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Survey on Yen-OIS Market in May 2007

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Introduction

The Bank of Japan (BOJ) conducted a survey on the developments in the yen-denominated overnight index swap (JPY OIS) market in May 2007, with the cooperation of market participants.¹ This report is a summary of the results.

OIS is a type of yen-yen interest rate swaps (IRS) that exchange floating against fixed interest rates using overnight rates as its floating rates. In Japan, OIS started to be traded around 1997, but the market had been sluggish for a long time under the zero interest rate policy and the quantitative easing policy. As market participants started to anticipate the termination of the quantitative easing policy around early 2006, the OIS transactions have grown substantially at a rapid pace.

Compared with the IRS market as a whole, however, OIS market participants are still limited in both numbers and scope. Several foreign financial institutions occupy a particularly large share of the transactions and domestic financial institutions' transactions constitute only a tiny portion. Market participants sometimes cite this as a main reason for low liquidity of the market in some situations.

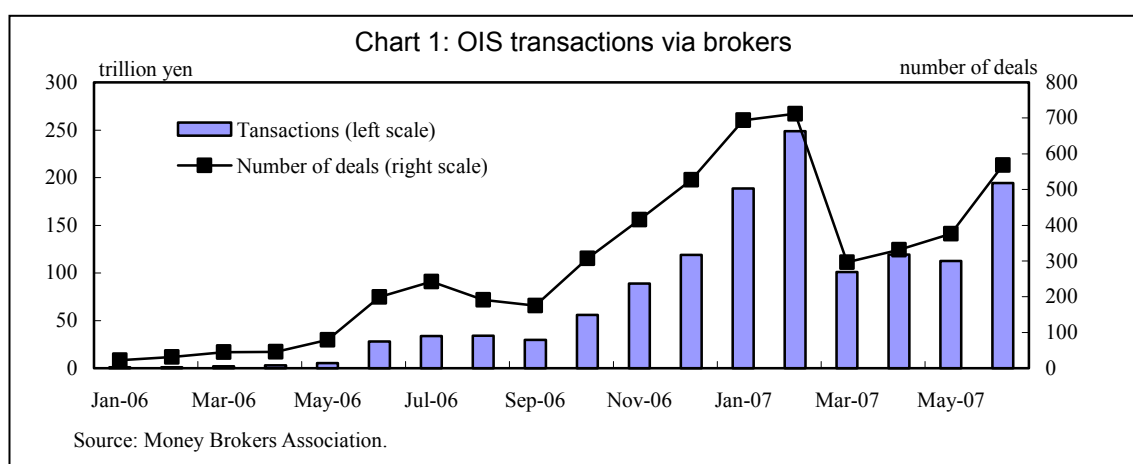
According to the survey results on the overall yen money markets (*Survey on the Functioning of Money Markets*), which was conducted by the BOJ in April 2007 prior to this survey, 31 institutions including 9 domestic institutions of all the institutions that have offices in Japan answered that they have started the OIS transactions. On the other hand, the number of institutions that answered that they are preparing to start the OIS transactions or have an interest in those transactions amounted to 100. These institutions emphasized the need of comprehensive information about the OIS market, transaction volume and market structure in particular, in considering the entry into the market.

The BOJ has been involved in a 6-month action program toward enhancing market functioning in money markets and places the activation of short-term derivatives as one of the central agenda items. We hope that this survey will help market participants better understand the JPY OIS market.

¹ This survey was conducted in cooperation with 31 financial institutions that have already started the OIS transactions and 4 brokers that conduct brokerage of the OIS transactions.

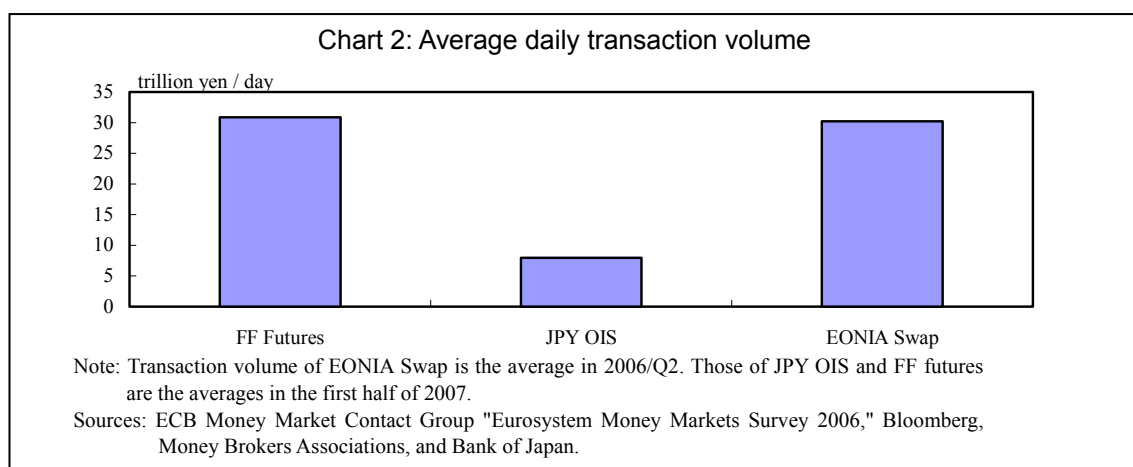
1. Overview of the JPY OIS Market and Objectives of the OIS Survey

As short-term interest rates have become higher and more volatile since the end of the quantitative easing policy in March 2006, OIS has begun to be traded actively. The OIS transaction volume via brokers shows that transactions increased up to 250 trillion yen in February 2007 (Chart 1).



