

# Financial Market Globalization: Present and Future

**Kunio Okina, Masaaki Shirakawa, and Shigenori Shiratsuka**

*It is widely recognized that financial market globalization has been developing. International financial markets have expanded substantially, and transaction volumes in foreign exchange markets and capital markets have increased markedly. Progress in information and telecommunications technologies, liberalization in capital markets, and development of new financial instruments have further stimulated 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 barriers to international capital flows. Portfolios of investors based in industrialized countries are biased toward domestic assets (the “home bias puzzle”), and national savings tend to be absorbed domestically (the “Feldstein-Horioka paradox”). From a long-term historical perspective, the size of net capital flows has not increased so much.*

*Alternatively, such development of globalization can be viewed differently once we take account of other aspects such as off-balance sheet 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.*

*Given the recent growing trend toward financial globalization, how and at what pace financial globalization will develop in the future have 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.*

**Key words:** Globalization; Central bank; International capital mobility; Risk diversification; Monetary policy; Stability of financial system

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## I. Introduction

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It is widely recognized that financial market globalization has been developing. International financial markets have expanded substantially, and transaction volumes in foreign exchange markets and capital markets have increased markedly. Progress in information and telecommunications technologies, liberalization in capital markets, and development of new financial instruments have further stimulated 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 barriers to international capital flows. Portfolios of investors based in industrialized countries are biased toward domestic assets (the “home bias puzzle”), and national savings tend to be absorbed domestically (the “Feldstein-Horioka paradox”). From a long-term 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 sheet 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 II, we review the development of globalization in Chapter III and show that, despite the rapid pace of financial globalization, we still observe puzzling phenomena or “globalization puzzles” such as the home bias puzzle. Then, we show how to interpret the “globalization puzzles” in a manner consistent with the progress in the financial globalization. In Chapter IV, we look at the future perspective of financial globalization and its impact on the world economy and financial systems. In Chapter V, we examine implications of financial globalization on the policy conduct of central banks. In our concluding remarks, in Chapter VI, we summarize the possible implications of financial globalization for the mandates and roles of central banks.

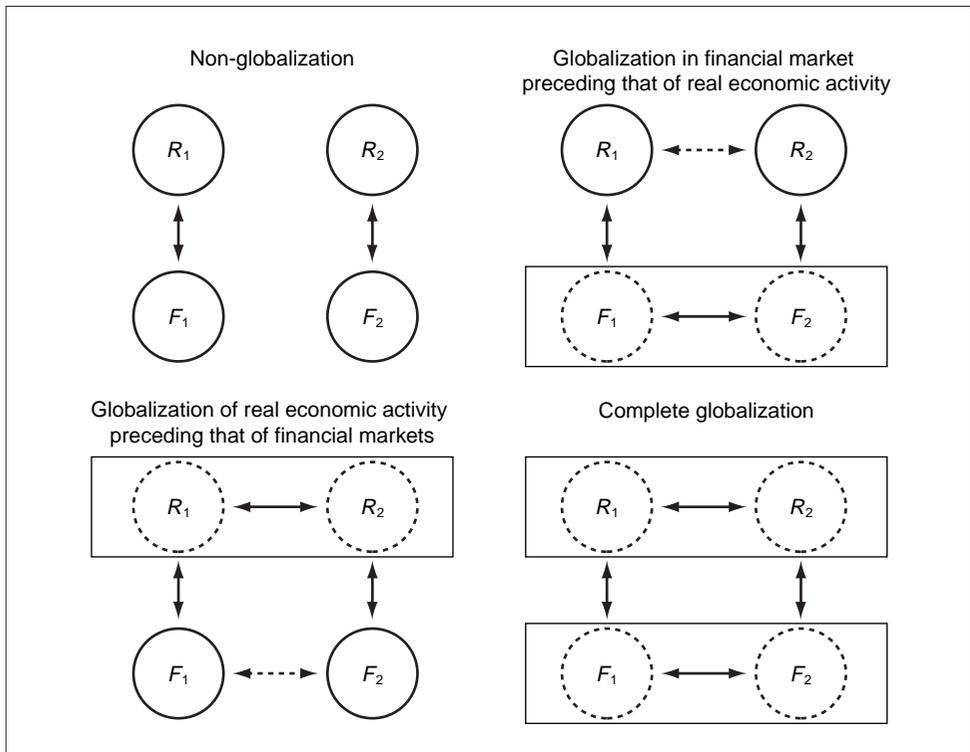
## II. Globalization of the Financial Markets: A Definition

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 ambiguous. Here, we start with making a clear distinction between financial globalization and financial internationalization. We define “internationalization” as a situation where certain external transactions increase, while “globalization” as one where each country’s economy, including its financial markets, becomes increasingly integrated resulting in development toward a single world market. For example, even when a country adopts a unitary import mechanism for agricultural products in order to protect the domestic agricultural sector, internationalization could develop, while globalization could not.

