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THE DEVELOPMENT OF THE EUROYEN MARKET AND PROGRESS IN FINANCIAL LIBERALIZATION

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The Euroyen market has been a topic of increasing concern in recent years, particularly since the release of the report of the Yen-Dollar Committee in May 1984. It is, however, as of yet a rather new area to observers in Japan, except for a limited number of specialists in international finance. To fill this gap, this paper provides a survey of the development of the Euroyen market.

First, in sections 2 and 3, this paper will describe what "Euroyen" is and its mechanics, and some of the features of Euroyen transactions. Next, in section 4, I examine the factors behind the expansion of the market and its functions in connection with the evolution of the international financial market. In section 5, I consider the consequences of the financial liberalization of domestic interest rates through an analysis of the interest arbitrage relationship between the Euroyen and domestic markets. Finally, in section 6, I sketch out the steps taken in the process of the relaxation of restrictions on Euroyen transactions in the aftermath of the Yen-Dollar Committee.

1. Introduction

Since May 1984, after the release of the report by the Yen-Dollar Committee, the Euroyen market has been a topic of increasing concern. But it is, as of yet, a rather new area to us except for a limited number of specialists in international finance. Recently its market growth has been striking, although the absolute volume still accounts for only a small part of the total Eurocurrency market. The progress of the Japanese financial liberalization hereafter should not be considered separately from the development of the Euroyen market.

At first, in sections 2 and 3, this paper describes what "Euroyen" is and its mechanics, and some features of Euroyen transactions. Next, in section 4, I examine the factors behind the expansion of the market and its functions in connection with the evolution of the international financial market. In section 5, I consider the consequences of the financial liberalization of domestic interest rates through an analysis of the interest arbitrage relationships between the Euroyen and domestic markets. Finally, in section 6, I sketch out the steps taken in the process of the relaxation of restrictions on Euroyen transactions in the aftermath of the Yen-Dollar Committee.

2. Growth of the Euroyen Market and the Mechanics of Euroyen Transactions

A Eurocurrency is a foreign currency deposited in a bank outside the country where the currency is issued as legal tender. A Dollar deposited in New York is a U.S. Dollar, but it becomes a Eurodollar when deposited in a bank outside the

United States. Similarly, Japanese Yen becomes Euroyen when deposited in a bank outside Japan, for instance in London. There are many other Eurocurrencies, such as the Euromark, Eurosterling, etc. Obviously the Eurodollar is the most important Eurocurrency and has the largest share in the Eurocurrency market. The size of the Euroyen market is measured by the gross total of outstanding Yen-denominated deposit liabilities in banks located outside Japan.

According to estimates by the Bank for International Settlements (BIS), the gross size of the Eurocurrency market amounted to $1,693 billion as of the end of September 1986, and the Eurodollar market amounted to $1,075.3 billion, which accounted for about 63.5 percent of the gross size of the Eurocurrency market (Table 1). The size of the Euroyen market amounted to $81.5 billion, which only accounted for 4.8 percent of the total market. But the Euroyen market has been growing markedly for the past ten years, its ranking among Eurocurrencies jumped from seventh place in 1977 to fourth in 1986. It may be instructive to illustrate the growth of the market by tracing through the steps in (1) the creation of a Euroyen deposit, (2) of interbank deposits between Eurobanks, and (3) a Euroyen lending to a final borrower. The mechanics of Euroyen transactions are essentially similar to those of Eurodollar transactions.

Table 1. Size of the Eurocurrency Market

[Billions of U.S. dollars. ( ) %]

End of year	Dollar	Other	of which						ECU	Total
			Deutsche mark	Swiss franc	Yen	Sterling	French franc	Guilder		
1977	318.1 (72.6)	120.2 (27.4)	69.8 (15.9)	23.3 (5.3)	2.7 (0.6)	6.7 (1.5)	4.5 (1.0)	5.1 (1.2)	–	438.3
1978	398.4 (70.4)	167.5 (29.6)	94.8 (16.8)	28.6 (5.1)	6.2 (1.1)	10.4 (1.8)	7.5 (1.3)	7.4 (1.3)	–	565.9
1979	509.6 (68.4)	235.4 (31.6)	130.3 (17.5)	42.1 (5.7)	10.3 (1.4)	15.3 (2.1)	11.5 (1.5)	8.8 (1.2)	–	745.0
1980	647.9 (70.9)	265.8 (29.1)	128.7 (14.1)	56.5 (6.2)	11.2 (1.2)	24.4 (2.7)	14.7 (1.6)	8.4 (0.9)	–	913.7
1981	768.8 (73.4)	277.9 (26.6)	121.5 (11.6)	72.6 (6.9)	16.1 (1.5)	19.9 (1.9)	11.4 (1.1)	9.3 (0.9)	–	1046.7
1982	806.3 (75.0)	268.6 (25.0)	116.3 (10.8)	62.2 (5.8)	16.9 (1.6)	16.2 (1.5)	11.3 (1.1)	10.8 (1.0)	–	1074.9
1983	852.6 (75.4)	270.6 (23.9)	113.8 (10.1)	63.9 (5.7)	21.7 (1.9)	14.6 (1.3)	11.4 (1.0)	11.5 (1.0)	7.0 (0.6)	1130.2
1984	895.7 (76.1)	264.6 (22.5)	113.0 (9.6)	56.2 (4.8)	21.7 (1.8)	15.9 (1.4)	9.8 (0.8)	10.1 (0.9)	16.0 (1.4)	1176.3
1985	954.3 (68.0)	415.0 (29.6)	161.7 (11.5)	90.5 (6.4)	47.5 (3.4)	27.6 (2.0)	17.8 (1.3)	13.4 (1.0)	34.5 (2.5)	1403.8
1986 (Sep.)	1075.3 (63.5)	575.2 (34.0)	213.7 (12.6)	123.6 (7.3)	81.5 (4.8)	33.2 (2.0)	20.5 (1.2)	15.7 (0.9)	42.5 (2.5)	1693.0

• Prior to 1983 ECU liabilities were included in "other" liabilities.
Source: BIS, *International Banking Developments*, April 1985, January 1987.

Suppose that the original depositor (A) holds a demand deposit for ¥1 billion in a Japanese bank. Wishing to keep its deposits in Yen, but encouraged by the prospect of an higher interest rate return, depositor (A) transfers this deposit to Eurobank (I). For the Japanese bank, the total deposit liabilities have remained unchanged – the demand deposit of Eurobank (I) has simply replaced the demand deposit previously held by depositor (A). However, both the liabilities and assets of Eurobank (I) have been increased by the amount of the deposit. The three-month time deposit due to depositor (A) is a Euroyen deposit. These changes are shown in Figure 1.

Figure 1. Mechanics of Euroyen Transaction

(1) Creation of Euroyen Deposit

< Abroad >		< Domestic >	
Eurobank (I)		Japanese Bank	
+ ¥1 billion (Japanese Bank)	+ ¥1 billion (A)		– ¥1 billion (A) + ¥1 billion (I)

(2) Interbank Deposit

Eurobank (I)		Japanese Bank	
– ¥1 billion (Japanese Bank) + ¥1 billion (II)	+ ¥1 billion (A)		– ¥1 billion (I) + ¥1 billion (II)
Eurobank (II)			
– ¥1 billion (Japanese Bank)	+ ¥1 billion (I)		

(3) Euroyen Lending

Eurobank (II)		Japanese Bank	
– ¥1 billion (Japanese Bank) + ¥1 billion (B)	+ ¥1 billion (I)		– ¥1 billion (II) + ¥1 billion (B)

Since Eurobank (I) does not wish to leave idle funds in a Japanese bank, it will search for a profitable use for these funds. Assume that Eurobank (I) finds lending in the interbank market profitable. It will deposit the funds in Eurobank (II). (It may keep some portion of the ¥1 billion in a Japanese bank as a working balance, but for the sake of simplicity, it can be neglected here.)

