

Developments in the Short-term Money Market — Settlement Risk and the Real Time Gross Settlement (RTGS) System

By Taizo Ueda
Financial Research Group

Introduction

Unfamiliar money market terminologies such as RTGS and repos have recently cropped up in the newspapers. Most people are less familiar with the money market than with stock and bond markets, especially since individuals are unable to participate directly. But as seen by the strong interest in the BOJ's recent monetary policy shift, developments in the money market can impact other markets including the more familiar stock and bond markets.

Indeed, since the money market is integral to cash settlements in other markets, we might even say that it lies at the core of the securities and financial markets. The money market has changed significantly under financial liberalization, whose goal is to enhance the efficiency and openness necessary for this demanding role. In addition, abnormal conditions in recent years — including the financial system instability, zero-interest rate policy, and year 2000 problem — have brought critical issues to the fore. The first half of this paper examines how the short-term money market has changed in view of these developments.

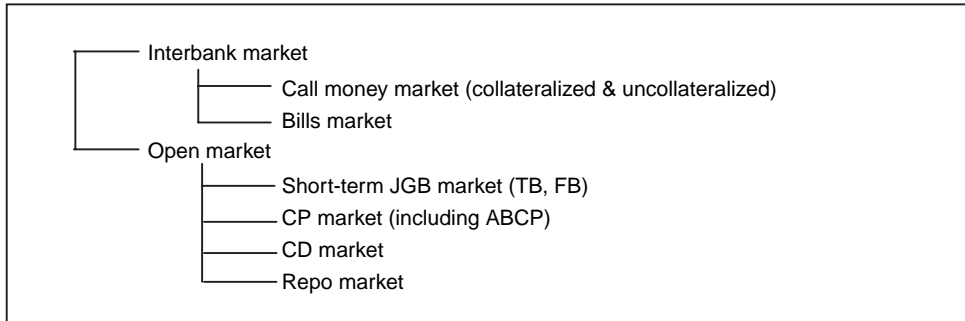
The second half discusses the future direction of the money market. As seen by the introduction of the real time gross settlement (RTGS) system in January 2001, one of the most critical issues is the reduction of settlement risk. In addition, cash management at financial institutions will be greatly affected in fiscal 2002, when the trade settlement date for stocks and bonds is changed from three business days to the next business day.¹ Thus we describe the implications of the reforms to the settlement system in some detail.

1. Description of the Short-term Money Market

The short-term money market refers to the market for borrowing and lending transactions with maturities of one year or less.² It can broadly be divided into the interbank market, where only financial insti-

tutions participate, and the open market, in which corporations can also participate. These markets in turn consist of narrower markets (Figure 1).

Figure 1 Composition of the Short-term Money Market



Repo transactions, also called repurchase agreements, are contracts in which the seller of debt securities agrees to buy them back at a specified time and price. CD refers to certificate of deposit. Commercial paper (CP) is an unsecured short-term obligation issued by a corporation or bank, while asset-backed commercial paper (ABCP) is commercial paper secured by the assets of the originating corporation, and issued through a special purpose company (SPC).

2. Changes in the Short-term Money Market

In the course of financial liberalization, the money market have transformed in two ways: (1) from simply being a cash management tool to an efficient market, and (2) from a market for financial institutions to an open market. Improvement of the market's transparency and fairness has greatly increased the convenience to participants.

(1) Longer Maturities of Transactions

Since the primary function of the money market is to satisfy the daily cash management needs of lenders and borrowers, overnight transactions were predominant in the past. However, with refinements in asset and liability management (ALM) and cash management, there has been an increase in transactions with longer maturities (term trading) that reflect interest rate expectations and credit risk.