In this paper, based on this definition of globalization, we discuss the present and the future of financial globalization, and its implications for the mandates and roles of central banks. Although we mainly focus 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 Figure 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.

**Figure 1 Typology of Globalization**



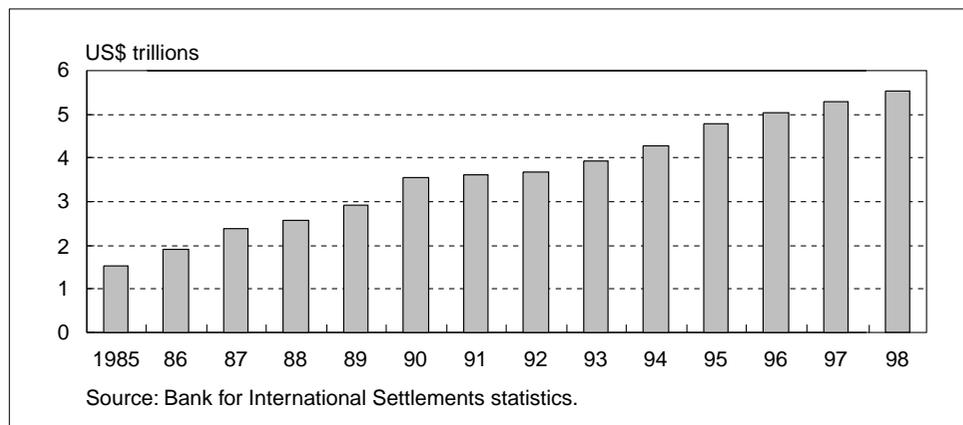
The actual world economy lies somewhere between “non-globalization” (upper left diagram) and “complete globalization” (lower right diagram). The former corresponds to the situation where both financial markets and markets for goods and services are isolated by national borders. On the contrary, the latter corresponds to the situation where both markets are fully integrated into a single market.

Since in general cross-border mobility of financial assets is 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 is developing synergistically, globalization of the real side precedes that of the financial side partially in some products or some region, as shown in the lower left diagram.<sup>1</sup>

### III. Development of Globalization

The recent development of financial globalization is remarkable. For example, the amount of securities issued increased more than five times from US\$222 billion in 1988 to US\$1,168 billion in 1998. Based on the Bank for International Settlements (BIS) statistics on international banking and financial market activities, net international banking assets of the reporting countries more than doubled between 1988 and 1998, from US\$2,545 billion in 1988 to US\$5,485 billion in 1998 (Figure 2).

**Figure 2 Total International Bank Lending**



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. Figure 1 can be interpreted as a two-country and two-good model that 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 nonparallel globalization once we introduce uncertainty and/or heterogeneity of goods and services.

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 from a historical perspective, followed by a thorough examination of the current situation.

### A. Home Bias and International Capital Flows

We first review the past development of financial globalization based on several measures.

#### 1. Home bias puzzle

An interesting issue in this regard is the “home bias” that has been discussed extensively by academics.<sup>2</sup> Based on the idea that a diversified portfolio results in higher expected profits under the same risk, it is believed that remarkable progress has been made in diversification of international investment portfolios. 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.

French and Poterba (1991) estimated the international equity portfolios of investors in the United States, Japan, and the United Kingdom, and pointed out that investors hold a very large share of their equity wealth at home (Table 1).<sup>3</sup>

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.<sup>4</sup> Given the increase in international financial transactions and the substantial development of globalization in real economic activity, this phenomenon may be regarded as a puzzle.

**Table 1 Equity Portfolio Weights: U.S., Japanese, and U.K. Investors**

Market	Portfolio weight			Adj. market value (US\$)
	United States	Japan	United Kingdom	
United States	.938	.0131	.059	2,941.3
Japan	.031	.9811	.048	1,632.9
United Kingdom	.011	.0019	.820	849.8
France	.005	.0013	.032	265.4
Germany	.005	.0013	.035	235.8
Canada	.010	.0012	.006	233.5

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.

Source: French and Poterba (1991), p. 223.

2. See Lewis (1995) and Obstfeld and Rogoff (1996) for the details of the recent discussion.

3. According to French and Poterba (1991), if one wishes to apply CAPM theory to explain the fact that U.K. investors' domestic stockholding share in their portfolio reaches 82 percent, the expected yield of the U.K. market should be 5 percent higher than that of the U.S. market. Similarly, U.S. 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 U.S. 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 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 stockholding ratio (number of stocks held) of foreign investors increased from 5.5 percent in 1992 to 9.4 percent in 1995.

