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Financial Market Globalization: Present and Future

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Abstract

It is widely recognized that financial market globalization has been developing. However, empirical evidence suggests that national borders have been serving as some sort of barrier to international capital flows. Portfolios of investors based in industrial countries are biased towards domestic assets ("the home bias puzzle"), and national savings tend to be absorbed domestically ("the Feldstein-Horioka paradox"). From a long historical perspective, the size of net capital flows has not increased so much.

Development of globalization can be viewed differently once we take account of other aspects such as off-balance transactions. Derivative instruments offer the possibility of unbundling risks inherent in underlying assets, and such unbundled risks can be repackaged and dealt in separately. Thus, cross-border derivatives transactions enhance the effectiveness of risk transfer.

How and at what pace financial globalization will develop in the future has important implications for the conduct of monetary policy by central banks. If financial markets become further integrated and international capital flows more actively, it is obvious that independent monetary policy directed toward domestic goals, liberalization of capital mobility, and fixed foreign exchange rates cannot be achieved simultaneously. In addition, prudential policy might face new problems pertaining to the stability of the financial system due to increasing international linkage among asset prices.

Keywords: Globalization, Central Bank, International Capital Mobility, Risk Diversification, Monetary Policy, Stability of Financial System
JEL Classification Code: E58, F21, F36, G11, G21, G38

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1. INTRODUCTION

It is widely recognized that financial market globalization has been developing. It is a fact that international financial markets have expanded substantially, and transaction volumes in foreign exchange markets and capital markets have increased markedly. Progress in information and telecommunication technologies, liberalization in capital markets, and development of new financial instruments will further stimulate international capital flows, leading to more expansion and efficiency in international financial markets.

However, empirical evidence suggests that national borders have been serving as some sort of barrier to international capital flows. Portfolios of investors based in industrial countries are biased towards domestic assets ("the home bias puzzle"), and national savings tend to be absorbed domestically ("the Feldstein-Horioka paradox"). From a long historical perspective, the size of net capital flows has not increased.

Development of globalization can be viewed differently once we take account of other aspects such as off-balance transactions. Derivative instruments offer the possibility of unbundling risks inherent in underlying assets, and such unbundled risks can be repackaged and dealt in separately. Given that increase in cross-border financial transactions has two elements --- one an increase in mobility of saving, that is, improving efficiency in intertemporal resource allocation, and the other an increase in risk transfer, that is, smoothing consumption through risk diversification ---, cross-border derivatives transactions will improve the efficiency of risk transfer. In other words, as a result of the development of derivatives transactions, arbitrage of financial asset prices across countries seems to have been working more smoothly than in the past, which also provides supporting evidence of globalization.

How and at what pace financial globalization will develop in the future has important implications for the conduct of monetary policy by central banks. For example, if financial markets become further integrated and international capital flows more actively, it is obvious that independent monetary policy directed toward domestic goals, liberalization of capital mobility, and fixed exchange rates cannot be achieved simultaneously. In addition, prudential policy might face new problems pertaining to the

stability of the financial system due to increasing international linkage among asset prices.

This paper is constructed as follows. After presenting our definition of financial market globalization in Chapter 2, we will review the development of globalization in Chapter 3 and show that, despite the rapid pace of financial globalization, we still observe puzzling phenomena such as the home bias puzzle. In Chapters 4 and 5, we will look at the future perspective of financial globalization and its impact on the world economy and financial systems. In our concluding remarks, in Chapter 6, we will summarize the possible implications of financial globalization for the mandates and roles of central banks.

2. GLOBALIZATION OF THE FINANCIAL MARKETS: A DEFINITION

The most often heard term in the world of finance in the past decade has probably been "financial globalization." As is often the case with such popularized terminology, its definition is becoming rather ambiguous. In this paper, we make a clear distinction between financial globalization and financial internationalization. "Internationalization" refers to a situation where certain external transactions increase, while "globalization" refers to one where each country's economy, including its financial markets, becomes increasingly integrated resulting in development towards a single world market. For example, when a country adopts a unitary import mechanism for agricultural products in order to protect the domestic agricultural sector, internationalization could develops, while globalization could not.

In this paper, based on this definition of globalization, we will discuss the present and the future of financial globalization, and its implications for the mandates and roles of central banks. Although the paper focuses on globalization of financial markets across countries, it is also true that financial globalization is closely related to globalization of the real side of the economy.

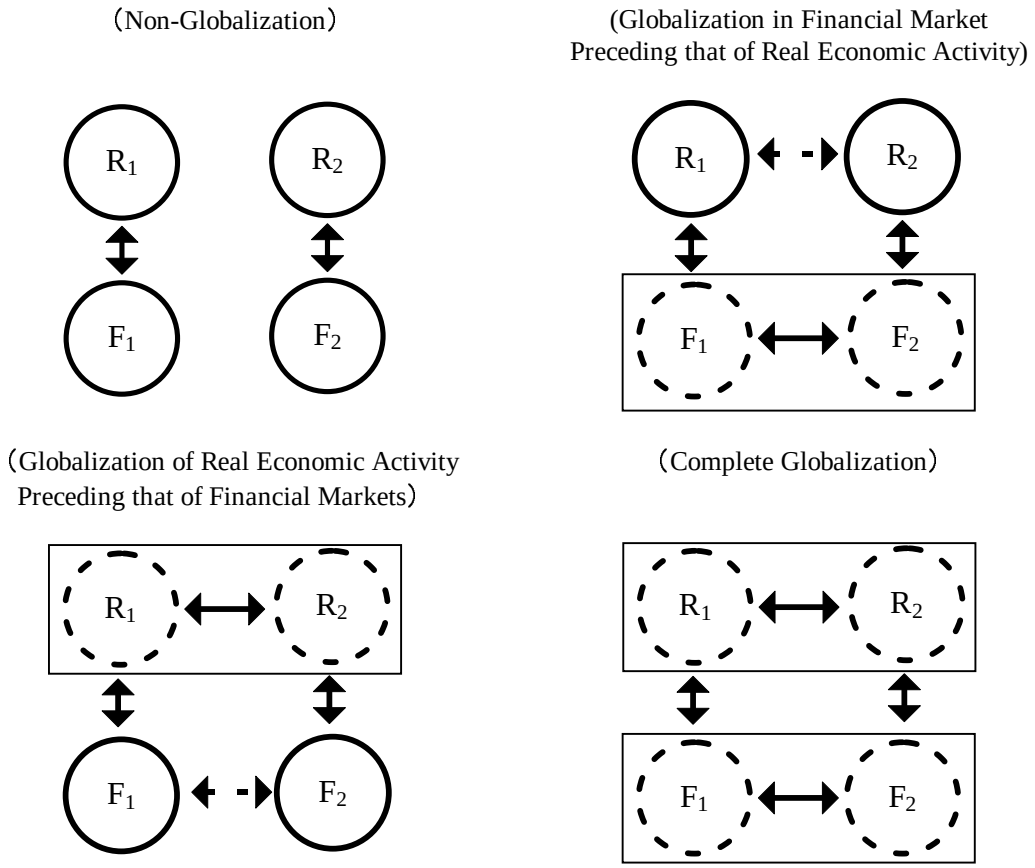
To establish the basis for the following discussion, we illustrate the types of globalization in Chart 1. For simplification, we consider a world consisting of two

countries. R and F denote markets for goods and services and financial markets respectively, and subscript numbers denote countries. The actual world economy lies somewhere between "non-globalization," where both financial markets and markets for goods and services are isolated by national borders, as shown in the upper left diagram, and "complete globalization", where both kinds of markets are fully integrated into a single market, as shown in the lower right diagram.

Since, in general, cross-border mobility of financial assets are considered to be relatively easier than those of goods and services, we can assume that in many cases development of globalization will occur first in financial markets, as shown in the upper right diagram. However, there seems to be a close connection between the globalization of financial markets and markets for goods and services, such that development in financial globalization induces globalization of markets for goods and services, and vice versa. In addition, when globalization of both the financial and the real sides of the economies are developing synergistically, some goods and services may be highly integrated, and some regional economies in the global market may be in the situation where globalization in the real side precedes that in the financial side, as shown in the lower diagram.[1]

[1] Since we intend to provide an intuitive explanation of globalization by illustrating the interaction of the financial and the real sides of the economies, the explanation is not based on a complete theoretical model. Chart 1 can be interpreted as a two-country and two-good model which consists of markets for goods and services and financial markets. In this case, if the markets for goods and services are globally integrated, the financial markets must also be globally integrated to reach a general equilibrium. This suggests that globalization of these two markets cannot develop separately. Of course, it might be possible to construct a model of non-parallel globalization once we introduce uncertainty or/and heterogeneity of goods and services.

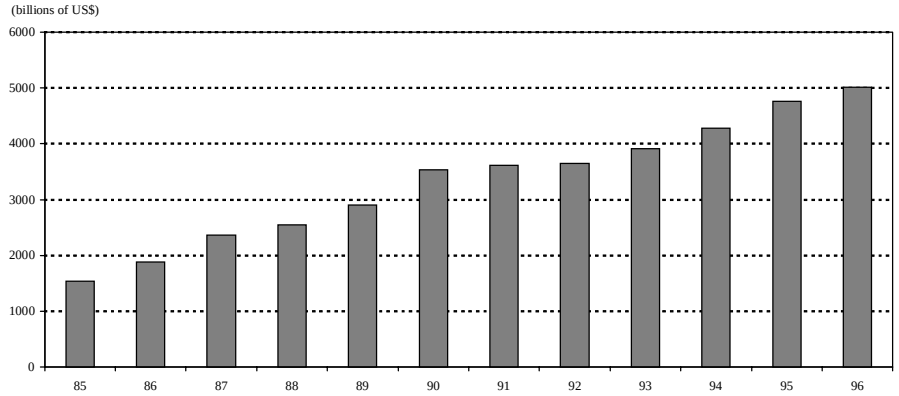
Chart 1: Typology of Globalization



3. DEVELOPMENT OF GLOBALIZATION

The recent development of financial globalization has been remarkable. For example, the amount of securities issued more than doubled from $220 billion in 1986 to $569 billion in 1996. Based on the Bank for International Settlements (BIS) statistics on international banking and financial market activities, net international banking assets of the reporting countries almost tripled in the last ten years, from $1,885 billion in 1986 to $5,150 billion in 1996 (Chart 2).

Chart 2: Total International Bank Lending



Source: BIS Statistics.

However, over a longer period, we can clearly see both rise and fall in economic integration in the world. Therefore, we first review the development of financial globalization in a historical perspective, followed by a thorough examination of the current situation.

(1) Home Bias and International Capital Flows

In order to identify the extent of financial globalization in a historical perspective, we first review the past development based on several measures for financial globalization.

(a) Home bias puzzle and Feldstein-Horioka Paradox

An interesting issue in this regard is the "home bias" which has been discussed extensively by academics.[2] Based on the idea that a diversified portfolio will result in higher expected profits under the same risk, it is believed that there has been a remarkable development of diversification in international investment portfolio. However, if we examine the actual portfolios of investors, there seems to be a bias toward domestic stocks (equity holdings) compared with the optimal portfolio based on Capital Asset Pricing Model (CAPM) theory.

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[2] See Lewis [1995] and Obstfeld and Rogoff [1996] for the details of the recent discussion.

French and Poterba [1991] estimated the international equity portfolios of investors in Japan, the United States, and the United Kingdom, and pointed out that investors hold a very large share of their equity wealth at home (Chart 3).[3]

Chart 3: Equity Portfolio Weights: British, Japanese, US Investors

	Portfolio Weight			Adj. Market
Market	U.S.	Japan	U.K.	Value
U.S.	.938	.0131	.059	$2,941.3
Japan	.031	.9811	.048	1,632.9
U.K.	.011	.0019	.820	849.8
France	.005	.0013	.032	265.4
Germany	.005	.0013	.035	235.8
Canada	.010	.0012	.006	233.5

Source: French and Poterba [1991], p. 223.
Notes: 1. Estimates correspond to portfolio holdings in December, 1989.
2. Adjusted market values exclude intercorporate cross-holdings from total market value, and correspond to June 1990 value.

Of course, the magnitude of such bias may decrease once the latest data are used, although it is difficult to believe that home bias itself has disappeared.[4] Given the increase in international financial transactions and the substantial development of globalization in real economic activity, this phenomenon can be regarded as a sort of "puzzle."

Another "puzzle" which stems from the same line of thinking is the "Feldstein-Horioka paradox" (Feldstein and Horioka [1980]).[5] If financial markets are completely integrated, savings will be pooled in the world as a whole. As a result, we can assume

[3] According to French and Poterba [1991], if one wishes to apply CAPM theory to explain the fact that UK investors' domestic stock holding shares in their portfolio reaches 82 percent, the expected yield of the UK market should be 5 percent higher than that of the US market. Similarly, US investors can be considered to expect a 2.5 percent higher yield for the domestic market than for the Japanese market, and Japanese investors a 3.5 percent higher yield than for the US market. In other words, investors in each country hold maximum expected yields against their domestic markets, which are appreciably higher than that of foreign markets.

[4] For an example, if we look at foreign investors' behavior in the Japanese stock market as reported in the *1995 Stock Distribution Survey* (Japan Stock Exchange Committee), the stock holding ratio (number of stocks holding) of foreign investors has increased from 5.5 percent in 1992 to 9.4 percent in 1995.

