

## Chapter V Market Operations

The Bank of Japan conducts market operations as a measure to conduct monetary policy. This chapter explains the framework and details of market operations, mainly focusing on open market operations, which are the Bank's principal measures whereby it conducts its market operations.

### A. Monetary Policy and Daily Market Operations

The Bank of Japan, at Monetary Policy Meetings (MPMs) held regularly, determines the guidelines for money market operations, and these guidelines are effective until the next MPM.<sup>1</sup> Currently, the Bank sets a target rate for the uncollateralized overnight call rate<sup>2</sup> in its guidelines for money market operations.<sup>3,4</sup> In order to encourage the uncollateralized overnight call rate to remain at the targeted level, the Bank supplies funds to, or absorbs funds from, financial institutions. These processes actually taken to conduct monetary policy are called money market operations (hereafter, "market operations;" see Chapter I.B.2 for details of monetary policy and the transmission mechanism). This chapter explains the framework and the details of market operations.

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<sup>1</sup> The guidelines for money market operations are also decided at unscheduled MPMs (see Footnote 5 in Chapter II).

<sup>2</sup> The uncollateralized call rate is the interest rate for uncollateralized transactions in the call market, where financial institutions lend and borrow short-term funds. Among uncollateralized call rates, the rate at which funds are received and paid on a contract day, and at which reverse transactions are conducted on the business day following the contract day, is called the uncollateralized overnight call rate.

<sup>3</sup> The target rate, to which central banks guide the specified interest rate, is in general called the policy interest rate. A target other than the uncollateralized overnight call rate may be used as the target in market operations. For example, between the MPM in March 2001 and that in March 2006, the Bank set the outstanding balance of current accounts at the Bank as the policy target for market operations.

<sup>4</sup> Generally, other major central banks also use the short-term interest rate as the target rate in their market operations. Currently, the United States, Canada, and Australia apply the interbank overnight interest rate as the target rate, whereas in the euro area the minimum bid rate in operations with one-week maturity is applied as the target, and in the United Kingdom the central bank's deposit rate is applied as the target. The overnight interest rate in the United States is known as the federal funds rate.

### B. Framework of Market Operations

The Bank of Japan influences supply and demand for funds and interest-rate formation in money markets by adjusting changes in the financial institutions' current account balances at the Bank through market operations. This section explains the framework of market operations as a whole, including money markets and financial institutions' current account deposits at the Bank (hereafter, BOJ account deposits).

#### 1. BOJ account deposits and money markets

BOJ account deposits have three major roles. The first is their role as payment instruments. Specifically, the following are settled by transferring, crediting, and debiting current accounts at the Bank: (1) fund settlements in receipts and payments of funds among financial institutions via private-sector payment and settlement systems;<sup>5</sup> (2) fund settlements in transactions between financial institutions, such as transactions in the call market, where financial institutions lend and borrow short-term funds (see Box 1, “Money Markets and the Call Market”), and transactions of selling and buying securities;<sup>6</sup> and (3) the Bank's operations and lending to financial institutions, receipts and payments of treasury funds (see Section A in Chapter IX), and the issuance and redemption of Japanese Government Securities (JGSs; see Section C in Chapter IX). The second role of BOJ account deposits is to fulfill the function as funds for payment (reserve for payment) for financial institutions in the same way that demand deposits at financial institutions do for individuals and firms. The third role is to serve as reserves under the reserve requirement system (see Section B.2.a.[2] in this chapter). Under this system, banks and other financial institutions are required to hold a certain fraction (reserve requirement ratio) of deposits and other liabilities in their current accounts at the Bank. The total balance of each financial institution's current account at the Bank, subject to the reserve requirement system, is counted as its reserve.

The relationship between BOJ account deposits and money markets where the lending and borrowing of short-term funds take place is as follows. When financial institutions wish to maintain their current account balances at the Bank at a certain level in preparation for various payments or to meet reserve

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<sup>5</sup> Currently, examples of these private-sector payment and settlement systems are the Domestic Funds Transfer System, and the bill and check clearing system (see Section C in Chapter IV).

<sup>6</sup> These types of settlements accounted for around 80 percent of the total amount settled through current accounts at the Bank (the average ratio throughout 2009).

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requirements, in order to fulfill a shortage of funds, they generally borrow funds through money markets from other financial institutions holding excess funds. Among the wide variety of money markets in Japan, the call market plays an important role as the market where very short-term transactions are conducted, such as transactions in which funds are received/paid on the contract day, followed by reverse transactions on the following business day (overnight transactions), and as the market in which funds are lent and borrowed among financial institutions in order to adjust changes in current account balances at the Bank. Therefore, when the Bank adjusts the overall changes in current account balances at the Bank through market operations, this influences the amount of funds borrowed or lent by financial institutions in the call market, influencing the formation of the uncollateralized overnight call rate (see Box 2, “Money Markets and the Bank of Japan”).

### **2. Supply and demand of BOJ account deposits**

This section explains how the supply-demand balance of BOJ account deposits is determined.

#### **a. Demand for BOJ account deposits and the reserve requirement system**

There are two types of demand for BOJ account deposits. One is the fund demand for payment and settlement that corresponds to the first two of the previously-mentioned three roles of BOJ account deposits (payment instruments and reserves for payment). The other is the fund demand for required reserves, reflecting the third role (reserves under the reserve requirement system) of BOJ account deposits.

##### **(1) Fund demand for payment and settlement**

Demand for BOJ account deposits arising from payment and settlement is mostly determined by the volume of payment and settlement transactions and the receipts/payment of cash scheduled on that day. For financial institutions holding BOJ account deposits, it is extremely important to settle transactions and receive/pay cash as scheduled throughout the day. Considering the risk of financial institutions not being able to settle these transactions on schedule, they usually maintain certain balances at the Bank, even at the end of the business day. This is based on the same incentive as individuals and firms keeping a certain amount of cash on hand or in demand deposits in order to ensure

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smooth payment and settlement.

Even if cash on hand becomes a little short, financial institutions' business operations will not be hindered as long as they are able to borrow funds needed in the overnight call money market at the time they realize the shortage of settlement funds. However, if financial institutions totally depend on this kind of fund management, unexpected incidents, such as operational errors, computer system failures, earthquakes, and other contingencies, or instability in financial markets caused by bankruptcies of other financial institutions, may lead to a situation in which financial institutions are unable to borrow the funds necessary to close the day's transactions or are forced to borrow funds at an extremely high interest rate.

In order to prevent such situations, each financial institution plans fund management considering its schedule of receipts and payments, as well as its funding ability in the market, and fund demand for payment and settlement of BOJ account deposits is determined accordingly. The total fund demand for payment and settlement by financial institutions holding BOJ account deposits can be calculated by adding up each financial institution's fund demand for payment and settlement.

Moreover, the Bank offers an intraday overdraft facility<sup>7</sup> in order to facilitate payment and settlement during the day. The overdraft facility automatically supplies intraday funding liquidity up to the amount of collateral submitted in advance at the Bank. As a result, financial institutions can continue to execute payment instructions, even very large ones, taking advantage of intraday overdrafts, as long as they have sufficient collateral.<sup>8</sup>

### (2) Fund demand for required reserves

The fund demand for required reserves is derived from the obligation under the

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<sup>7</sup> This intraday overdraft facility is offered at no interest; that is, this facility is structured to offer intraday liquidity with collateral, free of charge. However, the funds obtained through the facility must be paid back to the Bank by the end of the day. If the funds cannot be paid back by the cut-off time, interest for the delay is charged as a penalty for the deficiency. Therefore, the counterparties, which hold BOJ account deposits, act to keep current account balances at the Bank in the black at the end of the day, even if they use the facility.

<sup>8</sup> In a simple description, for each entity, the fund demand for the payment and settlement of the BOJ account deposit depends on the excess amount of the peak net payment amount of the transactions throughout the day (the maximum amount of the difference calculated by subtracting the amount of receipts of funds from that of payments of funds during the business day) over the amount of the collateral. This means that when the peak net payment amount is likely to exceed the amount of the collateral, the financial institution is required to hold a current account balance at the Bank that is at least equivalent to the excess.

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reserve requirement system that financial institutions must maintain reserves in their BOJ current accounts. In Japan, the Act on Reserve Requirement System, enforced in 1957, stipulates that a financial institution designated in the Act (a financial institution subject to the required reserve)<sup>9</sup> should deposit in its BOJ account an amount of funds equal to or exceeding the designated percentage (reserve requirement ratio) of its deposits and other liabilities.

Under the reserve requirement system, financial institutions are required to maintain average current account balances at the Bank that are equal to or exceed the legal reserve requirements (also referred to as “the required reserve;” see Box 3, “Calculation Method for the Legal Reserve Requirement”) for a month at the end of daily business for each one-month period from the 16th of the month to the 15th of the following month (reserve maintenance period). This method is called a semi-lagged system.<sup>10</sup> With this method, even if a financial institution’s current account balance at the Bank falls below the required amount on a given day, the requirement can still be met as long as the financial institution holds an excess amount on another day and the average current account balance at the Bank throughout the reserve maintenance period equals or exceeds the legal reserve requirements. On the other hand, if a financial institution’s average current account balance at the Bank for a given month falls short of the legal reserve requirement, a penalty is charged for the deficiency. The penalty, equal to the basic loan rate<sup>11</sup> plus an annual rate of 3.75 percent, is levied against the

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<sup>9</sup> Financial institutions subject to the reserve requirement system include: city banks; regional banks; regional banks II; trust banks; foreign banks’ branches in Japan; long-term credit banks; *shinkin* banks (limited to those with deposit balances of more than 160 billion yen at the fiscal year end); Norinchukin bank; and Japan Post Bank.

<sup>10</sup> The methods of maintaining reserves in central banks are conceptually divided into a lagged system and a contemporaneous system. Using the lagged system, central banks calculate the required reserves of financial institutions based on their liabilities, which are the subjects of reserves, for a designated period (or point in time), and, later, the institutions maintain the required reserves in central banks. With the contemporaneous system, the calculation period for required reserves coincides with the reserve maintenance period, and the financial institutions deposit their reserves before the required reserves are fixed. A mixed method between these two is known as a semi-lagged system. In Japan, financial institutions have to maintain required reserves, which are calculated from the average balances of the institutions’ liabilities, which are the subjects of reserves, during the month. The financial institutions then maintain average current account balances at the Bank from the 16th of the month to the 15th of the following month (reserve maintenance period) that are equal to or exceed the required reserves.