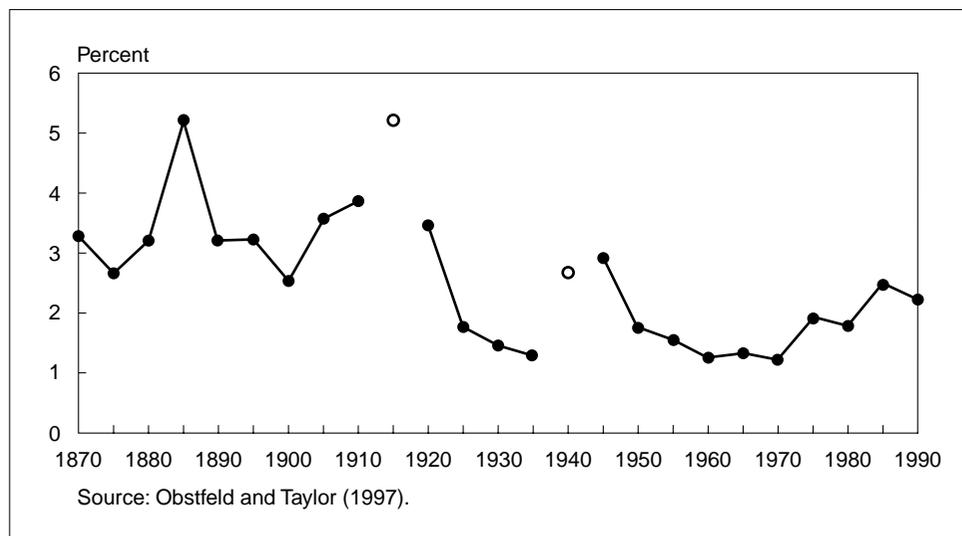
## 2. The magnitude of net capital flows

Another similar puzzle is the “Feldstein-Horioka paradox” (Feldstein and Horioka [1980]).<sup>5</sup> If financial markets are completely integrated, savings will be pooled in the world as a whole. As a result, theoretically, we can assume that an exogenous marginal increase in domestic savings will be invested in a country that offers the highest return. Therefore, 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 seems inconsistent with the assumption of financial integration. In other words, the series of studies about the Feldstein-Horioka paradox suggest a strong tendency for savings to be absorbed domestically.

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. This implies that 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) (Figure 3), the average size of net international capital flows of industrialized countries, measured by the ratio of current account to nominal GDP in absolute terms, was over 3 percent before World War I, with some periods recording as high as 4 to 5 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 3 percent, although it is still not as high as the pre-World War I level.

**Figure 3 Net Capital Flows since 1870 (Mean of Current Account in 12 Countries)**



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

These changes in net international capital flows have been closely related to the choice among macroeconomic policy goals: stability of foreign exchange rates, 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, industrialized countries opted for stability of foreign exchange rates and free capital mobility under the gold standard, and capital showed high international mobility. Under the Bretton Woods system, in contrast, industrialized 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.

## **B. 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 can be combined as a “globalization puzzle.” These puzzling points contradict the general perception of a growing trend toward financial globalization. How can we interpret this puzzle in a manner consistent with financial globalization?

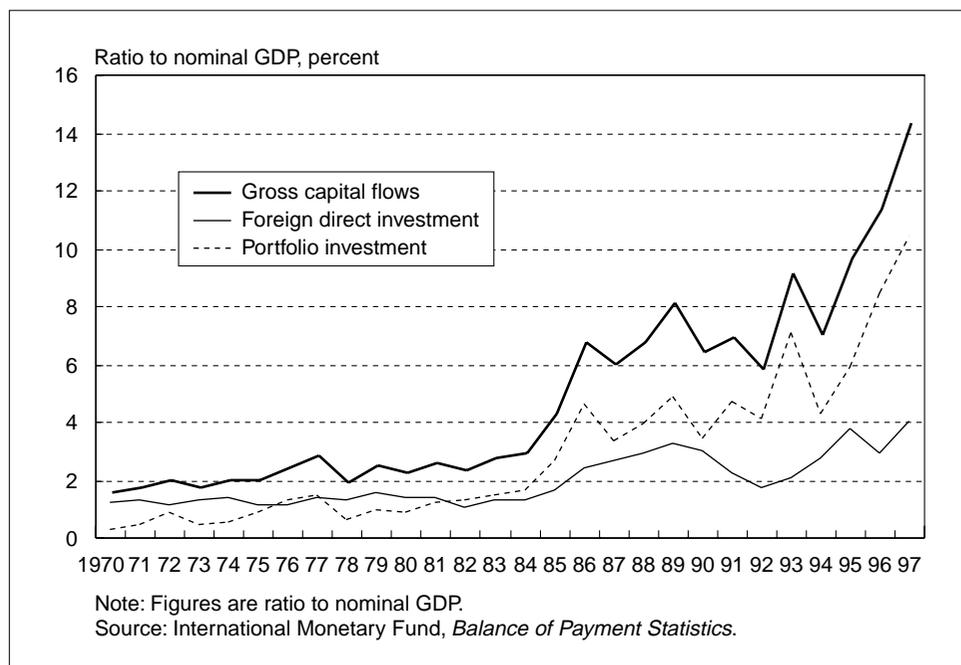
In the following, we first examine the globalization puzzle from the viewpoint of the expansion of gross capital flows, advance in global financial services, and increased effectiveness of interest rate arbitrage. Then, we consider the relation between these points and the globalization puzzle.