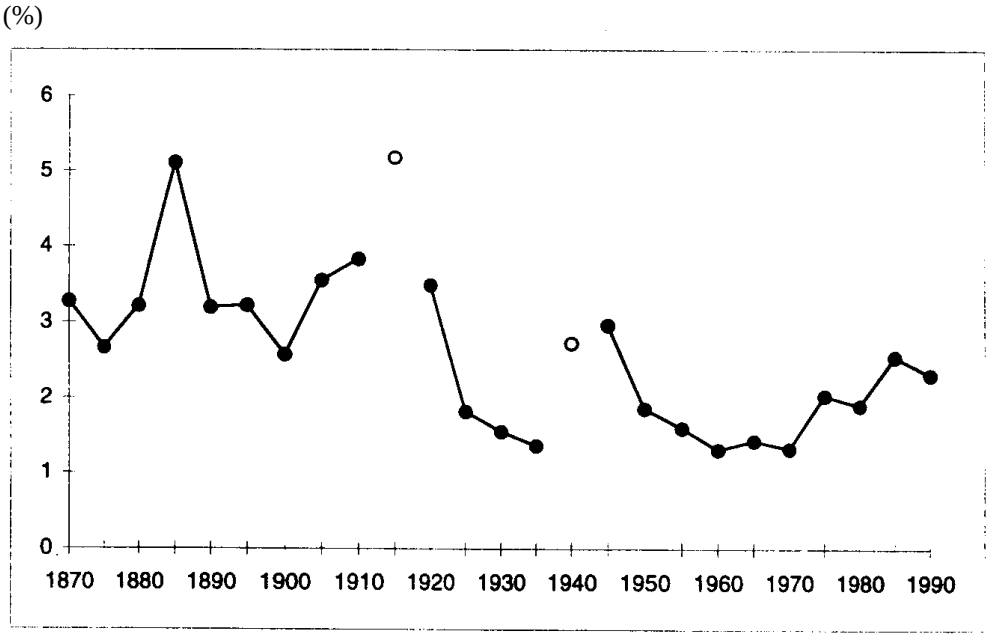
[5] For recent empirical studies of the Feldstein-Horioka paradox, see the survey by Obstfeld [1994]. For theoretical problems of the paradox, see Rogoff and Obstfeld [1996], Chapter 3.

theoretically that an exogenous marginal increase in domestic savings will be invested in a country which offers highest return, and there should be no correlation between domestic savings and domestic investments. However, past empirical studies found a high correlation between domestic savings and investment ratios, which seem inconsistent with the assumption of "financial integration." In other words, the series of studies about the Feldstein-Horioka paradox suggest that there seems to be a strong tendency for savings to be absorbed domestically.

(b) The magnitude of net capital flows

Let us review the magnitude of net international capital flows. In the national accounts, the current account corresponds to the difference between gross national savings and investment: a current account deficit, i.e. a shortage of domestic savings, is financed by an inflow of net savings (capital) from abroad. Therefore, reviewing the development of the absolute size of the current account is equivalent to reviewing the net international capital mobility. According to Obstfeld and Taylor [1997], as shown in Chart 4, the average size of net international capital flows of industrial countries, measured by the ratio of current account to nominal GDP in absolute terms, was over three percent before World War I, with some periods recording as high as four to five percent. Subsequently, in the 1920s and 1930s, and under the Bretton Woods regime of the 1950s and 1960s, the ratio showed a decline. Since the shift to the floating exchange rate regime in the 1970s, the ratio has increased gradually to approximately three percent, although it is still not as high as the pre-World War I level.

Chart 4: Net Capital Flows Since 1870
(Mean of Current Account in 12 Countries)



Source: Obstfeld and Taylor [1997].

These changes in net international capital flows have been closely related to the choice among macroeconomic policy goals: stability of foreign exchange rate, stability of domestic economic activity, and free capital mobility. As is well-known, a country can only achieve at most two of the above three goals simultaneously. During the pre-World War I period, industrial countries opted for stability of foreign exchange rates and free capital mobility under the gold standard, and capital showed high international mobility during that period. Under the Bretton Woods system, in contrast, industrial countries pursued independent monetary policy and fixed exchange rates at the sacrifice of international capital mobility. As a result, capital mobility under that regime was generally low. Under the floating exchange rate regime after the collapse of the Bretton Woods system, stability of the domestic economy and free capital mobility have been opted for, and capital mobility has gradually increased again. Even though the trend of savings-investment gaps of the industrial countries may fluctuate for various reasons, such development of net capital flows seem inconsistent with widely recognized trend toward financial globalization.

(2) Globalization and Interpretation of the Puzzles

The existence of the home bias puzzle and the Feldstein-Horioka paradox, and the observed evidence that the level of net capital flows has not been so high would imply that national borders have been serving as some sort of barrier to international capital flows. These puzzling points, which contradict the general perception of a growing trend toward "financial globalization," combine to make a kind of "globalization puzzle." How can we interpret this puzzle in a manner consistent with "financial globalization"?

In the sections which follow, we will examine the globalization puzzle from the viewpoint of the expansion of gross capital flows, advance in global financial services, and increased effectiveness of interest rate arbitrage.

(a) Expansion of gross capital flows

Looking back over the past quarter of a century, gross international capital flows seem to have grown rapidly, especially in recent years, while, unfortunately, detailed analysis is hampered by the lack of historical data. When we take 10 countries[6] which correspond to those in the above-mentioned study by Obstfeld and Taylor [1997], and look at the ratios of sum of inflows and outflows of investment to nominal GDP, capital flows on a gross basis in the past 10 years have increased substantially (Chart 5).[7] When the main components of such capital flows (Chart 6) are examined, direct investment and portfolio investment both increased in parallel in the latter half of the 1980s; in the 1990s, direct investment has slowed down, while portfolio investment has been increasing substantially. Within portfolio investment, bonds and stocks both increased, with bonds investment showing especially high growth.[8]

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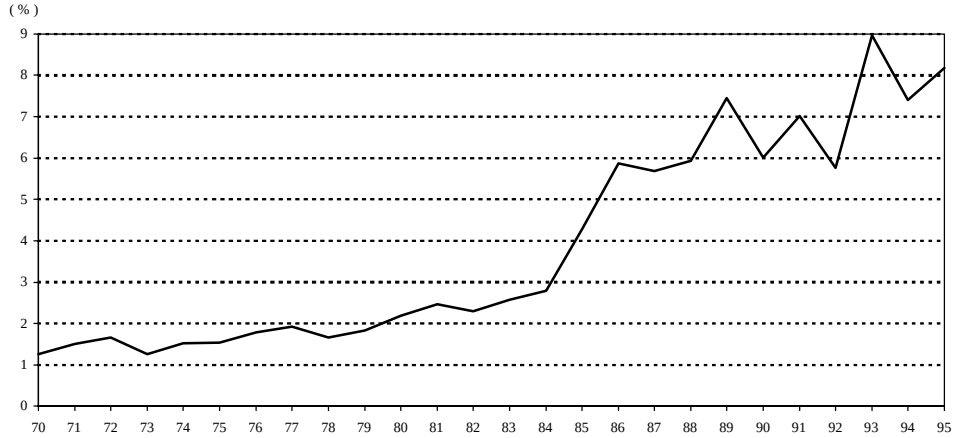
[6] The countries of the G7, plus Denmark, Sweden, and Australia.

[7] For reference, current account balance/nominal GDP ratios, which indicate net capital flows, are shown in the lower panel of Chart 5. Since the sources and countries are slightly different from those of Obstfeld and Taylor [1997], the levels are a little lower, but the time series shows almost parallel movement with their study.

[8] The evidence that gross capital flows through bond investment showed higher growth than that of stock investment is consistent with the fact that home bias observed in the bond market is smaller than in the stock market.

Chart 5: Gross Capital Flow since 1970

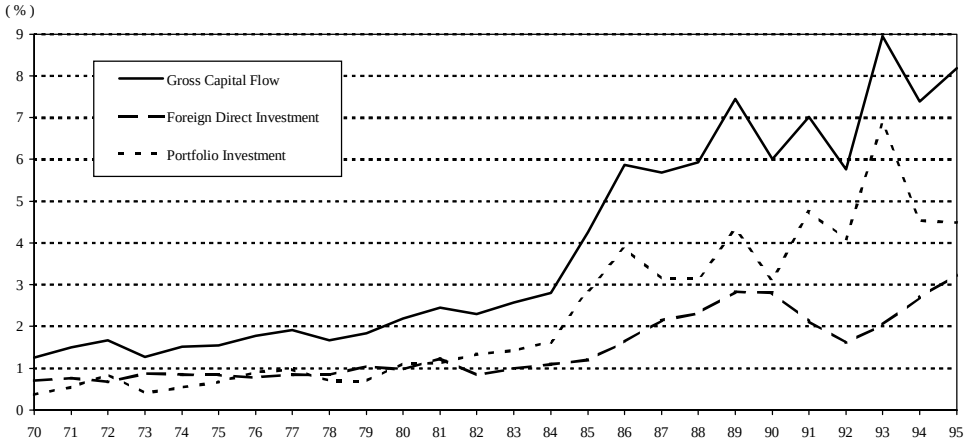


Reference: Net Capital Flow

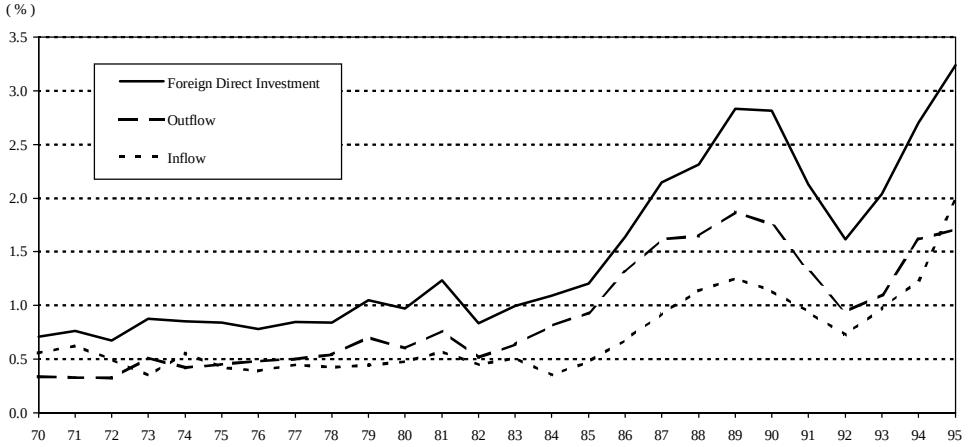
Source: IMF, *Balance of Payment Statistics*
Note: Figures are ratio to nominal GDP.

Chart 6: Main Features of the Gross Capital Flows

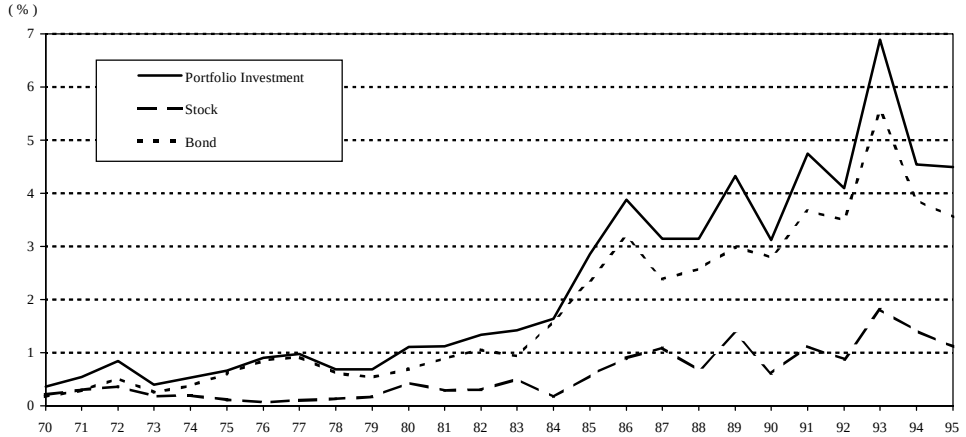
(1) Total



(2) Foreign Direct Investment



(3) Portfolio Investment

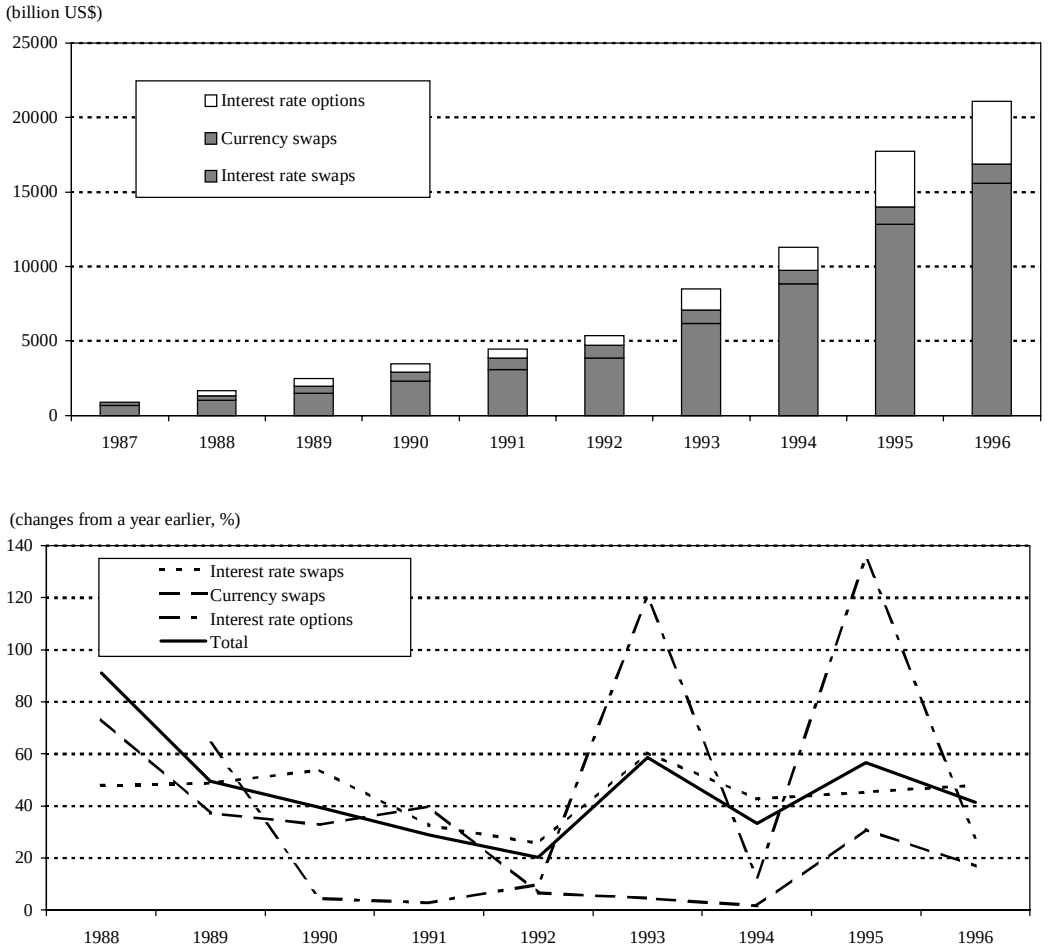


Source: IMF, *Balance of Payment Statistics*
Note: Figures are ratio to nominal GDP.