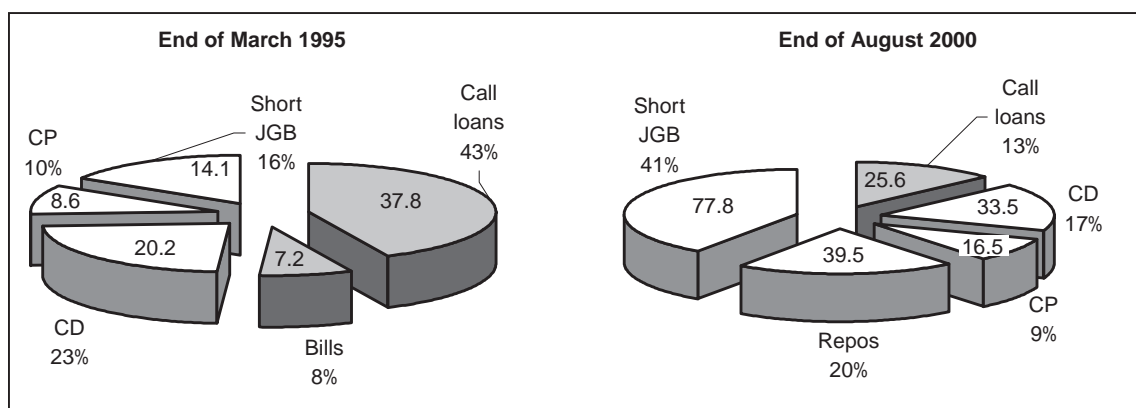
(2) From Interbank to Open Market

The shift from indirect to direct corporate financing obviously affects the money market — corporations now raise financing using CP and actively engage in money management on the open market. In

addition, while the interbank market entails transaction costs paid to intermediary *tanshi* financing companies, the open market has no (or low) transaction costs, and the terms and amounts of financing are readily negotiable.

Other factors behind the growth of the open market are deregulation and the diversification of transactions in recent years — specifically, the deregulation of maturities on CPs and CDs, and appearance of new types of transactions such as ABCP and repos.

Figure 2 Composition of the Money Market



Note: Shaded area indicates interbank market, white area indicates open market.
Source: BOJ

3. Topics in Recent Years

Moreover, in recent years the money market has experienced abnormal conditions such as financial system instability. Below we discuss the issues that emerged as a result (designated-time net settlement and RTGS are addressed in the next section).

(1) Financial System Instability

By causing the first default on a call transaction, the failure of Sanyo Securities in November 1997 dealt a serious blow to the money market. This unprecedented event defied the two most important requirements money managers seek from short-term assets — safety of principal and liquidity. Understandably, credit supply tightened to borrowers at risk, triggering the failures of Hokkaido Takushoku Bank and Yamaichi Securities by the end of the month.

However, due to the small size of Sanyo Securities' defaulted debt and the government's declaration to

protect money transactions in full, no further defaults ensued. While a potentially chaotic situation was averted in settlements, the market was left deeply apprehensive of settlement risks under the existing designated-time net settlement system.

(2) Zero-Interest Rate Policy

The world's first de facto zero-interest rate policy has strongly impacted financial institutions by driving down long-term interest rates. In particular, life insurers have suffered negative yield spreads on their long-term liabilities, while banks have enjoyed large positive yield spreads on their short-term liabilities. However, we limit the discussion below to the zero-interest rate policy's impact on the money market.

1. Reversal of ordinary deposit rate and call rate

In call transactions, which are large-value trades in units of 100-million yen, the contracted amount becomes illiquid at least until the next day. As a result, the call rate normally exceeds the ordinary deposit rate, since deposits can be withdrawn at any time during business hours. However, under the BOJ's zero-interest rate policy, these two rates have reversed positions. Thus investors who can open ordinary deposit accounts — such as life and property & casualty insurers — have adopted a strategy of keeping funds in ordinary deposits instead of trading in the overnight call market.

2. The Y2K problem

Many financial institutions took a conservative stance toward September 9, 1999, viewing it as a potential precursor to the Y2K problem. Seeking to avoid contracts that with a start or end date of September 9, in the overnight call market on September 8,

- (a) some foreign banks experienced fund shortages, and bid up the call rate above the ordinary deposit rate of 0.05%,
- (b) investors withdrew their ordinary deposits and moved funds into the call market,
- (c) banks, short on funds due to the run on ordinary deposits, bid up the call rate further.

A vicious circle ensued between (b) and (c), pushing short-term rates upward. Although the BOJ resolved matters by providing liquidity, the cash position of banks was revealed to be extremely unstable when the reversal of deposit and call rates led investors to keep large funds in ordinary deposits. If the same situation reoccurs under RTGS, which requires real-time cash management, the settlement risk is predicted to be substantially greater.