### **1. Expansion of gross capital flows**

Looking back over the past quarter of this 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<sup>6</sup> that 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

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6. The G-7 countries plus Norway, Sweden, and Australia.

**Figure 4 Gross Capital Flows since 1970**



substantially (Figure 4).<sup>7</sup> When the main components of such capital flows are examined, foreign direct investment and portfolio investment both increased in parallel in the latter half of the 1980s; in the 1990s, foreign direct investment has slowed, while portfolio investment has increased substantially.<sup>8</sup>

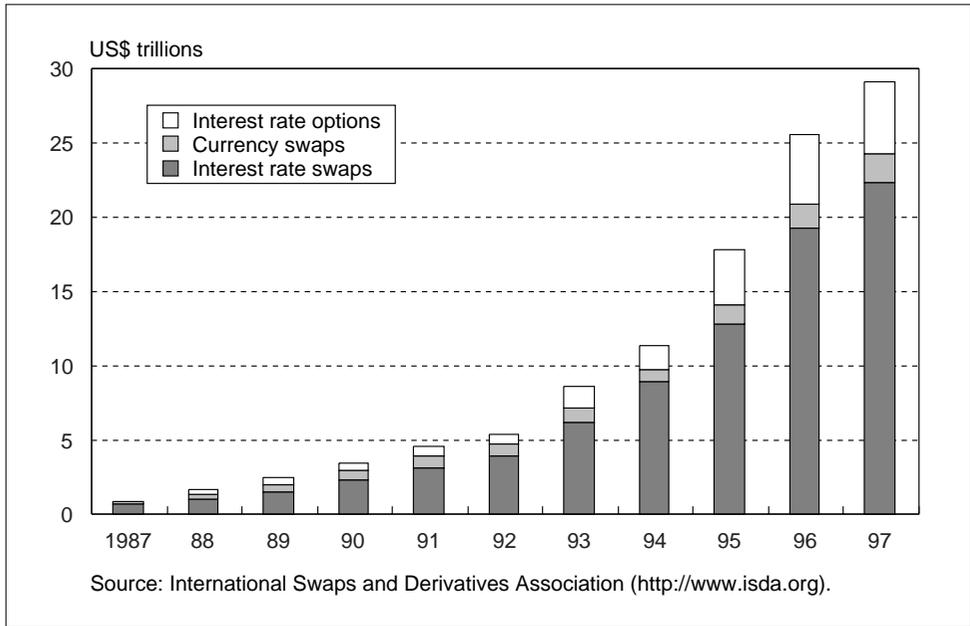
## 2. Globalization of financial services

The growth of cross-border financial transactions, especially off-balance sheet 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 (Figure 5). BIS surveys also show that cross-border transactions compose the greater part on a transaction volume basis (Table 2).

7. Although the sources and countries are slightly different from those of Obstfeld and Taylor (1997), current account balance/nominal GDP ratios of these countries show almost parallel movement.

8. Within portfolio investment, bond investment grows more rapidly than stock investment. This is consistent with the fact that home bias observed in the bond market is smaller than in the stock market.

**Figure 5 Global Notional Amounts of OTC Derivative Contracts**



**Table 2 Share of Local and Cross-Border Trading in OTC Derivative Transactions**

Percent

	1995		1998	
	Cross-border	Local	Cross-border	Local
Total	54.0	46.0	54.5	45.5
Foreign exchange	54.5	45.5	55.8	44.2
Interest rates	51.7	48.3	49.8	50.2

Source: Bank for International Settlements (1996a, 1999a).