(b) Globalization of financial services

The growth of cross-border financial transactions, especially off-balance transactions, has been quite notable. For example, consider the recent rapid growth in derivatives transactions. A report by the International Swaps and Derivatives Association (ISDA) shows that the transaction volume of over-the-counter (OTC) derivatives (in notional amounts outstanding) has increased rapidly since the beginning of the 1990s (Chart 7), and, as was corroborated by the survey conducted by the ECSC of the BIS, cross-border transactions compose the greater part both on a notional amounts outstanding and a transaction volume basis (Chart 8).

Chart 7: Global Notional Amounts of OTC Derivative Contracts



Source: ISDA (http://www.isda.org)

Chart 8: Share of Local and Cross-Border Trading in OTC Derivative Transactions

(%)

	Notional Amounts Outstanding		Turnover	
	Cross-border	Local	Cross-border	Local
Total	54.9	45.1	54.0	46.0
Foreign exchange	56.6	43.4	54.5	45.5
Interest rates	54.0	46.0	51.7	48.3

Source: BIS [1996a]

Transactions of derivative instruments unbundle risks inherent in underlying assets, and make it possible to repackage such decomposed risks into synthetic products and to deal in them separately. Given that an increase in cross-border financial transactions has two elements --- one is an increase in mobility of saving, that is, improving efficiency in intertemporal resource allocation; the other is an increase in risk transfer, that is smoothing consumption through risk diversification ---, cross-border derivatives transactions will improve the efficiency of risk transfer. In other words, as a result of the development of derivatives transactions, arbitrage of financial asset prices across countries has been working more smoothly than in the past, which also provides evidence in support of globalization.[9]

These phenomena may be generally summarized as follows. Financial transactions can be interpreted as transfers of savings and/or risks from financial surplus agents to financial deficit agents. The transaction process can be broken down into various elements such as: valuation of risks (collection of information, risk analysis, risk management, and risk transfer), development and sales of financial products (planning and sales of financial products), and enforcement of the transaction (confirmation of contract, settlement, custody, record, etc.). When we view such elements as "financial services," derivatives transactions are just extracting and offering risk transfer services. From such a perspective, recent financial globalization is clearly characterized as an increase in cross-border financial services rather than as an increase in cross-border capital flows.

[9] According to the current IMF Balance of Payment manual, cross-border derivatives transactions are recorded under either capital transaction such as option premium and principal of currency swaps, or current transaction such as interest rate swaps.

Of course, the two are related, and many transactions contain both characteristics. Typical in this regard is the increase in securities issued in the international capital markets and the increase in borrowing from international syndicated banks. For example, in 1996, the amount of financing (on a net basis) in the international financial market reached $745 billion (three percent of world nominal GDP and an increase of $215 billion from the previous year).[10] This can be interpreted as a behavior not only to finance a shortage of domestic savings by means of foreign savings, but also to make up this financial shortage in the international financial market, which provides financial services, including valuation of risks and development and sales of financial instruments, most efficiently.

An increase in such cross-border transactions has been observed in various other aspects besides the examples above. In risk valuation, utilization of rating produced by credit-rating agencies has been especially increasing greatly, while in risk management, purchase of risk management systems developed by third-vendors has rapidly become popular. Turning to settlement, the growth of global custody business is worth mentioning. In addition, we observe much merger and acquisition activity, financial institutions, and also cooperation; increased transfer of operation centers to abroad where rents and labor costs are low; and increased migration of skilled labor between financial institutions in different countries. All of these phenomena have the same effect as cross-border financial transactions. If we turn our eyes to the future, Internet banking, supported by the rapid progress in information and telecommunication technologies, may be another candidate for growth.

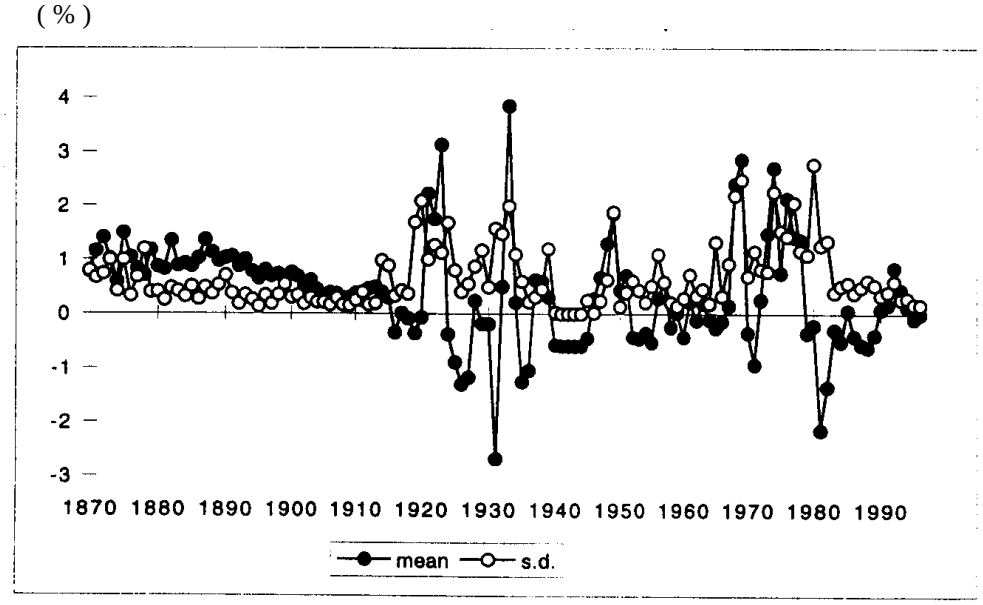
(c) Interest rate arbitrage

As capital flows become mobile, interest rate arbitrage is believed to become increasingly effective. To what extent has international interest rate arbitrage been activated? At this stage, we will review the historical evidence to evaluate the effectiveness of interest rate arbitrage both on a nominal and a real interest rates basis.

[10] See Figure VII.1 in BIS [1997a].

When we look at the historical development of covered nominal interest rate parity between the United States and United Kingdom in Obstfeld and Taylor [1997] (Chart 9), covered interest rate arbitrage worked effectively up to the mid-1910s under the gold standard, reflected in small and stable interest rate differentials during this period. Since the 1920s, differentials in interest rates have basically been large and their volatility has continued to be high, though they shrank slightly during the 1950s and 1960s under the Bretton Woods system. Although the exchange rate regime shifted to a floating scheme in the early 1970s, it was in the 1980s that differentials in interest rates shrank to the level of the 1910s along with a decline in their volatility.

Chart 9: Nominal Interest Rate Parity Since 1870
US-UK Covered Domestic Interest Differentials



Source: Obstfeld and Taylor [1997]

According to Obstfeld [1994] (Chart 10) , international comparison of the differentials in 3-months interest rates between interbank markets and euro-markets of the same currencies shows that such parity has generally been small in each country, thus suggesting that interest arbitrage has been functioning effectively.[11]

[11] In France and Italy, domestic interest rates were lower than Euro interest rates during 1982 to 1987, suggesting the existence of restrictions on capital outflow. In contrast, Germany had higher domestic interest rates compared with those of the Euro market, suggesting restrictions on capital inflows.

Chart 10: Domestic Interbank versus Eurocurrency Three-Month Interest Rates

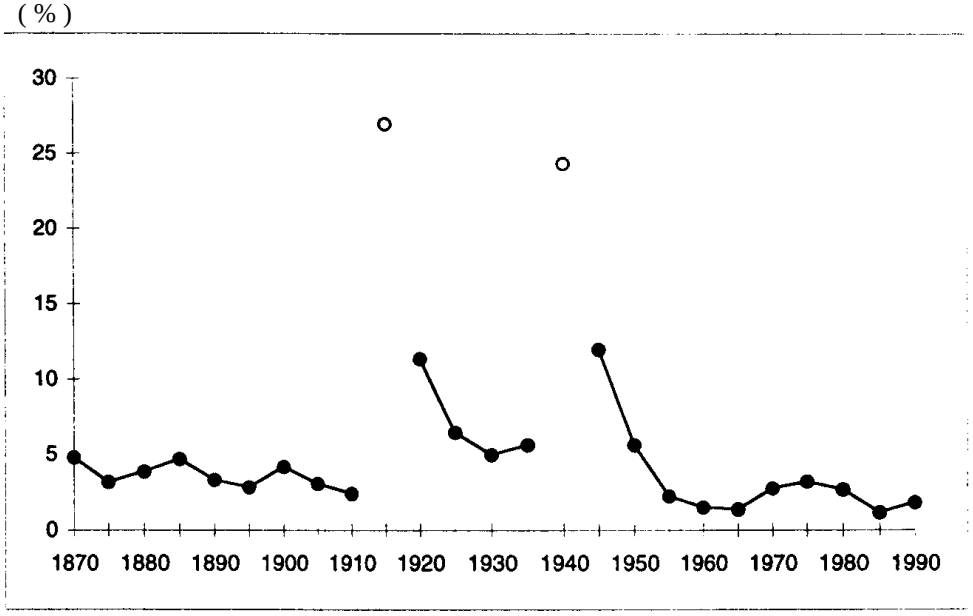
Period	Onshore Bid-Offshore Bid	Onshore Ask-Offshore Ask	Onshore Bid-Offshore Ask	Offshore Bid-Onshore Ask	Onshore Ask-Bid	Offshore Ask-Bid
			A. France			
Jan. 1,1982-	-227	-254	-267	214	-13	-40
Jan. 31,1987	(336)	(375)	(375)	(336)	(3)	(49)
Feb. 1,1987-	-11	-10	-23	-2	13	13
June. 30,1990	(16)	(20)	(19)	(17)	(4)	(10)
July. 1,1990-	8	1	-11	-20	12	19
May. 31,1992	(7)	(11)	(7)	(10)	(8)	(5)
June. 1,1992-	-1	-3	-35	-32	32	34
Apr. 30,1993	(34)	(40)	(45)	(36)	(20)	(38)
			B. Italy			
Jan. 1,1982-Jan.	-50	-89	-124	15	34	74
31,1987	(262)	(311)	(308)	(265)	(10)	(57)
Feb. 1,1987-	29	48	-14	-91	62	43
June. 30,1990	(48)	(47)	(49)	(47)	(20)	(7)
July. 1,1990-	56	63	9	-111	55	47
May. 31,1992	(29)	(36)	(29)	(37)	(24)	(6)
June. 1,1992-	36	28	-8	-73	36	45
Apr. 30,1993	(49)	(50)	(43)	(62)	(42)	(33)
			C. Germany			
Jan. 1,1982-Jan.	17	16	5	-28	11	13
31,1987	(17)	(17)	(18)	(16)	(4)	(3)
Feb. 1,1987-	5	3	-8	-15	10	13
June. 30,1990	(10)	(10)	(11)	(10)	(2)	(3)
July. 1,1990-	-5	-5	-18	-8	13	13
May. 31,1992	(9)	(8)	(9)	(8)	(2)	(1)
June. 1,1992-	7	5	-6	-18	11	13
Apr. 30,1993	(13)	(12)	(12)	(13)	(2)	(2)
			D. Japan			
Jan. 1,1982-Jan.	-7	n. a.	-20	n. a.	n. a.	13
31,1987	(28)		(28)			(4)
Feb. 1,1987-	-60	n. a.	-68	n. a.	n. a.	8
June. 30,1990	(33)		(33)			(3)
July. 1,1990-	9	n. a.	2	n. a.	n. a.	7
May. 31,1992	(37)		(37)			(3)
June. 1,1992-	17	n. a.	10	n. a.	n. a.	7
Apr. 30,1993	(19)		(19)			(2)

Source: Obstfeld [1994]
Note: Numbers are in basis points at an annual rate. Numbers in parentheses are standard

We next turn to the international arbitrage of real interest rates. Obstfeld and Taylor [1997] calculated the standard deviations of ex-post real long-term interest rates of 10 industrial countries for the period of about 100 years since 1870 (Chart 11). According to this study, current dispersions of real interest rates are significantly smaller than those of the interwar period and of the Bretton Woods system, and slightly smaller than in the pre-World War I period. Taking into account the difficulties in measuring

real interest rates, the above results suggest that, viewed historically, international real interest rates arbitrage has currently become quite strong.

Chart 11: Real Interest Parity Since 1870
Dispersion of Real Interest Rates in 10 Countries



Source: Obstfeld and Taylor [1997]
Note: 1. Figures are average absolute differentials relative to the USA.
2. Open circles and parenthesis denote wartime samples.

(d) Interpretation of the Puzzles: Evaluation of Current Financial Globalization

Based on the previous analyses, tentative answers to the puzzle of "contradictory evidence for globalization" can be summarized as follows.

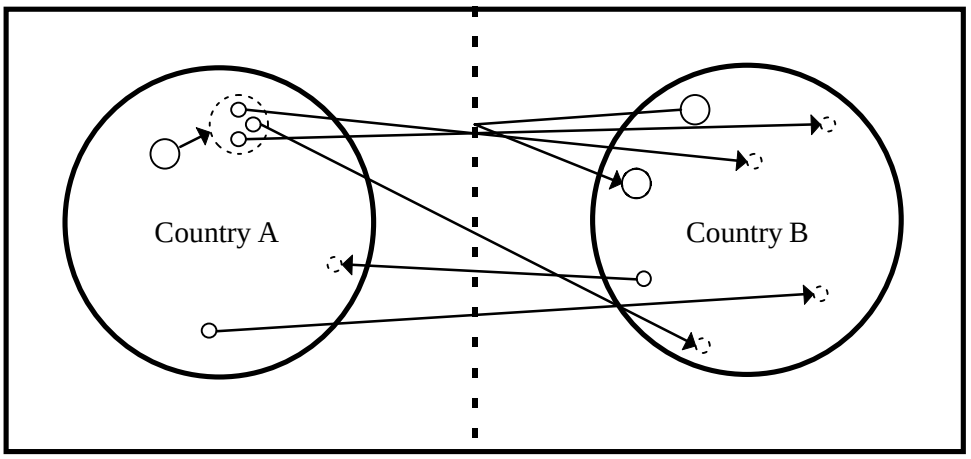
As suggested by the home bias puzzle and the Feldstein-Horioka paradox, national borders still act as barriers to international capital flows both on a stock and on a flow basis. However, in order to overcome such barriers, cross-border financial transactions such as in derivatives have been increasing, leading to a marked increase in gross international capital flows. As a result, interest rate arbitrage has become more effective, and interest rate risks and foreign exchange rate risks seem to have been internationally diversified in an efficient way.