4. Future Direction — Reduction of Settlement Risk

The financial system instability of 1997 awakened the market to settlement risks, something which few market participants had been aware of until then. In particular, with the lifting of the payoff ban, a money trade default by a failed bank could cause the entire settlement system to seize up.

Measures aimed at reducing this settlement risk are the RTGS system (implemented in January 2001), and shortened settlement date for stock and bond transactions.

(1) Settlement Risk

Settlement risk is defined here as the risk that a settlement either fails or is delayed due to the failure of a party or an obstruction in the system.

Settlement risk can quickly spread beyond a particular trade and affect other participants, causing the entire settlement system to seize up. The risk of such a chain reaction is called systemic risk.

The way to reduce systemic risk is to settle trades promptly with cash — which is the basic concept behind RTGS and shortened settlement date.

(2) From Designated-Time Net Settlement to RTGS

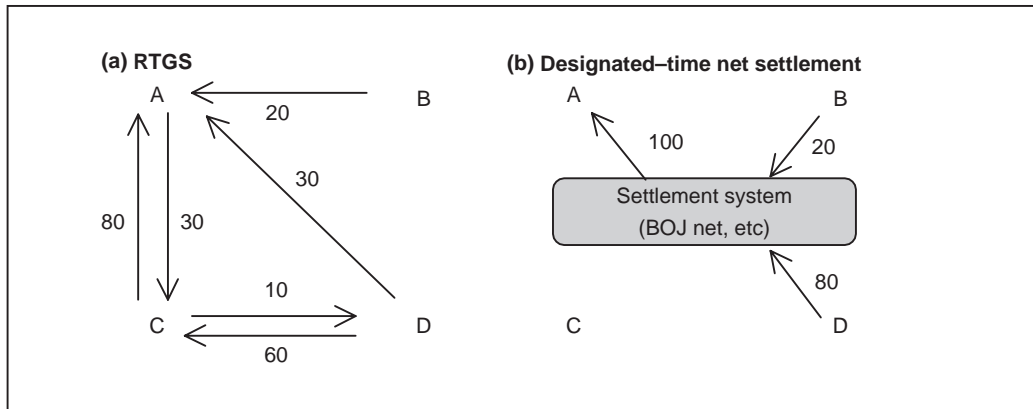
Real-time gross settlement is actually quite an inefficient settlement method. Why, then, has it been introduced throughout the world? To answer this, we first look at the present system of designated-time net settlement.

1. Designated-time net settlement

Among financial institutions, a large number of settlements are conducted on a daily basis.

For example, consider the fund transfers among four banks (Figure 3). Rather than settling each transaction as it occurs, the more efficient method is for each bank to settle its net position (netting) at prescribed intervals (usually at 9:00, 13:00, 15:00 and 17:00 hours). In our example, this would result in three settlements instead of six. In practice, because of the very large number of financial institutions and fund transfers, the difference between the two methods in number of settlements is substantial.

Figure 3 Comparison of Settlement Methods



However, with designated-time net settlement, bank A holds its 100 units until the next settlement time. If bank B defaults, all settlements in the system are stopped, including for banks C and D, who have not transacted directly with B.

Systemic risk crops up in times of financial system instability. In the past, except for the default by Sanyo Securities, the government's declaration to protect all liabilities of financial institutions ensured that money transactions of failed banks were settled smoothly. But following the deregulation of pay-offs, default on a transaction could cause the systemic risk to become reality.³

2. RTGS (Cash settlement)

The RTGS system adopted in January 2001 is intended to alleviate systemic risk by conducting settlements promptly and directly between transacting parties. In our example, bank A's holding would decrease with each settlement (from 100 to 70 after settlement with bank D), while bank B's default would have no transitory effect on banks C and D.

However, the settlement system could come to a standstill if banks delay outgoing transfers to wait for incoming ones. Measures under consideration to avert this problem, called grid-lock, include: (1) intraday loans limited to the assessed value of collateral held at the BOJ, and (2) a shift from overnight to term trading to reduce the volume of settlements conducted on a particular day.