<sup>11</sup> The basic loan rate is the base interest rate used by the Bank to provide loans directly to financial institutions, and is applied in the complementary lending facility (see Section C.2.a in this chapter). The basic loan rate was 0.3 percent as of the end of 2010.

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reserve deficiency, and this penalty is paid to the government via the Bank.<sup>12</sup>

On the other hand, reserves generally do not bear interest nor bring profit.<sup>13</sup> In other words, holding BOJ account deposits produces an opportunity cost for financial institutions subject to the reserve requirement system. Therefore, financial institutions that are subject to the reserve requirement system have the incentive to manage their daily current account balances at the Bank so that their average current account balances at the Bank during the reserve maintenance period will be close to their required reserves. In many major economies, the reserve requirement ratio is set to the level at which the average required reserves exceed the fund demand for payment and settlement. Under the current reserve requirement ratio in Japan, it seems that, as a whole, the fund demand for required reserves of financial institutions that are subject to the reserve requirement system usually exceeds that for payment and settlement. As mentioned above, under the current reserve requirement system, the demand for BOJ account deposits is generally stable and highly predictable, since: (1) the demand for BOJ account deposits is usually determined based on the fund demand for required reserves; and (2) financial institutions maintain their reserves to meet legal reserve requirements during the reserve maintenance period. These characteristics of the reserve requirement system contribute to the smooth conduct of monetary policy by facilitating the Bank's market operations.<sup>14</sup>

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<sup>12</sup> When it may be difficult for financial institutions to borrow funds in money markets, the institutions can hold reserves utilizing the Bank's complementary lending facility (see Section C.2.a in this chapter) at the basic loan rate, as long as the institutions have sufficient collateral submitted in advance at the Bank.

<sup>13</sup> However, the complementary deposit facility conducted by the Bank as a temporary measure (see Section C.2.b in this chapter) causes the interest to accrue to excess reserves (an amount exceeding the legal reserve requirements under the reserve requirement system).

<sup>14</sup> The first country in the world to adopt the reserve requirement system was the United States, and at that time, the purpose of the system was to protect depositors by compelling banks to reserve a certain percentage of their deposits. Later, this system was utilized as a measure of market operations by changing the reserve requirement ratio. In the past, in Japan, under the situation in which reserves bore no interest, the operation to shift the reserve requirement ratio was considered to be an effective method to tighten or ease monetary conditions by influencing the lending attitude through the increase and decrease of the cost burden on financial institutions. However, currently, major countries, including Japan, where money markets are developed, do not use the reserve requirement system as a monetary tightening or easing measure. In Japan, the reserve requirement ratio has not been changed since October 1991. In some emerging countries, the reserve requirement ratio is used as a monetary tightening and easing measure at present.

## B. Framework of Market Operations

### b. Sources of changes in current account balances at the Bank

#### (1) Autonomous factors

Changes in the balance of each financial institution's current account at the Bank are caused by: (1) receipts and payments of funds with other financial institutions; (2) changes in the balance of reserves for cash payment to individuals and firms ("changes in banknotes"); and (3) receipts and payments of funds with the government ("changes in treasury funds and others"). Among these changes, changes in (1) are offset when considering financial institutions as a whole. Therefore, if there is no influence from market operations, changes in (2) — namely, the changes in banknotes — and changes in (3) — namely, the changes in treasury funds and others — are the factors that affect current account balances at the Bank. These changes together are called sources of changes in current account balances at the Bank. The changes in banknotes and those in treasury funds and others reflect the consequences of the economic activity of a wide range of entities such as firms, households, and the government. In the context of daily market operations, these changes are considered autonomous factors.<sup>15</sup>

In the sources of changes in current account balances at the Bank, the changes in banknotes include various elements affecting the issuance of banknotes and their withdrawal from circulation. Banknotes are issued when financial institutions withdraw banknotes by debiting their BOJ account deposits, for example, to provide firms with cash for paying salaries to their employees or households for holiday seasons. As the issuance of banknotes decreases current account balances at the Bank, it is described as a source of a shortage of funds. On the other hand, banknotes are withdrawn from circulation when, for example, financial institutions credit their accounts at the Bank by returning banknotes obtained from their customers after a long weekend. As the withdrawal of banknotes from circulation increases current account balances at the Bank, it is described as a source of an excess of funds.

Changes in treasury funds and others include receipts and payments of various treasury funds. The payments of treasury funds are made when the government debits its account at the Bank and credits the accounts of financial institutions for various reasons, including the payment of public pensions to individuals or payment for public works to firms. Flows of treasury funds between the government and financial institutions take place through their accounts at the Bank. Therefore, the payments of treasury funds are accompanied by an increase in current account balances at the Bank, and are sources of an excess of funds. On

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<sup>15</sup> From a medium- to long-term perspective, as the Bank influences economic activity through its conduct of monetary policy, it consequently influences the demand for banknotes.

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the other hand, receipts of treasury funds, which are conducted when the government receives funds from financial institutions in the process of collecting funds such as taxes from individuals and firms, are sources of a shortage of funds.<sup>16</sup>

### (2) Operations

When the autonomous factors described above change, the excess and shortage of funds, which cannot be adjusted by call transactions among financial institutions, remain in current account balances at the Bank as a whole. This induces the uncollateralized overnight call rate to diverge from the level of the Bank's target rate.

Therefore, it is necessary for the Bank to appropriately adjust the supply-demand balance for BOJ account deposits based on its projection of the daily excess and shortage of funds. The Bank adjusts the fluctuations in current account balances at the Bank through daily market operations,<sup>17</sup> such as the provision of loans and purchases/sales of financial assets, in order to control the uncollateralized overnight call rate. The operations that increase current account balances at the Bank are referred to as funds-supplying operations, and those that decrease current account balances at the Bank are referred to as funds-absorbing operations.

The above flows of funds can be summarized into the following formulas.

- Changes in banknotes + changes in treasury funds and others = excess/shortage of funds
- Excess/shortage of funds + market operations = changes in current account balances at the Bank

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<sup>16</sup> Receipts and payments of yen funds between the government and private financial institutions caused by foreign exchange interventions are included in the changes in treasury funds and others. For example, settlements for yen-selling interventions are, in effect, a payment of treasury funds. On the other hand, the issuance of financing bills (FBs) to borrow funds for yen-selling interventions is a receipt of treasury funds. As a result, the excess and shortage of funds related to the interventions are offset when FBs are issued. When the Bank underwrites FBs issued by the government in the case of yen-selling interventions, the excess and shortage of funds related to the interventions will not be offset. Receipts and payments of funds between yen deposit accounts held at the Bank by other central banks and international institutions and those held by private financial institutions are also sources of changes in current account balances at the Bank.

<sup>17</sup> This category of market operations is also referred to as "open market operations."



## B. Framework of Market Operations

### 3. Mechanism for determination of the overnight interest rate

#### a. Determination of the overnight interest rate

This section briefly explains how the overnight interest rate<sup>18</sup> is determined under the current framework in Japan.<sup>19</sup>

The overnight interest rate is determined at the level where the supply and demand for BOJ account deposits are balanced (see Figure 5-1). For example, when the withdrawal of banknotes by financial institutions increases, the current account balances at the Bank decrease (the supply curve in Figure 5-1 shifts to the left), and the demand for BOJ account deposits exceeds the supply at the level of the prevailing interest rate. In this situation, some financial institutions would pay a higher interest rate to borrow overnight funds in the call market. Consequently, the overnight interest rate rises to the level where the supply and demand for BOJ account deposits are balanced, thereby restoring the equilibrium of such supply and demand. Through such a process, the overnight interest rate is determined at the level that balances the supply and demand for BOJ account deposits.<sup>20</sup>

As mentioned above, there are two sources of demand for BOJ account deposits: the fund demand for payment and settlement and that for required reserves (see Section B.2.a in this chapter). The fund demand for payment and settlement is determined by the amount of settlement of transactions and receipts and payments of cash scheduled on a given day (see Section B.2.a.[1] in this chapter).

On the other hand, with regard to the fund demand for required reserves, the reserve requirement ratio in Japan is set at the level where the required reserves exceed the average fund demand for payment and settlement. Therefore, when the required reserves (the fund demand for the required reserves) are

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<sup>18</sup> In the following pages, the uncollateralized overnight call rate is referred to as the “overnight interest rate.”

<sup>19</sup> The following is a simplified example. For the details of the mechanism for determining the overnight interest rate and fund demand for required reserves, see “*Gendai no Kinyu Seisaku* (Modern Monetary Policy in Theory and Practice)” by Masaaki Shirakawa (available only in Japanese) listed in the references (Appendix 2).

<sup>20</sup> It should be noted that the daily overnight interest rate is not determined by the monetary base (the total of BOJ account deposits and cash) but by the balance of supply and demand for BOJ account deposits. This is because, as mentioned above (see Section B.2.b.[1] in this chapter), with regard to the daily supply and demand for BOJ account deposits, changes in banknotes are autonomously determined.

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sufficient, usually the fund demand for payment and settlement is also met.<sup>21</sup> Because the balance of the required reserves needs to exceed the required reserve amount only on an average basis over the whole reserve maintenance period, the sensitivity of demand with respect to changes in the interest rate differs depending on whether it is the last day of the reserve maintenance period. This is because, on the last day of the reserve maintenance period,<sup>22</sup> the amount of the current account balances at the Bank that each financial institution has to maintain at the end of the day is fixed.