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. An increase in cross-border financial transactions has two elements: one is an increase in mobility of savings, improving efficiency in intertemporal resource allocation; and the other is an increase in risk transfer, which smooths consumption through risk diversification. As a result of the development of derivatives transactions, arbitrage of financial asset prices across countries has become more efficient than in the past, which also provides evidence in support of globalization.<sup>9</sup>

9. According to the current International Monetary Fund Balance of Payments manual, cross-border derivatives transactions are recorded as either a capital transaction such as an option premium or principal of currency swaps, or current transaction such as interest rate swaps.

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, it can be considered that derivatives transactions are just extracting and offering risk transfer services. A typical example is the increase in securities issued in the international capital markets and the increase in borrowing from international syndicated banks. In 1997, the amount of financing (on a net basis) in international financial markets reached US\$865 billion (3 percent of world nominal GDP). This can be interpreted as a behavior not only to finance a shortage of domestic savings by means of foreign savings, but also to purchase financial services, including valuation of risks and development and sales of financial instruments, in international financial markets.

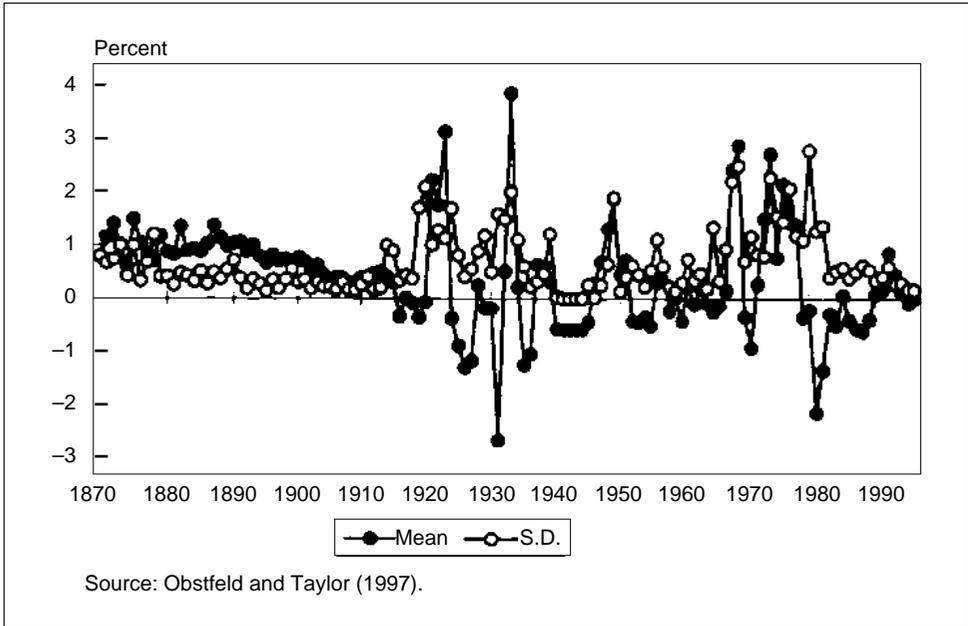
An increase in such cross-border transactions has been observed in various other aspects besides the examples above. In risk valuation, utilization of ratings produced by credit-rating agencies has been increasing greatly, while in risk management, purchasing risk management systems developed by third-party 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 of financial institutions, and cooperation; increased transfer of operation centers abroad, where rents and labor costs are low; and increased migration of skilled labor among 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 telecommunications technologies, may be another candidate for further expansion of business opportunity.

### **3. 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? Here, we review the historical evidence to evaluate the effectiveness of interest rate arbitrage on both a nominal and a real interest rate basis.

First, we look at the historical development of covered nominal interest rate parity between the United States and United Kingdom in Obstfeld and Taylor (1997) in Figure 6. 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.

**Figure 6 Nominal Interest Rate Parity since 1870  
(U.S.–U.K. Covered Domestic Interest Differentials)**



According to Obstfeld (1994a) (Table 3), international comparison of the differentials in three-month interest rates between interbank markets and the Euromarkets of the same currencies shows that such parity has generally been small in each country, thus suggesting that interest arbitrage has been functioning effectively.<sup>10</sup>

10. In France and Italy, domestic interest rates were lower than Euromarket 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 Euromarkets, suggesting restrictions on capital inflows.