Next, further assume that Eurobank (II) uses the funds to make a loan to the final borrower (B).

The most important point is that each Euroyen transaction is settled by transferring ownership of the demand deposit in the Japanese banking system. Therefore, as Euroyen tansactions become active, Yen-denominated deposit liabilities of Eurobanks increase outside Japan, and at home, while the total demand deposit liabilities of Japanese banks remain unchanged, the rate of turnover increases.

3. Development of the Euroyen Market before the Yen-Dollar Committee

As is evident from Table 1, the Euroyen market has grown increasingly large since the mid-1970's. The relaxation of Japanese exchange controls has also made progress step by step in parallel with the market's development. But Euroyen transactions have been the most restricted area in external capital transactions in Japan until the release of the report by the Yen-Dollar Committee in May 1984. Direct capital flows between the domestic and Euroyen markets had been isolated by various official restrictions.

Euroyen deposits by Japanese nonbank residents had been restricted severely. Euroyen lending had been prohibited extensively under the old Foreign Exchange Control Law. Even after external capital transactions became essentially free of restrictions in December 1980, with the amendment of the Foreign Exchange Control Law, it has been restricted in the form of administrative guidance. To put it concretely, medium and long-term Euroyen lending had been prohibited and short-term lending had been permitted only in the case of transactions directly involved in trade, such as export-import financing. Because these restrictive measures came into effect on Japanese banks under the supervision of the Ministry of Finance, Euroyen lending in London had been mainly conducted by foreign banks.

Table 2 shows the external Yen positions of BIS reporting banks, broken down into different sectors. It reveals the huge share that interbank trading comprises in the Euroyen market. Interbank transactions in the Eurodollar market accounted for 59 percent, and in other Eurocurrencies interbank transactions accounted for about 70 percent on an average, as of the end of December 1980. 1) Interbank transactions in the Euroyen market are bigger than that in other Eurocurrency markets. Most of the Euroyen are converted from Eurodollars 2), therefore it is thought that Euroyen transactions are closely related to foreign exchange transactions.

With respect to official transactions by monetary authorities, official liabilities decreased from $4.2 billion in 1979 to $2.2 billion in 1980. Foreign monetary authorities have been holding Yen reserves besides Dollars as a part of official reserve diversification. These figures show their investment conditions in the Euroyen market. In March 1980, the Japanese government freed interest rates paid to foreign

official bodies (foreign governments, central banks and international institutions). As a result, these foreign, official bodies shifted their funds from the Euroyen market to the domestic market. It can be considered that the decrease in official liabilities in 1980 reflected the relaxation of Japanese government restriction.

As mentioned above, the most important feature of the Euroyen market is the vast amount of interbank transactions and most of the Euroyen deposits are converted from Eurodollars. It should be noted that the enlargement of the Euroyen market is closely involved with Yen transactions in the foreign exchange market.

Table 2. BIS Reporting Banks' External Yen Positions

[Billions of U.S. dollars]

End of year	Assets							Liabilities						
	Total	Bank		Non-bank		Official monetary institutions		Total	Bank		Non-bank		Official monetary institutions	
			%		%		%			%		%		%
1977	1.7	1.4	82.4	0.3	17.6	–		2.7	1.5	55.6	0.3	11.1	0.9	33.3
1978	5.4	4.6	85.2	0.8	14.8	–		6.2	3.5	56.4	0.5	8.1	2.2	35.5
1979	6.3	5.2	82.5	1.1	17.5	–		10.3	5.2	50.5	0.9	8.7	4.2	40.8
1980	10.6	8.4	79.2	2.2	20.8	–		11.2	7.9	70.5	1.1	9.8	2.2	19.7
1981	16.3	12.5	76.7	3.8	23.3	0.1		16.1	12.2	75.8	1.7	10.5	2.2	13.7
1982	15.5	11.7	75.5	3.8	24.5	0.1		16.9	13.6	80.5	1.9	11.2	1.4	8.3
1983	17.2	15.3	89.0	1.9	11.0	–		21.7	16.9	77.9	2.4	11.1	2.4	11.0
1984	22.1	20.2	91.4	1.9	8.6	–		21.7	16.4	75.6	2.4	11.0	2.9	13.4
1985	51.4	46.1	89.7	5.0	9.7	0.3	0.6	47.5	37.7	79.4	4.3	9.0	5.5	11.6
1986 (Sep.)	82.2	70.6	85.9	11.1	13.5	0.5	0.6	81.5	69.1	84.8	6.0	7.4	6.4	7.8

Source: BIS *International Banking Developments* April 1985, January 1987.

4. Factors behind the Expansion of the Euroyen Market

In spite of severe official restrictions on the Euroyen market, why has the Euroyen market grown as much since the latter half of the 1970's? In this section, I'll try to look into this question in connection with the evolution of international financial markets during the same period.

The industrialized world switched to a system of floating exchange rates in 1973. An important change after that in international financial markets was an explosive increase of foreign exchange trading volumes. Table 3 shows the trading volumes in the New York Foreign Exchange Market broken down into each currency. The total volume increased from $106.4 billion as of the end of March 1977, to $702.5 billion as of the end of April, 1983. This increasing pace was far faster than that of world trade or capital investment during the same period. The volume of Japanese trade and the trading volume in the Tokyo Foreign Exchange Market

Table 3. Turnover of the United States Foreign Exchange Market by Currency

[Billions of U.S. dollars・%]

Currency	1977. 3		1980. 3			1983. 4		
	Turnover (A)	%	Turnover (B)	%	B/A	Turnover (C)	%	C/B
German mark	29.0	27.3	155.9	31.7	537.6	228.6	32.5	146.6
Japanese yen	5.7	5.4	50.1	10.2	878.9	154.7	22.0	308.8
Pound sterling	18.1	17.0	112.1	22.8	619.3	117.0	16.7	104.4
Swiss franc	14.6	13.7	49.7	10.1	340.4	86.0	12.2	173.0
Canadian dollar	20.4	19.2	60.5	12.3	296.6	52.7	7.5	87.1
French franc	6.7	6.3	33.6	6.8	501.5	30.8	4.4	91.7
Netherlands guilder	6.0	5.6	9.3	1.9	155.0	11.2	1.6	120.4
Italian lira	1.2	1.1	4.2	0.9	350.0	5.6	0.8	133.3
Belgian franc	1.6	1.5	5.1	1.0	318.8	2.8	0.4	54.9
Other	3.1	2.9	10.8	2.2	348.4	14.6	2.1	135.2
Total	106.4	100.0	491.3	100.0	461.7	702.5	100.0	143.0
Number of banks	44		90			119		

Source: Ministry of Finance (1984) *Annual Report of International Finance Bureau* p. 113.
(Original data) Federal Reserve Bank of New York's Foreign Exchange Turnover Survey

increased at approximately the same speed until 1977, but since 1977 trends for each one began to separate rapidly, especially after the implementation of the new Foreign Exchange Control Law in December 1980 (Figure 2).