Specifically, on the last day of the reserve maintenance period, financial institutions borrow necessary funds in the money market or by using the Bank's complementary lending facility (see Section C.2.a in this chapter), even if they have to pay a higher interest rate, in order to fulfill the required reserves for the reserve maintenance period. This is because if the average balance of a financial institution's reserves falls short of the required reserve, the financial institution is required to pay a penalty for the deficiency (see Section B.2.a.[2] in this chapter). On the other hand, financial institutions usually avoid holding funds at the Bank exceeding the required amount (holding excess reserves) so as not to lose the opportunity to lend in the money market.<sup>23</sup> Therefore, on the last day of the reserve maintenance period, the fund demand for required reserves becomes extremely inelastic with respect to changes in the interest rate.

Except for the last day of the reserve maintenance period, there are basically no such restrictions on the fund demand for required reserves.<sup>24</sup> Because financial institutions are required to maintain the average balances for the reserve maintenance period to fulfill the required reserves, shortages of balances are acceptable on a daily basis. Financial institutions adjust their daily

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<sup>21</sup> However, because the amount of required reserves changes depending on the amount of deposits accepted by financial institutions (see Box 3, "Calculation Method for the Legal Reserve Requirement"), the amount of required reserves for financial institutions that hold a small amount of deposits is small. In these financial institutions, compared to those holding a large amount of required reserves, the fund demand for payment and settlement tends to exceed that for required reserves.

<sup>22</sup> In Japan, the one-month period from the 16th of the month to the 15th of the following month is referred to as the reserve maintenance period.

<sup>23</sup> However, under the complementary deposit facility conducted by the Bank as a temporary measure (see Section C.2.b in this chapter), interest accrues to excess reserves, and financial institutions are therefore motivated to hold excess reserves when the market interest rate is lower than the interest rate applied to excess reserves.

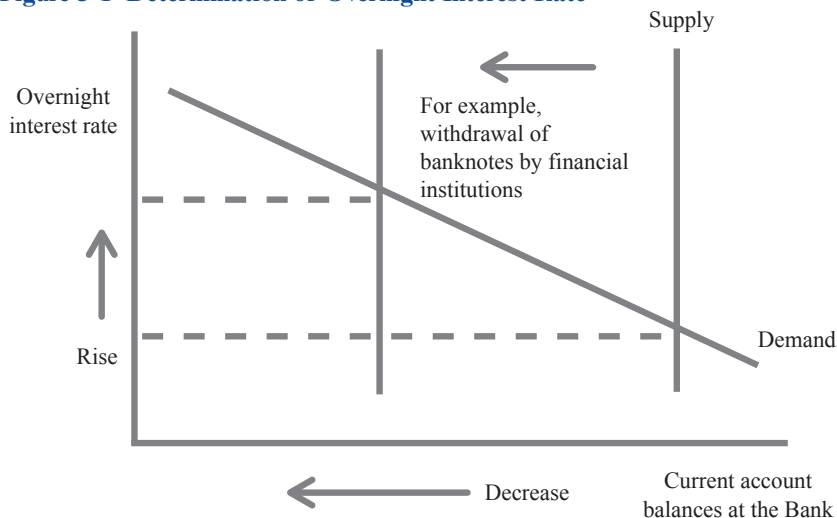
<sup>24</sup> However, because financial institutions need to hold required reserves by the last day of the reserve maintenance period, the fund demand for required reserves tends to become inelastic with respect to changes in the interest rate as the last day approaches.

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changes in the balances of their reserves by checking the overnight interest rate, which corresponds to the opportunity cost of holding the reserves. For example, financial institutions predict that the overnight interest rate usually becomes close to the target level of the policy interest rate set by the Bank's guidelines for money market operations. Therefore, when they judge that the market interest rate is higher than predicted, they lend their excess funds in the market instead of depositing them as reserves. Conversely, they deposit excess funds as reserves when the market interest rate declines.<sup>25</sup>

As mentioned above, under the reserve requirement system, demand for BOJ account deposits is generally stable and highly predictable, thereby facilitating the Bank's encouragement of the overnight interest rate to stay at an adequate level. In this context, the Bank sets the target level of the overnight interest rate, and when the overnight interest rate is likely to diverge from the target level, the Bank conducts operations to supply or absorb funds. In this way, the overnight interest rate in Japan is guided by the Bank to the target level.

**Figure 5-1 Determination of Overnight Interest Rate**



<sup>25</sup> In this way, even if central banks do not conduct operations, the overnight interest rate tends to stabilize around the target rate. This function of the reserve requirement system is called the "smoothing function."

### b. Fluctuations in the overnight interest rate

Despite large changes in banknotes and in treasury funds and others (see Figure 5-2 for changes in the excess and shortage of funds, which are the total changes in banknotes and in treasury funds and others), both of which influence current account balances at the Bank, the fluctuations in the overnight interest rate are small in Japan. This is because the Bank's projection regarding changes in banknotes and in treasury funds and others is very precise<sup>26</sup> and the Bank is capable of ascertaining almost the exact amount required for the operations to adjust the excess or shortage of funds. Moreover, the Bank releases its projection of changes in current account balances at the Bank in order to support private financial institutions' planning for funding, thus contributing to preventing large fluctuations in interest rates.<sup>27</sup>

The fund demand for payment and settlement increases, and consequently the pressure to raise interest rates tends to intensify, on days when there is a large volume of transactions of funds, such as on days with a large amount of tax payments, as well as issuance of JGSs, and when financial institutions close their books. The same situation can be observed in the case of turmoil in financial markets, a failure of payment and settlement systems, or a natural disaster such as an earthquake. Moreover, on the last day of the reserve maintenance period, when financial institutions tend to pay a higher interest rate to fulfill required reserves, the fund demand for required reserves becomes inelastic with respect to the interest rate, and the upward pressure on the interest rate tends to intensify. In this situation, the Bank restrains a rise in the overnight interest rate by flexibly providing ample funds in response to an increase in demand.

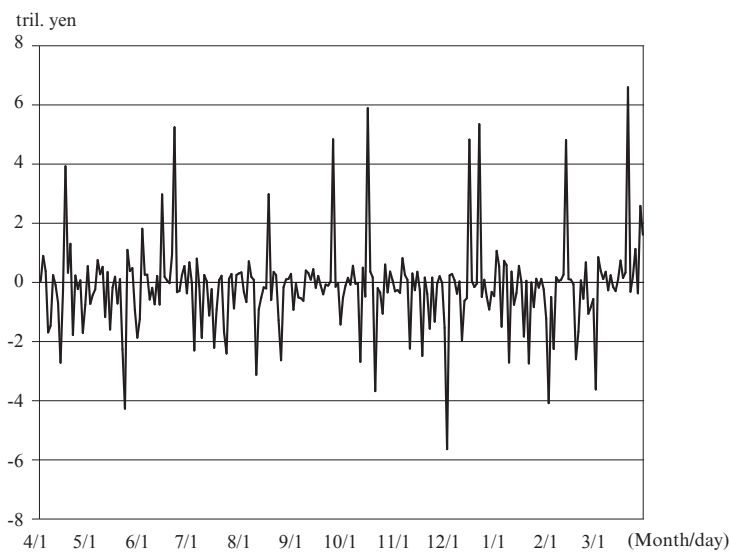
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<sup>26</sup> The Bank's predictions regarding banknotes are accurate because its Head Office and branches obtain data daily, from financial institutions that hold BOJ account deposits, on predicted amounts of receipts and payments of banknotes to be made between the Bank and these institutions. Meanwhile, the high accuracy of the Bank's predictions regarding treasury funds is attributable to the fact that the Bank's treasury fund services cover all related services in an integrated manner, such as the receipt and payment of treasury funds, the accounting of government deposits, and the calculation and checking of treasury funds for government agencies (the treasury fund services conducted by central banks in the United States and major European countries are usually limited to the accounting of government deposits [see Footnote 1 in Chapter IX]).

<sup>27</sup> For the prediction of changes in current account balances at the Bank, the Bank releases the next day's prediction in the evening of every business day, and the monthly prediction at the beginning of every month.

## C. Details of Market Operations

**Figure 5-2 Daily Changes in Excess/Shortage of Current Account Balances at the Bank in Fiscal 2009**



## C. Details of Market Operations

This section explains the specific details of the Bank's market operations. As explained above, under the reserve requirement system, demand for BOJ account deposits is generally stable and highly predictable. Accordingly, the Bank adjusts the balance of supply and demand for BOJ account deposits through the conduct of operations in response to changes in current account balances at the Bank caused by autonomous factors (see Section C.1 in this chapter).

In addition to these operations to adjust the balance of supply and demand for BOJ account deposits as a whole, in order to prevent the uncollateralized overnight call rate from rising excessively, the Bank has established a complementary lending facility, whereby it provides loans<sup>28</sup> secured by col-

<sup>28</sup> Loans exclude the type of loans provided by discounting of bills, which were commercial bills discounted by financial institutions at the request of customers and approved as eligible by the Bank. The discounting of bills was implemented by the Bank through purchases from financial institutions at the face value subtracting the amount equivalent to the interest rate for the period during which the bills were held at the Bank until maturity. The discounting of bills was suspended at the end of June 2001 since its significance as a policy tool had diminished.

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lateral to financial institutions holding BOJ account deposits at an interest rate exceeding the Bank's target level of the policy interest rate to some extent (see Section C.2.a in this chapter). Moreover, with a view to preventing the uncollateralized overnight call rate from falling excessively, the Bank has established a complementary deposit facility as a temporary measure, in which it pays interest on excess reserves (balances held in the accounts with the Bank in excess of required reserves under the reserve requirement system) (see Section C.2.b in this chapter). As the reserve requirement system has already been explained in Section B.2.a.(2), the following section focuses on the Bank's operations, the complementary lending facility, and the complementary deposit facility.

### 1. Operations

Operations are the Bank's primary means to adjust the supply and demand for BOJ account deposits. In other words, the Bank conducts operations in order to encourage the overnight interest rate to remain at the target level by influencing the supply and demand for BOJ account deposits. Operations by the Bank are conducted, for example, by providing loans against financial assets submitted as collateral, or by selling and purchasing JGSs.