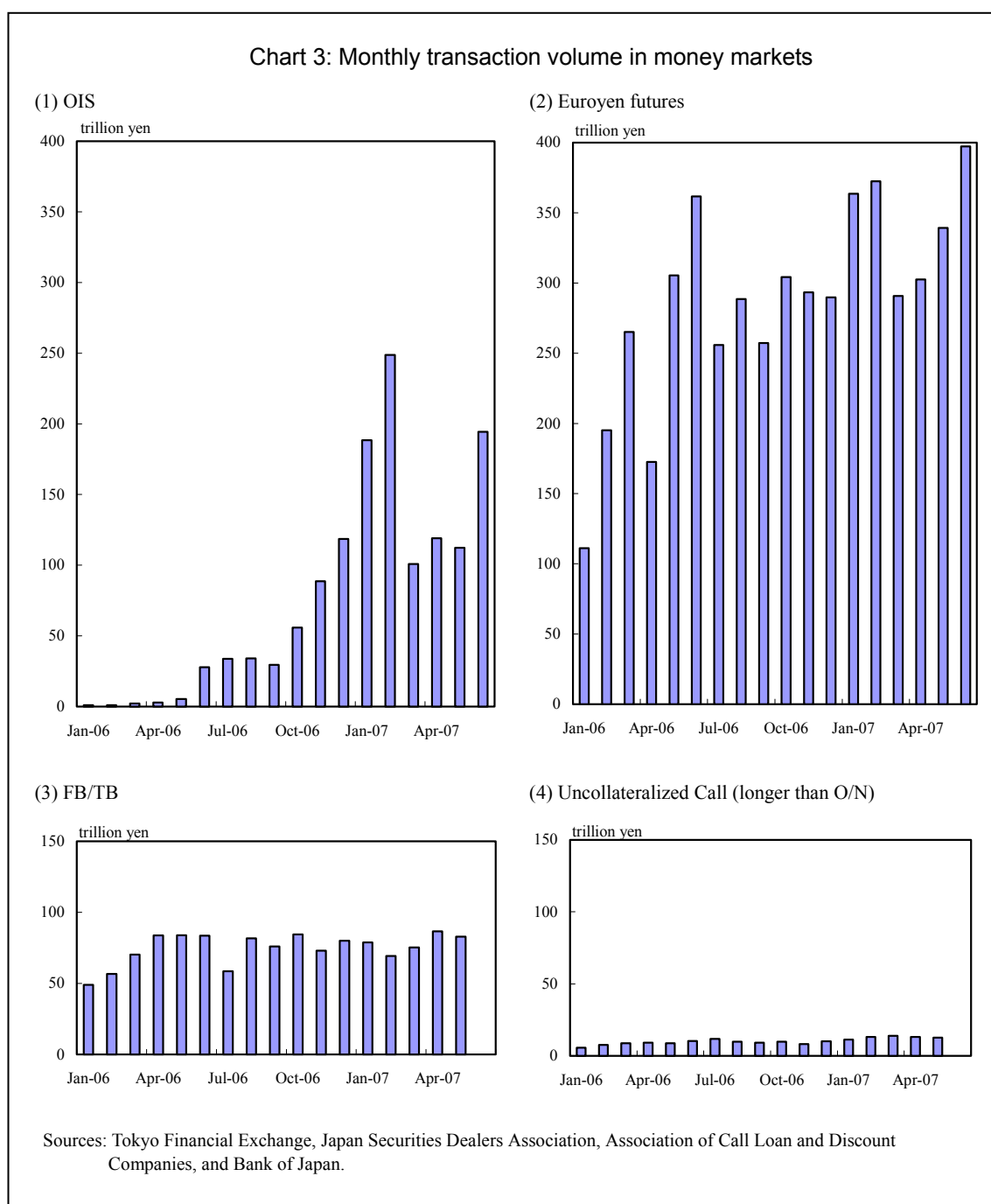
The OIS market activities tend to be influenced by market participants' expectations about monetary policy changes. More specifically, transaction volume tends to increase when market expectations about near-future policy changes build up. In fact, transaction volume decreased after the rate hike in February 2007, but it still kept the level above 100 trillion yen, higher than the level before last autumn. It returned to around 200 trillion yen in June.

Under these circumstances, the presence of OIS in JPY money markets has been increasing. The JPY OIS market is still smaller than, but has been rapidly expanding up to 1/4-1/3 of, similar derivatives markets in the U.S. or Euro zone in the last one and a half years (Chart 2).²

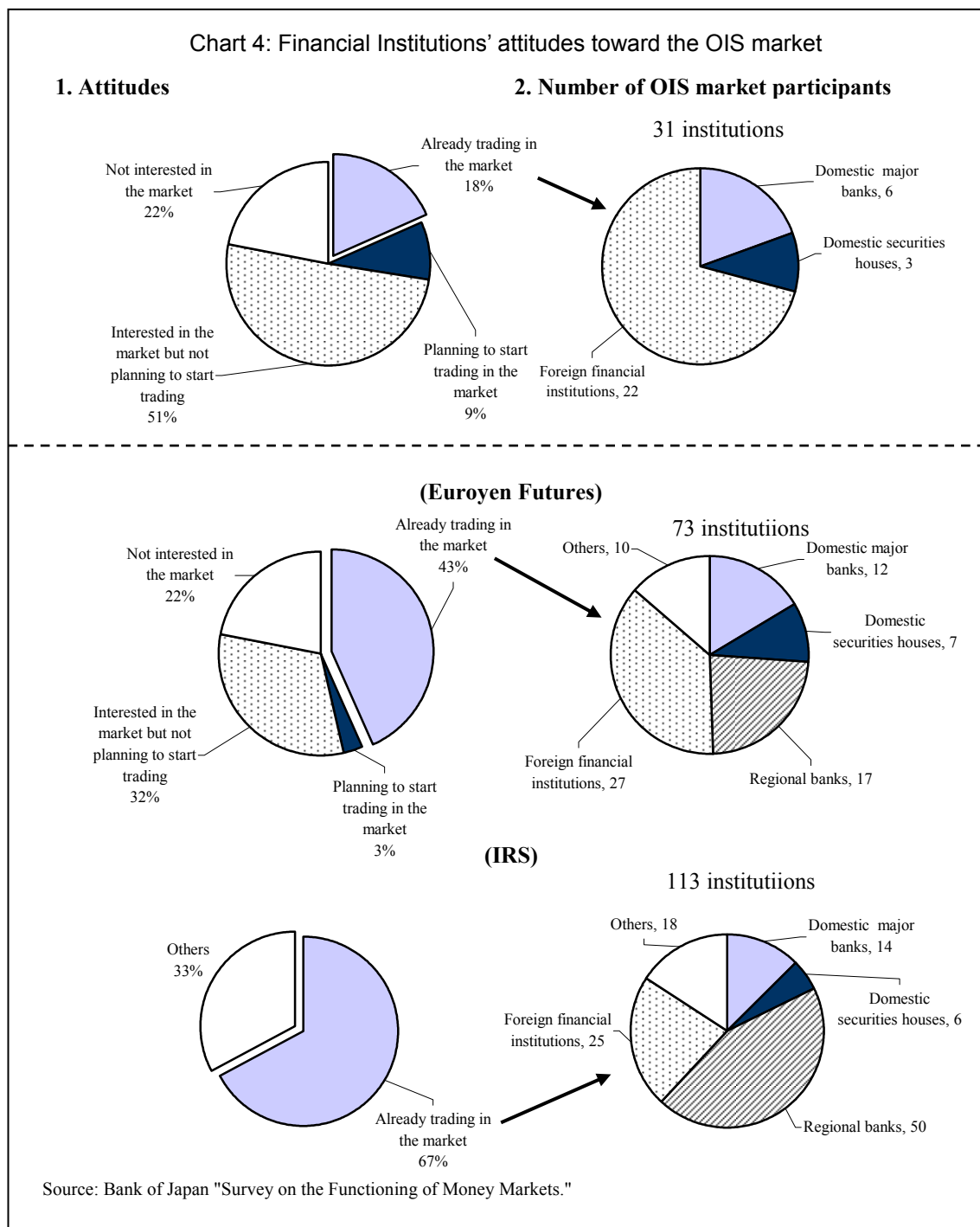


² The derivatives whose underlying assets are overnight rates have been actively traded both in the U.S. and the Euro area. In the Euro area, the EONIA swap, which is the OIS whose underlying asset is EONIA (Euro Overnight Index Average), is the most dominant. In the U.S., both the 30 day Fed Funds Futures listed on the CBOT (FF Futures) and OTC-based USD OIS are actively traded.

The OIS market has also grown in size in comparison with other instruments in JPY money markets, although we should note the difficulty in such a direct comparison. The OIS transaction volume reached about half of that of Euroyen futures in June 2007 and became much larger than those of FB/TBs and uncollateralized call loans with terms longer than overnight (Chart 3).



Despite its rapid growth, OIS market participants are still limited. According to the *Survey on the Functioning of Money Markets* of 168 major financial institutions conducted by the BOJ in April 2007, only 31 institutions, sum of 6 domestic major banks, 3 domestic securities houses, and 22 foreign financial institutions, were participating in the market (Chart 4). The number is significantly smaller than that of Euroyen futures (73) and IRS (113), which have been established as a tool for asset and liability management (ALM).