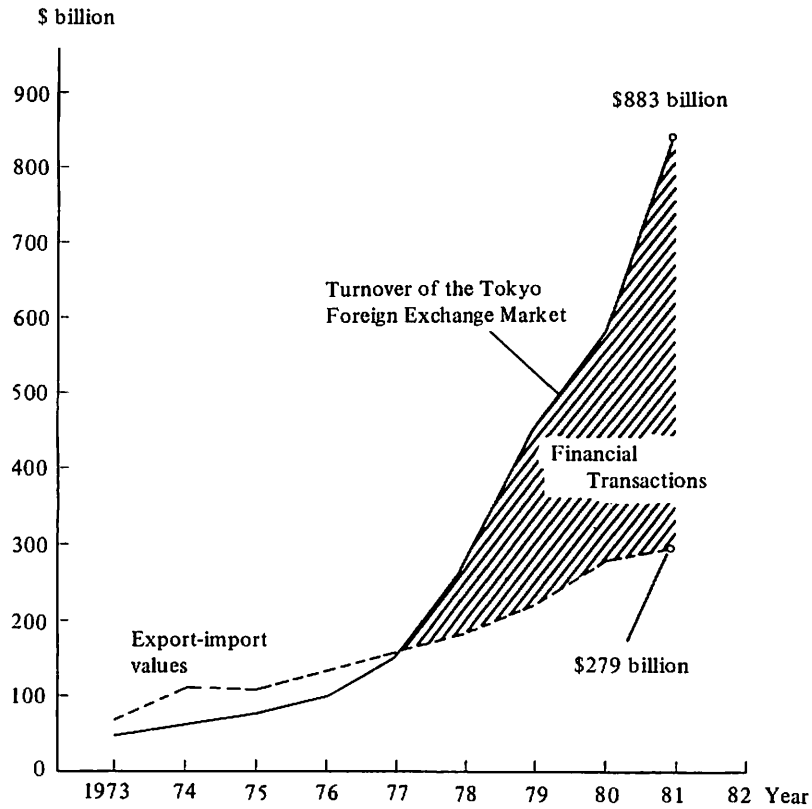
Patricia A. Revey points out that there are basically three major reasons for this marked increase of foreign exchange transaction volumes in New York. 3)

The first is the active profit-center, foreign exchange trading conducted by banks. Over the past ten years, a growing number of banks have become willing to position heavily in foreign exchange on the basis of expected changes in exchange rates and interest rate differentials, although such positions are increasingly held for only limited time intervals.

Second, the entry of a large number of foreign banks into New York has sharpened competitive conditions, reinforcing the change already under way toward more active position-taking.

Third, exchange rate fluctuations have become more volatile than before. Table 4 shows the average standard deviation of daily, weekly, and monthly percentage changes in the Dollar spot rate vis-a-vis several major currencies. The longer the term of the exchange rate change taken, the larger the standard deviation becomes in all currencies, and these tendencies have strengthened over time. It can be found that, especially concerning Yen, this tendency is especially distinguished and the standard deviation is larger than for other major currencies. The standard deviation is taken as a good measure of risk, because unpredictability is associated with variability. Higher levels of risk are associated with longer term exchange rate changes, so position-taking in the interbank exchange market has become even riskier in recent years, particularly following the October 1979 change in monetary policy by the Federal Reserve. This higher risk environment has inspired banks to shrink back even further from operations based on longer run exchange rate expectations. As a result, the

Figure 2. Turnover of the Tokyo Foreign Exchange Market and Export-import Values



Source: Kinyu Zaisei Jijo Kenkyukai ed. 1983, p. 11.
(Original Data) Ministry of Finance *Annual Report of International Finance Bureau*, various issues

time between the taking on and the unwinding of positions has become very short, amounting to minutes and hours rather than days and weeks. These rapid "in and out" transactions have led to an explosive rise in spot turnover. 4)

Exchange rate volatility is likely to increase the riskiness of uncovered foreign currency transactions and may raise the cost of obtaining forward cover. In the short run, when exchange rates are relatively variable, the differences between forward exchange rates and future spot rates tend to be amplified. In other words, the forward exchange rate for a particular date becomes less accurate as a predictor of the actual spot rate on that date.

Differences between forward exchange rates and the subsequently observed spot rate for corresponding dates are important because they indicate the degree of risk present in the exchange market. Higher risk leads participants in international trade to increase the proportion of their trade contracts that is to be hedged, and increases the cost of hedging a given contract in the forward exchange market. 5) Figure 3 shows the developments in the cost of hedging in the New York market as measured

Table 4. Spot Exchange Rate Variability

Standard deviation of percentage changes*

Currency	March 1973 through October 1979	November 1978 through October 1979	October 1979 through August 1981
Daily changes:			
German mark	0.573	0.427	0.706
Swiss franc	0.738	0.596	0.790
Japanese yen	0.488	0.590	0.736
Canadian dollar	0.195	0.211	0.250
Sterling	0.462	0.512	0.647
Weekly changes:			
German mark	1.290	0.977	1.556
Swiss franc	1.630	1.471	1.777
Japanese yen	1.128	1.316	1.640
Canadian dollar	0.469	0.511	0.578
Sterling	1.069	1.263	1.465
Monthly changes:			
German mark	3.046	2.197	3.514
Swiss franc	3.430	2.886	3.791
Japanese yen	2.609	2.150	3.789
Canadian dollar	1.158	1.309	1.231
Sterling	2.450	2.830	3.388

*The standard deviations of weekly and monthly changes represent means of standard deviations of five series of five-day percentage changes and twenty-one series of twenty-one-day percentage changes. Thus, for example, weekly percentage changes were measured Monday to Monday, Tuesday to Tuesday, and so on to obtain five nonoverlapping series. Similarly twenty-one non-overlapping series of monthly intervals were constructed, approximating percentage changes from the first day of a given month to the first day of the next month, successively for all subsequent business days.

Source: Federal Reserve Bank of New York, *Quarterly Review*, Autumn 1981, p. 37.

by the bid-offered spreads for the 3-month and 12-month forward exchange rates of seven major industrial countries against the U.S. Dollar for the period from the beginning of 1974 to the end of 1981. Bid-offered spreads of Japanese Yen declined from the high level in 1974 to a low point in 1976, but thereafter rose sharply, and for 1981 it was again as high as in 1974, like other currencies. This suggests that the cost of undertaking hedging transactions in the forward market, which declined in the mid-1970s, has again risen sharply since 1979.

When nonbank customers (such as traders) conduct forward exchange transaction with banks for the purpose of avoiding their foreign exchange risk, the bank can respond to the customer's supply of forward exchange by three alternative

methods: (1) matching it with an equal and opposite customer supply, (2) the swap method, and (3) the Eurocurrency market mechanism.

If the bank responds to the customer's supply of forward exchange by matching it with an equal and opposite customer supply, the bank can quickly find offsetting positions at very small spreads. Even if an offsetting position cannot be found, the bank can obtain an offsetting transaction within a short period of time by making a slight adjustment to the quotation.6)

In the absence of matching forward transactions, two alternative methods of offering forward facilities to costomers without forcing banks into open speculative positions are available, that is the swap method and the Eurocurrency market mechanism. A currency swap involves an interbank transaction where a bank sells a currency spot to another bank and simultaneously buys the currency back forward.7)

The Eurocurrency market mechanism allows the bank to offer to buy or sell forward contracts without risk through a movement of funds on the Eurocurrency markets. Under this method, the bank: (1) borrows in the Eurocurrency market the currency being sold forward by its customers; (2) sells the currency spot for the currency being bought by the customer, and (3) invests the proceeds of the spot sale in the appropriate Eurocurrency market.8)

Imagine that a customer wants to purchase 90-day forward Japanese Yen. The bank can take the opposite side of the contract (sell Japanese Yen forward) without incurring exchange risk, by borrowing Dollars in the Eurodollar market and converting them to Japanese Yen on the spot foreign exchange market, buying a 90-day Yen-denominated asset in Euroyen market, and selling the Yen forward. When the asset matures, the proceeds will be used to honour his forward sale. The bank is merely engaging in covered interest arbitrage. This arbitrage transaction includes the spot foreign exchange transaction and Eurocurrency transactions. As covered arbitrage transactions become active, Eurocurrency and foreign exchange transactions also increase. Thus the expansion of the Euroyen market is closely related to the rise of foreign exchange transactions in Yen.