Currently, the Bank conducts various types of operations (see Figure 5-3), which can be classified broadly into two categories, namely, funds-supplying operations and funds-absorbing operations. Funds-supplying operations, such as loans against financial assets submitted as collateral, have the effect of increasing current account balances at the Bank. Funds-absorbing operations, such as sales of bills issued by the Bank and sales of JGSs held by the Bank with repurchase agreements, have the effect of reducing current account balances at the Bank (for each type of operation, see sections C.1.a and b in this chapter).<sup>29</sup>

The Bank's operations can also be classified by whether they have fixed maturities. While outright operations, such as purchases or sales, do not have maturities, purchases and sales with repurchase agreements or lending are operations with fixed maturities. In outright operations, the Bank purchases financial assets, and funds supplied by the Bank will not be returned from the counterparties. By the same token, the Bank sells financial assets, and funds absorbed by the Bank will not be returned to the counterparties. On the other hand, in operations with maturities, the Bank temporarily supplies funds, and

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<sup>29</sup> In addition to funds-supplying operations and funds-absorbing operations, the Bank has established the securities lending facility for the purpose of providing financial institutions with JGSs held by the Bank as a temporary and secondary source (so-called securities lending; see Section C.1.c in this chapter).

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the supplied funds will be returned to the Bank on the due date. By the same token, the Bank temporarily absorbs funds, and such funds will be returned to the counterparties on the due date.

Moreover, operations can be classified by duration, namely, long-term operations and short-term operations. Long-term operations are conducted to supply long-term funds against the Bank's stable debt, mainly in the form of banknotes. Short-term operations are conducted to address temporary excesses or shortages of funds mainly caused by changes in banknotes and in treasury funds and others. The Bank, by effectively using both long-term and short-term operations, works to smoothly adjust current account balances at the Bank without causing disruptions in the markets. At present, the Bank conducts outright purchases of Japanese government bonds (JGBs) (see Section C.1.a.[5] in this chapter) to supply long-term funds, while it supplies short-term funds mainly by conducting funds-supplying operations against pooled collateral (see Section C.1.a.[1] in this chapter).

At MPMs, the Bank's Policy Board decides and modifies basic matters regarding operations, such as the types of eligible financial assets for the Bank's purchases and sales, and the methods of, as well as conditions for, the transaction. The Bank makes public principal terms and conditions for each type of operation. In principle, eligible counterparties in the Bank's operations are selected annually, based on the procedure for selection of eligible counterparties in each type of operation, among depository financial institutions, securities companies, and *tanshi* companies.<sup>30</sup> When actually conducting each operation, the Bank mainly employs the conventional method of competitive yield auction<sup>31</sup>

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<sup>30</sup> The criteria for selecting eligible counterparties in the Bank's operations are released (available only in Japanese) on the Bank's website (<http://www.boj.or.jp/index.html>). Common requirements for eligibility as a counterparty in each operation are as follows: (1) a counterparty should hold a BOJ account (be a BOJ account holder); (2) a counterparty should be a participant in the Bank of Japan Financial Network System (BOJ-NET); and (3) a counterparty should be deemed by the Bank to have sufficient creditworthiness. For each type of operation, the Bank takes into consideration the following for determining the priority among bidders when the number of bidders in its operations exceeds the number of offerings: (1) the bidder's presence in the market in terms of its holdings and transactions of assets concerned; and (2) the results of successful bidding in the Bank's operations if the bidder is already an eligible counterparty. The financial institutions selected as eligible counterparties must: (1) participate in the operations actively; (2) process business operations accurately and promptly; and (3) provide useful market information to the Bank.

<sup>31</sup> Under the conventional method of competitive yield auction, for example, in funds-supplying operations, the Bank accepts bids, starting with the highest yield bid, until the total of the accepted bids reaches the amount offered. If there are multiple bidders at the same yield, the amount of bids accepted may be allocated according to the amount of each bid.

## Chapter V: Market Operations

for determining the amount of successful bids and the yield, in order to make full use of the market mechanism. As for collateral for lending, the categories and prices of collateral and eligibility standards are stipulated in the Bank's Guidelines on Eligible Collateral, under which the Bank selects only assets with sufficient creditworthiness and marketability.<sup>32</sup>

The following explains the operations of the Bank by classifying them into funds-supplying operations and funds-absorbing operations.<sup>33</sup>

### a. Funds-supplying operations

The Bank has the following types of operations to supply funds to markets. It uses these means depending on the situation in order to conduct market operations in line with the guidelines decided at MPMs.

#### (1) Funds-supplying operation against pooled collateral

The funds-supplying operation against pooled collateral is the operation by which the Bank provides loans to eligible financial institutions against pooled collateral<sup>34</sup> submitted by the institutions to the Bank. At present, this operation is the main method for supplying short-term funds, and the duration shall not exceed one year. The loan interest is determined either by the variable-rate method, in which the interest rate on loans shall be determined by the conventional method of multiple-rate competitive auctions; or

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<sup>32</sup> The Bank will not accept as collateral, or as purchase with repurchase agreements, liabilities of financial institutions that are BOJ account holders and their related firms. This is because the Bank should: (1) avoid disclosing its judgment on the credibility of individual financial institutions that are BOJ account holders; and (2) exclude from the Bank's assets and collateral liabilities that might be paid back by the Bank's own extension of credit.

<sup>33</sup> The details and characteristics of market operations conducted by the Bank are also explained in "Money Market Operations in Fiscal XXXX," released every fiscal year (available on the Bank's website).

<sup>34</sup> The term "pooled collateral" refers to collateral that counterparties submit to the Bank based on agreements pertaining to transactions with the Bank and the agent contract. The assets most commonly submitted by counterparties to the Bank are JGSs, corporate bonds, other securities, and loans on deeds. Counterparties may borrow from the Bank within the limit of the value of pooled collateral through various means, such as the funds-supplying operation against pooled collateral, complementary lending facility, and intraday overdraft, as well as the funds-provisioning measure to support strengthening the foundations for economic growth as a temporary measure (see Footnote 14 in Chapter I).



## C. Details of Market Operations

**Figure 5-3 Operations by the Bank of Japan<sup>1</sup>**

### 1. Funds-Supplying Operations

Type of Operations	Year of introduction	Start day <sup>2</sup>	Duration	Maturity
Funds-supplying operation against pooled collateral (at the Head Office)	2006	From T + 0 through T + 4	Short-term	Within one year
Funds-supplying operation against pooled collateral (at all offices)	2006	From T + 0 through T + 2	Short-term	Within one year
Purchase of CP with repurchase agreements	1989	T + 2	Short-term	Within three months
Purchase of Japanese government securities with repurchase agreements	2002	From T + 0 through T + 2	Short-term	Within one year
Outright purchase of treasury discount bills	1999	From T + 2 through T + 3	Short-term	—
Outright purchase of Japanese government bonds	1966	T + 3	Long-term	—

### 2. Funds-Absorbing Operations

Type of Operations	Year of introduction	Start day	Duration	Maturity
Sale of bills	1971	From T + 0 through T + 4	Short-term	Within three months
Sale of Japanese government securities with repurchase agreements	2002	From T + 0 through T + 2	Short-term	Within six months
Outright sale of treasury discount bills	1999	From T + 2 through T + 3	Short-term	—

### 3. Others

Type of Operation	Year of introduction	Start day	Maturity
Operations through the securities lending facility <sup>3</sup>	2004	T + 0	O/N <sup>4</sup> in principle

Notes: 1. Excludes those conducted as temporary measures.

2. The start day is the day when funds and securities are settled after an operation, and when the term of the operation starts. “T” in “T +  $\alpha$ ” stands for the day of trade, which here indicates the day of offering, when the Bank issues notice to the eligible counterparty to the operation regarding the type of operation, the amount of funds, and the start day. “ $\alpha$ ” is the number of business days after the day of offering to the start day. Depending on financial market conditions, however, start days other than those indicated above may be used.

3. The operation is conducted as the sale of JGSs with repurchase agreements.

4. When the start day is four business days before the due date of coupon payment of the JGSs subject to the sale, the maturity date will be set on the same day as the due date. The maturity date is the day when funds and securities are settled upon the end of the operation.

the fixed-rate method,<sup>35</sup> in which the interest rate on loans shall be the Bank’s target rate for the uncollateralized overnight call rate on the day of disbursement of the loans.<sup>36</sup>

There are two types of such operations. The first type is conducted at the Bank’s Head Office and branches, lending to a wide range of counterparties that have transactions with these offices. The other type is conducted at the Bank’s Head Office, lending solely to counterparties that have transactions with the Head Office.

#### (2) Purchase of CP with repurchase agreements

The Bank purchases eligible CP with an agreement to sell them back to the counterparty on a specified date (within three months). On the day of maturity,

<sup>35</sup> The fixed-rate funds-supplying operation against pooled collateral was introduced in December 2009, when the Bank introduced the three-month funds-supplying operation against pooled collateral, as a new method in which the interest rate applied to the operation was fixed. It was introduced to further enhance easy monetary conditions by encouraging a further decline in longer-term interest rates.

<sup>36</sup> However, it was decided at the MPM held in October 2010 that interest rates applied to the fixed-rate funds-supplying operation against pooled collateral would be maintained at 0.1 percent for the time being.

## C. Details of Market Operations

the Bank sells back the CP at prices equivalent to the purchase prices plus interest for the period during which the CP was held by the Bank.

### **(3) Purchase of JGSs with repurchase agreements**

The Bank purchases interest-bearing JGBs and treasury discount bills (T-Bills) in this operation, with an agreement to sell them back to the counterparties on a specified date (within one year). On the day of maturity, the Bank sells back the JGSs at prices equivalent to the purchase prices plus interest for the period during which the JGSs were held by the Bank.

### **(4) Outright purchase of T-Bills**

The Bank purchases T-Bills in this operation.