The *Survey on the Functioning of Money Markets* also reveals that 15 institutions were preparing for starting the OIS transactions and 85 institutions were interested in the market, although they have not decided to enter the market thus far. Most of them cited the shortage of information as one of the most important reasons for not having entered the market. In particular, information about the OIS market structure and the operational procedures is strongly needed (Chart 5).

Chart 5: Useful information for participating in the OIS market

	Practical issues such as mark-to-market methods or risk management.	Trading system	Rate information	Market information such as breakdown of transactions or market participants' purposes for OIS trading.
Total (168)	95 (57%)	76 (45%)	94 (56%)	103 (61%)
"Planning to start trading in the market" or "Interested in the market" (100)	86	69	74	83

Source: Bank of Japan "Survey on the Functioning of Money Markets."

For the time being, only available information about the OIS market structure is transaction volume via brokers compiled by Money Brokers Associations. In view of such a situation, we conducted a survey (*OIS survey*) of all the OIS market participants who were counterparties of the BOJ's money market operations, as well as all domestic brokers. The main features of the *OIS survey* can be summarized as follows. (i) The survey uncovered the OIS amount outstanding, in addition to the transaction volume, for the first time. (ii) The survey intended to investigate the OIS market structure quantitatively wherever possible. (iii) The survey covered not only domestic transactions, but transactions on a global basis. (iv) The survey included qualitative questions, such as the purposes of trading, in addition to the quantitative questions.

In sum, coverage and surveyed questions are as follows.

Coverage: 31 OIS market participants who were counterparties of the BOJ's money market operations and 4 domestic brokers.

Type of questions for the OIS market participants: trading locations, the amount outstanding by counterparty and location as of the end of May 2007, trading purposes, transaction volume per trade and so on.

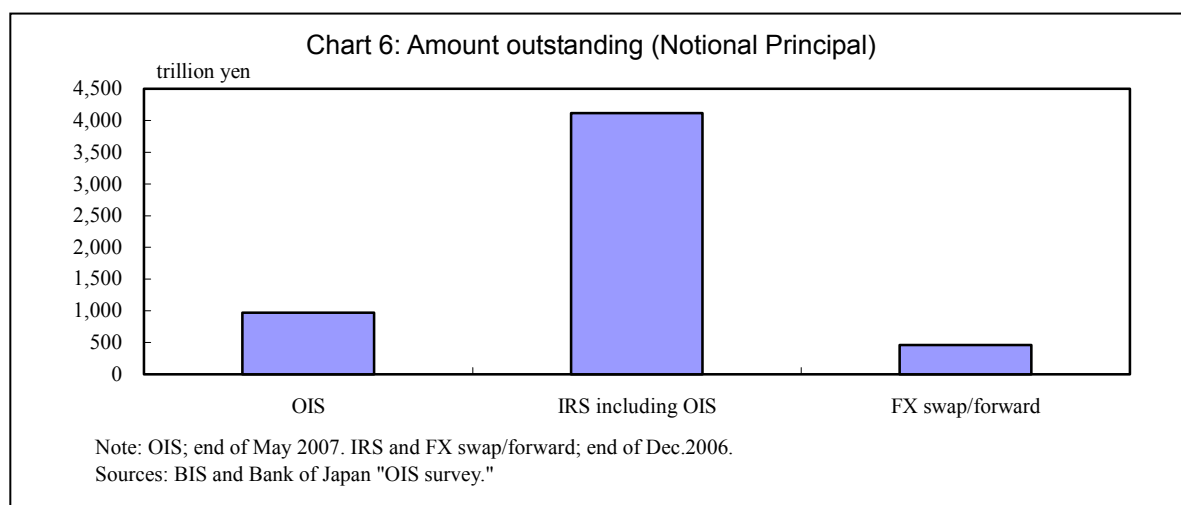
Type of questions for brokers: Transaction volume/number in May 2007 by trading type and term, transaction volume by time zone and so on.

2. OIS Market Structure Based on the Amount Outstanding (End of May 2007)

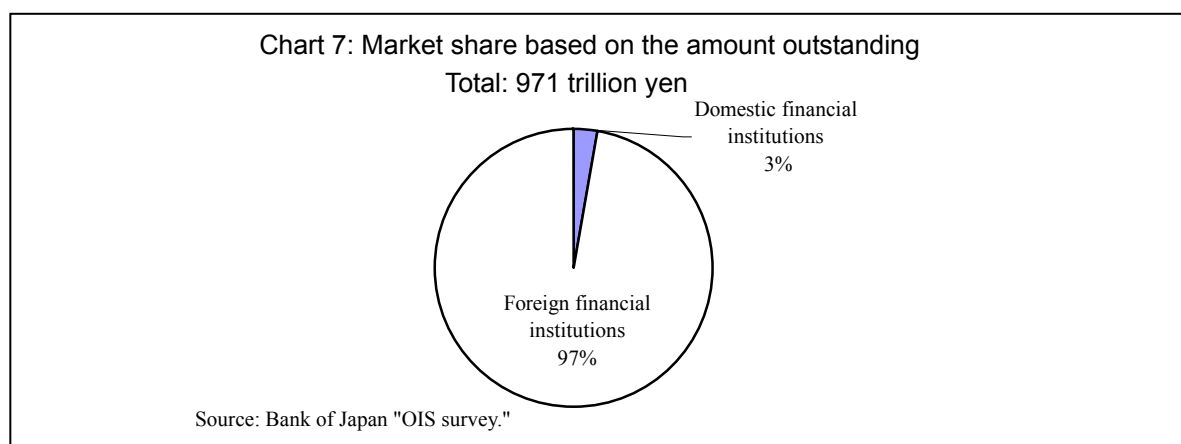
(1) Amount Outstanding (Notional Principal)

(Foreign financial institutions largely dominate the OIS market)

The OIS amount outstanding reaches 971 trillion yen as of the end of May 2007. The amount corresponds to 20-30 percent of IRS including OIS (4,188 trillion yen as of the end of 2006), and exceeds the amount outstanding of FX swaps/forwards (458 trillion yen as of the end of 2006) (Chart 6)³.



In terms of market share based on the amount outstanding, 22 foreign financial institutions largely dominate the market. This is due partly to the fact that they were able to initiate JPY OIS transactions relatively easily due to their experiences of trading EONIA Swap and USD OIS. On the other hand, some domestic financial institutions have started the OIS transactions in recent months (Chart 7).



³ The average maturities of OIS transactions are much shorter than usual IRS and so the risks are smaller than IRS if the amount outstanding is the same. Hence, it should be noted that the notional principal of OIS tends to be higher than usual IRS.

(OIS market is highly concentrated)

In terms of market concentration, top 3 foreign financial institutions occupy about 70 percent of total amount outstanding, and the OIS market concentration ratio is higher than EONIA swap market and other JPY related interest rate derivatives markets (Chart 8).

Chart 8: Market concentration ratios

1. Market share

	JPY OIS	EONIA Swap
Top 3	71.3	—
Top 5	82.4	43.4
Top 10	95.6	67.8

Notes: The market share of JPY OIS is based on the amount outstanding as of the end of May 2007.
The share of EONIA swap is based on the transaction volume in Q2 2006.

2. Herfindahl index

	Herfindahl index	Amount outstanding (trillion yen)
JPY OIS	2,016	971
JPY IRS	624	4,118
JPY interest rate option	769	380
IRS		
USD	680	8,364
EUR	561	10,695
CAD	1,020	226
CHF	1,149	352
GBP	692	2,188

Notes: Herfindahl index is defined as the sum of squared percentage market shares of each institution.