If there were some supplementary statistics, such as "balance of risk transfer," which captures risk transfers through financial services, to measure the extent of financial globalization, we could have gained a clearer picture of globalization compared with that derived from analyzing net capital flows which is based only on "balance of payments" statistics. In addition, interest rate arbitrage, if measured in terms of financial transaction units broken down by means of derivative instruments, should also show a marked increase. In other words, if we think of portfolios including off-balance transactions, whose cross border transaction costs are relatively small, international risk diversification may have been progressing more than we have been able to actually observe and interest rate arbitrage mechanism may have been working more effectively.[12]

Based on Chart 12, we will intuitively interpret the financial globalization puzzles and evaluate the current stage of globalization. If we compare national borders, which work as barriers to international capital flows, to filters, on-balance transactions whose transaction costs are high have large particles and thus have difficulty in passing through these filters. On the other hand, off-balance transactions whose transaction costs are low have small particles, so to speak, so that they can easily pass through such filters. Derivatives transactions will convert large particles of on-balance assets into small particles of multiple assets, thus in effect enlarging the holes of the filters. In addition, progress in information and telecommunication technologies and resulting abolition of financial regulations would lower the barrier itself and enlarge the holes of the filters, as well as bringing the transaction costs down and thus reducing the size of the particles.

[12] When improvement in economic welfare brought about by international financial transactions is divided into (i) improvement of efficiency in intertemporal resource allocation given the extent of risk variance, and (ii) smoothing of consumption by risk diversification given the intertemporal resource allocation, current globalization seems to have shown more progress in the latter aspect.

Chart 12: Globalization of Financial Markets: Illustration



4. THE FUTURE OF FINANCIAL GLOBALIZATION

Based on the above interpretation of globalization puzzles, this section will examine the factors which cause borders serve as barriers to international capital flows, discuss trend of each factor, and outline future perspectives of financial globalization.

(1) Can We Get Rid of Financial Transaction Barriers?

Given the current financial globalization, how should we consider its future perspectives? As an approach to this issue, we will trace the behavior of investors, especially that of pension funds and mutual funds, which have substantial shares in cross border investment, and consider why national borders became barriers to international capital flows.

We assume that national borders will impede international capital flows since the actual merits of internationally diversified investment are not that large, while its costs and risks are substantial, thus offsetting incentives for international portfolio diversification.[13]

[13] The discussion of the home bias puzzle which follows relies mainly on Shiratsuka and Nakamura [1997]. The statistical evidence that investors are biased toward domestic assets can partly be explained by adjustment in statistical treatment such as (i) taking the effects of direct investment by multinational

On the one hand, as regards the impacts of international portfolio diversification on economic welfare, many simulation analyses with theoretical models have been conducted, making various assumptions.[14] According to these analyses, the impacts are limited because: there exist non-tradable goods;[15] risk sharing impacts are sensitive to the specification of the models;[16] and foreign assets are not necessarily superior to domestic assets in hedging against the uncertainties of labor income.[17]

On the other hand, it is emphasized that there exist additional costs and risks for cross-border financial transactions. Such costs and risks include: foreign exchange risk; sovereign risk; difficulties in collecting and evaluating information; time difference risk; legal risk stemming from different rules for insolvency across countries; and restrictions to limit cross-border transactions themselves. In addition, it can also be the case that conservatism within organizations, rooted in inertia, impedes cross-border transactions and investment decisions.

The above-mentioned costs and risks can be classified into four categories. The

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corporations into account, and (ii) considering asset markets other than stock markets. However, it is also true that biases toward domestic assets cannot be completely explained even after adjusting for such statistical problems. For example, see Obstfeld and Rogoff [1996], and Lewis [1995].

[14] An intuitive explanation of the merits of internationally diversified investment within the general equilibrium framework would be as follows: if perfect capital mobility holds and a full variety of "state" contingent commodities are traded among countries, the marginal rates of substitution of consumption among 'situations' will be equalized. In other words, international transaction of risky assets are conducted based on each country's comparative advantage in risk taking capacity. As a result, when intertemporal elasticity of substitution is equalized, the composition of each country's portfolio will be identical.

[15] For domestic investors, investment in stocks of non-tradable industries will yield higher profits as they invest, and incentives to hold stocks of non-tradable industries will become strengthened. For details, see Stockman and Dellas [1995], Baxter, Jermann, and King [1995].

[16] Estimates of potential merits stemming from international risk sharing are quite sensitive to particular assumptions about market structure, country-size, technologies, and preferences, and it is therefore difficult to draw general conclusions. See Lewis [1996], Tesar [1995], and van Wincoop [1994] for the details of discussion.

[17] During a recession, corporate profits decline while changes in labor income are relatively small, causing labor income share to increase and show countercyclical movements. As a result, the correlation between profits from human resources and financial assets becomes weak, which relatively offsets the attractiveness of foreign assets in hedging against future labor income uncertainties. For details, see Bottazzi, Pesenti and van Wincoop [1996].

first category contains those which become easier to take once more effective ways to insure against the potential risks are developed, even though the total risks in the economy remain unchanged. Foreign exchange risks and sovereign risks fall into this category. In the second category are those which decline in magnitude as the market size grows. The expansion of demand for retirement savings enables mutual funds and pension funds to operate a diversified portfolio based on a longer time horizon. If the market expands further, professional services in collection and valuation of information will be provided. The third type are those which gradually decline in line with the improvement in infrastructure for financial transactions. Various settlement risks, and risks and costs stemming from the difference in insolvency law are included in this category. In the fourth category are those which naturally diminish as globalization progresses, and can be called dynamics of globalization.

(2) Future Development of Financial Transaction Barriers

Next we will focus on the costs and risks of international portfolio diversification, and examine how the above four categories will develop in the future. It is of course important to analyze the merits of international portfolio diversification as opposed to the costs and risks in order to predict the future development of globalization, but it is beyond the scope of this paper.

(a) Progress in Risk Management Techniques

Cost reduction is being or will be brought about in four ways which are above mentioned. First, there are the cost reduction impacts of progress in risk management techniques in taking the same amount of risk. The revolution in information processing and telecommunication technologies have lowered the degree of information asymmetry in financial transactions, and transaction costs have been diminished as a direct result. Such progress in technology has, at the same time, make possible valuation and unbundling of risks, which were considered as difficult in the past, thus enhancing the efficiency in risk transfer and management.

Financial derivatives are now extensively used to unbundle risks throughout our

financial system. Various types of financial derivatives are available to help economic agents manage interest rate risks, foreign exchange risks, other market risks, and, increasingly, credit and catastrophe risks. Derivative instruments which deal with macroeconomic fluctuations such as GDP could well be introduced in the future.[18] While risks will not disappear as a whole, derivatives can be used to separate the total risk into much more fundamental risk factors, thus making it possible to allocate such risks more efficiently to those investors most willing and capable to bear them.

(b) Progress in International Division of Labor

The second channel of cost reduction will be brought about by the progress in division of labor. As Adam Smith said "division of labor is limited by the extent of the market," so expansion of the markets for goods and services will lead to further development of division of labor. Similarly, expansion of financial markets as a result of financial globalization will promote international division of labor and reorganization in financial services.

In fact, information costs, caused not only by differences in accounting and legal systems but also by differences in language and culture, are substantial, and there still seem to be quite large risks for individual investors holding foreign assets individually. However, mutual funds have high potential for reducing costs and risks of international portfolio diversification, thus encouraging domestic investors to hold foreign assets. As a result, the environment for holding foreign assets has gradually been improved through mutual funds.

In addition, in international financial markets, financial services have been subdivided into various areas, and in each area there is a tendency for international cooperation to develop. Such developments have already been observed in services such as investment banking, global custody, asset management, and supply of financial market information, and will manifest in other areas as well.

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[18] For example, from the viewpoint that unexpected large fluctuations in asset prices will affect future standard of living, Shiller [1993] constructed a dynamic price indicator and examined the possibility of forming markets for risks of macroeconomic fluctuations by trading it.

As instruments such as options and swaps come into wide use, traditional categories of financial institution, including banks, and insurance and security companies have been rapidly losing their significance. If we take the market for retirement savings as an example, differences between types of financial services such as insurance, mutual funds, and pension funds do not matter much to consumers.

Under these circumstances, we have recently observed dynamic merger, take-over, and alliance activities among international financial institutions. Such movement is often characterized as "financial conglomeration," and it is an interesting issue whether this tendency will become general. In this case, it is important to consider how to design institutional organization to achieve the highest operational efficiency.

Whether to form financial conglomerates and "internalize" transactions or to outsource some transactions to other firms is one of the issues which has recently been under active discussion among academics.[19] On the one hand, those who form a conglomerate will try to integrate the decision making process by internalizing transactions in order to achieve higher efficiency. On the other hand, such integration will deprive the provider of each financial service of freedom in decision making and reduce incentives. In addition, it becomes difficult to change partners once partners are internalized. Therefore, the key issue will be whether improvement in efficiency of resource allocation and risk management gained by integration are greater the loss of the merits of decentralization through partner rearrangement.

Although this paper does not aim at providing answers to this question, it might be worth noting three keywords for future discussion. The first is "focus." When a financial market is globalized and each business is specialized, firms cannot improve

[19] In order to understand international development of financial institutions, it is useful to refer to the discussions of "boundary of firms" based on recent developments in incomplete contract theory. For an application of incomplete contract theory to the analysis of corporations or organizations, see Hart [1995]. Past contract theory assumed that one can describe all the possible contingencies in the initial contract, and that the persons concerned are obliged to fulfill the contract ex post. Such a compulsory contract is called a complete contract. By contrast, when there are uncertainties as to the content of the contract and its fulfillment, one cannot make a contract which covers all possible contingencies, and the contract is called an incomplete contract.

efficiency and profitability unless they focus on business contents, areas, customers based on certain criteria. The second is "corporate culture." Anecdotally, recent evidence seems to suggest that it is difficult to efficiently manage both investment banking and commercial banking within the same organization. The third is "networking." In the future, it seems most likely that global networks will be established by involving other financial institutions, which stimulate to provide various financial services in a global, efficient, and flexible way. Given this line of thinking, a conglomerate, whose functions are difficult to rearrange, is not warranted as the most effective strategy for financial institutions.

At any rate, the market for financial services is getting intensively competitive. Domestic and foreign financial institutions compete aggressively across a broad range of financial activities. In this sense, development of international division of labor will reduce the costs of financial services.

(c) Convergence of Financial Market Infrastructure

The third channel of cost reduction is being brought about by the convergence of financial market infrastructure across countries. When one wished to sell foreign securities 10 years ago, some countries took T+3 days to make payments, others took several weeks. There were same-day funds and next-day funds. Delivery versus payment (DVP) was not as common as nowadays. As for the accounting standard, mark-to-market was not as widely-used as now, and public disclosure was unsatisfactory. In other words, the path in front of investors who wished to engage in international diversified investment was quite bumpy.

However, as financial market globalization develops, internal pressure to converge to global standards will build up, leading to the gradual formation of seamless financial market to reduce transaction costs.

Going back to the settlement system, only a limited numbers of industrial countries had realized DVP and real time gross settlement (RTGS) 10 years ago, while most of the industrial countries have now adopted such systems. There was a G30 recommendation

in 1988 with respect to settlement of securities, and most of the recommendations contained in it, including T+3 settlement, have been realized. In addition, efforts have been made for the reduction of foreign exchange settlement risks such as adoption of the continuous linked settlement (CLS) system by major banks in industrial countries.

Regarding the accounting standard, the International Accounting Standards Committee (IASC) launched a project in 1988 to set up a comprehensive standard including recognition of financial instruments (financial assets and liabilities), measurement, and public disclosure. Based on past comments, IAS32 "Financial Instruments: Disclosure and Presentation" became the standard in 1995. Furthermore, a discussion paper titled "Accounting for Financial Assets and Financial Liabilities" has been released, requiring "every financial instrument to be valued at fair value and valued profits and loss to be reflected in the current profits and loss report." Such movement indicates that efforts of firms' management to optimize investment and financing, taking account of factors such as interest rates, time frame for investment and financing, are directly reflected in financial reports. As a result, the market mechanisms will be stimulated, and transparency will be improved. In addition, such pressure will work on the accounting systems of not only the private sectors but also of the public sectors. We can observe an example in the recent adoption of private accounting framework or more sophisticated framework of generation accounting in governments.

Pressure towards convergence has been seen on regulations of financial institutions. Regulations which restrict competition among financial institutions have been gradually abolished and become homogeneous across countries. With respect to cross-border investment, restrictions on holding foreign assets have been substantially removed. In such changes in regulations restricting financial activities and investor's portfolio, the development of derivatives has played an important role.[20]

In the field of bank regulation and supervision such as capital requirements, explicit efforts toward convergence have been made by regulatory authorities and central banks.

[20] For example, the Fraser Institute [1996] reported that the existence of the foreign investment restriction induced the utilization of derivatives transaction. This suggests that remaining regulations may have lost their effectiveness with the progress of financial innovation.

It was in 1988 that the BIS adopted capital standard for international banks, and since then, supervision of international banks has been conducted based on a common framework. After agreeing on a capital standard corresponding to credit risk, another standard which relates to market risk was adopted in 1995. In addition, some principles pertaining to bank supervision of off-shore markets have been confirmed.

Pressure towards convergence can also be seen on taxation, and, again, development in derivatives transactions has been the driving force. Tax rates differ from country to country, and tax systems and tax rates differ according to the character of corporate and personal incomes which was classified in details. Since the use of derivative instruments facilitates income classification switches and the exchange of countries or entities to be taxed, the movement to save on the tax is expected to gain pace.