### **(5) Outright purchase of JGBs**

The Bank purchases interest-bearing JGBs in this operation in order to steadily supply funds to the market, in response to an increasing trend in demand for banknotes that reflects economic growth. Therefore, the amount outstanding of JGBs held by the Bank is managed to be within the outstanding amount of banknotes in circulation.<sup>37</sup> The Bank publishes this management policy in advance to clarify that the purchase of JGBs is not aimed at financing government debt, which has the effect of preventing risk premiums of long-term interest rates from rising (see Box 4, “Market Operations and the Bank of Japan’s Balance Sheet”). Moreover, in order to prevent the remaining maturities of JGBs purchased from becoming too short or too long, the Bank introduced a scheme to purchase JGBs from specific brackets classified by bond type and residual maturity. The Bank conducts each purchase in two segments chosen from the following five segments: up to one year; more than one year and up to ten years; more than ten years and up to 30 years; floating-rate bonds; and

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<sup>37</sup> In October 2010, as part of the comprehensive monetary easing policy (see Footnote 40 in this chapter), the Bank decided to establish the Asset Purchase Program on its balance sheet, for the purpose of encouraging a decline in longer-term interest rates. In this program, the Bank purchases JGBs with a remaining maturity of one to two years, and holds JGBs apart from the assets obtained through other operations. The purchase of JGBs through the program is different from the existing outright purchase of JGBs, as described in the text, in terms of the purposes and the types of JGB holdings, and is treated differently from the JGBs purchased within the ceiling of the amount of banknotes in circulation.

inflation-indexed bonds.<sup>38</sup>

### (6) Exceptional measures

In addition to the conventional funds-supplying operations explained above, the Bank has taken flexible actions when it has been judged necessary considering the economic and financial situation, such as expanding the range of assets in the outright purchase or the range of eligible collateral in its operations.

During the global financial crisis since summer 2007, the Bank introduced various funds-supplying measures, such as the outright purchase of CP and corporate bonds, as well as the special funds-supplying operation to facilitate corporate financing,<sup>39</sup> in response to the sharp deterioration of liquidity in financial markets and the serious damage to financial intermediary functions. Moreover, as part of its collateral policy, the Bank expanded the range of corporate debts to be included in its eligible collateral (see Box 4 for Chapter I, “Global Financial Crisis after Summer 2007 and Policy Measures Taken by the Bank of Japan”).

In 2010, in order to further enhance monetary easing, the Bank introduced the comprehensive monetary easing policy.<sup>40</sup> As part of this approach, the Bank decided to conduct the fixed-rate funds-supplying operation against pooled collateral through the Asset Purchase Program established on its balance sheet. The Bank also conducted outright purchases of various financial assets, such as JGSs, CP, corporate bonds, exchange-traded funds (ETFs), and Japan real estate investment trusts (J-REITs).<sup>41</sup>

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<sup>38</sup> In order to prepare for the market risk entailed by purchased assets, such as JGBs, the Bank allows for a provision for possible losses on bonds transactions based on related governmental and ministerial ordinances, and the Bank’s Accounting Rules (see Box 3 for Chapter II, “The Bank of Japan’s Accounts”).

<sup>39</sup> The special funds-supplying operation to facilitate corporate financing is conducted for an unlimited amount within the value of corporate debt at an interest rate equivalent to the target for the uncollateralized overnight call rate.

<sup>40</sup> The comprehensive monetary easing policy refers to a policy package introduced by the Bank in October 2010 to further enhance monetary easing, which is composed of the following three measures: (1) it will encourage the uncollateralized overnight call rate to remain at around 0 to 0.1 percent; (2) it will maintain the virtually zero interest rate policy until it judges that price stability is in sight; and (3) it will establish a program (the Asset Purchase Program) on its balance sheet as a temporary measure to conduct fixed-rate funds-supplying operations against pooled collateral and to purchase various financial assets.

<sup>41</sup> In addition, as a temporary measure from July 2003 through March 2006, the Bank conducted purchases of asset-backed securities in order to encourage the development of the asset-backed securities market and to strengthen the transmission mechanism of monetary easing.

## C. Details of Market Operations

At the same time, the Bank carefully considers the soundness, liquidity, and neutrality of the assets it holds even when conducting such temporary and extraordinary measures (see Box 4 for Chapter II, “Basic Accounting Principles for the Bank of Japan’s Balance Sheet”). For example, when the Bank purchases corporate debts entailing credit risk, it takes the characteristics of this measure into consideration, such as the high possibility of loss on the assets purchased and deep involvement in micro-level resource allocations for individual industries and firms, and sets countermeasures, such as certain restrictions on the creditworthiness of the assets to be purchased, a limit to the total amount outstanding of purchased assets, and a limit on the amount outstanding of purchased assets per issuer.

### b. Funds-absorbing operations

The Bank has the following types of operations to absorb funds from markets. It uses these means depending on the situation in order to conduct market operations in line with the guidelines decided at MPMs.

#### (1) Sale of bills

The Bank absorbs funds from markets by selling bills drawn by the Bank with a maturity of three months or less.

#### (2) Sale of JGSs with repurchase agreements

The Bank sells interest-bearing JGBs and T-Bills with an agreement to repurchase them from the counterparties on a specified date (within six months). On the day of maturity, the Bank repurchases the JGSs at prices equivalent to the sale price plus interest for the period during which the securities were held by the counterparties.

#### (3) Outright sale of T-Bills

The Bank absorbs funds from the market by selling its T-Bills to the counterparties.

### c. Securities lending facility

The securities lending facility is different from the aforementioned operations that adjust the fluctuations in current account balances at the Bank. The purpose of the securities lending facility is to contribute to enhancing liquidity in the

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JGS markets and to maintaining smooth market functions. In the operation, the Bank sells its JGSs to the markets with repurchase agreements to provide a temporary and secondary source of JGSs (referred to as “securities lending”). In the JGS markets, liquidity may decline occasionally when market participants experience difficulties in securing specific issues or face uncertainties over their availability. In these cases, with the prerequisite of market participants making every effort to maintain market liquidity, the securities lending facility enables market participants to temporarily secure JGSs from the Bank as a complementary tool.

### 2. Bilateral market operation tools

In addition to the operations described so far, the Bank uses bilateral market operation tools in order to prevent excessive fluctuations in the overnight interest rate and to conduct smooth market operations. The bilateral market operation tools are the complementary lending facility and the complementary deposit facility. The complementary deposit facility is conducted as a temporary measure.

#### a. Complementary lending facility

The complementary lending facility is a standing lending facility<sup>42</sup> in which, based on conditions pre-specified by the Bank, the Bank extends loans at the request of eligible counterparties. The amount of the loans should not exceed the total value of collateral submitted by the eligible counterparties to the Bank. The maturity of the loans is overnight and the counterparties should pay the loans back to the Bank on the following business day. The loan rate (basic loan rate) is decided and changed at MPMs, and is set to be above the target level of the uncollateralized overnight call rate.<sup>43</sup> The counterparties eligible for the complementary lending facility are financial institutions such as banks and securities companies that request to use the facility and are deemed sufficiently

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<sup>42</sup> The Federal Reserve, the European Central Bank, and the Bank of England also have a similar standing lending facility in which operations are conducted at the request of counterparties.

<sup>43</sup> As of the end of 2010, the target for the uncollateralized overnight call rate was around 0 to 0.1 percent and the basic loan rate was 0.3 percent. In the current complementary lending facility, when loans with a duration of one business day are extended for a total of more than five business days per reserve maintenance period, a higher interest rate (the basic loan rate plus 2.0 percent) will be applied to such loans. However, since March 2003, a temporary measure has been taken to remove the restriction of the maximum number of days and to terminate the implementation of the higher interest rate.

## C. Details of Market Operations

creditworthy by the Bank. The loans are provided against pooled collateral (see Footnote 34).

When financial institutions find it difficult to obtain funds from the market at interest rates that are the same or lower than that of the complementary lending facility, they would prefer to use the complementary lending facility. Therefore, the complementary lending facility has the effect of preventing an excessive rise in the overnight interest rate.<sup>44</sup> Moreover, even when financial institutions do not actually use this facility, the facility has the effect of stabilizing the overnight interest rate by building market confidence in the availability of funds.

The basic interest rate at which the Bank provides loans to financial institutions used to be called the official discount rate. It played the role of the policy interest rate, indicating the basic stance of the monetary policy. In the past, under the regulated interest rate system prior to the financial liberalization, various interest rates fluctuated in line with changes in the official discount rate, and the Bank's main market operation was lending to financial institutions. However, with the deregulation of interest rates in recent years and the development of various types of financial markets, such as the secondary market of JGSS, the direct link between the official discount rate and various types of market interest rates was lost. In such a situation, the types of market operations by the Bank have changed to those that utilize market functions, such as operations with multiple-rate competitive auctions. Through such changes, the target level of the uncollateralized overnight call rate based on the guidelines for money market operations is currently considered as the policy interest rate, which indicates the Bank's monetary policy stance. The Bank's loan rate to financial institutions — that is, the basic loan rate for the complementary lending facility — now plays a new role of preventing an excessive rise in the overnight interest rate.

### b. Complementary deposit facility

The complementary deposit facility is a facility in which the Bank pays interest on excess reserves (balances held at the accounts with the Bank in excess of

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<sup>44</sup> In order to use the complementary lending facility, however, financial institutions are required to hold a corresponding amount of collateral at the Bank. Therefore, financial institutions that cannot afford to hold such an amount of collateral at the Bank may borrow funds from markets at an interest rate higher than that of the complementary lending facility.

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required reserves under the reserve requirement system).<sup>45</sup> The interest rate applied is the targeted uncollateralized overnight call rate decided in the guidelines for money market operations minus a spread determined by the Bank. The interest rate is decided and changed at MPMs.<sup>46</sup>

When financial institutions find it difficult to lend funds in the market at an interest rate higher than that of the complementary deposit facility, they would prefer to use the complementary deposit facility. Thus, the complementary deposit facility has the effect of preventing an excessive decline in the overnight interest rate.

As explained above, the Bank's complementary lending facility and the complementary deposit facility function to prevent excessive rises and declines in the overnight interest rate. When the difference between the interest rate applied to the complementary lending facility and that applied to the complementary deposit facility<sup>47</sup> is small, short-term interest rates in the markets tend to stabilize. However, in such a case, the incentive for financial institutions to make transactions in the markets will decrease, and as a result, market functions that distribute liquidity appropriately, according to the risk and other conditions of the counterparties, will also deteriorate. Conversely, if the difference is excessively large, the effects of stabilizing short-term interest rates will decrease.<sup>48</sup>

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<sup>45</sup> The complementary deposit facility was introduced in November 2008 as a temporary measure. It was decided in October 2009 that the facility would remain in effect for the time being. The European Central Bank and the Bank of England pay interest on reserves. They have a deposit facility as a standing facility to accept interest-bearing deposits at the request of financial institutions that are their counterparties. The Federal Reserve pays interest on both the required reserves and excess reserves.