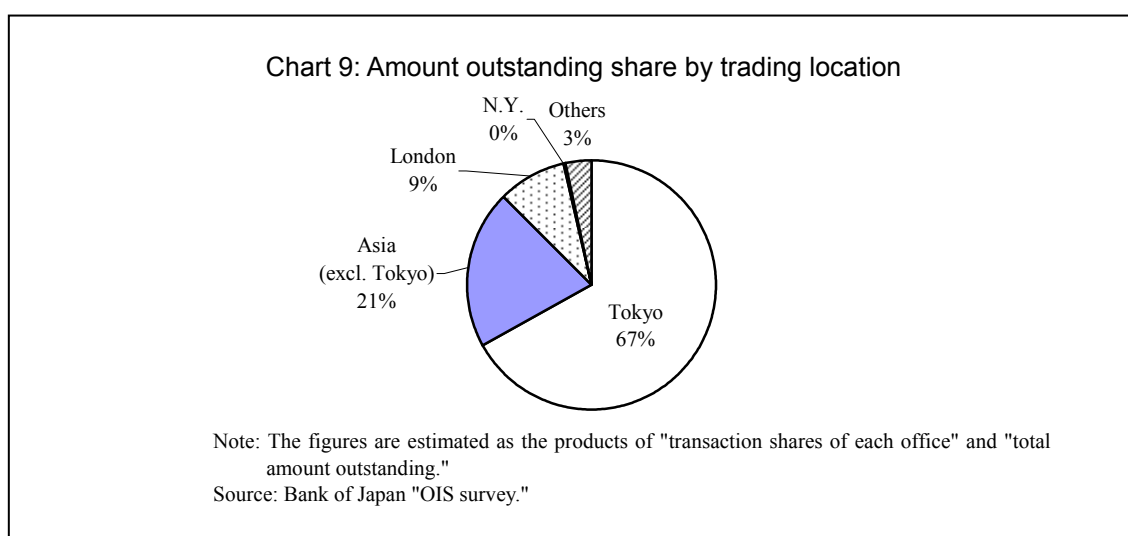
A higher value of the index means higher concentration of the market. The index of JPY OIS is based on the *OIS survey*. The others are calculated from the amount outstanding as of the end of December 2006 released by BIS. Amount outstandings is notional principal amount.

Sources: BIS "OTC derivatives market activity in the second half of 2006," ECB "Euro money market study 2006," and Bank of Japan "OIS survey."

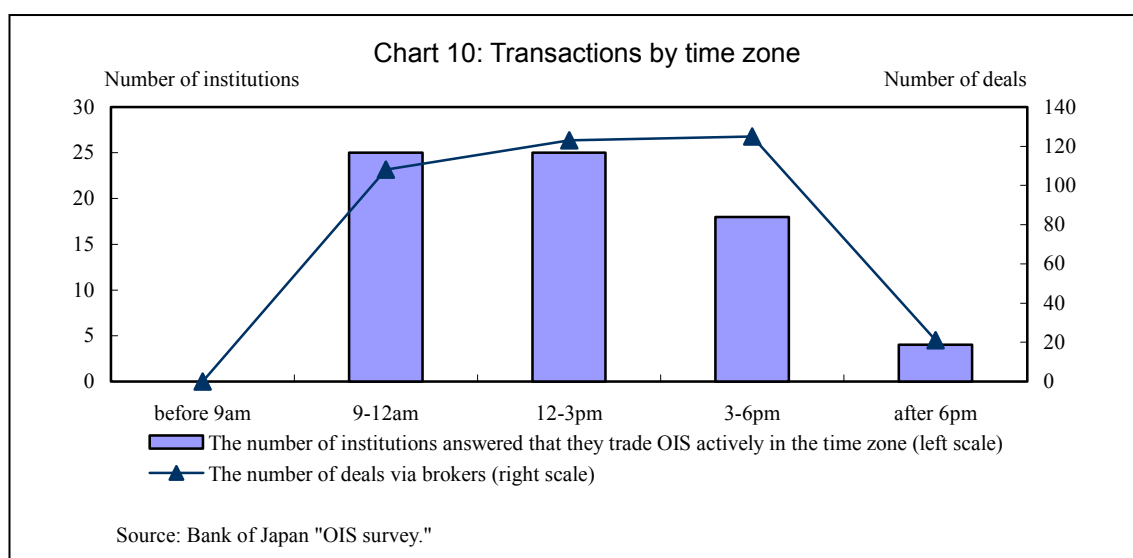
(2) Trading Locations

(Main trading location is Tokyo, but overseas locations occupy a share of 30 percent)

Many institutions trade OIS mainly in Tokyo, but some large foreign institutions and a part of domestic institutions also trade OIS actively in London and Asia excluding Tokyo, such as Singapore and Hong Kong. The share of Tokyo reaches 67 percent, followed by Asia excluding Tokyo (21 percent) and London (9 percent) (Chart 9).



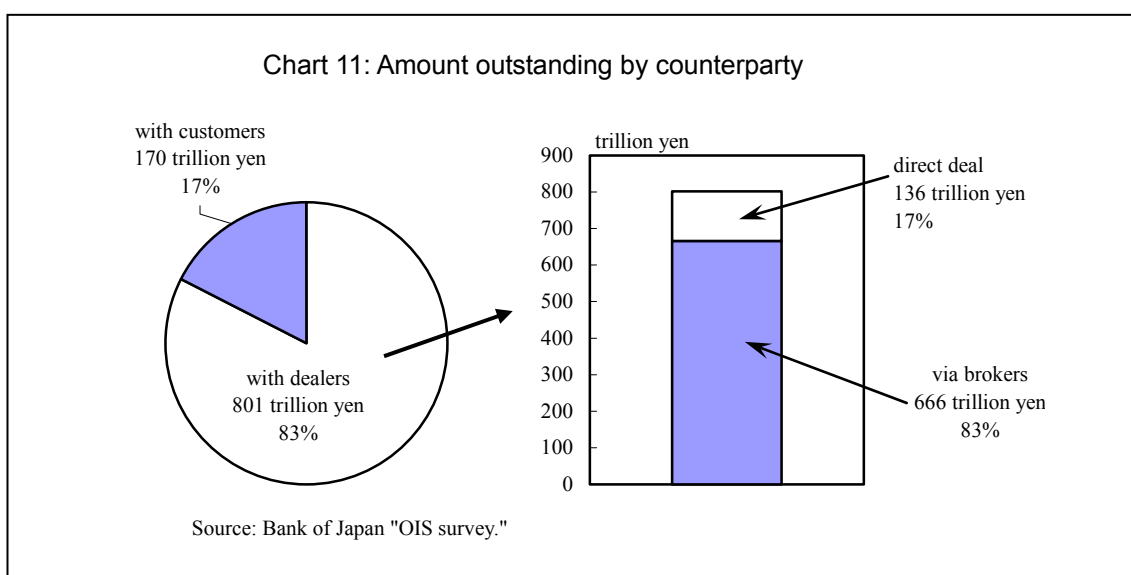
Transactions by time zone are closely related to the above trading locations. Most institutions actively trade OIS from 9 am to 6 pm (Tokyo time), overlapping London morning (Chart 10).