**Table 3 Domestic Interbank versus Eurocurrency Three-Month Interest Rates**

[1] France

Period	Onshore bid – offshore bid	Onshore ask – offshore ask	Onshore bid – offshore ask	Offshore bid – onshore ask	Onshore ask – bid	Offshore ask – bid
Jan. 1, 1982– Jan. 31, 1987	-227 (336)	-254 (375)	-267 (375)	214 (336)	-13 (3)	-40 (49)
Feb. 1, 1987– June 30, 1990	-11 (16)	-10 (20)	-23 (19)	-2 (17)	13 (4)	13 (10)
July 1, 1990– May 31, 1992	8 (7)	1 (11)	-11 (7)	-20 (10)	12 (8)	19 (5)
June 1, 1992– Apr. 30, 1993	-1 (34)	-3 (40)	-35 (45)	-32 (36)	32 (20)	34 (38)

[2] Italy

Period	Onshore bid – offshore bid	Onshore ask – offshore ask	Onshore bid – offshore ask	Offshore bid – onshore ask	Onshore ask – bid	Offshore ask – bid
Jan. 1, 1982– Jan. 31, 1987	-50 (262)	-89 (311)	-124 (308)	15 (265)	34 (10)	74 (57)
Feb. 1, 1987– June 30, 1990	29 (48)	48 (47)	-14 (49)	-91 (47)	62 (20)	43 (7)
July 1, 1990– May 31, 1992	56 (29)	63 (36)	9 (29)	-111 (37)	55 (24)	47 (6)
June 1, 1992– Apr. 30, 1993	36 (49)	28 (50)	-8 (43)	-73 (62)	36 (42)	45 (33)

[3] Germany

Period	Onshore bid – offshore bid	Onshore ask – offshore ask	Onshore bid – offshore ask	Offshore bid – onshore ask	Onshore ask – bid	Offshore ask – bid
Jan. 1, 1982– Jan. 31, 1987	17 (17)	16 (17)	5 (18)	-28 (16)	11 (4)	13 (3)
Feb. 1, 1987– June 30, 1990	5 (10)	3 (10)	-8 (11)	-15 (10)	10 (2)	13 (3)
July 1, 1990– May 31, 1992	-5 (9)	-5 (8)	-18 (9)	-8 (8)	13 (2)	13 (1)
June 1, 1992– Apr. 30, 1993	7 (13)	5 (12)	-6 (12)	-18 (13)	11 (2)	13 (2)

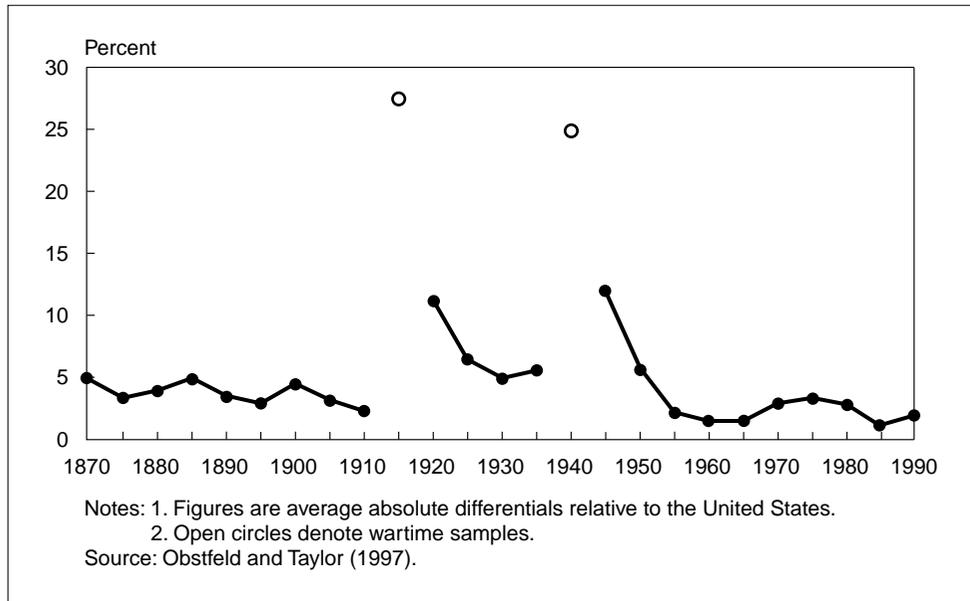
[4] Japan

Period	Onshore bid – offshore bid	Onshore ask – offshore ask	Onshore bid – offshore ask	Offshore bid – onshore ask	Onshore ask – bid	Offshore ask – bid
Jan. 1, 1982– Jan. 31, 1987	-7 (28)	n. a.	-20 (28)	n. a.	n. a.	13 (4)
Feb. 1, 1987– June 30, 1990	-60 (33)	n. a.	-68 (33)	n. a.	n. a.	8 (3)
July 1, 1990– May 31, 1992	9 (37)	n. a.	2 (37)	n. a.	n. a.	7 (3)
June 1, 1992– Apr. 30, 1993	17 (19)	n. a.	10 (19)	n. a.	n. a.	7 (2)

Note: Numbers are in basis points at an annual rate. Numbers in parentheses are standard deviation.  
Source: Obstfeld (1994a).