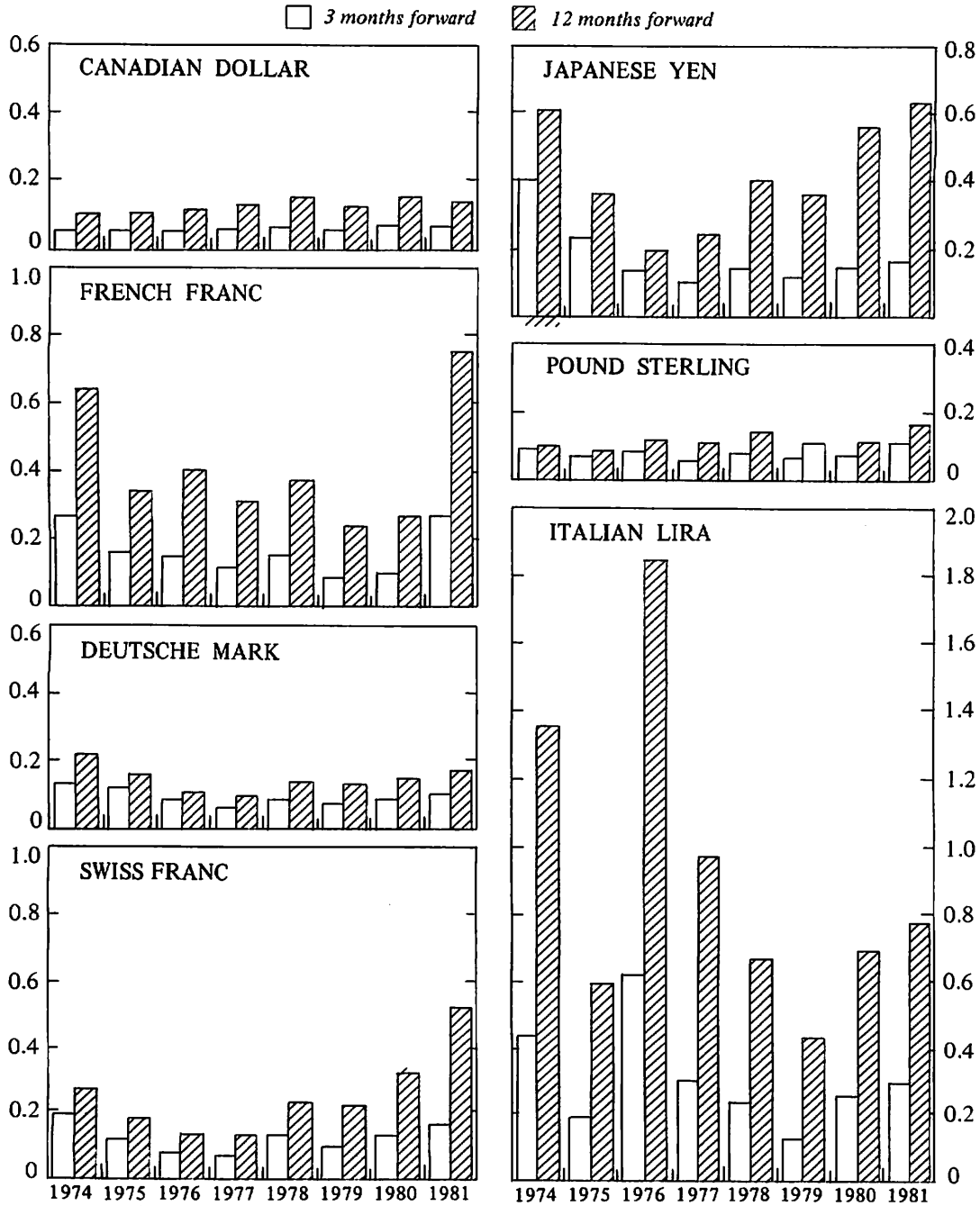
The volatility of exchange rates and the rapid increase in the volume of Yen trading in the foreign exchange market lead to a raise of demand for hedging transactions in Japanese Yen. On the other hand, as the bid-offered spread for forward Japanese Yen is larger than those for other currencies, the hedging transaction cost in the forward exchange market becomes higher (Figure 3). As a result, interest arbitrage transactions through the Eurocurrency markets have become larger. In other words, it can be said that the Euroyen market has grown as a substitute for the forward exchange market.

W.D. McClam points out that threr are four credit-substitution functions in the Eurocurrency market for the traditional financial market.9) The first is Eurocurrency credits as a substitute for domestic credit to nonbanks. Substitution effects of this kind normally occur under conditions of relatively tight domestic monetary policy. When tight monetary policy is pursued and nonbank residents are faced with the difficulty of fund raising, they are able to shift their demand for credit from the domestic market to the Eurocurrency market.

The second is Eurocurrency credits as a substitute for domestic "monetary base"

Figure 3. Spreads Between Buying and Selling Rates in Forward Exchange Markets in New York, 1974–81[1]

(In per cent)



Average daily rates (U.S. dollars per currency unit in the New York foreign exchange market).
Source: I.M.F. *Annual Report* (1982), p. 46.

creation. From the point of view of domestic banks, foreign funds borrowing is a source of "high-powered" reserve money equivalent to that of central bank credit. Domestic banks may provide the credit to domestic nonbank borrowers by recourse to the Eurocurrency market.

The third is the Eurocurrency market as a substitute for foreign money markets. During the early stage of the Eurocurrency market, the main factor of the growth was the introduction of various restraint measures for nonresident borrowers in the traditional international financial markets, such as New York and London.

The fourth is the Eurocurrency market as a substitute for forward exchange markets.

To what extent did the Euroyen market carry out these credit-substitution functions?

As Euroyen borrowing by nonbank residents and Euroyen lending to residents by Japanese banks has been prohibited, it would be considered that the Euroyen market has not carried out the first and second credit-substitution functions before the Yen-Dollar Committee.

Concerning the credit-substitution function for foreign money markets, to what extent has Yen-denominated external lending, so far carried out, become an important problem? Blanket permission of Yen-denominated external lending was begun in 1972, and Yen-denominated syndicated loans were opened in March 1972. Although Yen-denominated syndicated loans are the area with most striking increase in the use of the Yen in international transactions, they only account for a small part of total external lending in the world. Moreover the proportion of Euroyen lending to total Eurocurrency lending had been negligible before the Yen-Dollar Committee (Table 5). Thus it would be also considered that the Euroyen market has not carried out the third credit-substitution function.

Table 5. Market Share of Eurocurrency Lending by Currency

Year	1978	79	80	81
	%	%	%	%
U.S. dollar	95.6	94.5	93.0	93.0
Deutsche mark	1.7	2.0	1.8	0.8
Japanese yen	0.5	0.6	0.0	–
Pound sterling	1.1	1.2	1.4	2.5
Hong Kong dollar	0.2	0.2	1.4	1.0
French franc	0.1	0.4	0.5	0.2
OPEC currency	0.3	0.4	0.3	0.1
Other	0.5	0.7	1.6	2.4
Total	100.0	100.0	100.0	100.0

• Figures exclude external lending in domestic markets.
Source: Tokai Bank (1984), p. 18.

Concerning the fourth credit-substitution function, the forward exchange substitute function, it may be described as follows. As the demand for hedging against the foreign exchange risk of Yen (which resulted from the volatility of exchange rates and the rapid increase of the trading volumes of foreign exchange) increases, the interest arbitrage operations by banks became active. That means the Euroyen market provides a method of offering forward facilities as substitutes for forward exchange market.