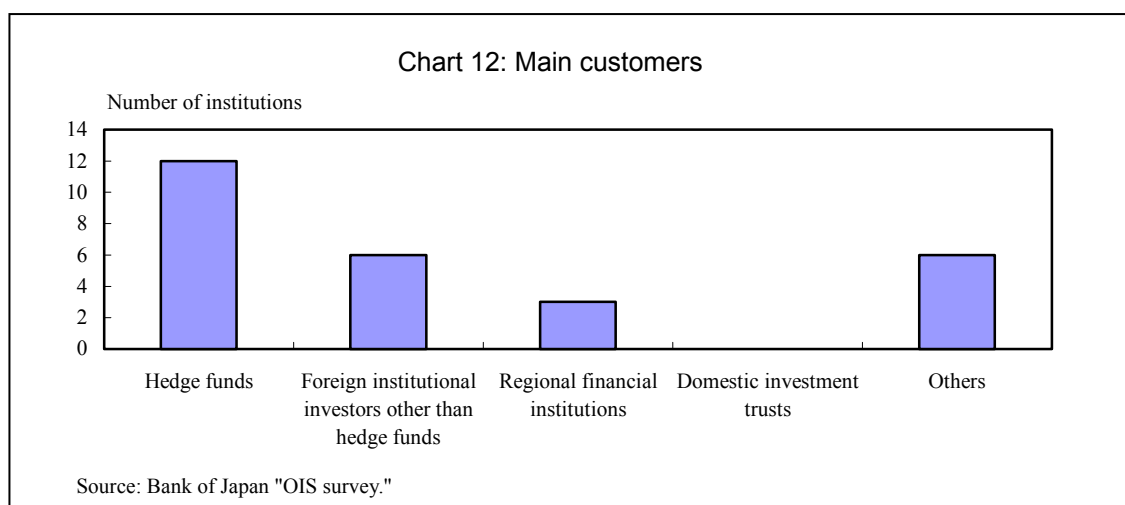
(3) Transactions by Counterparty

(Inter-dealer transactions are dominant)

Transactions among dealers dominate the market, which amounts to 83 percent of total amount outstanding (Chart 11). Only 13 institutions, mainly foreign institutions, of 31 total institutions conduct transactions with customers, suggesting that the OIS market is dominated by inter-dealer transactions. 83 percent of the inter-dealer transactions are done via brokers.



12 of 13 institutions that conduct transactions with customers answered that hedge funds are their customers (Chart 12). Following hedge funds, foreign institutional investors other than hedge funds are cited as their customers. Domestic institutional investors seem to have not used OIS thus far.



3. Transaction Volume via Brokers in May 2007

As has already been seen, the transaction share via brokers amounts to about 70 percent of total amount outstanding and 80 percent of inter-dealer transactions. In this section, we take a close look at transactions via brokers, paying particular attention to types of transactions and characteristics by term.

(1) Transaction Volume by Trading Type

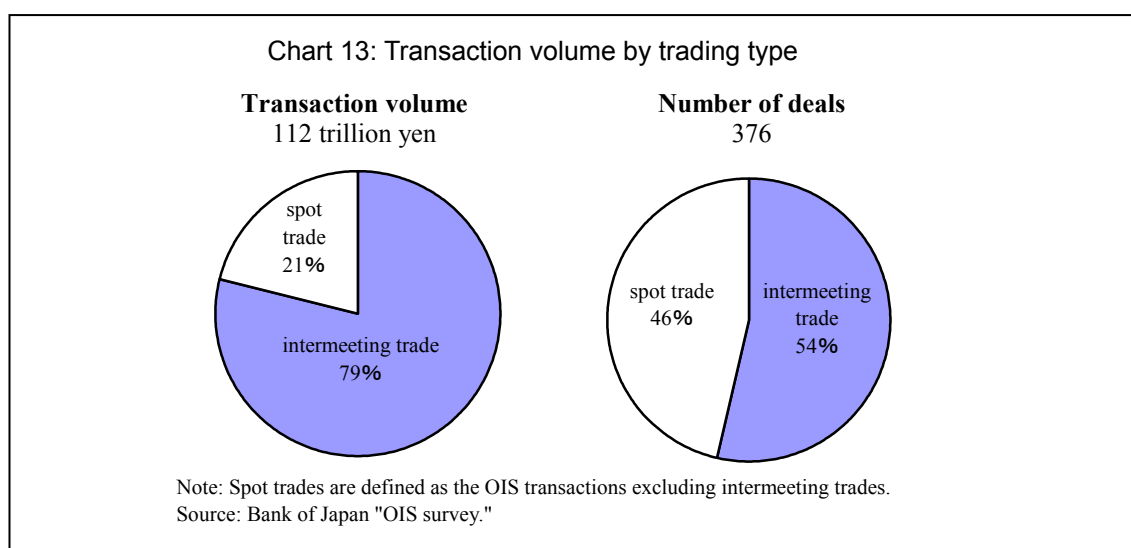
(Intermeeting trades are dominant)

Most of the JPY OIS transactions can be classified as "intermeeting trades" or "spot trades."

An intermeeting trade is a forward trade in which the contract period corresponds to the interval between the BOJ's Monetary Policy Meetings (MPMs). For instance, a July-August intermeeting trade involves the exchange between the compounded uncollateralized call rate (O/N) starting from the next date of the July MPM and ending on the date of the August MPM and a fixed interest rate of the same term.

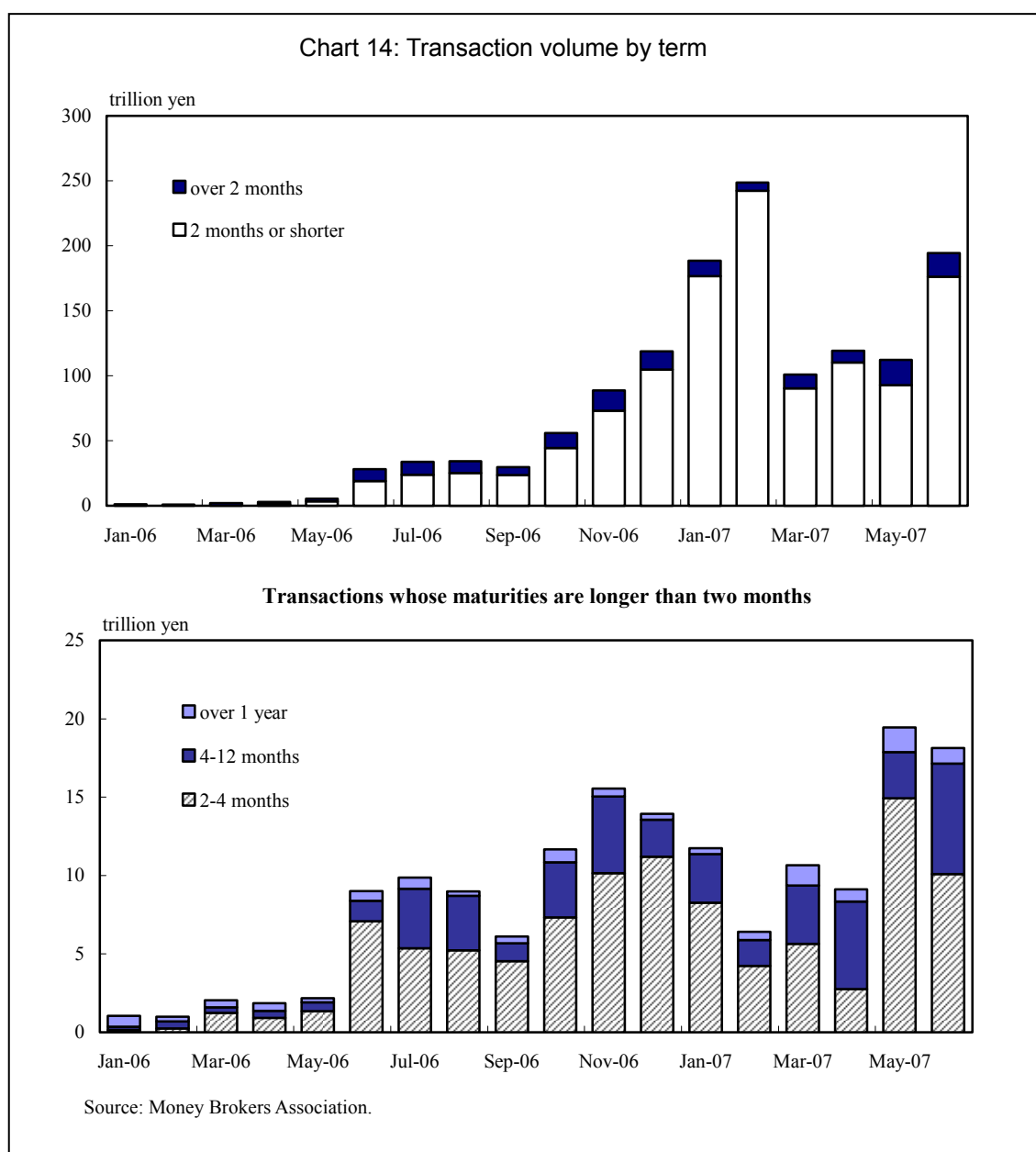
A spot trade involves the exchange between the compounded uncollateralized call rate (O/N) and a fixed rate over a more conventional period, such as one month, from two days after the contract date.