<sup>46</sup> At the MPM held on October 5, 2010, it was decided that the interest rate applied to the complementary deposit facility would be maintained at 0.1 percent for the time being.

<sup>47</sup> The range of fluctuations in the interest rates between the upper limit and the lower limit set by a central bank's bilateral market operation tools is generally referred to as a "corridor."

<sup>48</sup> Even if a central bank does not have a reserve requirement system, it can conduct smooth market operations by setting interest rates on bilateral market operation tools — measures usually referred to as the lending facility and the deposit facility — to the upper level and lower level of the target for short-term interest rates. This is because, in this case, the daily overnight interest rate will be basically determined by the interest rates of bilateral market operation tools. Therefore, central banks that do not have a reserve requirement system often establish a corridor.



## D. Actual Business Procedures of Market Operations

### D. Actual Business Procedures of Market Operations

The following is an example of actual business procedures, based on data for October 27, 2008 (see Figure 5-4), of how the Bank of Japan conducts various market operations in response to changes in the factors affecting current account balances at the Bank.

#### 1. Flow of business procedures prior to the day of operations

Prior to the day of operations, the Bank makes a projection<sup>49</sup> of changes in the total current account balances at the Bank on the day of operations due to autonomous factors, based on information on the issuance of banknotes and their withdrawal from circulation (see Section B in Chapter III), payment and receipt of treasury funds (see Section A in Chapter IX), and issuance and redemption of JGSs (see Section C in Chapter IX), together with an analysis of historical patterns of excesses and shortages of funds and recent economic developments. Projections in Figure 5-4 show a net issuance of 40 billion yen under “banknotes”<sup>50</sup> ([a], sources of a shortage of funds) and a net receipt of 340 billion yen under “treasury funds and others”<sup>51</sup> ([b], sources of a shortage of funds). The total projected shortage of funds is the sum of these two sources, or 380 billion yen ([c], a decline in current account balances at the Bank).

Adding the net total amount of the operations that start or end on the day of operations to that figure, the Bank makes its projection of changes in current account balances at the Bank, including the effects of the operations offered before the day of operations.

More specifically, in Figure 5-4, the operations starting on October 27 are funds-supplying operations providing 1 trillion yen through purchases of JGSs

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<sup>49</sup> Projections are released on the Bank’s website at 18:00 Japan Standard Time (JST) on the previous day of the operations (at 19:00 JST in the case of the last business day of every month) as “Sources of Changes in Current Account Balances at the Bank of Japan and Market Operations” (updated every business day). The Bank also makes monthly projections of excesses and shortages in current account balances at the Bank, and releases these projections as “Sources of Changes in Current Account Balances at the Bank of Japan (projections)” on the second business day of every month.

<sup>50</sup> If the amount of banknotes withdrawn from circulation exceeds that of banknotes issued, the net exceeded amount is indicated with a plus sign, which shows an increase in current account balances at the Bank.

<sup>51</sup> If the payment of treasury funds and redemption of JGSs exceed the receipt of treasury funds and issuance of JGSs, the excess amount is indicated with a plus sign, which shows an increase in current account balances at the Bank.

## Chapter V: Market Operations

with repurchase agreements (d) and funds-supplying operations against pooled collateral at the Head Office providing 1 trillion yen (e). As a result, a total of 2 trillion yen is supplied. On the other hand, the operations ending on October 27 are funds-supplying operations providing 1.2 trillion yen through purchases of JGSs with repurchase agreements (f), funds-supplying operations against pooled collateral at the Head Office providing 600 billion yen (g), and loans of 20 billion yen provided through the complementary lending facility (h). As a result, the total amount of funds supplied through operations ending on October 27 is 1.82 trillion yen. Because, upon the maturity of funds-supplying operations, financial institutions pay back the funds supplied by the Bank, these paybacks become factors for the Bank to absorb funds from the markets. Therefore, the sum of (d) through (h), which is the total amount of funds supplied through market operations, is 180 billion yen (i). The sum of the projected shortages of funds (c) and (i) is 200 billion yen, which shows a projected decline in the total current account balances at the Bank (j), excluding the effects of same-day-start operations that may be offered on October 27.

### **2. Flow of business procedures on the day of operations**

In the morning of the day of operations, based on the above projections of changes in the total current account balances at the Bank due to sources of changes in the balances, and also based on information collected on financial market conditions, the Bank determines the amount of funds to be supplied/absorbed for the day through market operations, and, when necessary, offers same-day-start operations (operations for which settlement is conducted on the day of offer and contract) at 9:20. Moreover, even after the Bank offers the same-day-start operations at 9:20, if the demand for BOJ account deposits increases or decreases compared to the projection due to fluctuations in the demand of funds for payment and settlement or changes in liquidity risks among financial institutions, or if, as a result of such factors, concern arises that the call rate will considerably diverge from the target level, the Bank conducts additional same-day-start operations as necessary. Figure 5-4 indicates that, considering the financial market conditions, the Bank supplied 600 billion yen through same-day-start funds-supplying operations against pooled collateral at the Head Office at 12:50 (k) in order to fulfill the guidelines for money market operations at the time (in this case, “the Bank of Japan will encourage the uncollateralized overnight call rate to remain at around 0.5 percent”) decided at an MPM. On the same day, a net amount

## D. Actual Business Procedures of Market Operations

**Figure 5-4 Sources of Changes in Current Account Balances at the Bank of Japan and Market Operations: Actual Practice on October 27, 2008**

bil. yen

	Projections (excluding same-day-start operations)	Preliminary figures	Final figures
Banknotes (negative: net issuance)	-40 (a)	-10	-10
Treasury funds and others (negative: net receipt of funds)	-340 (b)	-460	-460
Excess/shortage of funds (negative: shortage)	-380 (c)	-470	-470
Outright purchase of JGBs			
Outright purchase of T-Bills			
Outright sale of T-Bills			
Purchase of JGSs with repurchase agreements	1,000 (d)	1,000	1,000
	-1,200 (f)	-1,200	-1,200
Sale of JGSs with repurchase agreements			
Funds-supplying operation against pooled collateral (at the Head Office)	1,000 (e)	1,000	1,000
	-600 (g)	-600	-600
		600	600(k)
Funds-supplying operation against pooled collateral (at all offices)			
Purchases of CP with repurchase agreements			
Sale of bills			
Loans	-20 (h)	60	60(l)
Securities lending facility			
Subtotal	180 (i)	860	860
Net change in current account balances	-200 (j)	390	390(m)

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Current account balances (amount outstanding)		10,000	10,000
Reserve balances		9,500	9,490
Held by institutions that have fulfilled reserve requirements for the current period		740	740
Excess reserves		740	740
Current account balances held by institutions not subject to reserve requirement system		500	510

### (Reference)

Required reserves for the reserve maintenance period (October 16 – November 15, cumulative total)	149,560
Required reserves for the reserve maintenance period (October 16 – November 15, daily average)	4,820
Remaining required reserves on and after October 28 (cumulative total)	86,110
Remaining required reserves on and after October 28 (daily average)	4,530

### Notes:

- Figures are rounded off to the nearest 10 billion yen.
- The figures for “Current account balances (amount outstanding)” are the total balance of financial institutions’ current accounts at the Bank (including the balances of reserves).
- The figures for “Required reserves for the reserve maintenance period” are revised, in principle, on the last business day of the month and on the seventh of the following month (or the preceding business day when the seventh falls on a bank holiday).
- The figures for “Loans” indicate those of the complementary lending facility.
- The figures for the deposit of the Japan Post Bank are included in “Net change in current account balances,” “Current account balances (amount outstanding),” and “Reserve balances.”
- The figures for the deposit of the Japan Post Bank are not included in “Held by institutions that have satisfied required reserves for the current period,” “Excess reserves,” or “Reference.”
- The figures for market operations in “Projections” indicate those for the operations that were already offered by the time the figures were released. The figure for the projection of “Net change in current account balances” is calculated based on the assumption that the loans through the complementary lending facility on the day will not be provided.

## D. Actual Business Procedures of Market Operations

of 60 billion yen<sup>52</sup> was also supplied through the complementary lending facility (I) at the request of financial institutions. As a result, the total of supplied funds, including those supplied by the complementary lending facility on that day, reached 860 billion yen. Adding the excess/shortage of funds on that day updated from the projection made on the previous day (a shortage of 470 billion yen) to this 860 billion yen, current account balances at the Bank marked an increase of 390 billion yen from those on the previous day (m).<sup>53</sup>

As can be seen from the above example, the Bank adjusts the fluctuations in current account balances at the Bank by combining same-day-start and future-day-start operations, and by managing the flow of funds on the day of maturity. To facilitate participation of financial institutions as bidders in operations, the offers of same-day-start and future-day-start operations are basically made at a fixed time determined for each type of operation (see Figure 5-5 for the time schedule of operations as of the end of 2010). The settlement of operations that start or end on the day concerned is completed between the Bank and counterparty financial institutions through credits and debits to current accounts at the Bank and by the delivery of JGSs, bills, and CP used in the operations.

A summary of business procedures relating to the offers and settlements on the day of operations described above is shown in Figure 5-5 in time order, using the example of October 27, 2008.

**Figure 5-5 Flow of Operations by the Bank of Japan: Actual Practice on October 27, 2008**

Time	Business procedures by the Bank
9:30	<ul style="list-style-type: none"><li>Offered a future-day-start purchase of JGSs with repurchase agreements (1 trillion yen) to the eligible counterparties for the operation.</li></ul>
10:10	<ul style="list-style-type: none"><li>Offered a future-day-start outright purchase of JGBs (300 billion yen) to the eligible counterparties for the operation.</li><li>Deadline for bids for the future-day-start purchase of JGSs with repurchase agreements offered at 9:30.</li></ul>

<sup>52</sup> The total of 60 billion yen was calculated by subtracting the amount of loans under the complementary lending facility returned on that day from the amount of loans newly provided through the facility on the same day.