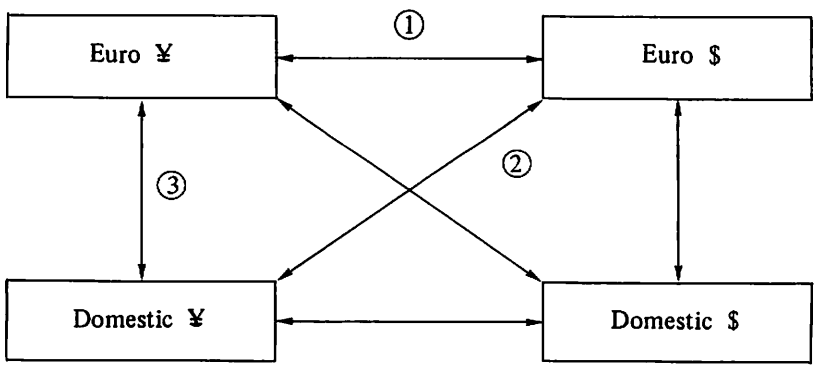
As mentioned above, the Euroyen market couldn't carry out the first, second, and third credit-substitution functions as a result of Japanese official restrictions, only the fourth one could be carried out. As a result, the proportion of Euroyen interbank transactions is larger than in the other Eurocurrency markets, and the enlargement of the Euroyen market has run parallel to the increase of foreign exchange transactions using Yen.

5. Interest Arbitrage Relationships between the Euroyen and Domestic Financial Markets

Until the announcement of liberalization measures of the Euroyen market by the report of the Yen-Dollar Committee in May 1984, direct capital flow between the domestic and Euroyen markets had been restricted. The empirical arbitrage relationships between the external and domestic markets are analyzed in this section.

There are four broad arbitrage channels, which may be identified between: (1) two domestic markets in different countries; (2) the domestic and Eurocurrency market in the same currency; (3) Eurocurrency markets in different currencies; and (4) the Eurocurrency market in one currency and a domestic market in another. (Figure 4).

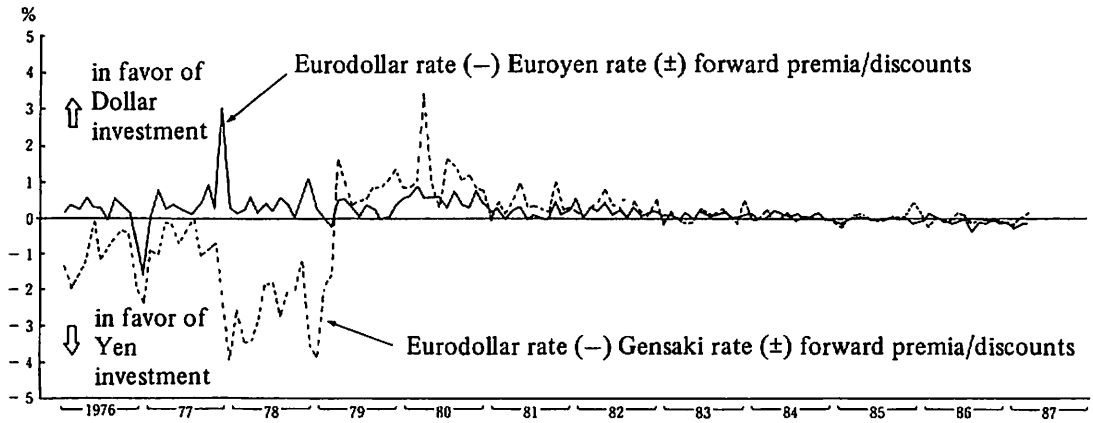
Figure 4. International Arbitrage Channels



The interest-parity condition has invariably been maintained within Eurocurrency markets even in periods of exchange control. Thus forward premia/discounts invariably equal uncovered interest differentials between the Euroyen and Eurodollar.

Figure 5 displays the covered interest differential between Dollar and Yen. The full line shows the covered differential between the Eurodollar and Euroyen three month deposit rates, and the dotted line shows the covered differential between the Eurodollar and domestic Yen (short-term repurchase "Gensaki") rates. The origin is the level of interest rate parity.

Figure 5. Covered Interest Rate Differentials between the Dollar and the Yen (three-month)



(1) Figures for Eurodollar, Euroyen, and Gensaki rates are at the end of month.
(2) May 1979 Nonresidents' participation in the Gensaki market allowed.
(3) June 1984 Abolition of Yen-swap limits for banks.
Source: Morgan Guaranty trust, *World Financial Markets*, various issues. Bank of Japan.

The covered interest differential between the Eurodollar and Euroyen has been approximately zero, except in December 1976 and in November 1977. On the other hand, in the case of the covered differential between Eurodollar deposits and Gensaki rates, before early 1979, a considerable differential in favor of Yen investment had been sustained. In this period the Japanese government used exchange controls to inhibit capital inflows into Japan. In February 1979, this regulation was removed and in May, nonresident participation in the Gensaki market was allowed. The covered interest differential narrowed thereafter. Since December 1980, after the implementation of the new Foreign Exchange Control Law, both lines have remained approximately zero; especially after the abolition of Yen-swap limits for banks in June 1984.

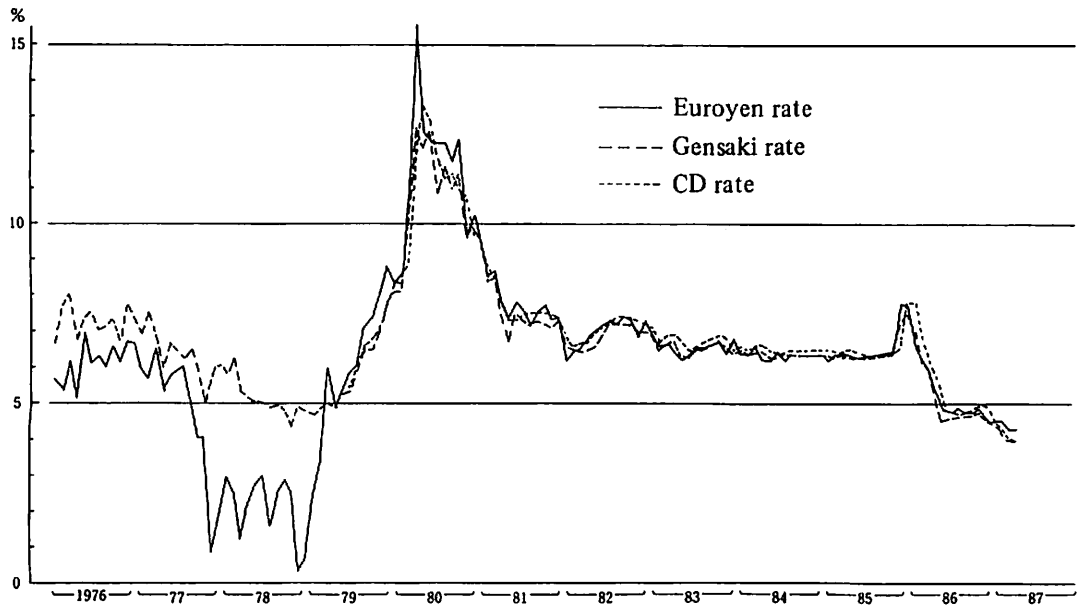
As mentioned above, while the interest-parity condition invariably has been maintained within Eurocurrency markets even in periods of exchange control, a covered interest differential in favor of the domestic currency (Japanese Yen) can be sustained as a result of controls on capital inflows.

Next, we will examine the interest arbitrage relationships between the Euroyen and domestic markets from the point of view of the demand for and supply of funds in Yen.

From the viewpoint of short-term investment in Yen-denominated assets, Figure 6 shows the relationship among three month Euroyen, Certificates of Deposit, and Gensaki rates. In May 1979, the CD market opened and nonresident participation was allowed in the Gensaki market. On the other hand, Euroyen deposit by nonbank residents is severely restricted.