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 industrialized countries for the period of about 100 years since 1870 (Figure 7). 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. The above results suggest that international real interest rate arbitrage has currently become quite effective.

**Figure 7 Real Interest Parity since 1870  
(Dispersion of Real Interest Rates in 10 Countries)**



#### 4. Interpretation of the puzzles: evaluation of current financial globalization

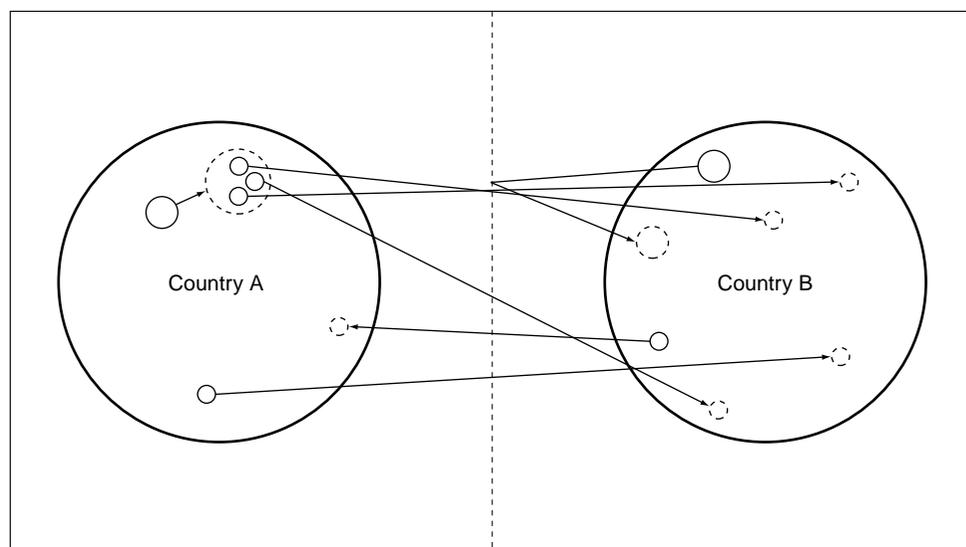
Based on the previous analyses, tentative answers to the puzzle of “contradictory evidence for globalization” can be summarized as follows. As suggested by the home bias puzzle and the Feldstein-Horioka paradox, national borders still act as barriers to international capital flows both on stock and flow bases. 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 risks seem to have been internationally diversified in an efficient way.

If there were some supplementary statistics, such as balance of risk transfer, which capture risk transfers through financial services, we could have gained a clearer picture of globalization compared with those derived from analyzing net capital flows that are 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 show a marked increase. In other words, if we think of portfolios including off-balance sheet 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 the interest rate arbitrage mechanism may have been working more effectively.<sup>11</sup>

Based on Figure 8, we 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 sheet transactions whose transaction costs are high have large particles and thus have difficulty in passing through these filters. On the other hand, off-balance sheet transactions with lower transaction costs have small particles, so that they can easily pass through such filters. Derivatives transactions will convert large particles of on-balance sheet assets into small particles of multiple assets, thus in effect enlarging the holes of the filters. In addition, progress in information and telecommunications technologies and resulting abolition of financial regulations would lower the barriers themselves and enlarge the holes of the filters, as well as bringing the transaction costs down and thus reducing the size of the particles.

**Figure 8 Globalization of Financial Markets: Illustration**



11. Improvement in economic welfare brought about by international financial transactions can be divided into (1) improvement of efficiency in intertemporal resource allocation given the extent of risk diversification; and (2) smoothing of consumption by risk diversification given the intertemporal resource allocation. In this sense, the current globalization seems to have shown more progress in the latter aspect.

## IV. The Future of Financial Globalization

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

### A. Can We Get Rid of Financial Transaction Barriers?

Given the aforementioned interpretation of the current financial globalization, how should we consider its future perspectives? As an approach to this issue, we 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 are barriers to international capital flows.

We assume that national borders 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.<sup>12</sup>

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.<sup>13</sup> According to these analyses, the impacts are limited because there exist non-tradable goods;<sup>14</sup> risk-sharing impacts are sensitive to the specification of the models;<sup>15</sup> and foreign assets are not necessarily superior to domestic assets in hedging against the uncertainties of labor income.<sup>16</sup>

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 be the case that conservatism within organizations, rooted in inertia, impedes cross-border transactions and investment decisions.

12. The discussion of the home bias puzzle that follows relies mainly on Nakamura and Shiratsuka (1998). The statistical evidence that investors are biased toward domestic assets can partly be explained by adjustment in statistical treatment such as (1) taking the effects of direct investment by multinational corporations into account; and (2) 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 further discussion on this issue, see also Obstfeld and Rogoff (1996) and Lewis (1995).