A major merit of intermeeting trades lies in the easiness for making positions based on the expectations about the future policy rates. On the contrary, spot trades are more convenient to arbitrage transactions with other short-term instruments. Intermeeting trades occupy about 80 percent on a transaction-volume basis and 50 percent on a transaction-number basis in May 2007 (Chart 13).



(Spot trades are also increasing)

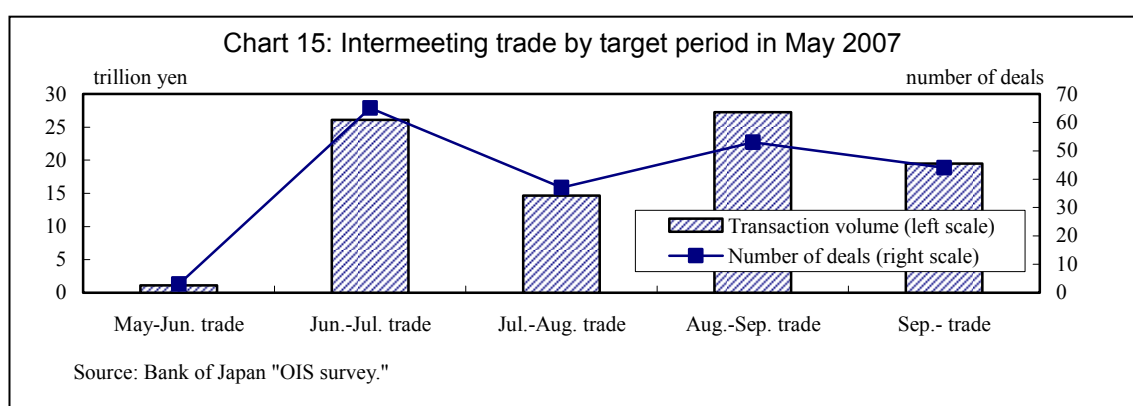
The monthly transaction volume by term compiled by Money Brokers Associations makes no distinction between intermeeting and spot trades, and hence intermeeting trades are included in "one month or shorter" or "from one to two months" category depending on the term between MPMs. Supposing that the category of "two months or shorter" approximately corresponds to intermeeting trades, intermeeting trades are found to have been dominant over time, which is consistent with the result of the *OIS survey*. Spot trades are still limited, but have been gradually increasing reflecting the growth of arbitrage / ALM demands, which will be mentioned in section 5 (Chart 14).



(2) Transaction Volume by Term

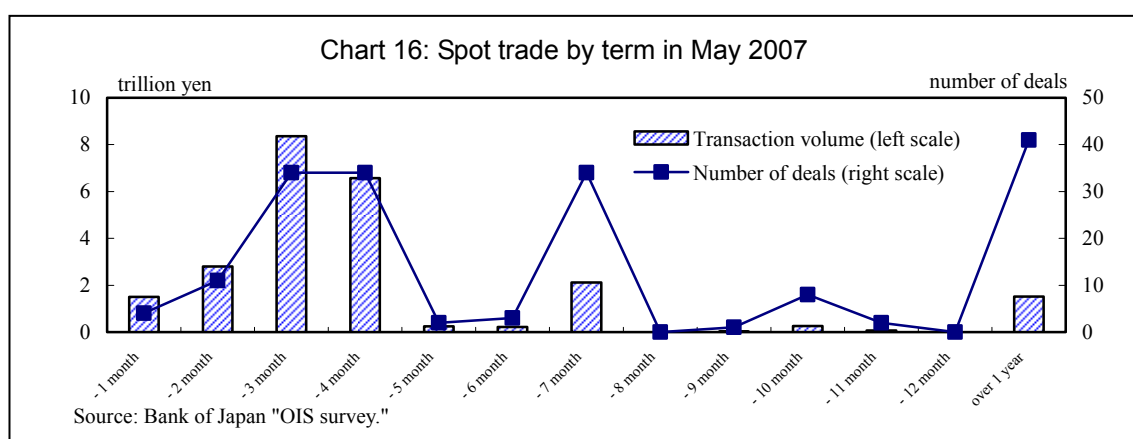
(Intermeeting trades become active as participants anticipate monetary policy changes)

The transaction volume of intermeeting trades tends to increase as market participants anticipate near-future monetary policy changes (Chart 14). In May 2007, market participants' expectations about a monetary policy change at the August or September MPM grew. This resulted in active August-September trades and trades starting from the MPMs at or after the September MPM (Chart 15). These trades were typically combined with other intermeeting trades whose target MPMs are not expected to involve monetary policy changes. This kind of transactions, a "spread trade," explains why June-July intermeeting trades also became active in May 2007.



(Terms of spot trades concentrate on 3, 6, and 12 months)

Spot trades are often used for arbitrage / hedging activities with other short-term instruments such as FB/TBs and Euroyen futures. Hence, terms of spot trades tend to concentrate on 3, 6, and 12 months, which correspond to the usual terms of other short-term instruments (Chart 16).