(d) Dynamics of Globalization

As factors likely to reduce cross-border financial services, we have so far pointed out technological innovation, progress in the international division of labor, and convergence of financial market infrastructure. What we want to emphasize finally is the dynamics of globalization.

Dynamics of globalization progresses in various dimensions. Home bias of institutional investors is caused mainly by regulations, costs, and lack of information, and, in the short term, by sheer inertia and conservatism. Inertia and conservatism emerge when the costs a firm would incur by changing its investment are perceived as larger than the benefits. Cross-border investment requires an investment in human capital called "knowledge." Therefore, once cross-border investment takes place, subsequent marginal costs become small and this facilitates further investment. This could be expressed as "reduction in risk premium," and interpreted as the process of discovery of market anomalies.[21]

[21] This is similar to the process of entry of Japanese baseball players into the US major league. First there was a player who set himself the challenge of getting into the major league, and once he succeeded, the inclination among Japanese players to play in the major league became stronger, and accordingly the

When cross-border financial transactions expand and integration among financial markets proceeds, international division of labor will progress and the costs will decline. Such cost reduction will lead to a further increase in cross-border financial transactions and progress in international division of labor, as well as to intensification of convergence toward global standards for financial market infrastructure across countries. Convergence of financial market infrastructure, in turn, will further facilitate cross-border financial transactions and international division of labor. As a result, we can observe a situation in which "globalization accelerates globalization."

If we accept the above proposition literally, the world financial market will be completely integrated, although this will probably not happen in the near future. In other words, it might be better for us to consider that "persistence in domestic assets" represented by home bias seems to be generally stronger than the convergence pressure toward globalization, and explosive progress toward a situation in which "globalization accelerates globalization" is unlikely.

A key to this issue is evaluation of the recent regionalization such as the European Monetary Union (EMU), which has been developing in parallel with globalization. One possible interpretation of regionalization is expansion of optimum currency area, which corresponds to the situation where a regional economic area has become larger than national territories. Such a situation reflects deeper integration and linkage in the real and the financial sides of economies. Given this interpretation, regionalization will progress in parallel with globalization, which will connect expanding regional economic areas.

(3) Effects on the global financial system

As financial market globalization develops further, the barriers for international financial transactions are expected to diminish, while persistence in domestic assets and momentum toward regionalization will still exist. During such ongoing process of financial globalization, what effects will appear in the world financial system? In the

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major league arranged a system on its side to scout promising Japanese players.

below, we will examine some of the factors which are considered as important for the discussion of this question.

(a) Changes in World-Wide Capital Flows

Financial globalization implies that capital flows from areas of higher risk-adjusted net return to those of lower return will be accelerated. Therefore, from the macroeconomic viewpoint, financial globalization can be considered beneficial for the world financial system in the long run.[22] However, such acceleration of capital movements could make the financial system fragile in the short-run.

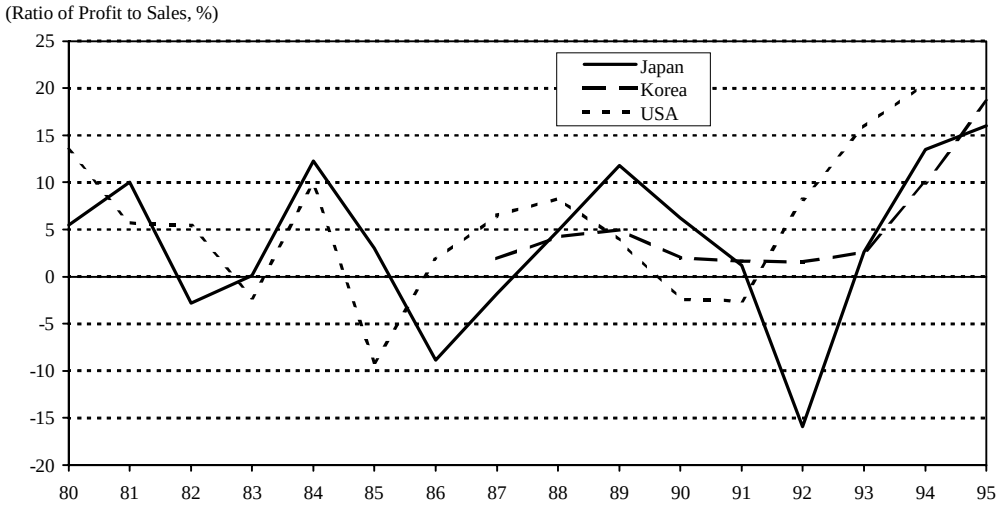
The first category of capital flows in a situation of financial globalization is those from industrial countries to emerging market economies. When we look at the money flow to the emerging market economies in the BIS statistics, it has increased more than tenfold from $7.8 billion in 1986 to $105.0 billion in 1996.

The second category is the changes in capital flows among industries. For example, the performance of semiconductor industries tends to rely more on international semiconductor market conditions than on the domestic business conditions (Chart 13). Therefore, if a country depends heavily on a specific industry which has close international linkage, macroeconomic performance and financial market stability of the country will be vulnerable to the external shocks which hit that specific industry.[23]

[22] For example, Obstfeld [1995] argues that taking account of the fact that risk diversification causes a world portfolio shift to higher risks but more productive assets and thus enhanced economic growth, integration of financial markets will bring extremely substantial improvement of economic welfare.

[23] The example of the semiconductor industry is regarded as a case which globalization of the real economy occurs first, corresponding to the lower left case in Figure 1 where we classified the types of globalization.

Chart 13: Profitability of Major Corporations in the Semiconductor Industry



Sources: Japan and USA --- Japan Development Bank [1996]
Korea --- Tokyo Keizai Kaisha Shikihou

The third category is the cross-border capital flow within the same industry as a result of geographical relocation. In the financial industry, advance in financial globalization makes it important to choose the site-location from an international viewpoint. Considering the situation that rapid progress in information and telecommunication technologies has been the driving force of financial globalization, growing competition might eliminate domestic financial institutions from the wholesale market. Such competition could also spread into the retail market through Internet banking.[24] Competition among financial markets as well as among financial institutions will be accelerated. In such a situation, two scenarios can be envisaged: one is that protectionism will emerge in order to protect domestic financial institutions from foreign competition, and the other is that efficiency in financial markets will be achieved through international division of labor, even though some countries may become complete importers of financial services. Development of financial globalization, although it will bring efficient allocation of capital in the long-run, may make the financial system more fragile in the short-run, unless an appropriate exit rule for inefficient market participants is

[24] Such interest has already been a prominent phenomenon in the real economy. That is, in the frontier industries such as the information and telecommunication industries, a winner-take-all phenomenon realizing from their nature of increasing returns has been noted. This suggests that distribution of profit has become unequal in these industries. See Reinganum [1989] for details.

established.

In addition, if international banking of financial institutions develops in the conglomerate direction, once negative information or a settlement failure hits one of the member of the conglomerate and spreads to the market, the impact will spread to the whole organization or the whole market. The propagation mechanism of financial system crises might change.[25] In addition, as a result of country-specific regulations and institutional frameworks, regional risk concentration and rapid transaction shifts among markets may become more likely to occur emerge. Therefore, the need to grasp the risk profile of the financial market as a whole has become stronger.[26]

(b) Synchronization of Asset Prices

The next important point concerning financial stability under globalization is the international synchronization of asset price fluctuation. Since the 1980s, many industrial countries have experienced large fluctuations of asset prices, such as land and stocks. Although the magnitude of fluctuation differs substantially across countries, the fluctuations have occurred more or less in synchrony (Chart 14). As a reason for such synchronization of asset prices, progress in globalization seems to have played an important role in addition to factors including adoption of easy monetary policy, pursuit of financial liberalization, and distortion in tax systems.[27]

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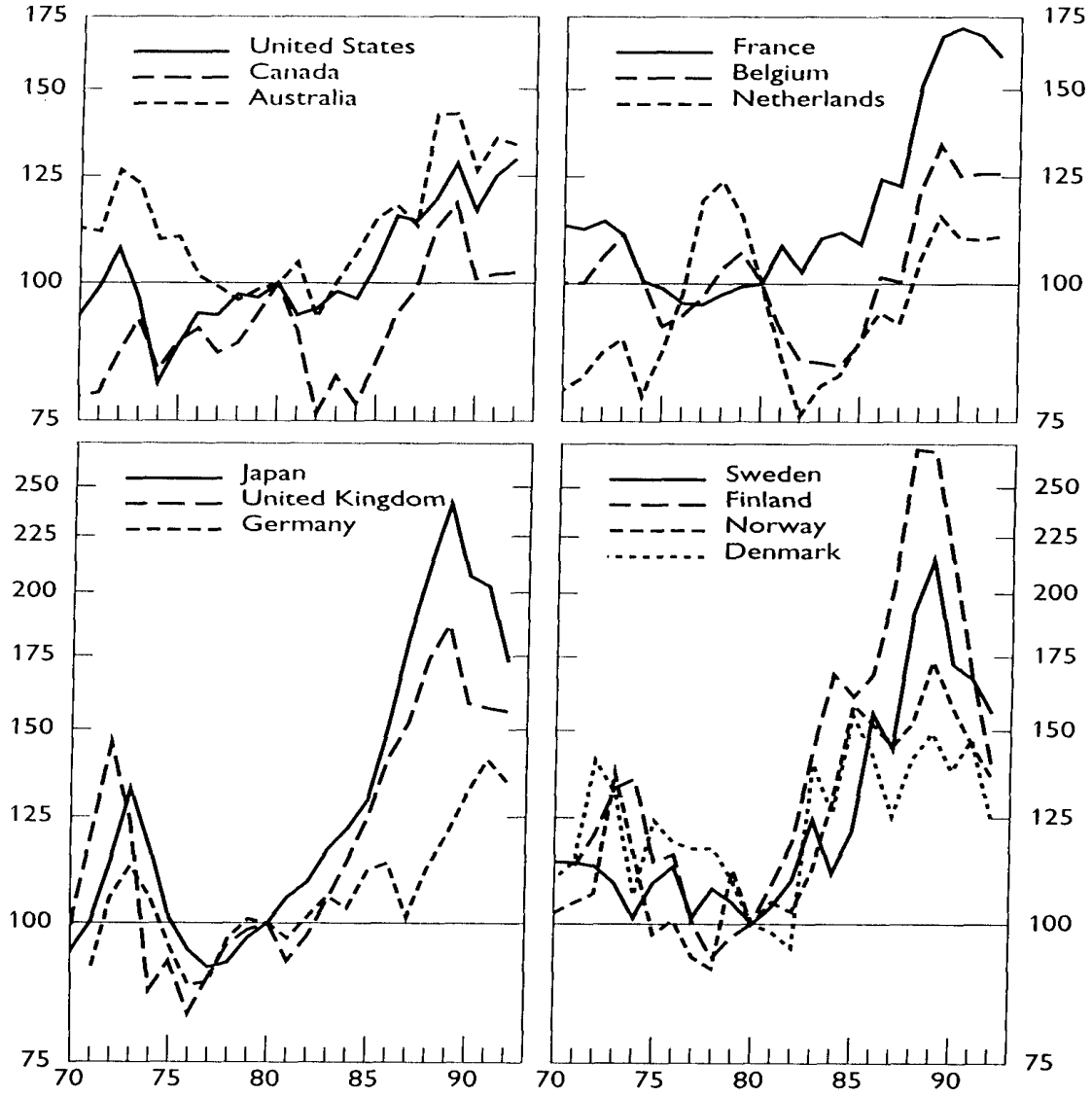
[25] Effects of conglomeration correspond to the upper right case in Figure 1, in which globalization in financial aspects occurs first.

[26] In relation to this point, *the Measurement of Aggregate Market Risk*, a report which reflects research efforts into a topic identified for further investigation in Yoshikuni Report of the ECSC, pointed out the necessity of expanding the traditional micro-prudence view, which focuses on individual financial institutions' soundness, to a macro-prudence view, which recognizes the risk profile of the financial system as a whole. The report also emphasized that it is important not only to capture the static risks of market participants and the financial system as a whole, but also to continue research on the mechanism of market dynamics in stress situations, such as feedback effects caused by changes in market participants' behavior and rapid depletion of market liquidity under stress. Such issues are quite difficult to examine, but central banks are faced with these issues, whether they like it or not.

[27] For explanation of each country's situation, see BIS [1993] and Borio, Kennedy, and Prowse [1994].

Chart 14: Real Aggregate Asset Prices

(1980=100, in logarithmic scale)



Source: Borio, Kennedy and Prowse [1994], p.12.

Note: The real asset price index is a weighted average of equity and residential and commercial real estate price indexes deflated by consumer prices. The weights are based on the composition of private sector wealth.

The future direction of financial globalization will be such that "home bias" will be weakened, and the distinction between residents and non-residents loses its importance at least for the market. At the same time, globalization of the real side of the economy may promote the international linkage between firm profits. Under such circumstances, fluctuations in asset prices will be more synchronized than those in the 1980s. Furthermore, because of the progress in financial innovation, the variety of financial assets traded in the market will be substantially wider than in the past.

In the globalized market, international linkage of asset prices will be promoted, which may lead to synchronization of business cycles across countries.[28] In addition, taking into account the fact that financial institutions are vulnerable to asset price fluctuation, the financial systems of different countries may well affect each other. A country may export its asset inflation to other countries on the one hand, and may absorb part of the impact of bubbles occurring in other countries on the other hand, although as a result of synchronized asset price fluctuation.

(c) Financial Aspects of Government Behavior

Another significant aspect which relates to financial stability under globalization stems from the difference in behavior between economic entities: private market participants who are forced to follow the discipline of the globalized financial market, and governments who do not follow this mechanism in the short run. Of various government activities, bond issuance, and activities of running public financial institutions and public pension fund are the ones which explicitly relates to financial aspects. Further, a government implicitly conducts a variety of financial activities. In addition, given that the last implicit guarantor of stability of the financial system is the government, sustainability of fiscal position of government has gained significance. Commitment to fixed exchange rates can be discussed in this context.