According to Figure 6, discrepancies between Euroyen and Gensaki rates were substantial before May 1979. Particularly over the period from November 1977 through February 1979, when severe controls on capital inflows were imposed, discrepancies were marked. After the removal of the controls in February 1979 and the permission for nonresident participation in the Gensaki market in May 1979, the differential between the two rates narrowed.

Figure 6. Interest Rates on Yen-denominated Assets (three-month)



May 1979, the CD market opened.

Source: Same as Figure 5.

The U.S. and Eurodollar markets are linked by arbitrage activities of nonbank depositors, nonbank borrowers, and large multinational banks. Among these, Eurodollar arbitrage by U.S. banks is the primary channel linking the Eurodollar market and the domestic banking sector. Large U.S. banks operate, daily and in volume, in both markets and usually respond promptly to any profitable interest rate discrepancies. Large U.S. banks balance competing credit demands in the domestic and external markets primarily through transactions with their branches abroad. Consequently, their arbitrage activities can also be classified as outward (raising funds domestically and placing those funds in the Eurodollar market) or inward (raising funds in the Eurodollar market and lending those funds domestically) arbitrage depending on the direction that funds flow in response to interest rate incentives. 10)

In Japan it was difficult to conduct these arbitrage activities between the Euroyen and domestic markets, because there were a number of restrictions such as Yen-swap limits for banks and the prohibition on Euroyen lending by Japanese banks. But recent circumstance have been changed by the relaxation of these restraints, that is, the abolition of Yen-swap limits for banks and the liberalization of short-term Euroyen borrowing by residents in June 1984.

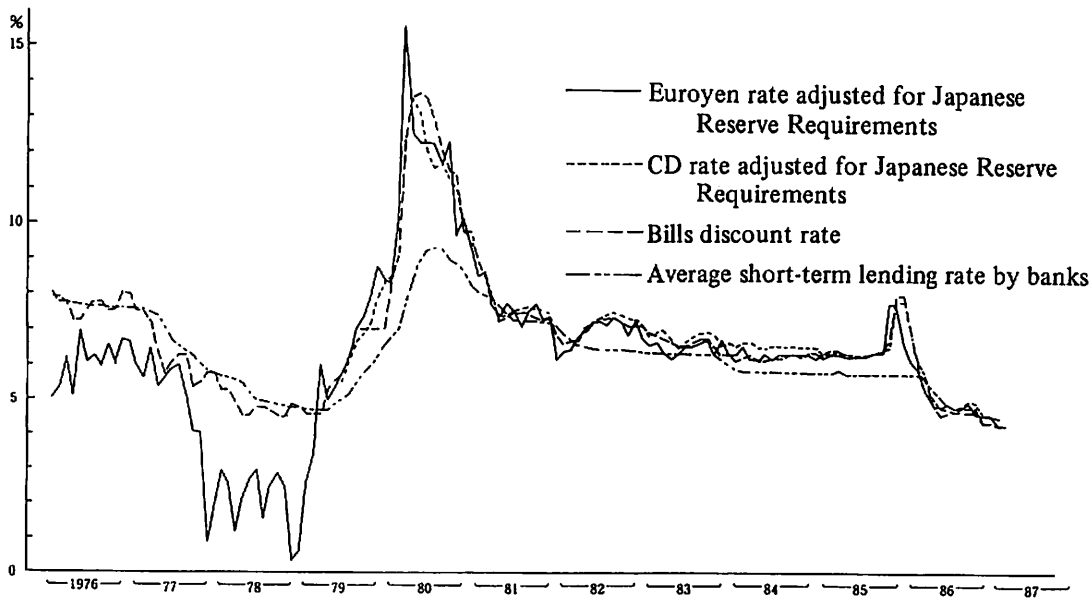
In the case where there is no obstacles to capital flows between the Eurocurrency and the domestic markets, the relationship between the domestic and corresponding Eurocurrency interest rates is determined by the percentage reserve requirements on domestic and external liabilities. The equilibrium condition, which means that there are no incentives to shift funds between the two markets, is that the effective cost of internal and external funding is equal. This condition is illustrated as follows.

$$\left(\frac{1}{1-Rd}\right)Id = \left(\frac{1}{1-Rf}\right)Ie$$

where Rd and Rf are the percentage reserve requirements on domestic and external liabilities and Id and Ie are the domestic and corresponding Eurocurrency interest rates. 11)

Therefore, at least since short-term direct capital flows between the Euroyen and domestic markets were liberalized in June 1984, domestic interest rates must be equal to the Euroyen rate. Figure 7 shows the relationship among the Euroyen, Certificates of Deposit, bills discount and short-term bank lending rates. The Euroyen and CD rates are adjusted for Japanese reserve requirements on domestic and external liabilities. Discrepancies among these rates have been narrowing step by step

Figure 7. Yen-denominated Fund Raising Interest Rates (three-month)



Source: Same as Figure 5.

with the liberalization measures in May 1979 and in December 1980, and the Euroyen rate has moved into line with the bills discount rate since June 1984.

From the facts described above, we may conclude that, although direct capital flow between the Euroyen and domestic markets had been restricted before June 1984, when the liberalization measures for Euroyen transactions were taken, the correlation between the two market interest rates has made considerable progress since the end of the 1970's. There have been notable turning points in the relaxation of exchange control in that period. One was in February 1979, when control on capital inflows was removed. Another was in May 1979, when nonresident participation in the Gensaki market was allowed and the CD market, which also allowed nonresident participation, opened. A third was in December 1980, when the new Foreign Exchange Control Law was implemented.

In the period of severe exchange control in Japan, free capital movements were possible only in channel (1) in Figure 4. As a result, the interest-parity condition was realized only within the Eurocurrency market. After that, as the liberalization measures progressed in 1979 and 1980, and as Eurodollar transactions in the domestic market such as foreign currency deposits, Dollar call, impact loans, etc., have been increasing, arbitrage transactions in channel of (2) have become active and the interest-parity condition was almost realized between the Eurodollar and domestic markets, as shown in Figure 5. That the interest-parity condition is achieved by active arbitrage transactions through channels (1) and (2) indicates that Japanese interest rates are moving into line with Euroyen rates as shown in Figure 6 and 7 in spite of the absence of capital flows through channel (3).

6. Progress in the Liberalization of Euroyen Transaction since the Yen-Dollar Committee

The enforcement of the new Foreign Exchange Control Law in December 1980 changed Japanese official attitudes on external capital transactions, they were to be free of restriction in principle. However, even thereafter the Ministry of Finance continued to take a prudent attitude on the liberalization of the Euroyen market in relation to the internationalization of Yen, various restrictions in the form of administrative guidance remained.

A new phase began in May 1984 with the release of the report by the working group of the Joint Japan-U.S. Ad Hoc Group on the Yen/Dollar Exchange Rate, Financial and Capital Market Issues (the so-called Yen-Dollar Committee) and the report by the Ministry of Finance entitled "Current Status and Future Prospects for the Liberalization of Financial and Capital Markets and the Internationalization of the Yen". The United States believed that the internationalization of the Yen would increase demand for it, thereby strengthening it and moderating the U.S. trade deficit with Japan. So the U.S. Treasury claimed that "the establishment of a completely free Euroyen market is the cornerstone of progress toward the internationalization of the yen, and therefore that Japan should approach the yen's internationalization from the Euroyen market" 12) in the report of Yen-Dollar Committee.

