rules described above, the new regulations 1) added two pricing methods -- matching of customer orders<sup>iv</sup> and quoting indicative prices<sup>v</sup> -- in the definition of PTS. In addition, in order to ensure fair trading, the new rules 2) mandated disclosure of prices by PTS dealing in equities and convertible bonds; and 3) introduced rules and restrictions to protect interests of the public and investors for systems handling large trading volumes.<sup>vi</sup> As a result of these revisions, there could be more PTS filings and hence accelerated growth of electronic trading systems in the JGS market.<sup>vii</sup>

i. A method of pricing which employs 1) in the case of securities traded on authorized exchanges, the prices determined in such exchanges, and 2) in the case of securities traded over-the-counter, the price published by the securities dealers associations which administer the OTC market.

ii. The report of the General Working Party of the Securities Exchange Commission published in May 1997 notes that "if PTS are deemed to contribute equally to price formation as authorized exchanges, then, they would need to be subject to the same regulations. However, for the current and in the immediate future, these systems are considered to basically be dependent on the price formation functions of authorized exchanges and thus secondary to authorized exchanges in terms of price formation functions."

iii. 'BB Super Trade for Equities' established by Japan Bond Trading Co., Ltd., and 'E-Bond' (a securities firm established by Softbank Finance and Lehman Brothers trading non-government securities) have received PTS approval in June 2000.

iv. A method of pricing where prices are determined by matching buy and sell limit orders placed by other market participants. This pricing method contributes to a certain degree to the price discovery mechanism as customer orders are matched. However, this method is not as sophisticated as the system utilized in authorized exchanges where market order and order books are involved.

v. A method of pricing where one or more securities firms quote indicative prices to sell or buy several securities. This pricing method performs price discovery to the extent that market makers trade at prices they indicate, but this function is not considered to be as sophisticated as that in the OTC market.

vi. When trading volume on a PTS -- trading in equities and convertible bonds traded on authorized exchanges or established OTC markets -- exceeds 10 percent of trading volume on authorized exchanges such as the Tokyo Stock Exchange and the Osaka Stock Exchange combined for individual securities and convertible bonds, and the total trading volume exceeds 5 percent of the same exchanges, these PTS will be subject to several requirements, involving installing adequate organization and personnel for administering trades, establishing adequate reserves to ensure settlement, and periodic monitoring of the system to maintain the stability and efficiency of trades. In addition, if more than 20 percent of any security and 10 percent of total trading volume is traded on the system, the system will need to obtain a license for establishing a market for securities transactions, as with authorized exchanges. For PTS that trade other debt securities, "new criteria would be introduced, if, with the expansion in trading volumes, etc., the need arises from the viewpoint of public welfare or investor protection".

vii. In the United States, since April 1999 (further amended in April 2000), Alternative Trading Systems (ATS) are included in the definition of exchanges. If such systems have self-regulatory functions, they are treated as authorized exchanges. If they do not, they would be treated as securities firms supervised by the US Securities Industry Association. ATS may choose either framework, but ATS whose transaction volumes exceed a certain amount are mandated to register as authorized exchanges.



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### *Systems for Customers (mostly institutional investors)*

In the dealer-customer market, JP Morgan and Goldman Sachs in July 2000, and Nomura Securities in November 2000, started to offer institutional investors single-dealer systems for cash-market trading of government securities, via Bloomberg terminals and internet channels.

In January 2001, Daiwa SBCM, Nikko Salomon Smith Barney, and Nomura Securities became equal partners in the launch of 'Yensai.com'. This multi-dealer system plans to offer a one-stop system for institutional investors in providing quotes from all participating dealers.

### **Reasons behind the Limited Growth in Electronic Trading Systems**

As these developments indicate, electronic trading systems have gained a foothold in the JGS market, but trading volumes on these systems are still limited. One reason for this is the relatively short time since their introduction. In addition, the slow growth could reflect factors in the JGS market, which are not consistent with the facilitating conditions for the development of electronic trading identified in the CGFS Report.