<sup>53</sup> The Bank releases on its website the preliminary figures of the excess and shortage of funds and of the market operations conducted on the business day concerned at 18:00 JST on the same day (at 19:00 JST in the case of the last business day of every month). The corresponding final figures are released at 10:00 JST on the following business day.

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Around 10:25	<ul style="list-style-type: none"> <li>Decided on the successful bids for the future-day-start purchase of JGSs with repurchase agreements offered at 9:30 and notified the bidders of the results. Released the total amounts of the bids, the amounts of successful bids, and the average successful bid rate via the Bank's website and others.</li> </ul>
11:40	<ul style="list-style-type: none"> <li>Deadline for bids for the future-day-start outright purchase of JGBs offered at 10:10.</li> </ul>
Around 12:00	<ul style="list-style-type: none"> <li>Decided on the successful bids for the future-day-start outright purchase of JGBs offered at 10:10 and notified the bidders of the results. Released the total amounts of the bids, amounts of successful bids, and the average successful bid rate via the Bank's website and others.</li> </ul>
12:50	<ul style="list-style-type: none"> <li>Offered the same-day-start funds-supplying operation against pooled collateral (conducted at the Head Office; 600 billion yen [k]) to the eligible counterparties for the operation.</li> </ul>
13:20	<ul style="list-style-type: none"> <li>Deadline for bids for the same-day-start funds-supplying operation against pooled collateral (conducted at the Head Office) offered at 12:50.</li> </ul>
Around 13:35	<ul style="list-style-type: none"> <li>Decided on the successful bids for the same-day-start funds-supplying operation against pooled collateral offered at 12:50 and notified the bidders of the results. Released the total amounts of the bids, amounts of successful bids, and the average successful bid rate via the Bank's website and others.</li> </ul>
As needed	<ul style="list-style-type: none"> <li>Conducted complementary lending for eligible counterparties at their request (net amount of 60 billion yen [l]).</li> </ul>

- Notes: 1. Figures for (k) and (l) in this table correspond to those for (k) and (l) in Figure 5-4.
2. The Bank's operations are offered, in principle, according to their type at the following fixed times, as of the end of 2010.
- |       |  |
|-------|--|
| 9:20  | Same-day-start operations (purchase/sale of JGSs with repurchase agreements, funds-supplying operation against pooled collateral, and sale of bills) |
| 9:30  | Future-day-start operations (purchase/sale of JGSs with repurchase agreements and purchase of CP with repurchase agreements)                         |
| 10:10 | Future-day-start operations (outright purchase/sale of T-Bills and outright purchase of JGBs)  |
| 12:50 | Same-day-start operations (purchase/sale of JGSs with repurchase agreements, funds-supplying operation against pooled collateral, and sale of bills) |
| 13:00 | Future-day-start operations (funds-supplying operation against pooled collateral and sale of bills)  |
| 14:00 | Operations through the securities lending facility   |

## E. Monitoring of Money Markets

### E. Monitoring of Money Markets

The projection of changes in the overall current account balances at the Bank of Japan is an important prerequisite for the Bank's conduct of daily operations. However, even if the Bank precisely projects the changes in the balances, various kinds of information related to the supply and demand for funds in the overall money markets are required in order to appropriately decide on the amount and the timing of the operations. Therefore, the Bank checks market trends on a daily basis through its money market monitoring, including interviews with market participants, so as to conduct smooth market operations. Moreover, the Bank provides market participants with the statistics related to market operations, which are compiled and summarized based on various data obtained from them.

#### 1. Market monitoring

The uncollateralized overnight call rate, which is the Bank's target interest rate, is the value-weighted average rate for transactions made through *tanshi* companies. The daily movements of the uncollateralized overnight call rate are considerably influenced not only by the macro-level supply-demand balance of BOJ account deposits, but also by each market participant's borrowing and lending activities.

For example, if some market participants' current account balances at the Bank happen to decrease significantly, they may need to borrow much more funds within the day than they borrowed in the previous day in order to maintain the positive balances of current accounts at the Bank. In this case, as it is necessary for the participants to borrow a large amount of funds in a short period of time and the amount of funds borrowed from one counterparty may be subject to credit line constraints, they may bid up the rate to borrow funds. Such an action taken by major market participants may influence the borrowing and lending of other market participants, and as a result the rate in the overall market may fluctuate. Moreover, contingencies such as an incident related to settlements may also significantly affect fund transactions in the market during the day.

Therefore, the Bank closely communicates with major participants in money markets, such as banks, securities companies, and *tanshi* companies (money market brokers) and monitors developments in daily borrowing and lending by each market participant as well as the conditions for transactions in the markets. At the Bank, the department in charge of market operations

## Chapter V: Market Operations

(the Financial Markets Department) and that in charge of off-site monitoring (the Financial System and Bank Examination Department) work together to conduct market monitoring. The information related to funding conditions of each financial institution obtained through off-site monitoring is taken into consideration in the market monitoring (see Footnote 3 in Chapter VI).

Through the market monitoring, the Bank gathers such information as the daily amount of borrowing and lending by major market participants, the projected current account balances at the Bank, the supply and demand for funds in the markets, movements in interest rates, and views among market participants on the Bank's operations. The information is quite useful for the Bank in deciding on the amounts and maturities of daily operations to supply/absorb funds, as well as the types and the timing of operations.

In addition to monitoring money market developments, the Bank conducts research and analysis on developments in financial and capital markets at home and abroad in order to gather information necessary for its conduct of monetary policy. The Bank publishes the *Financial Markets Report* semi-annually, with a view to comprehensively reviewing the information obtained through market monitoring, explaining the Bank's assessment to market participants at home and abroad, and discussing unsettled issues regarding market developments. The report explains not only short-term fluctuations in financial markets, but also market conditions and the underlying supply-demand conditions as well as structural factors. It also provides an overview on the issues with regard to market functioning and the Bank's efforts to settle the issues.<sup>54</sup>

### 2. Compiling and releasing relevant statistics

The Bank receives various data related to market operations from its counterparties and releases the aggregated data to the public on its website. The data are also useful for market participants, as the data enable them to ascertain developments in money markets as well as changes in interest rates resulting from the Bank's market operations, and to recognize the effects of the operations.

The major statistics released by the Bank are as follows. Regarding interest rates, statistics such as the weighted average of the uncollateralized overnight call rate, which is the target rate in the Bank's policy conduct, as well as its highest and lowest levels (released daily), and the prevalent market rate (Tokyo Repo Rate) for short-term fund transactions that are referred to as repo transactions (securities lending with cash collateral and transactions under repurchase agreements) are released. Regarding the amount outstanding and the

<sup>54</sup> *Financial Markets Report* is available on the Bank's website.



## F. International Cooperation

amount of transactions in the markets, the amount outstanding of borrowing and lending in the call market by sector with or without collateral (released monthly on both an end-of-month basis and an average-amount-outstanding basis) and the amount outstanding of the uncollateralized call transactions by maturity (released monthly) are released. Regarding operations and BOJ account deposits, the terms of the operations such as the offered amount and the scheduled dates, and the results of the operations, including the bid amount, the successful bid amount, the successful bid rates, and the average successful bid rate are released whenever the Bank conducts the operations, and the aggregated results of the operations are released monthly. The Bank also releases “Sources of Changes in Current Account Balances at the Bank of Japan and Market Operations” (daily and monthly), “BOJ Current Account Balances by Sector” (monthly), “Japanese Government Bonds held by the Bank of Japan” (monthly), “T-Bills Purchased by the Bank of Japan” (monthly), and the amount of pooled collateral — which is the collateral assets for the operations — by type (monthly).

### F. International Cooperation

The Bank also participates in international cooperation with other central banks regarding market operations and market monitoring. Specifically, there are various types of cooperation, from bilateral discussions and exchanges of information between the Bank and other central banks to multilateral cooperation and exchanges of information and opinions among groups of central banks. Above all, the Bank’s activities in the Market Committee (MC) and the Committee on the Global Financial System (CGFS), of which the Bank for International Settlements (BIS) acts as the secretariat, are an important part of the international cooperation with other central banks.

The MC consists of senior officials responsible for market operations of central banks from 21 major economies. It assesses the functioning of financial markets and market operations by central banks. It also evaluates and analyses long-term structural trends that may have implications for them. To facilitate its discussions and enhance market transparency, the MC publishes a document that summarizes and compares the monetary policy frameworks and market operations of its member countries.<sup>55</sup>

The CGFS consists of the Deputy Governors and the Executive Directors of the central banks from 22 major economies. Its purpose is to

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<sup>55</sup> The document is available on the BIS website (<http://www.bis.org>).

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identify and assess potential sources of stress in global financial markets, to further the understanding of the structural underpinnings of financial markets, and to promote improvements in the functioning and stability of these markets. The CGFS also oversees the collection of the “Locational Banking Statistics” and “Consolidated Banking Statistics,” published by the BIS.

The central banks exchange opinions and information with each other when necessary. This kind of global cooperation related to market operations and the monitoring of financial markets has been becoming increasingly important recently. In response to the global financial crisis since summer 2007, the central banks’ close cooperation and information exchange contributed to realizing policy coordination among them and improvement in various means of their market operations in their respective countries.<sup>56</sup> Specifically, in view of the possible impact of a liquidity shortage in the U.S. dollar market on the liquidity condition in the yen market, the Bank, together with other major central banks, concluded a temporary U.S. dollar liquidity swap arrangement with the Federal Reserve to obtain U.S. dollars, and introduced, as a temporary measure, a U.S. dollar funds-supplying operation against pooled collateral to supply U.S. dollar funds to market participants in Japan. There is a growing trend among major central banks to use the bonds issued by foreign governments as eligible collateral (the acceptance of so-called cross-border collateral). The Bank, in coordination with other central banks, decided in May 2009 to accept bonds issued by the governments of the United States, the United Kingdom, Germany, and France as eligible collateral, with a view to further facilitating the Bank’s market operations in response to developments in financial markets, while enhancing efficiency in the management of eligible collateral.