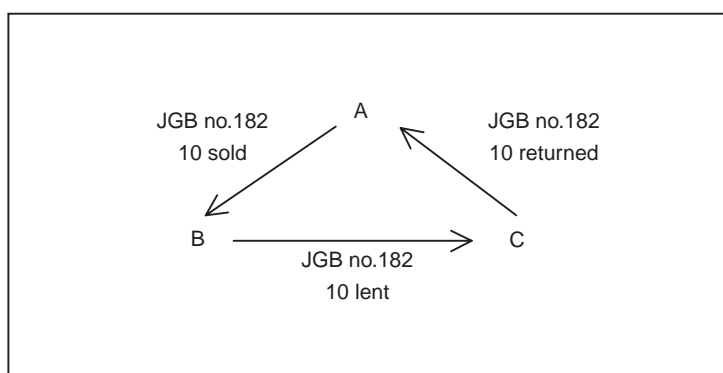
3. RTGS for bond settlement

When Japanese government bond settlement shifts from designated-time settlement (at 3:00 p.m.) to RTGS in 2001, the settlement risk for government bonds will increase substantially compared to cash settlement. Unlike cash, bonds come in a variety of types and are thus more susceptible to the the

grid-lock problem. For instance, when bond #182 is sold as is, other bond issues cannot be substituted, while a bond loan on the same day is difficult compared to cash. In this case, a loop phenomenon is likely to occur, causing the trade to fail because the bond transfer is not completed on the settlement date (Figure 4).

Measures to avert this risk include: (1) decreasing the size of trades to ¥5 billion or less per contract, (2) netting trades with the same bond issue and face value (by direct settlement), and (3) expanding the repo market of trades that start on the same day. In addition, the market is being prepared to accept failed trades under certain conditions.

Figure 4 Loop Phenomenon in Bond Settlement



(3) Securities Settlement Date: From T+3 to T+1

In fiscal 2002, the present settlement date for stock and bond trades of T+3 (three business days after the trade date) will be changed to T+1 (next business day). While reducing settlement risk, the shortened time will also strain cash management at financial institutions, increasing the demand for overnight transactions. However, as mentioned earlier, to curtail the increase in settlement volume under RTGS, we expect to see more open-end trades, which do not require daily settlement and are also highly liquid (they have unspecified maturity dates but can be called by either side on the same day or next day).

(4) Issues in Accommodating Settlement System Reforms

While the settlement system reforms address key issues, they also impose new demands on financial institutions:

1. RTGS decreases systemic risk, but requires real-time cash management.
2. The shortened settlement date reduces settlement risk, but requires that back-office functions be sped up.

In other words, there is a tradeoff between lower settlement risk and higher operational risk. But glitches in the settlement process must be averted at all cost, since they would damage confidence in the financial markets.

This highlights the need for infrastructure to facilitate and integrate processes from trade to settlement. To this end, below are four measures that financial institutions and settlement institutions must implement.

1. *In-house STP* — Straight Through Processing refers to the seamless processing of trades on computer networks, eliminating manual steps and ensuring maximum speed and efficiency.
2. *Electronic trade confirmation system* — This method electronically confirms trades between parties using Internet servers.
3. *Settlement systems⁴* — There is a need to establish settlement systems for CP and CD, and efficient data linkage between corporate systems.
4. *Crisis readiness* — There is a need to formulate contingency plans for system breakdowns and other contingencies, and conduct training drills.