The possibility that the government's action will trigger financial system instability has become higher than before. This is because progress in financial globalization has improved the government access to the global financial market, and it is difficult for market participants to monitor the government behavior accurately in the short run.

Recent remarkable growth of the emerging markets suggests that transactions related to these countries have become profitable enough on a risk-adjusted basis for providers of financial services and investors. However, these capital inflows are not necessarily stable for the emerging economies. In particular, once investors judge their economic performance as unsustainable, capital will flow out rapidly. The Mexican

[28] In addition, synchronization among asset prices may offset the risk reduction effects of international diversified investment.

Peso crisis in 1994 and the recent currency turmoil in South East Asia reflect such sentiment among the market participants. In other words, policies which are only sustainable in the short run have been adopted over longer periods, and great turmoil occurs when the market recognizes the limit of such policies.

However, it is not fair only to emphasize that financial globalization brings instability to financial systems. Participants in the globalized financial market severely monitor the credibility of debt-payment ability of the government, and if the repayment is considered doubtful, the government will be penalized in the form of a rise in long-term interest rates or a speculative attack in the foreign exchange market. Therefore, it should be pointed out that financial globalization will, through promoting the monitoring of government behavior by participants in globalized financial markets, provide the government with a discipline for macroeconomic policy management and, hence contribute to stability of financial system.[29]

The phenomenon that the market mechanism imposes discipline on government behavior is not limited to emerging countries. Of course, there is no reason to assume that sovereign risk caused by lack of foreign reserves, as in the developing countries, would be realized in industrial countries, because their government debt is generally financed in their own currency. However, if fiscal expansion financed by unsustainable bond issue continues, real long-term interest rates denominated in its own currency may rise because of the increase in sovereign risk premium. In addition, it is likely that the foreign exchange rate of the country will depreciate substantially because of the increase in risk premium. If such possibilities come to be recognized by governments, it will impose strong discipline on their fiscal behavior. Such market mechanism is already in place, and is expected to further strengthen its functioning in the future.[30]

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[29] However, in order to consider whether market mechanism is likely to impose discipline on the government, it should be noted that "market failure" caused by the information asymmetry plays an important role in the outbreak mechanism of sovereign risks and currency crises.

[30] Real long-term interest rates are showing a tendency to converge on a certain level. By using panel data for seven countries—Japan, the United States, Germany, France, Italy, the United Kingdom, Canada—during the period 1986-1996, we have estimated a function which explains each country's real long-term interest rates by real short-term interest rates, cumulative current account balance, general government net debt balance. The results showed that general government net debt balance, which is a

(d) Formation of Private Market Regulation

As we have seen, statutory regulations of financial institutions have been converging internationally. What is interesting in discussing the future form of regulation is the recent trend toward self-checking mechanisms by the private financial market participants, so-called "private market regulations," not statutory regulations enforced by official authority.

A typical development is the recent trend toward public disclosure of financial institution. Financial institutions with sound performance will advertise their soundness by effective use of public disclosure. As a result, such financial institutions will be rewarded by a reduction of capital costs, which induces further efforts to improve soundness and public disclosure. On the other hand, financial institutions with poor performance will be passive in regard to public disclosure, leading to an increase in capital costs reflecting the rise in risk premiums, resulting in facing a choice between improving management efficiency and leaving the market.

In risk management, the limitations of the "one-size-fits-all" command and control approach in regulations has gradually become obvious, and initiative of individual financial institutions has gradually gained in importance. Use of internal models has

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proxy for fiscal risk, does not have significant explanatory power for the seven countries as a whole, while is significant for four countries (France, Italy, the United Kingdom and the Canada), and for every 10 percent increase in net debt balance / GDP leads to 0.3 percent increase in real long-term interest rates. We could not find increasing effects of real interest rates for Japan, the United States, and Germany, and this seems to reflect the fact that changes in savings-investment balance of these three countries affect the level of the world real interest rates, thus not identified as each country's fiscal risk.

	Seven Countries			Four Countries
Parameter Dummy	No	No	Yes	No
Selected Model	Two-way Fixed Effects	Two-way Fixed Effects	One-way Fixed Effects	One-way Fixed Effects
Real Short-term Interest Rates	0.338 (4.61 ***)	0.334 (4.52 ***)	0.368 (5.87 ***)	0.445 (5.08 ***)
Accumulated Current Balance	-0.064 (3.06 ***)	-0.055 (2.14 **)	-0.072 (3.20 ***)	-0.074 (2.34 **)
Net Debt for General Government		0.012 (0.60)	0.031 (1.96 *)	0.035 (1.79 *)
Constant	3.571 (10.2 ***)	3.136 (3.89 ***)		
Adjusted R^2	0.708	0.705	0.675	0.570

Note: t-values in parentheses. *, **, and *** denote statistically significant at 10%, 5%, and 1% respectively.

already been adopted under certain conditions for assessing capital requirement for market risks, and research efforts among private financial institutions to quantify credit risks can be seen in this context. In his recent speech, FRB Chairman Greenspan called "private market regulation," regulations formed endogenously within market participants, and pointed out its importance, and Bundesbank President Tietmeyer also emphasized the incentive compatibility of regulations with the market system.[31]

The decision making process in regard to regulations and rules for financial institutions have changed markedly just in the past decade. Taking capital requirement as an example, each country was adopting its own ratio before the 1988 Basle Capital Accord. BIS Accord raised the capital requirement for financial institutions as well as aiming at creating a level playing field. Recently, however, the style of rule setting is changing so that rules are first generated endogenously within the globalized financial markets, and subsequently examined and approved by each country's regulatory and supervisory authorities.[32]

As reasons for this relative decline of official regulation and increase in private market regulation, we can first point out that risk valuation and management themselves have become more specialized than before, because of the progress in the division of labor in financial services. Instead of individual stockholders, mutual funds and pension funds are carefully monitoring corporate management, and credit-rating agencies and market analysts are examining the public disclosure information in detail.

Second, we can also point out the widening of gaps in knowledge and information level between participants of the globalized financial market and regulatory and supervisory authorities and central banks. In these circumstances, regulatory and supervisory authorities and central banks can never foresee and forestall every possible

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[31] See Greenspan [1997b] and Tietmeyer [1997].

[32] Recently, the pre-commitment approach proposed by Kupiec and O'Brien [1995] has attracted attention. This approach can be understood as a form of 'incentive compatible regulation' which values the voluntary risk management incentives of financial institutions within the framework of official regulations. However, the pre-commitment approach is a mechanism designed to cope with incentives within the framework of official regulations, and thus should be differentiated from private market regulation which is a check mechanism formed naturally among market participants.

negative impact of financial innovation on the financial system, and will therefore suppress such innovation itself if they dare.

5. PROBLEMS FOR CENTRAL BANKS

In previous chapters, we have reviewed the facts on the development of financial market globalization and presented our interpretation of these facts as well as our forecast of the future development of financial globalization. In this chapter, we will point out issues relevant to central banks during the ongoing process of globalization. Many issues are to be examined, and they are mutually correlated with each other. We will discuss the issues from the viewpoints of monetary policy, responsibilities in achieving the stability of financial system, and enhancing market functioning.

This chapter does not intend to be conclusive. Our concern is to point out the key issues in discussing how financial globalization affects the mandates and roles of central banks' monetary and prudential policies.

(1) Monetary Policy

Since the late 1980s, not only industrial countries but also developing countries were confronted with the instability of their financial systems. Such instability was caused by macroeconomic instability and the lax management of financial institutions as well as defects in prudential regulatory systems. In fact, both financial and macroeconomic instability in the late 1980s were closely related to asset price inflation. Maintaining fixed exchange rates at a certain level for extended period of time often caused financial and macroeconomic instability characterized by failure in macroeconomic policy coordination among industrial countries, turbulence in emerging countries and the EMS.

Given that monetary policy is strongly influenced by international financial markets, an increasingly integrated financial market is not likely to lose its effectiveness in controlling domestic short-term interest rates. The controllability of domestic short-

term interest rates, which are the operational targets used for monetary policy implementation, depends on the controllability of the monetary base, denominated in domestic currency. However, keen questions also rise on how to interpret the impact of domestic short-term interest rates on long-term interest rates, and how to treat asset prices in conducting monetary policy. Such issues seem to gain much more importance in the future.

(a) Monetary Policy Trilemma

As financial market globalization advances, and capital moves more freely and actively, it becomes obvious that fixed exchange rates are incompatible with the commitment of monetary policy to domestic objectives such as price stability. As a result, the central bank of each country has to select its policy objectives in a more explicit way.

In accordance with this advance in financial market globalization, the substitutability of financial assets denominated in each country's currency increases. This implies that the exchange rate risk premium (that is, the difference between the yields of financial assets denominated in foreign currencies and those in the domestic currency) on foreign currency-denominated assets and debts, which are created by accumulation of balance of payment imbalances, becomes smaller.[33] Therefore, exchange rate movements can be small enough to accommodate such necessary interest rate differentials. In other words, it might be the case that autonomous exchange rate movements, as a correction mechanism of balance of payment imbalances, are less likely to be generated, so that it will take more time to pursuit an autonomous adjustment process of balance of payments imbalances. Consequently, political pressures calling for the use of monetary policy to control exchange rates, regardless of whether such control on exchange rates is effective or not, will become strong, especially in countries in which balance of payments imbalances tend to provoke political friction.

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[33] As the number of participants in the foreign exchange markets increases, that is, the depth of the foreign exchange markets increases, the risk premium on uncovered foreign assets will decrease, and thus the substitutability between domestic and foreign assets will increase. See Fukao and Okina [1989], for example.

Under these conditions, central banks have chosen the following options: to fix the exchange rate, to respond to international policy coordination, or to pursue domestic targets. These options are not expected to change in the future. However, a wrong selection of policy reaction will have greater effects on both real and financial sides of the economy because of the advance in globalization.

(b) Fixed Foreign Exchange Rates

When a central bank targets the exchange rate, monetary policy must be committed to fulfilling this objective. This implies that there will be no room for implementing an independent monetary policy if some countries form a currency area by fixing exchange rates.

According to the theory of optimum currency areas,[34] countries wish to join fixed exchange rate areas closely linked to their own economies through trade and factor mobility. The following three conditions are often mentioned as the prerequisite for joining currency areas: (i) similarity of policy objectives or preference,[35] (ii) symmetry in impacts of external shocks,[36] (iii) alternative adjustment mechanism between regions for exchange rate adjustment.[37] When a country tries to fix the exchange rate without satisfying such conditions, it is highly possible that instability of financial and real economic activities will be provoked.

A fixed exchange rate arrangement will be a realistic option for a small country with a high dependency on foreign trade. To the extent that a trading partner country keeps sound economic policy management, sound discipline for achieving price stability will be automatically imported by just pegging the domestic currency to the trading partner's

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[34] See Chapter 20 of Krugman and Obstfeld [1997], for example.

[35] If this condition does not meet, and policy objectives and preference vary across countries, different monetary policy reaction is needed. For example, policy reaction against the same external shock may differ depending on whether a country puts emphasis on price stability or full employment.

[36] If external shocks affect member countries in the same direction, common monetary policy reaction will successfully offset shocks, thus costs of giving up the independent monetary policy will be negligible. For example, if there are both oil-producing countries and oil-importing countries in the same currency area, rapid increase in oil prices will affect asymmetrically between the two.

[37] Although the condition (i) does not meet, capital mobility, fiscal transfer, and labor mobility will be able to absorb the asymmetric shock without conducting independent monetary policy.

currency. However, since it is difficult to adjust the fixed exchange rates frequently, misalignment of the target exchange rate may occur. In addition, in order to maintain credibility, central bank may conduct inappropriate monetary policy through commitment to an overvalued target exchange rate, thus increasing the risk that the financial system will become fragile.

Recently, there has been a remarkable development toward economic and monetary union (EMU) in the Europe. Countries joining the EMU have to meet the convergence criteria on macroeconomic performance. This implies that a country's ability to achieve long-lasting domestic and external stability must be established and proven before joining the common currency area, since countries cannot pursue different monetary policies in the monetary union.[38] Such a prerequisite may induce political conflicts with the European Central Bank, which operates supernationally, and presumably with the political opinions that prevail at the national level. However, as Frankel and Rose [1997] showed, empirical results suggest that countries with closer trade links tend to have more closely correlated business cycles. These results can be interpreted as evidence supporting the hypothesis that countries are more likely to satisfy the criteria for joining a currency union after realizing economic and monetary integration.

(c) International Macroeconomic Policy Coordination

As mentioned above, based on the experience of the last quarter of the century, it is widely recognized that fixed exchange rate or target zone arrangements are difficult to adopt in large economic areas such as Japan, the United States, and Europe. This supports the understanding that the international coordination of macroeconomic policy, conducted in compliance with other countries, has not necessarily improved domestic economic welfare in each country, partly because there is incomplete knowledge of the structure of global economy.[39]

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[38] See Tietmeyer [1997].

[39] Feldstein [1988] stated, based on his experience of the Chairman of the Council of Economic Advisers under the Reagan Administration, his opinion on the international coordination of macroeconomic policy as follows:

In Japan, it has been pointed out that prolonged monetary relaxation, which paid much attention to the international coordination of macroeconomic policy, was one of the factors of the boom and bust of asset markets and the instability of the financial system. In this regard, Matsushita [1995], Governor of the Bank of Japan, stated that "if the macroeconomic policy of a country is to be conducted in compliance with that of other countries, the favorable balance in a national economy, such as price stability and sustainable growth, is likely to be sacrificed," and, by looking back the policy management after the 1987 Louvre Accord, he further mentioned that "these policy measures were in place for too long a period, which resulted in [the] unfavorable side effects. It is undeniable that this was caused by the philosophy of international coordination at that time."[40]

(d) Pursuit of Domestic Objectives

Given the fact that the international coordination of macroeconomic policy does not work, the remaining options for a central bank are either to choose a fixed exchange rate arrangement, or to pursue domestic economic stability using its own judgment.