The first of such factors is the low market liquidity in the cash market for JGS. Low liquidity means that trading volume is small and can be comfortably processed manually. In addition, large-lot trading in such markets tends to lead to large price movements, increasing the risks borne by dealers, who must, in electronic trading systems, continuously offer firm quotes and process large volumes quickly.<sup>11</sup>

Another factor is the lack of standardization of operations, which inhibit integrated systems development. STP from the front-office to the back-office, including matching of trade confirmations and settlement, and settlement of cash and securities, is essential in taking full advantage of the cost reduction potential of electronic trading. Progress in this area is slower in Japan than in the US and Europe.

Finally, end users' behavior and dealers' attitudes in soliciting trades may also be dampening the growth of electronic trading systems. End users in JGS markets are said to evaluate services and costs in their relations with dealers on an overall and not on trade-by-trade basis. Reciprocally, dealers tend to adopt strategies emphasizing comprehensive services to capture business, rather than offering best prices to a wide range of potential customers in a timely manner. However, this may change in the future, as pressure from shareholders and fund investors may force Japanese market participants to become more aware of the need for accountability on the performance of individual transactions.

### **Significance of Promoting Electronic Trading Systems for Strengthening the JGS Market**

A liquid secondary market, where a wide variety of market participants can always trade according to

their varying needs, will be ever more important as the amount of JGS outstanding becomes the largest in the world. In this connection, financial institutions which provide trading and settlement services would be called upon to provide infrastructure that allows the speedy trading and settlement of larger volumes. This would, in turn, necessitate STP integrating the front and back-office operations and electronic trading as well. The ability to settle trades with greater speed and accuracy will also become more important against the background of the introduction of RTGS for the settlement of funds and JGS,<sup>12</sup> and the introduction of T+1 settlement within the next few years.<sup>13</sup>

Collecting, storing, and analyzing trade data will be facilitated with the wider use of electronic trading systems. Such information is essential in fulfilling the increasing needs of customers for services pertaining to position management and market analysis. As a result, this will influence the competitiveness of an intermediary.

Intermediaries can provide value-added services relatively inexpensively through electronic trading systems, compared with establishing a branch network, which entails high fixed costs. For this reason, electronic trading systems reduce the entry cost into the intermediary business. In US and Europe, a variety of electronic trading systems have emerged. Meanwhile, authorized exchanges are more than ever actively pursuing consolidation and partnerships with other exchanges and electronic trading systems. These developments are motivated by the recognition that liquidity, in other words, the number of orders funneled into a system, is the key to success in a highly competitive environment. System providers are, therefore, all striving to capture a ever larger numbers of customers for their networks. The potential for new businesses in the JGS market is substantial, considering its market size. The structure of the financial industry might be reshaped as more and more foreign and domestic players start to offer electronic trading systems.

### **Conclusion**

Electronic trading systems should be regarded as indispensable building blocks of the infrastructure of financial markets, as trading volume is projected to increase into the future. There is an expectation that the market will see an ever more diverse market participants trading larger and larger volumes at an increasing speed. Therefore, it is essential to develop integrated electronic systems that process not only trading but also back and middle office operations, such as trade confirmation, settlement, and risk management.

Electronic trading is expected to develop further reflecting these market forces. However, it should be noted that there are some conditions for progress. In the JGS market, higher liquidity in the cash market, standardization of operational procedures with a view to integrating the operations from trading to settlement, and higher accountability in trade

execution services are pre-requisites for sustaining the development of electronic systems. Furthermore, it is important to ensure markets for trading services are contestable, where nascent electronic trading systems can, without constraints from conventional market design concepts, effectively challenge traditional market structures centering on exchanges

In addition, as the CGFS Report points out, there are issues that need further examination. This includes, for example, understanding how the blurring of distinctions between the dealer-customer and interdealer market, and the lower liquidity in the interdealer market will affect market functioning, such as efficient price discovery and resiliency in times of stress.

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<sup>1</sup> The Committee on the Global Financial System (CGFS) is a standing committee at the Bank of International Settlements. It conducts research and monitoring of financial markets with a view to fulfilling its role in enhancing monetary policy and macro prudential policies (Chairman, Bank of Japan Deputy Governor Yutaka Yamaguchi). Central bank members meet regularly to exchange views on financial market matters. Working groups are set up to examine mid and long-term issues as necessary. Published working group papers can be obtained from the BIS website (<http://www.bis.org>).