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<sup>56</sup> In this aspect, the Bank has many conventional types of market operations compared to other central banks, and its exclusive knowledge related to these measures was extensively utilized when other central banks considered extending their range of types of market operations.

### Box 1 Money Markets and the Call Market

Markets in which participants lend/borrow short-term funds maturing within a year are generally referred to as money markets.<sup>1</sup> They are often divided into interbank markets, in which financial institutions, such as banks, securities companies, and *tanshi* companies<sup>2</sup> participate, and open markets, in which not only financial institutions but also nonfinancial institutions and local governments are able to participate. There are other types of money markets, such as: (1) the foreign exchange swap market, which is often used by Japanese banks for funding in foreign currencies (or foreign financial institutions for funding in yen); (2) the Euroyen market, in which offshore yen transactions take place;<sup>3</sup> and (3) short-term interest-rate derivatives markets, including the Overnight Index Swap (OIS) market,<sup>4</sup> which is the market where interest rate swap transactions for the uncollateralized call rate take place.

The call market accounts for the major part of interbank markets as explained below.<sup>5</sup> On the other hand, open markets consist of various types of markets, such as the repo market, where bonds such as Japanese government bonds are lent/borrowed and purchased/sold with repurchase agreements, the CP market, where CP issued mainly by nonfinancial institutions are traded, as well as the treasury discount bill (T-Bill) market,<sup>6</sup> where such bills are traded.

The call market is important in Japan because through this market, financial institutions make the day's final adjustment of current account balances at the Bank, and the uncollateralized overnight call rate determined consequently in this market is used as the target rate of the Bank of Japan's market operations. The call market has no physical trading floor: instead, financial institutions contact *tanshi* companies and other financial institutions by telephone or through computer terminals, and agree on funds transaction contracts. Based on the experience of the financial crisis in 1901, the call market was established rather naturally and has been developed as an interbank market to make the final adjustment of funds between financial institutions. It has the longest history of all the money markets in Japan.

The transactions in Japan's call market (call transactions) can be classified into four types, according to collateral — those with (collateralized call transactions) or without (uncollateralized call transactions) collateral — and according to the counterparty — those via *tanshi* companies or not (direct deals). In terms of their duration, call transactions have a range from overnight (settled on the next business day) to one year, among which a large volume of transactions are traded overnight. The delivery day is set on the same day as the

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contract (same-day-start) or on a future date, and many overnight trades are same-day-start transactions.

- Notes:
1. On the other hand, markets in which funds are lent/borrowed for periods longer than one year are often referred to as capital markets.
  2. *Tanshi* companies specialize in intermediating funds in money markets. When financial institutions trade call money, CP, and treasury bills (TBs), they act as dealers that lend/borrow funds to/from these institutions, and as brokers who match buyers and sellers.
  3. Offshore markets are the markets that give favor to the lending/borrowing of funds among nonresidents in terms of financial regulation and taxation.
  4. OIS transactions are interest rate swap transactions conducted to exchange the uncollateralized overnight call rate for the fixed interest rate, using the overnight interest rate as the floating interest rate. In general, the overnight interest rate of each country is strongly linked to the policy interest rate of the central bank in each country. Therefore, in an OIS market, financial institutions trade by taking the possibility of the central bank's policy change into account. In this context, under the framework that sets the overnight interest rate as the target rate, OIS transactions provide an effective way to monitor market perceptions about future monetary policy.
  5. Bills markets are also categorized as interbank markets. However, the volume of transactions conducted in these markets has been decreasing recently.
  6. T-Bills were introduced in February 2009 by integrating TBs and financing bills (FBs). Meanwhile, the status of TBs and FBs remains the same under the existing fiscal system and the terms TBs and FBs are still used when necessary.

**Box 2 Money Markets and the Bank of Japan**

Japan's money markets are important for the Bank of Japan as a central bank, in that the uncollateralized overnight call rate, which is the target rate for monetary policy, is determined in these markets, and they are also where the Bank conducts market operations. The overnight interest rate, which is determined in line with the Bank's target level, eventually influences the level of economic activity and developments in prices through various money market interest rates and the fund-raising cost of firms and financial institutions (see Chapter I.B.2).

In this way, money markets function as the transmission channels of the monetary policy effect. Therefore, the Bank cooperates with the relevant parties such as financial institutions in order to improve the system and functioning of money markets. Specific examples of the Bank's initiatives are the recent implementation of the next-generation RTGS project (see Chapter IV.D.1.d), the enhancement of the business continuity arrangements in the case of disasters affecting the entire market (see Chapter IV.D.3), and the improvement of market statistics (see Section E.2 in this chapter).

**Box 3 Calculation Method for the Legal Reserve Requirement**

As described in this chapter, in the reserve requirement system in Japan, financial institutions designated in the Act on Reserve Requirement System are obliged to maintain deposits at the Bank of Japan that are greater than the amount calculated by multiplying their liabilities, such as accepted deposits, by a certain ratio (reserve requirement ratio). The setting, changing, and abolishing of the reserve requirement ratio are decided by the Policy Board at Monetary Policy Meetings (see the table below for the current reserve requirement ratios). Financial institutions holding current account deposits at the Bank (BOJ account deposits) do not need to open a separate deposit account for holding reserves, as the total amount outstanding in their BOJ account balances is counted as reserves in satisfying their reserve requirements.

Under the reserve requirement system, the minimum current account balance that a financial institution is required to maintain as reserves at the Bank (referred to as the legal reserve requirement or required reserves) is calculated as follows: (1) the daily amount is calculated by multiplying the balance of the liabilities subject to reserves at the end of the day<sup>1</sup> by the reserve requirement ratio for that day; (2) the total monthly amount is calculated by adding up the amounts calculated from the first through the last day of the month; and then (3) the minimum amount is calculated by dividing the total monthly amount by the number of business days in the month.

Note: 1. The liabilities subject to reserves include deposits, bank debentures, principal of money in trust, foreign currency deposits of residents, and yen deposits of nonresidents.

**Table for Box 3 Reserve Requirement Ratios under the Reserve Requirement System as of the End of 2010**

	%	
<b>Reserve ratios on deposits<sup>1</sup></b>		
— Banks, long-term credit banks, and <i>shinkin</i> banks with outstanding deposits of more than 160 billion yen at the fiscal year-end <sup>2</sup>		
Outstanding deposits of:	Time deposits (including certificates of deposits)	Other deposits
More than 2.5 trillion yen	1.2	1.3

## Boxes

Between more than 1.2 trillion yen and 2.5 trillion yen or less	0.9	1.3
Between more than 500 billion yen and 1.2 trillion yen or less	0.05	0.8
Between more than 50 billion yen and 500 billion yen or less	0.05	0.1
- The Norinchukin Bank	0.05	0.1
<b>Reserve ratio on debentures outstanding<sup>3</sup> issued by banks and long-term credit banks</b>	0.1	
<b>Reserve ratio on outstanding principal balance of money in trust (including loan trusts)</b>	0.1	
<b>Reserve ratio on foreign currency liabilities against nonresidents (excluding special international transaction accounts)</b>	0.15	
<b>Reserve ratios on foreign currency deposits of residents (excluding special international transaction accounts)</b>	Time deposits	Other deposits
	0.2	0.25
<b>Reserve ratio on liabilities in nonresident yen accounts (excluding special international transaction accounts)</b>	0.15	
<b>Reserve ratio on balances transferred from special international transaction accounts to other accounts</b>	0.15	

Notes: 1. In Japan, progressive reserve requirement ratios are used where outstanding deposits are classified into brackets by value, and higher reserve requirement ratios are applied to higher value brackets. For example, if a bank had a daily outstanding balance of 3 trillion yen in time deposits throughout March 2010, the legal reserve requirement for the bank for the reserve maintenance period from March 16 through April 15 would be calculated as follows: 500 billion yen (the amount by which liabilities exceed 2.5 trillion yen)  $\times$  1.2 percent + 1.3 trillion yen (the amount between more than 1.2 trillion yen and 2.5 trillion yen)  $\times$  0.9 percent + 700 billion yen (the amount between more than 500 billion yen and 1.2 trillion yen)  $\times$  0.05 percent + 450 billion yen (the amount between more than 50 billion yen and 500 billion yen)  $\times$  0.05 percent = 18.275 billion yen.

2. No reserve requirement ratio is set for amounts of 50 billion yen or less.

3. Figures for debentures include those succeeded by designated financial institutions under the Act on Reserve Requirement System through acquisitions of other designated financial institutions from April 1996.

### **Box 4 Market Operations and the Bank of Japan's Balance Sheet**

The assets and liabilities the Bank obtains through its operations are recorded on the Bank's balance sheet. On the balance sheet, the major liabilities are banknotes, current accounts, and government deposits, while the major assets are Japanese Government Bonds (JGBs), treasury discount bills, and the assets related to short-term funds-supplying operations (see Boxes 3 and 4 for Chapter II, "The Bank of Japan's Accounts" and "Basic Accounting Principles for the Bank of Japan's Balance Sheet"). Among the liabilities of the Bank, government deposits and other debts that fluctuate widely in the short term, and current accounts, which require timely control over the amount outstanding, should be backed by short-term financial assets obtained by the Bank through its operations. If the amount outstanding of JGBs, which are long-term assets, were to exceed that of banknotes in circulation, which are long-term liabilities, the Bank would hold JGBs, also as matching assets for government deposits and current accounts, which are short-term liabilities. In this case, in order to provide timely control over the amount outstanding of the current accounts in response to financial conditions, the Bank would be required to trade in the JGB market frequently or conduct funds-absorbing operations continuously. However, this approach could disturb the market by causing wide fluctuations in the market interest rates.

The Bank limits the amount outstanding of its JGB holdings to within that of banknotes in circulation in order to avoid such disturbances. This also enables the Bank to hold short-term financial assets of which the amount outstanding can be flexibly adjusted in response to changes in government deposits and current accounts, thereby contributing to conducting smooth market operations.