On the other hand, Japan's Ministry of Finance claimed that "a too rapid estab-

lishment of a free Euroyen market may have adverse effects on Japanese fiscal and monetrary policies, exchange rates, and Japan's domestic financial systems; and also that there is no consensus on whether the Euro market should play the major role in internationalizing one's currency." 13)

As cited above, there were some differences of views between the two countries on the role of the Euroyen market in internationalizing the Yen. Therefore, it may be thought that, to some extent, external pressures have had a major impact on the deregulation process of the Euroyen market.

The liberalization measures included in the report of the Yen-Dollar Committee contains three broad areas; (1) capital market liberalization, (2) access of foreign financial institutions to Japanese money and capital markets, and (3) deregulation of the Euroyen market. The deregulation of Euroyen transactions has made progress in [1] the Euroyen bond market, [2] Euroyen negotiable certificates of deposit (CDs) market, and [3] Euroyen lending.

[1] Deregulation of Euroyen bond

Introduction of the liberalization measures in the field of Euroyen bonds has had the widest and the most fruitful effect. Issues amounted to ¥277 billion in 1984 and ¥1,445.7 billion in 1985. Issues in the single month of December 1984, when the regulations were relaxed, amounted to ¥152 billion, compared with ¥70 billion in 1983.14) The growth of issues by nonresidents has been particularly rapid. (Table 6)

Table 6. Euroyen Bond and Yen-denominated Foreign Bond Issues (Number · ¥ billion)

	Nonresident		Resident		Yen-denominated Foreign Bond	
	Number	Value	Number	Value	Number	Value
1977	2	30.0	–	–	18	326.0
78	1	15.0	–	–	40	827.0
79	2	25.0	–	–	22	400.2
80	4	55.0	2	10.0	14	261.0
81	5	80.0	1	10.0	40	612.5
82	6	95.0	2	30.0	67	856.0
83	4	70.0	–	–	73	899.0
84	13	227.0	–	–	71	1114.5
85	66	1445.7	7	140.0	59	1272.5
86	141	2551.5	21	417.0	42	785.0

Source: Ministry of Finance, *Annual Report of International Finance Bureau* various issues.

But it is not necessary that the apparent sharp increase in issues of Euroyen bonds be reflected in the strong international demand for Yen. For many issues are subsequently switched to other currencies by means of swaps. As a result of financial innovation in the international financial market, especially in swap techniques,

it is not necessary for borrowers to have direct access to the market, whose currency they ultimately want to take. There are indeed many cases where issues of Euroyen bonds are chosen as the lowest cost means of fund raising in dollars, after taking account of interest rates in the various currencies, exchange rates, bond quotations, and swap market conditions. Many issuers are subsequently switching to other currencies by means of swaps. As a result, a considerable proportion of Euroyen bonds are flowing back into Japan to be held by Japanese investors. Diversification of the types of Euroyen bonds for issue by nonresidents was permitted in June 1985.

[2] Euroyen CD

Euroyen CD is a Yen-denominated certificate of deposit issued by banks in the Euroyen market. Short-term Euroyen CD issues were approved in December 1984 on the conditions that the maturity was within 6 months and sale in Japan prohibited. At the beginning Japanese banks actively issued Euroyen CDs and the amount outstanding was ¥155.3 billion at the end of 1984. But issues in this market fell to only ¥40.3 billion in 1985, because there are few advantages for either investors or banks due to a lack of well-established secondary markets, and due to complicated issuing procedures. In April 1986, the maximum issuing period was extended to one year. The most important point for the growth of the Euroyen CD market is the preparation of a well-established secondary market.

Table 7. Outstanding Euroyen CDs and Euroyen Loans

(¥ billion)

	Euroyen Loans				Euroyen CDs
	Nonresident			Resident	
	Short-term	Medium & Long-term	Total	Short-term	
1981	11	–	11	–	–
82	4	–	4	–	–
83	192	–	192	–	–
84	468	–	468	84	155
85	1122	277	1399	133	40
86	1567	818	2385	1072	44

Source: Ministry of Finance *Annual Report of International Finance Bureau* various issues.

[3] The relaxation of Euroyen lending

Restrictions on Euroyen lending have been progressively relaxed for several years as follows. In June 1983, short-term Euroyen lending to nonresidents was liberalized. In June 1984 short-term Euroyen lending to Japanese residents, and in April 1985 medium- and long-term Euroyen lending to nonresidents, were liberalized. As these liberalization measures subsequently made progress, lending outstanding has increased.

Table 8. Liberalization Measures of the Euroyen Market

1984 – April	• Euroyen bond issues by residents liberalized
– June	• Short-term Euroyen impact loans liberalized
– December	• Short-term Euroyen CD issues approved (maturity within 6 months; sale into Japan prohibited)
	• Euroyen bond issues approved for foreign private companies, state and regional governments, and government agencies
1985 – April	• Withholding tax abolished on interest paid to nonresidents on Euroyen bonds issued by residents
	• Medium- and long-term Euroyen loans to nonresidents liberalized
	• Issuing criteria relaxed for Euroyen bonds issued by nonresidents
– July	• Types of Euroyen bonds for issue by nonresidents diversified
1986 – April	• Waiting period for resale of Euroyen bonds to Japan's market shortened (from 180 days to 90 days)
	• Types of Euroyen bonds for issue by residents diversified
	• Maximum issuing period for Euroyen CDs extended to 1 year
	• Number of bond-rating institutions increased for Euroyen bonds issued by nonresidents
	• Rating criteria shifted to issuing standards.
– June	• Issue of Euroyen bonds by foreign banks approved.
– October	• Handling of Euroyen commercial paper approved for foreign securities companies affiliated with Japanese banks
1987 – February	• Handling of Euroyen CP approved for overseas branches of Japanese banks
	• Issuing criteria relaxed for Euroyen bonds issues by residents
– November	• Euroyen CP issues by nonresidents approved

Source: Sakai, N., (1987), p. 7.

Liberalization of Euroyen lending by Japanese banks to residents is equivalent to the credit-substitute function of domestic "monetary base" creation (McClam's second credit-substitute function) and Euroyen lending to nonresidents is equivalent to the credit-substitute function of external lending in foreign money markets (McClam's third credit-substitute function). That is to say, the Euroyen market extends its functions from only the forward exchange substitution function before the Yen-Dollar Committee to the second and third credit-substitute functions. In Figure 4, route (3) of the arbitrage channels was liberalized.

In April 1985, more than half of the outstanding value of the Euroyen market was the placement of funds by Japanese banks and more than 60 percent of total borrowing was also shared by Japanese banks.15) That is a circular flow of funds. Short-term Euroyen impact loans were liberalized in June 1984. Since 1986 short-term Euroyen lending to residents has been rapidly increasing. These recent trends reveal that the spread lending by Japanese banks has increased in the domestic market and the Euroyen market acts mainly as a segment of the domestic financial market.

7. Concluding Remarks

This paper surveyed the development of the Euroyen market and its implica-

tions. Although the epochmaking event concerning the growth of the Euroyen market was no doubt the release of the report of the Yen-Dollar Committee, I would like to emphasize that, even before the Yen-Dollar Committee, the growth of the Euroyen market had been striking as compared with other Eurocurrency markets.

There are two main purposes of this paper. One of them has been to examine the causes of the growth of the Euroyen market, especially before the Yen-Dollar Committee. Since the shift to a system of floating exchange rates in 1973, an important change in the international financial market has been the dramatic increase of foreign exchange trading volumes. It has occurred essentially in response to the increasing volatility of exchange rates. Particularly since the exchange rate fluctiations about the Yen were quite volatile and the growth rate of the Yen's turnover on the United States foreign exchange markets was remarkable when compared with other major currencies.

Exchange rate volatility increases the riskiness of uncovered foreign currency transactions. This higher risk leads participants in international trade to increase the proportion of their trade contracts that is to be hedged, and increases the cost of hedging a given contract in the forward exchange market. As active hedging behavior became stronger, banks have taken to covering their own positions by covered interest arbitrage transactions through Eurocurrency markets rather than the forward exchange market.