Whether or not the latter option succeeds depends on the ability of a central bank to forecast the future development of the economy. Even if the forecast is proven to be successful, however, there remains a serious problem of how to cope with political pressure. For example, according to the Mundell-Fleming effects, fiscal expansion will be offset by an appreciation of foreign exchange rate in conditions of perfect capital mobility, while monetary easing will stimulate real economic activity through exchange

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"Although international coordination of macroeconomic policy-making sounds like a way to improve international relations more generally, there is a serious risk that it will have the opposite effect. An emphasis on international interdependence instead of sound domestic policies makes foreign governments the natural scapegoats for any poor economic performance. Pressing a foreign government to alter its domestic economic policies is itself a source of friction and the making of unkeepable promises can only lead to resentment. It would in general be far better if the major industrial countries concentrated on the pursuit of sound domestic economic policies and reserved the pursuit of international cooperation for those subjects like international trade and national security in which cooperation in which cooperation is truly essential." (p. 12)

[40] See Matsushita [1995] p. 7.

rate depreciation.[41] In this case, the political pressure stems from the industries which are seriously affected by the fluctuation of foreign exchange rates.

Although a deeper level of financial market integration increases the tendency of capital flows to equalize real long-term interest rates between countries, a wider dispersion of short-term interest rates may persist, reflecting the business and financial conditions in each country. In this case, monetary policy will affect real economic activities by altering the spreads between long- and short-term interest rates. Thus, it seems to be the case that increased financial market integration will change the transmission mechanism of monetary policy.

(e) Asset Price Fluctuation

Experience of serious asset price inflation and deflation since the late 1980s all over the world raised the question of what is the appropriate way to treat asset prices in conducting monetary policy. At this stage, however, a consensus on this issue has yet to be established, even among central banks.[42] The debate on the monetary policy response during the US equity price surge in the late 1920s is surprisingly similar to that of the late 1980s.[43] Nevertheless, it is difficult to say that knowledge of central banks on

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[41] Of course, even in the closed economy, if people have rational expectation on the impact of policy changes --- that is, people expect future tax increase in the fiscal expansion ---, the effectiveness of fiscal policy will fall. See Barro [1974]. Therefore, it should be noted that globalization is not the only factor which makes fiscal policy less effective.

[42] Based on a review of the experience of the US economy in the 1920s and asset price bubbles in the 1980s, Kindleberger [1995] concluded as follows:

> "When speculation threatens substantial rise in asset prices, with a possible collapse in asset market later, and harm to the financial system, or if domestic call for one sort of policy, and international goals another, monetary authorities confront a dilemma for judgment, not cookbook rules of the game. Such a conclusion may be uncomfortable. It is, I believe, realistic." (p. 35)

[43] M. Friedman & Schwartz [1963] described the situation at that time as follows:

> "Both the Board and the Federal Reserve Bank of New York agreed that security speculation was cause for concern. The difference was about the desirability of 'qualitative' techniques of control designed to induce banks to discriminate against loans for speculative purposes. The Tenth Annual Report section on 'the guide to credit policy' had emphasized the impossibility of controlling the ultimate use of Reserve credit, and other reports had repeatedly noted the same points. Nevertheless, the view attributed to the Board was that direct pressure was a feasible means of restricting the availability of credit for speculative purposes without unduly restricting its

this issue has progressed between these two periods.

The reason why central banks should closely and constantly monitor the development of asset prices in conducting monetary policy can be summarized as follows: First, an increase in asset prices stimulates activity in the corporate and household sectors through the wealth effect; second, asset price fluctuations affect financial system stability; and third, asset prices reflect the public's expectations of future level of economic activity.

In any event, given the recent advance in financial globalization, we believe that further discussion on asset prices in relation to the conduct of monetary policy is necessary. The following points are worth examining: To what extent have asset price increase in East Asian countries during the 1990s been affected by the low interest rates in the industrial countries? When a country is faced with asset price booms abroad, is it possible for a central bank of the country concerned to isolate the inflationary pressure?[44]

(2) The Role of Central Banks in Achieving Financial Stability

World-wide consensus has been established about the importance of central bank independence in achieving price stability. However, with respect to the role of the central bank in prudential regulation and supervision, a global standard has yet to be formed. The fundamental issue seems not to be "the roles of central banks in prudential regulation and supervision," but rather, in a broader sense, "the roles of central banks in achieving stability of financial system." Therefore, we first try to summarize the recent debate on this issue, and then examine the implication of financial globalization for it.

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availability for productive purposes, whereas rise in discounts rate or open market sales sufficiently severe to curve speculation would be too severe for business in general."

[44] A supporting factor on this issue may be that former non-tradables --- such as financial services, logistics, software development, and various areas in the real economic activities --- have been adding the feature of tradables, reflecting the recent development of information and communication technologies. It can be reasonably assumed that price arbitrage in non-tradables will be more effective compared with the high efficiency of the price arbitrage in the traditional tradables. Such development will strengthen the impact of exchange rate adjustment on the relative price changes between tradables and non-tradables, suggesting higher effectiveness of monetary policy to isolate the impacts of fluctuation of business condition abroad.

(a) The Basic Principle of Central Bank Responsibility

As a starting point for the discussion on "the roles of central banks in achieving stability of financial system," we will examine the mandate for central banks from a philosophical viewpoint.

Although central banks play various roles in achieving stability of financial systems, the motivation of such activity is not to protect depositors (especially small depositors) but to maintain the stability of the financial system as a whole. On this point, Dewatripont and Tirole [1994], one of the leading textbooks on bank regulation, states that "[bank] regulation is motivated in particular by the need to protect the small depositors." (p. 31) Central banks, however, have been concerned in the achievement of stability of financial system in a different way. In this regard, objectives of central banks do not perfectly correspond to those of banking regulatory authorities.

Of course, as typically seen in countries in which a central bank is the only banking regulatory and supervisory authority, a central bank's commitment to designing the financial system and regulating and supervising financial institutions may vary, depending on the extent to which the central bank emphasizes those aspect.

(b) The Relationship between Price Stability and Financial Stability

In order to examine "the roles of central banks in achieving financial stability," the first question will be "whether there is a trade-off between price stability and the stability of the financial system?"

The monetary policy of a central bank, which aims at price stability, is conducted using the financial system as its transmission channel. Therefore, monetary policy will be less effective once the stability of the financial system has been undermined. If a financial crisis occurs and large scale bank closures take place, the financial intermediating function of the financial system will not be able to operate in a stable and smooth manner. Under these conditions, it is most likely that the response of financial

institutions to policy interest rate changes will be different from what central banks expect.

If price stability, in turn, is undermined and inflation results, the business cycle will become unstable and asset prices will tend to fluctuate excessively. When looking at the Japanese economy since the late 1980s, it is clear that the bubble economy has threatened sustainable price stability, and, as the aftermath of the emergence and collapse of the asset-price bubble, tremendous quantities of non-performing loans were accumulated. In this sense, it would be appropriate to understand that price stability is an important precondition for achieving the stability of financial system as a whole.

In addition, price stability is also a necessary condition in that prices will serve as signals for the efficient allocation of resources. At the same time, the stability of the financial system is a necessary condition for achieving efficient financial intermediation through deposit-taking and lending. Thus, both price stability and financial stability are important elements for achieving sustainable economic growth.

To sum up, the two objectives of central banks --- price stability and the stability of the financial system --- can be considered as complementary in the sense that one is a precondition for achieving the other, and thus it is not appropriate to think that there is a fundamental conflict between the two objectives. In other words, central banks can contribute to economic growth by achieving the two objectives simultaneously.

Based on these points, it might be the case that such interdependence will cause a conflict between the two objectives. For example, if a fragile financial system disrupts a country's macroeconomic performance, the central bank will have to take into account the impact on the financial system when conducting a particular monetary policy. In this case, however, the difficulties which a central bank confronts are different from the problems stemming from "conflicts of interest." As Governor Eddie George of the Bank of England has often pointed out, separation of responsibility for achieving stability of the financial system from the central bank does not seem to mitigate the difficulties, since the existence of a conflict between price stability and financial stability implies the

necessity of coordination to pursue the both objectives simultaneously.[45] Thus, it is likely that combining the two responsibilities within a central bank has certain practical advantages.[46]

In addition, the existence of synergy effects emerging from the combination of the two responsibilities has also often been pointed out. In fact, the central bank needs a great deal of information about financial institutions' balance sheets and about the behavior of those institutions for both their responsibilities for implementing monetary policy and for maintaining the stability of financial system. Information about payment and settlement systems contains important elements for central bank policies in achieving both price stability and financial stability. These considerations imply that there are economies of scope between the two responsibilities.

At the same time, however, problems in combining the two responsibilities are discussed. One of the issues which is cited in supporting the separation of the two responsibilities is the reputation risk of central banks. The reputation of a central bank as a monetary policy authority depends heavily on whether it can achieve a status of the guardian of the value of money ("inflation fighter"). Once the central bank becomes responsible for bank regulation, its performance as a regulator will probably affect its reputation.

For example, the bankruptcy of a financial institution may be desirable from the viewpoint of enhancing discipline on the part of financial market participants.[47] Even in

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[45] Lecture at the London School of Economics on January 25, 1996 (George [1996]).

[46] Speech presented at the dinner with Lord Mayor for Bankers and Merchants of the City on June 12 ,1997 (George [1997]).

[47] Greenspan [1997a] discussed on this point as follows:

> "It is this freedom to take on risk that characterizes our economy and, by extension, our banking system. Legislation and regulation of banks, in turn, generally should not aim to curtail the predilection of businesses and their banks to take on risk--so long as the general safety and soundness of our banking system is maintained. As I have said many times, regulators and legislators should not act as if the optimal degree of bank failure were zero. Rather, policymakers must continually assess the tradeoff between, on the one hand, protecting the financial system and the taxpayers, and on the other hand, allowing banks to perform their essential risk-taking activities, including the extension of risky credit. Optimal risk-taking on the part of our banks means that

this case, however, the failure of financial institutions will probably be recognized as a failure of the banking regulatory and supervisory authority. Although it is reasonable to assume that financial regulators and supervisors are responsible for such failures, there is an opinion that the "bad reputation" for having caused a failure will undermine the credibility of a central bank and will have a negative influence on the conduct of monetary policy of a central bank.

(c) Globalization and Lender of Last Resort

The role of central banks in achieving stability of the financial system will not change in the future, despite progress in financial market globalization. The banking regulation and supervision framework itself will, of necessity, continuously adjust to the rapidly changing and globalizing activities of financial institutions. In order to prevent financial crises, it is necessary for central banks to deepen their knowledge of not only domestic banking activities but also of international aspects of financial institutions and financial transactions. In particular, as typically seen in the expansion of financial derivative transactions, international financial markets has become increasingly complex, suggesting that a central bank alone may have difficulty in maintaining stability of financial system. In addition, in order to cope with potential systemic risks, international coordination among central banks will become increasingly important, because of (i) the increase in the diffusion speed of problems; (ii) the increase in the cross-border transaction volume accompanied by delivery lag; and (iii) the growth of transfer of funds denominated in foreign currency.

Of course, there are many problems to be solved, ranging from relatively easy ones such as establishing a network for a more systematic exchange of information among banking regulatory and supervisory authorities, to quite difficult ones such as setting up a formal arrangement for implementing international coordination. From these viewpoints, as Chairman Greenspan of the Federal Reserve Board stated, what is required is not a

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some mistakes will be made and some institutions will fail. Indeed, even if a bank is well-managed, optimal risk-taking means that such a bank can simply get unlucky. Either through mistakes of management or through the vagaries of economic luck, bank failure will occur, and such failure should be viewed as part of a natural process within our competitive system."

formal and rigid arrangement, but an informal and flexible arrangement for international coordination and mutual reliance.[48]

(d) Balancing Private Market Regulation

In designing the safety-net, it becomes increasingly important to consider how to provide individual financial institutions with appropriate incentives which are compatible with stability of the financial system. In other words, the question we have to ask here is how to formulate a framework for banking regulation and supervision by balancing government regulation and private market regulation.

As activities of financial institutions become more and more globalized, such issues will be repeated when we discuss the difficulties of banking supervision on a consolidated basis, or the appropriate response to the trend towards the development of financial conglomerates. A question we need to answer is: "to what extent and under what conditions can central banks rely on private market regulation?"

When we look back in history, private market regulation is not a recent development but was a dominant idea during the 19th and early 20th centuries. At the same time, it is also a historical fact that the public regulation and supervision of financial institutions have gradually been strengthened in times of financial and economic turmoil, especially since the 1930s.

From the viewpoint of achieving stability of financial systems during the process of globalization, bank regulation must be designed so as to be compatible with incentives for individual financial institutions, and the following points should be emphasized: (i) advantage should be taken of private market regulation generated autonomously and endogenously among financial market participants; and (ii) more significance should be placed on incentive-compatible instruments as supplements for such private market regulation. Therefore, the key questions for central banks are (i) where the limitation of private market regulation as a foundation of such framework lies, and (ii) what kinds of

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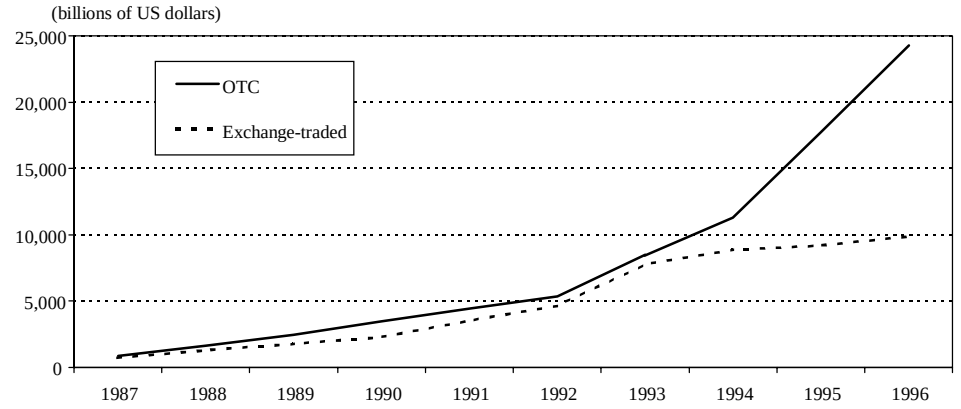
[48] See Greenspan [1997b].

public intervention are desirable in order to reinforce the effectiveness of private market regulation.