5. Conclusion

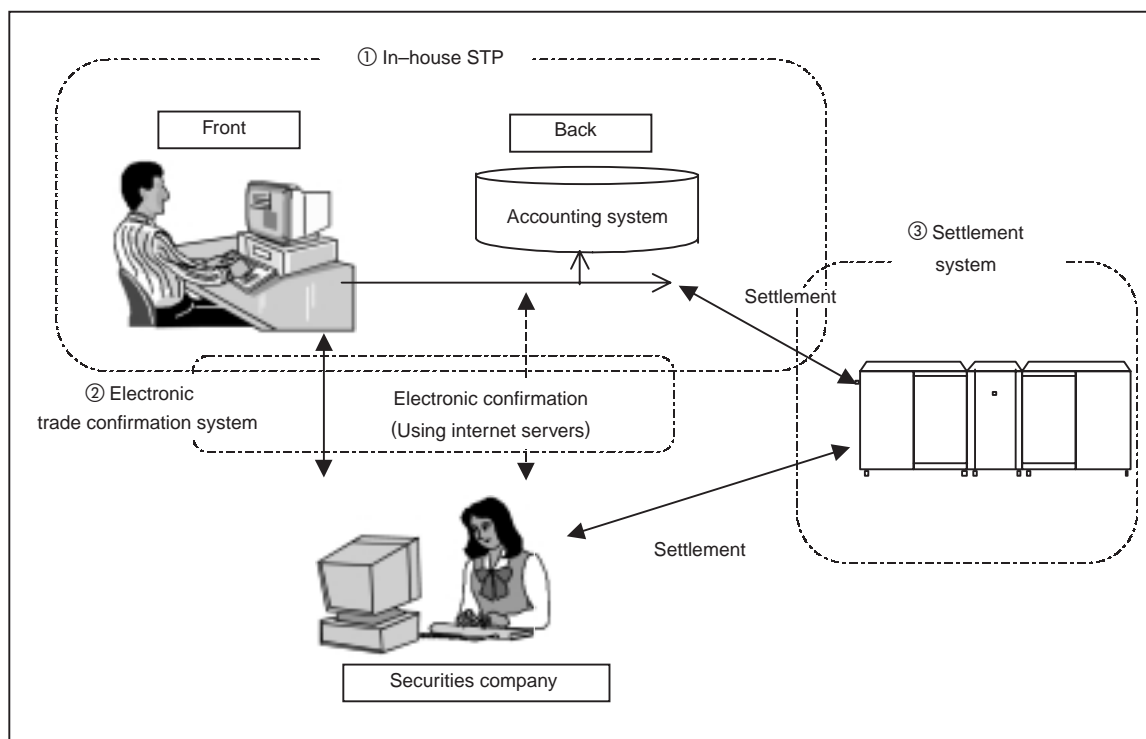
Since the smooth settlement of transactions is crucial to the economy and national life, the shift to the new system needs to be closely monitored. Obviously, problems in the settlements of financial institutions are likely to affect personal and corporate transactions as well. In addition, even financial institutions that now enjoy the market's confidence may lose favor if they repeatedly commit settlement errors due to inadequate preparation. It is also conceivable that foreign confidence in Japanese financial institutions could ebb further, leading to the hollowing out of Japan's financial markets.

To avoid such gloomy scenarios, problems that have arisen in tests of the RTGS system such as grid-lock and failed trades are resolved, and that the system makes a successful start.

To accommodate next-day settlement for securities, an image is emerging of a new system using the latest advances in information technology (Figure 5). This image will be realized only when adopted by all market participants. However, efforts to prepare the necessary infrastructure at financial institutions and economy appear to be lagging behind. Even the electronic trade confirmation systems proposed for the CP and CD markets are vertically structured by market.

There is a risk of redundant spending for financial institutions to build systems when plans for the industry infrastructure are still uncertain. Moreover, for financial institutions to build efficient systems at minimal cost, it is critical that settlement institutions and trade confirmation systems be integrated overall, or else that standards are adopted (particularly for interfacing systems). Considering the time needed to construct these systems, fiscal 2002 is just around the corner. To ensure a smooth start, it is important to encourage debate that is framed across markets, and formulate a concrete vision for the economic infrastructure at the earliest possible time.

Figure 5 Future Image of Settlement



Notes

1. Fiscal 2002 is the targeted transition date of the government and LDP. But a growing consensus of market participants is that the transition will be delayed to fiscal 2003 or later.
2. Although a broader definition sometimes includes the gensaki market, deposit market, and euro market, these are outside the scope of this paper.
3. When Sanyo Securities defaulted on its called loans, chaos was averted apparently because of the small size of the defaulted loans, and because the lenders were major banks with sufficient cash.
4. In June 2000, the first subcommittee of the Financial Deliberation Council proposed the consolidation of settlement institutions, citing the need to create an integrated securities settlement system.