It can be said that the growth of the Euroyen market has occurred mainly in response to the increasing covered interest arbitrage transactions, and has chiefly played the substitution function for forward exchange market. Therefore, factors behind the expansion of the Euroyen Market were essentially the higher risk environment caused by the increasing volatility of exchange rates, and the relaxation measures of capital controls in 1979–80 in Japan which faciliated active covered interest arbitrage, especially following the implementation of the new Foreign Exchange Control Law in December 1980.

Another purpose of this paper has been to analyze the interest arbitrage relationships between the Euroyen and domestic markets. There are four broad arbitrage channels as shown in Figure 4.

From the point of view of Japanese capital controls, direct capital flows between the Euroyen and domestic markets had been restricted before the liberalization of Euroyen transactions in June 1984, but the correlation between the two market rates had become strong since the end of the 1970's.

In the period of severe Japanese capital control (before in February 1979), it was possible to have free capital movements only in the channel (1), interest rate parity was realized only within the Eurocurrency (Euroyen and Eurodollar) markets. After the relaxation of exchange controls in the period 1979–80, the arbitrage transactions in channel (2) have been active and the correlation between the Euroyen and domestic market interest rates have became much stronger than before. Therefore, even when the arbitrage channel (3) was closed, the interest rates of the two markets have followed closely together through channels (1) and (2).

The liberalization of the Euroyen market by the report of the Yen-Dollar Committee means the opening of channel (3). The growth of the Euroyen market has been accelerated since the Yen-Dollar Committee, and the circular flow of funds, flows from Japan into the Euroyen market, and back into Japan, has been increasing

recently. This type of flow of funds is, in essence, not international capital flows: the external market acts simply as a segment of the domestic financial market. The liberalization of the Euroyen market has brought many changes into the domestic market, such as the increase of spread lending by banks, a mere shell of Japanese interest rate structure which centers on the short and long-term prime lending rates, etc.

Notes

1) See Ellis (1981) p356.
2) See Ministry of Finance (1983) p190.
3) See Revey (1981).
4) Spot turnover in the United States Foreign Exchange Market increased from $58.7 billion, which accounted for 55.2 percent of total turnover, as of April, 1977 (44 banks base) to $491.3 billion, which accounted for 64.2 percent, as of March, 1980 (90 banks base). See ibid., p34.
5) See I.M.F. (1982) p42.
6) See Hilly (1981) p94.
7) For further details the reader should refer to Llewellyn (1980) p56 ~ 57.
8) See ibid., p57.
9) See McClam (1972).
10) For explanation of the interest arbitrage transactions between the Eurodollar and domestic Dollar markets in more detail see Kreicher (1982).
11) See Llewellyn (1980) p84.
12) See *Report* by the Yen-Dollar Committee (1984) p47.
13) See ibid., p47.
14) See Sakai (1987) p4.
15) See *Nihon Keizai Shinbun* (1985) 25/April.

References

Asahina, H. (1986) En no Kokusaika nitsuite (Concerning about the Internationalization of Yen), *Kinyu (Finance)*, October.

Bank for International Settlements, *Annual Report*, various issues.

B.I.S., *International Banking Developments*, various issues.

Bank of Japan, (1983) Naigai Shikin Ido no Kappatsuka to Kokunai Kinyu Shijo eno Eikyo nitsuite (Activation of International Capital Flow and its Consequences on the Domestic Market in Japan), *Chosa Geppo (Monthly Review)*, September.

Ellis, J.G., (1981) "Eurobanks and the interbank market" *Bank of England Quarterly Bulletin*, September.

Frankel, J.A., (1984) *The Yen/Dollar Agreement: Liberalizing Japanese Capital Markets*, Institute for International Economics, December.

Fukamachi, I., (1981) *Gendai Shihonshugi to Kokusaitsuka Doru (Modern Capitalism and 'Dollar' as a International Currency)* Iwanami Shoten.

Fukamachi, I., (1982) Hendosobasei to Kokusaitsuka Doru [II] (System of Floating Exchange Rates and 'Dollar' as a International Currency [II]) Kyushu University *Keizaigaku Kenkyu (Journal of Political Economy)*, April.

Frydl, E.J., (1981) "The Eurodollar Conundrum" *Federal Reserve Bank of New York Quarterly Review*, Spring.

Hilly, L.L., Beidleman, C.R., & Greenleaf, J.A., (1981) "Why There is no Long Forward Exchange" *Euromoney*, January.

I.M.F., (1982) *Annual Report*.

Kinyu Zaisei Jijo Kenkyukai (ed.) (1983) *Kinri Saitei Torihiki (Interest Arbitrage Tansaction)*, Kinyu Zaisei Jijo Kenkyukai.

Kinyu Zaisei Jijo Kenkyukai (ed.) (1985) *Kinyu Jiyuka to En no Kokusaika (Financial Liberalization and Internationalization of Yen)* Kinyu Zaisei Jijo Kenkyukai.

Kreicher, L.L., (1982) "Eurodollar Arbitrage" *Federal Reserve Bank of New York Quarterly Review*, Summer.

Kubarych, R.M., (1983) *Foreign Exchange Markets in the United States*, Federal Reserve Bank of New York.

Llewellyn, D.T., (1980) *International Financial Integration*, Macmillan.

McClam, W.D., (1972) "Credit Substitution and the Euro-currency Market" *Banca Nazionale del Lavoro Quarterly Review*, December.

Ministry of Finance, (1983) *Honpo Kinyu Shijo no Kokusaika no Genjo Chosa (Research for Internationalization of the Japanese Financial Markets in the Present Condition)*, March.

Ministry of Finance, *Kokusaikinyukyoku Nenpo (Annual Report of International Finance Bureau)*, various issues.

Mitsubishi Bank, (1984) Yurodara to Yuroen no Kankei nitsuite (Relationship between Eurodollar and Euroyen), *Chosa (Research)*, July.

Report by the Working Group of Joint Japan-U.S. Ad Hoc Group on Yen/Dollar Exchange Rate, Financial and Capital Market Issues, (1984) May.

Revey, P.A., (1981) "Evolution and Growth of the United States Foreign Exchange Market" *Federal Reserve Bank of New York Quarterly Review*, Autumn.

Saito, T., (1985) "Financial Deregulation in Japan" *Fuji Bank Bulletin*, January–February.

Sakai, N., (1987) "Recent Progress in Financial Liberalization and Internationalization – Since the Yen-Dollar Committee –" Bank of Tokyo, *Tokyo Financial Review*, December.

Suzuki, Y., (1985) *Kinyu Jiyuka to Kinyu Seisaku (Financial Liberalization and Financial Policy)*, Tōyōkeizaishinposha.

Tokai Bank, (1984) En no Kokusaika · Yuroen Torihiki no Jiyuka to sono Eikyo (Internationalization of Yen/ Liberalization of Euroyen Transactions and its Consequences), *Chosa Geppo (Monthly Review)*, August.

Toyoshintaku Bank Kokusaibu (ed.) (1987) *Yuroen Torihiki no Subete (All of Euroyen Transactions)* Keizaihorei Kenkyukai.

Troughton, H., (1986) *Japanese Finance: The Impact of Deregulation*. Euromoney Publication.

Uchida, M., (1987) 'The Internationalization of the Yen – Developments During Fiscal 1986 –" Bank of Tokyo, *Tokyo Financial Review*, October.

Yamamoto, K., (1984) Yuroen o meguru Tsusetsuteki Kenkai eno Gimon (Doubts about the Popular Views Concerning Euroyen) *Nihon Keizai Shinbun*. 20/September.