However, even if private market regulation in the globalized market gains strength and market discipline plays a core role in maintaining stability of the financial system, we cannot say with confidence that systemic risk which shakes the global financial system will never occur.

If we examine the recent development of off-balance-sheet transactions, OTC transactions have been increasing relative to exchange transactions (Chart 15). This seems to reflect their merit of a high degree of flexibility in tailoring cash flows according to customer's needs, and the fact that various financial innovations have been developing through these transactions. However, if we think of the risk profile of the market as a whole, we should keep a close eye on whether each market participants have properly evaluated potential risks in relation to both business partners and contract contents. In addition, many market participants have recently been taking advantage of ratings provided by credit-rating agencies, and the possible risk of inducing certain biases, reflecting rating companies' desires to expand their business scope, has been recognized.

Chart 15: International financial derivative markets



Source: BIS [1997a]

(e) The Evaluation of Aggregated Risk

Finally, we will discuss the increasing importance of appropriate risk evaluation in financial system as a whole, based on the recognition that the advance in financial system globalization implies that there will be more efficiency in risk transfer technologies.

For example, the financial system may become fragile even under the constant level of net capital mobility, reflecting complex interdependence of international financial market. As a result, it becomes difficult for a central bank alone to maintain stability of the financial system, which will lead to the fragility of the international financial system.

In addition, as we have discussed repeatedly, the current situation of financial market globalization implies that global markets which integrate the markets for goods and services and global financial markets are still imperfect and incomplete. Therefore, in risk evaluation, it is necessary to take linkages and feedback effects into account. Linkages and feedback effects appear at various levels such as the domestic and international aspects of interaction between real economies and financial systems, and between underlying assets and derivative instruments. It is important for central banks to trace such risk on an aggregated basis.

In this regard, BIS [1997b] which succeeded the research efforts in the *Yoshikuni Report* of the BIS Euro-currency Committee (BIS [1996b]), pointed out the importance of extending traditional micro-prudential viewpoints, which focus on the soundness of management of individual financial institutions, into macro-prudential viewpoints, which try to measure the risk profile of the financial system as a whole. The paper emphasized the importance of deepening our understanding of the dynamic nature of market behavior in times of market stress by incorporating the impacts of feedback trading and liquidity effects. Although such motivations seem quite difficult to be discovered through research, they are imminent issues which on-going globalization forces central banks to tackle with.

(3) Enhancing Market Functioning

The third problem which central banks confront during the growing trend toward

financial globalization is the exploration of what kinds of efforts are effective to promote market functioning. Financial markets have changed remarkably in accordance with the advance in financial globalization. Such changes have appeared not only in financial conglomerates and financial instruments but also in the narrowly defined "financial markets," which function as an apparatus for price discovery and trade enforcement. Since central banks are "banks for banks," central banks may well make efforts to promote market functioning and liquidity in accordance with the development of globalized financial markets.

The reason why central banks should make such efforts can be summarized in the following three points. The first reason is the improvement of efficiency in allocating savings and capital globally. Although the infrastructure for international financial trading has improved to a certain extent, there still exist persistent impediments by comparison with domestic financial trading, thus suggesting the importance of constructing more seamless financial markets.

The second reason is the necessity of constructing robust and resilient financial markets in order to maintain the stability of globalized financial markets. Although central banks must be prepared to provide liquidity through, for example, last resort lending in times of stress, they are also expected to foster deep and liquid markets. A deep and liquid market, where a market participant could easily build up or liquidate its position with little impact on prices, is a key element in preventing the onset of a systemic crisis.[49]

The third reason is the importance of financial markets in the daily operation of central banks: Central banks conduct monetary operations in financial markets, which form the starting point of transmission mechanism of monetary policy; and prices formulated in the financial markets, such as interest rates and option prices, provide valuable information for the conduct of monetary policy.

Based on these motivations, we will move on to discuss several issues relevant to

[49] Although mutual funds are expected to be more important financial instruments, high market liquidity is a prerequisite for mutual funds with high liquidity to play such a role.

central banks. The first point is the importance of investigating and understanding the actual state of the international financial markets. The Euro-currency Committee, since the publication of the *Cross Report* (BIS [1986]), has established a good track record in providing information on changes in international financial markets and implications for the central bank community.

For example, conspicuous changes have occurred in the narrowly defined financial markets, that is, places where financial trading takes place. On the one hand, organized exchanges throughout the world have made efforts to introduce new instruments as well as to arrange alliance and mergers in order to improve their competitive advantages. On the other hand, OTC derivative markets have not only made full use of their flexible nature to develop new OTC instruments but also introduced standardized risk management techniques. As a result, borders between traditional organized exchanges and OTC markets have become increasingly ambiguous.

The market structure of executing trade orders and conveying information has been changing in various directions, such as the shift to on-screen trading and the introduction of block trading. In this situation, the following questions have become increasingly important: "What is the most efficient structure for price discovery?" "What type of trading mechanism is the most effective in improving market liquidity?" In academic circles, so-called "market microstructure theory" has progressed during the last decade.

The second point is that efforts have been made to promote financial market functioning and market liquidity. Looking at impediments to the integration of world financial markets, tax systems and accounting standards are difficult area for central banks to intervene in directly. However, there are also some impediments which can be easily diminished if central banks, as major participants in financial markets, alter their services and settlement and trading rules.

The third point concerns the reconsideration of central bank operations. Since services provided by central banks are an important infrastructural element for promoting market efficiency, central banks are required to examine whether inappropriate central bank operations, which are incompatible with changing financial market, will restrict

market functioning. In the light of this point, the following operations are worth pondering: 24-hour operation, links of settlement accounts among central banks, the range of financial institutions accessible to central bank accounts, cross-border access to central bank accounts, collateral for central bank lending, and design of reserve requirement. Some issues are under reconsideration, while others are issues for future work. Desirable directions for reconsideration are still open questions. It becomes increasingly important for central banks to reexamine their behavior in order to improve financial market functioning, while minimizing incentives for individual financial institutions to adopt moral hazard behavior.

6. CONCLUDING REMARKS

We have reviewed the facts about the impacts of financial market globalization and presented our interpretation of these facts in the previous chapters. We have also pointed out some of the issues relevant to the mandate and the roles of central banks under the ongoing process of financial globalization.

The mandate of central banks is to contribute to the achievement of sustainable economic growth by maintaining a stable financial and economic environment. In order to accomplish this mandate, central banks have been trying to realize and maintain price stability by monetary policy, to operate efficient payment and settlement systems, and to prevent systemic risk by functioning as "lender of last resort." To this end, they have, formally and informally, been deeply involved in supervision of individual financial institutions. This fundamental mandate and roles of central banks will remain unchanged by financial globalization.

What is required for the central banks is to find practical methods in order to fulfill their fundamental mandate and role under the globalization. Activities of financial institutions which each central bank must deal with have increasingly been globalized, while central banks themselves have remained basically domestic organizations. In relation to this, Nobel prize winner John R. Hicks made an interesting prediction 30 years ago. Hicks [1969] emphasized that a central bank is a product of the market, and stated as follows:

> "Only in a national economy that is largely self-contained, can a national central bank be a true central bank; with the development of world market, and (especially) of world financial markets, national central banks take a step down, becoming single banks in a world-wide system, not at the 'centre' any longer. Thus the problem that was (partially) solved by the institution of national central banks has reappeared, and is still unsolved (though we are trying to solve it), on the world level." (p. 60)

In response to financial globalization, central banks have made various efforts in monetary policy, supervision of financial institutions, and banking operation. Thanks to such efforts, public interest in and understanding of the central banks have increased,[50] and the independence of the central bank has been strengthened in many countries, given the inherent inflationary bias. Therefore, a more or less world-wide consensus has been established about the importance of central bank independence to achieve price stability. However, with respect to the "roles of central banks in achieving stability of the financial system," a global standard is yet to be formed.

There are many issues which central banks have to examine in order to ensure stability of financial system in the ongoing process of financial globalization. The central question here is "what role should central banks play in enhancing prudential stability?" This question essentially comes down to asking "what are the core functions of central banks?" It is beyond scope of this paper, which is aimed at investigating the fact and nature of financial globalization, to present answers, although we hope that areas for future research are indicated.

REFERENCES

Bank for International Settlements, *Recent Innovations in International Banking*, 1986.

_____, *Central Bank Survey of Foreign Exchange and Derivatives Market Activity*, 1996a.

[50] If we investigate for the number of papers in the economics reference data base (ECONOLIT) using "central bank" as a keyword, it has increased from 20 to 30 a year in the 1980s to around 100 in the 1990s, suggesting an increase in interest in central banks.

_____, *Proposal for Improving Global Derivative Markets Statistics*, 1996b.

_____, *67th Annual Report*, 1997a.

_____, *The Measurement of Aggregated Market Risk: A Joint Exploration by a Group of Central Bank Researchers*, 1997b.

Barro, Robert J., "Are Government Bonds Net Wealth?" *Journal of Political Economy* 82(6), 1974, pp. 1095-1117.

Baxter, Marianne, Urban J. Jermann, and R. G. King, "Nontraded Goods, Nontraded Factors, and International Non-Diversification," *NBER Working Paper* No. 5175, 1995.

Borio, E. V., N. Kennedy, and S. D. Prowse, "Exploring Aggregate Asset Price Fluctuations across Countries: Measurement, Determinants and Monetary Policy Implications," *BIS Economic Paper* No. 40, 1994.

Bottazzi, Laura, Paolo Pesenti, and Eric van Wincoop, " Wages, Profits and the International Portfolio Puzzle," *European Economic Review* 40(2), 1996, pp. 219-254.

Dewatripont, Mathias, and Jean Tirole, *The Prudential Regulation of Banks*, MIT Press, 1994.

Feldstein, Martin, "Distinguished Lecture on Economics in Government: Thinking About International Economic Coordination," *Journal of Economic Perspectives* 2(2), 1988, pp. 3-13.

_____, and Charles Horioka, "Domestic Saving and International Capital Flows," *Economic Journal* 90, 1980, pp. 314-329.

Frankel, Jeffrey A., and Andrew K. Rose, "The Endogeneity of the Optimum Currency Area Criteria," *mimeo*, 1997.

Fraser Institute, *Fraser Forum*, June 1996（http://www.fraserinstitute.ca）.

French, Kenneth R. and James M. Poterba, "Investor Diversification and International Equity Markets," *American Economic Review*, 81, May 1991, pp. 222-226.

Friedman, Milton, and Anna J. Schwartz, *Monetary History of the United States, 1867-1960*, Princeton University Press, 1963.

Fukao, Mitsuhiro, and Kunio Okina, "Internationalization of Financial Markets and Balance of Payments Imbalances: A Japanese Perspective," *Carnegie-Rochester Conference Series on Public Policy* 30, 1989, pp. 167-220.

George, E. A. J., "Fourth Bank of England and London School of Economics Lecture,"

January 25, 1996.

_____, "Speech," at a Dinner with the Lord Mayor for Bankers and Merchants of the City of London at the Mansion House, June 12, 1997.

Greenspan, Alan, "Remarks" at the Annual Convention of the Independent Bankers Association of America, March 22, 1997a.

_____, "Remarks" at the Spring Meeting of the Institute of International Finance, April 29, 1997b.

Hicks, John R., *Critical Essays In Monetary Theory*, Oxford University Press, 1969.

Ishi, Kotaro, "Jisshitsu Kinri no Kettei Youin oyobi Kakkoku Hikaku nitsuite" (Determinants of Real Interest Rates and Their Cross-Country Comparison), IMES Discussion Paper 96-J-18, Institute for Monetary and Economic Studies, Bank of Japan, 1996.

Japan Development Bank, "Wagakuni Handotai Sangyo no Genjou to Kadai" (The Japanese Semiconductor Industry: Present Condition and Problems), *JDB Research Report* No. 215, Japan Development Bank, June 1996 (in Japanese).

Kindleberger, Charles P., "Asset Inflation and Monetary Policy," *BNL Quarterly Review* No. 192, 1995, pp. 17-37.

Kupiec, P. H., and J. M. O'Brien, "A Precommitment Approach to Capital Requirements for Market Risk," *Financial and Economics Discussion* Paper 95-36, Federal Reserve Board, 1995.

Krugman, Paul R., and Maurice Obstfeld, *International Economics: Theory and Policy*, fourth ed., Addison-Wesley, 1997.

Lewis, Karen K., "Puzzles in International Financial Markets," in Genne Grossman and Kenneth J. Rogoff eds. *Handbook of International Finance* vol. III, 1995, pp. 1913-1971.

Lewis, Karen K., "Consumption, Stock Returns, and the Gains from International Risk-Sharing," *NBER Working Paper Series* No. 5410, 1996.

Matsushita, Yasuo, "Global Economic Integration and the Central Bank," *BOJ Quarterly Bulletin* 3(3), 1995, pp. 5-13.

Obstfeld, Maurice, "International Capital Mobility in the 1990s," Peter Kenen, ed., *Understanding Independence*, Princeton University Press, 1994, pp. 201-261.

_____, "Risk-Taking, Global Diversification, and Growth," *American Economic Review* 84(5), 1995, pp. 1310-1329.

_____, and Kenneth Rogoff, *Foundations of International Macroeconomics*, MIT Press, 1996.

_____, and Alan M. Taylor, "The Great Depression as a Watershed: International Capital Mobility over the Long Run," *NBER Working Paper* No. 5960, 1997.

Reinganum, J., "The Timing of Innovation: Research, Development, and Diffusion," in R. Schmalensee and R. Willing eds., *Handbook of Industrial Organization*, 1989.

Stockman, Alan C., and Harris Dellas, "International Portfolio Nondiversification and Exchange Rate Variability," *Journal of International Economics* 26(1), 1989, pp. 271-289.

Tesar, Linda L., "Evaluating the Gains from International Risksharing," *Carnegie-Rochester Conference Series on Public Policy*, 42, 1995, pp. 95-143.

Tietmeyer, Hans, "Speech," at the first European Equity Traders Convention of the Federation of European Stock Exchanges in Frankfurt, June 19, 1997.

van Wincoop, Eric, "Welfare Gains from International Risk Sharing," *Journal of Monetary Economics* 34(2), 1994, pp. 175-200.