<sup>2</sup> In the Report, an electronic trading system is defined as a facility that provides some or all of the following services: 1) electronic order routing (the delivery of orders from users to the execution system), 2) automated trade execution (the transformation of orders into trades), 3) electronic dissemination of pre-trade information (bid/offer quotes and depth), and 4) electronic dissemination of post-trade information (transaction price and volume data).

<sup>3</sup> Straight Through Processing (STP) means that processing of trade and settlement instructions are completed via computer networks without the need for rekeying or reformatting the data and without the use of facsimile or telephone. Electronic trading systems facilitate the STP of trading processes.

<sup>4</sup> In an order-driven market, orders gathered on the order book are matched according to a pre-determined rule. Market making in such markets means that liquidity is provided to the order book rather than to customers. In the interbank market in the foreign exchange spot market, electronic broking ('EBS') plays a central role, and price formation is implemented through matching of orders placed by interbank dealers on the order book.

<sup>5</sup> 'MINEX' formed a partnership with 'EBS', but 'MINEX' as a system disappeared after 'EBS' bought out its shares and completely replaced the system.

<sup>6</sup> Reuters also offers an electronic broking function, but its direct dealing function is the more widely used function in the spot foreign exchange market. This service allows for exchange of information traditionally implemented via telephone and telex to be conducted through screens.

<sup>7</sup> Single-dealer systems are electronic trading systems offered by one dealer to its customers which provides executable prices (firm quotes). For example, in a typical dealer-customer electronic trading system in the foreign exchange market, customers may first ask for prices through internet terminals. The system returns a firm quote against the ask, and finally, the customer may enter into trades by accepting this quote. Quotes may differ according to the credit risk of a counterparty and transaction size. In many cases, credit risk management tools are put into place, such as an upper limit of transaction for

each counterparty.

<sup>8</sup> Multi-dealer systems are those allowing customers to examine multiple quotes from a number of dealers within a single system. Of these, customers can choose the best quote.

<sup>9</sup> 'MTS' started its 'Euro MTS' and 'MTS Amsterdam' operations in 1999, and its 'MTS Portugal', 'MTS France', and 'MTS Belgium' operations in 2000.

<sup>10</sup> 'Instinet' is a 100 percent subsidiary of the prominent information vendor, Reuters. 'Instinet' is a major player in interdealer transactions of US equities, but has also entered the interdealer trading of US treasury securities since March 2000. It has also expanded its global reach into the European market in April 2000.

<sup>11</sup> Reluctance to enter into electronic trading have also been expressed by market participants in the periodic meeting conducted by the Bank of Japan's Financial Markets Department to exchange views with market operation counterparties. There were views that "if the transaction frequency stays more or less in the same level, there is not much downsides in conducting trades through traditional methods such as telephone and facsimile", and "one large-lot order may change the supply and demand conditions in the market completely, thus making it difficult or impossible to trade at prices shown on the screen just a moment before (if transactions are executed at a fast pace, there is the risk that new quotes may not be posted fast enough)".

<sup>12</sup> RTGS is an abbreviation for Real Time Gross Settlement. Cash and securities transactions are settled on a real time basis as trades are executed. Compared to batch settlement where net trades are settled periodically, systemic risk is limited as there is no need to resettle all trade when one trade is not settled properly. RTGS has been introduced in Japan in January 2001.

<sup>13</sup> T+1 settlement aims to shorten the lag between trade (T) and settlement date to one day (T+1) so that the risk of counterparty default in the meanwhile and the consequent risk of not being able to receive settlement may be mitigated (settlement occurs one business day after trade). T+1 for the settlement of government securities is already implemented in the United States and the United Kingdom. In the United States, T+1 is envisaged in the trading of equity, corporate bonds, local government securities, and CP. In Japan, the settlement of outright government securities transactions are conducted T+3.

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The views expressed in the Review do not necessarily represent the views of the Bank of Japan. Comments and questions as well as requests for hard copies should be addressed to Tokiko Shimizu, Manager, Financial Markets Department ([tokiko.shimizu@boj.or.jp](mailto:tokiko.shimizu@boj.or.jp)). *Market Review E-series* and *Financial Markets Department Working Papers E-series* can be obtained through the Bank of Japan's Web site (<http://www.boj.or.jp>).