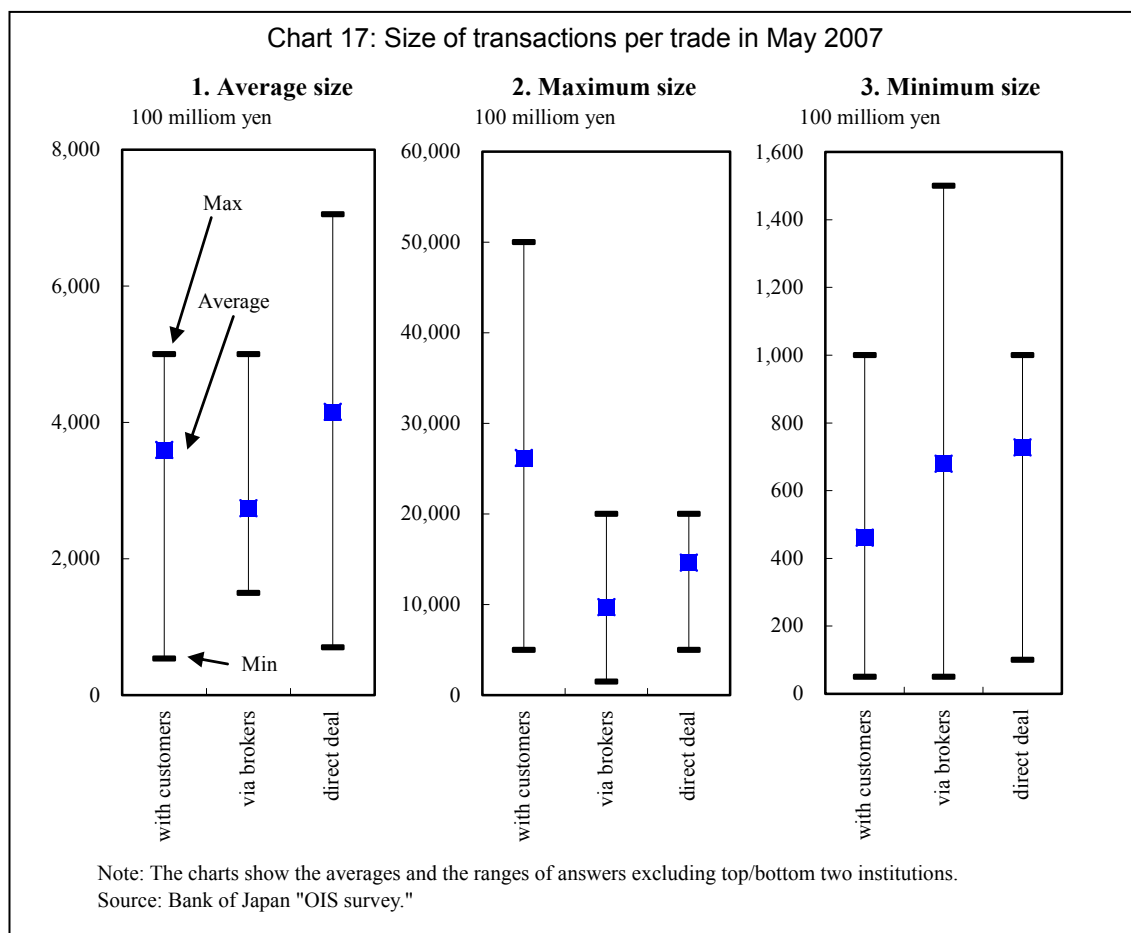
The terms of OIS transactions were mostly within six months partly because the MPM schedule more than six months ahead was not released as of the timing of the *OIS survey*. Reacting to the request from market participants, BOJ started to announce the MPM schedule up to twelve months ahead immediately after the June MPM.

4. Transaction Size per Trade

(Size of transactions per trade is relatively large)

As indicated in section 2, OIS market participants are still limited and transactions are mostly done by a few foreign financial institutions for the time being. Partly reflecting this fact, the average size of transactions of 31 market participants is relatively large, 0.3-0.4 trillion yen per trade in May 2007. In particular, the size of transactions with customers tends to become large. It should be noted, however, that dispersion across transactions is also large, varying from several billion yen to several trillion yen (Chart 17).

The average transaction volume via brokers, defined as the total transaction volume divided by total number of deals, is 0.3 trillion yen in May 2007. This amount is roughly consistent with the result of the *OIS survey* of 31 financial institutions.



The OIS market structure implied by the above survey results, relatively large transaction size and the small number of transactions, likely cause market liquidity to dry up and bid-ask spreads to expand when market expectations suddenly change and market becomes one way.

5. Purposes of OIS Transactions

(Main purposes are trading and arbitrage)

The purposes of OIS transactions can be roughly classified as (i) trading and arbitrage, (ii) ALM, and (iii) transactions with customers.

Most of 31 institutions use OIS for trading and arbitrage activities. The use of OIS for ALM purposes is still limited, but some financial institutions that hold large yen-denominated short-term assets and liabilities began to use OIS for controlling potential fluctuations of their earnings by future policy rate changes (Chart 18).

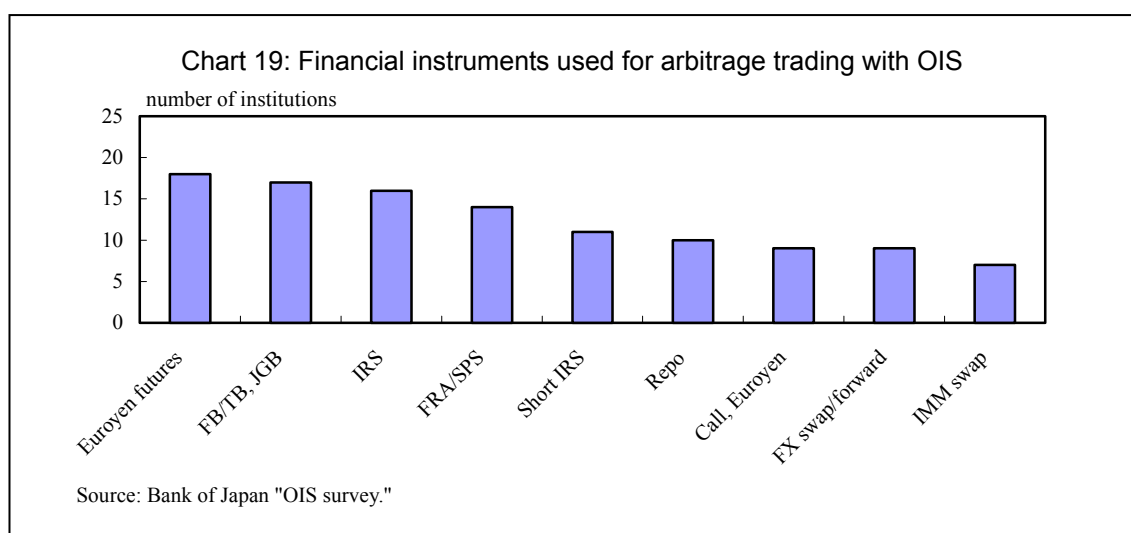
Chart 18: Trading purposes

		Trading/Arbitrage only	Both	ALM only
Domestic major banks	6	2	2	2
Domestic securities houses	3	3	0	0
Foreign financial institutions	22	15	6	1

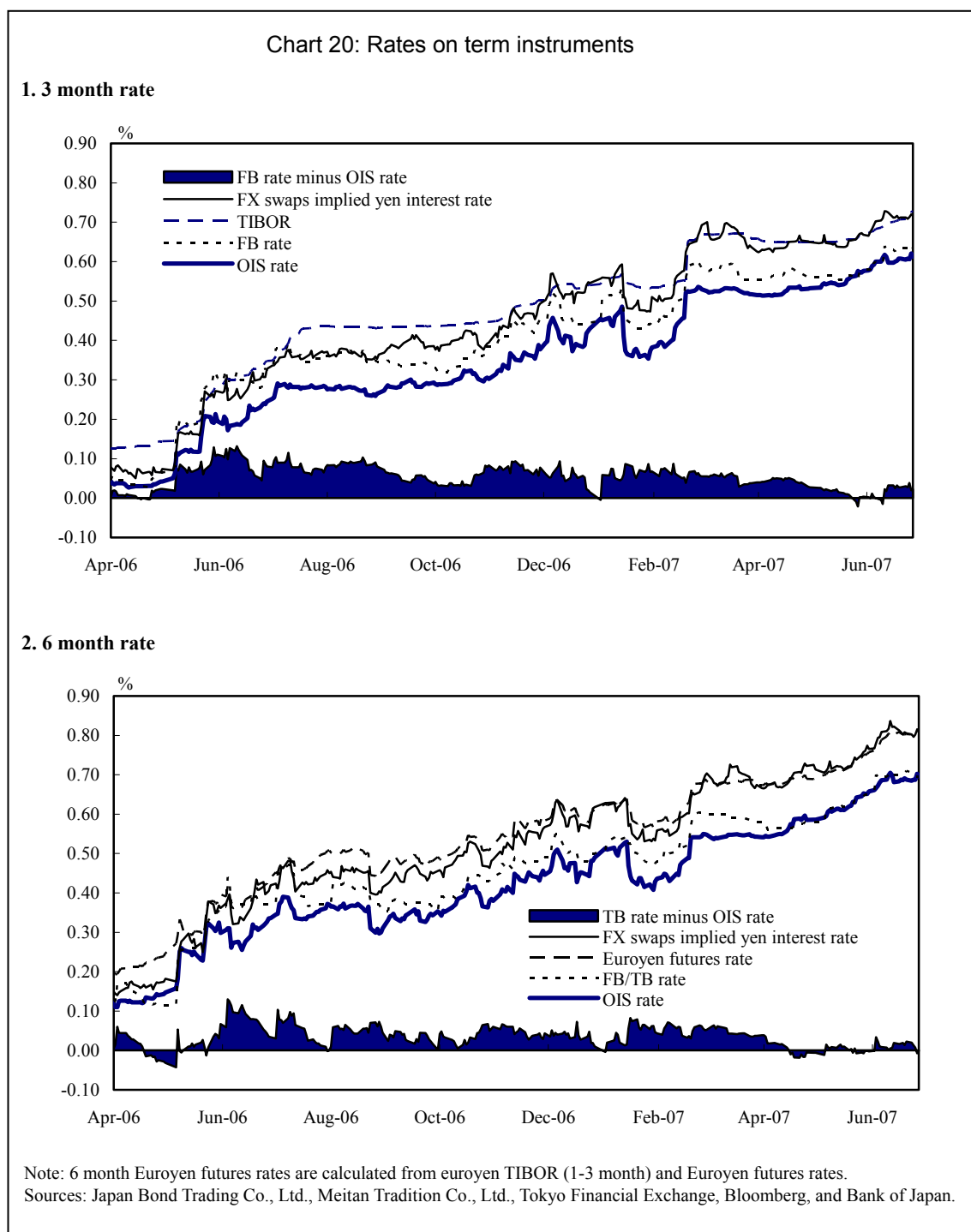
Source: Bank of Japan "OIS survey."

(Correlations between short-term rates have become higher)

As for the arbitrage activities, the *OIS survey* reveals that OIS is extensively used for arbitrage transactions with a wide variety of other short term instruments, such as Euroyen futures, FBTBs/JGBs, and IRS (Chart 19).



Market liquidity is likely to improve, and hence the spreads between short-term rates become more tightened as arbitrage transactions become more active. Recent developments of OIS rates suggest that arbitrage relationships between OIS and other short-term instruments have been put into place. However, the spreads widen in some situations, and there seems to be a room for further improvements in terms of efficiency among short-term rates (Chart 20).



6. Summary of Qualitative Questions

(1) Underlying Assets

In this survey, we investigated the possible use of the overnight interest rates other than the uncollateralized call rate as floating rates in the OIS transactions. We found that in almost all of the transactions, the uncollateralized call rate (O/N) released by the BOJ (weighted average of rates through brokers) is used as its floating rate.

In transactions with customers, on the other hand, we found the OIS transactions using the "BOJ's policy rate target" itself as a floating rate, although the transaction volume is small. The use of the policy rate target enables market participants to ignore the daily fluctuations of overnight call rates due mainly to unexpected changes in supply-demand conditions, and hence concentrate on their expectations about the future monetary policy.

(2) Mark-to-Market Methods

There are non-negligible basis points between the uncollateralized call rate (O/N) and other cash rates including TIBOR and LIBOR, and these basis points are not necessarily stable. For this reason, many emphasized the difficulty in directly applying the existing swap and JGB yield curves to mark-to-market of the OIS positions on a daily basis.

Most of the market participants answered that for a mark-to-market purpose, (i) in case of intermeeting trades, they use screen rates reported by brokers, and (ii) in case of spot trades, they first estimate the OIS yield curve from the screen rates of intermeeting trades and then use it to mark-to-market the spot OIS positions.

A few institutions answered that they estimate the yield curve common to overall short-term interest rates including LIBOR and swaps, not the yield curve specialized for the OIS, and use it for mark-to-market.

In this manner, mark-to-market and risk management methods differ across financial institutions to some extent, but most of them use screen rates reported by brokers as a main source of rate information. Due to this practice, not a few institutions emphasized the need of more open and reliable reference rates. There is also a view that this kind of reference rates enables market participants to conduct options transactions that use this rate as an underlying asset, which is likely to increase liquidity of the overall OIS market.

(3) Counterparty Risk: Contract and Management

OIS is an OTC (over-the-counter) transaction, and hence the swap master agreement by ISDA is

used for standard contracts. For a counterparty risk management perspective, CSA (Credit Support Annex) is often used in combination with the swap master agreement. In this respect, some institutions prefer exchange-based products like FF futures in the U.S. to OTC-based products from a viewpoint of avoiding credit exposure management and collateral loads.

Concluding Remarks

Main findings of the *OIS survey* can be summarized as follows.

The number of participants in the OIS market is around 30, and foreign financial institutions occupy most of the trading share. Most of the transactions (about 80 percent) are between dealers, and customer base is limited. Main customers are overseas investors such as hedge funds, and domestic institutional investors seem to have not yet used the OIS thus far.

Among not a large number of participants, transactions are concentrated on several specific institutions (70 percent of transactions are done by top three institutions).

The number of transactions is also still small (several hundred per month) and average size of transactions is relatively large (0.3-0.4 trillion yen). These facts suggest that liquidity of the OIS market is not necessarily high. In some situations, bid-ask spreads become so widened, compared with other money market instruments, that market participants face difficulty in trading OIS.

The most major trading place is Tokyo (trading share about 70 percent), but the OIS transactions are also active in Asia excluding Tokyo and London.

The main purpose of the OIS transactions is trading and arbitrage. Arbitrage activities with FB/TBs and other short-term derivatives are gradually becoming active. Reflecting these movements, the correlations between the OIS rates and other short-term instruments are becoming high, although spreads of other interest rates over the OIS rates are not necessarily stable. On the other hand, the use of OIS as an ALM tool by domestic financial institutions that have a large amount of yen-denominated short-term assets/liabilities in the form of deposits and loans, for instance, is still limited.

By trading type, intermeeting trades occupy about 80 percent share of overall transactions. Most of the trading targets of intermeeting trades are for immediate future MPM dates (3-4 meetings ahead).

We expect that as more domestic financial institutions enter the OIS market and the use of OIS as an arbitrage tool with other short-term instruments and an ALM tool become more widespread, liquidity of the OIS transactions with longer terms become higher and the market become more

resilient.

The OIS transactions began to become active in early 2006. This survey confirms that the market is in an early developing phase. However, many domestic financial institutions show interests in using OIS, and hence the market has a potential to grow further. Financial institutions that have already entered the market strongly hope that the market become more resilient due to entry of diversified participants. Taking these considerations into account, this report placed a particular emphasis on showing the OIS market structure and real-life trading pattern as specific as possible. The BOJ will closely monitor this market through market analysis and interactions with market participants.