13. 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 "states" will be equalized. In other words, international transactions 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.

14. 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 (1989) and Baxter, Jermann, and King (1995).

15. 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 the discussion.

16. 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).

The above-mentioned costs and risks can be classified into four categories. The 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 risk and sovereign risk fall into this category. The second category contains 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 that 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 that naturally diminish as globalization progresses, and can be called dynamics of globalization.

## **B. Future Development of Financial Transaction Barriers**

Next we focus on the costs and risks of international portfolio diversification, and examine how the above four categories will develop in the future.

### **1. Progress in risk management techniques**

Cost reduction is being or will be brought about in four ways mentioned above. 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 telecommunications 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, made possible valuation and unbundling of risks, which were considered 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. Derivatives instruments, which deal with macroeconomic fluctuations such as GDP, could well be introduced in the future.<sup>17</sup> 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 of bearing them.

### **2. 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.

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17. For example, from the viewpoint that unexpected large fluctuations in asset prices will affect the 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.

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.

As instruments such as options and swaps come into wide use, traditional categories of financial institution, including banks, and insurance and securities 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 organizations 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 that have recently been under active discussion among academics.<sup>18</sup> 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 than the loss of the merits of decentralization through partner rearrangement.

Although we do not aim at providing answers to this question in this paper, it might be worth noting three key words for future discussion. The first is “focus.” When a financial market is globalized and each business is specialized, firms cannot improve efficiency and profitability unless they focus on business contents, areas, and customers based on certain criteria. The second is “corporate culture.” Anecdotal, recent evidence seems to suggest that it is difficult to efficiently manage both investment banking and commercial banking within the same organization. The

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18. 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 that covers all possible contingencies, and the contract is called an incomplete contract.

third is “network.” In the future, it seems most likely that global networks will be established by involving other financial institutions, which stimulate one another to provide various financial services in a global, efficient, and flexible way. Given this line of thinking, forming a conglomerate, whose functions are difficult to rearrange, is not warranted as the most effective strategy for financial institutions.

At any rate, the markets for financial services are growing 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.

### **3. 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 three business days to make payments (T+3), and 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 facing 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 a seamless financial market to reduce transaction costs.

Going back to the settlement system, only a limited number of industrialized countries had realized DVP and real-time gross settlement (RTGS) 10 years ago, while most industrialized countries have now adopted such systems. There was a G-30 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, the continuous linked settlement (CLS) system for major banks in industrialized countries tries to reduce risks in foreign exchange settlement.

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. IAS 32, “Financial Instruments: Disclosure and Presentation,” and IAS 39, “Financial Instruments: Recognition and Measurement” became the standard in 1995 and 1998, respectively.<sup>19</sup> Such movement indicates that efforts of firms’ management to optimize investment and financing, taking account of factors such as interest rates, and the 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 the public sectors. We can observe an example in the recent adoption of a private accounting framework or a more sophisticated framework of generation accounting in governments.

19. In 1997, the IASC released a discussion paper entitled “Accounting for Financial Assets and Financial Liabilities,” which required “every financial instrument to be valued at fair value and valued profits and loss to be reflected in the current profits and loss report.” However, since much opposition was raised, IAS 39 was finalized by revising the discussion paper to incorporate major parts of the U.S. accounting standards on financial instruments.

Pressure toward convergence has been seen in regulations of financial institutions. Regulations that 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 an investor's portfolio, the development of derivatives has played an important role.<sup>20</sup>

In the field of bank regulation and supervision such as capital requirements, regulatory authorities and central banks have made explicit efforts toward convergence. It was in 1988 that the BIS adopted a 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 that relates to market risk was adopted in 1995. In addition, some principles pertaining to bank supervision of offshore markets have been confirmed.<sup>21</sup>

Pressure toward convergence can also be seen in taxation, and again, development in derivatives transactions has been the driving force. Tax rates differ from country to country. Moreover, they also differ even within a country according to the character of corporate and personal incomes, which were classified in detail. 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.

#### **4. Dynamics of globalization**

Finally, we would like to emphasize the dynamics of globalization, as another factor that is likely to reduce the cost of cross-border financial services.

The dynamics of globalization progress 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 a "reduction in risk premium," and interpreted as the process of discovery of market anomalies.<sup>22</sup>

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

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20. For example, the Fraser Institute (1996) reported that the existence of the foreign investment restrictions induced the utilization of derivatives transactions. This suggests that remaining regulations may have lost their effectiveness with the progress of financial innovation.

21. BIS (1999c) has asked for public comments to devise a new capital adequacy framework that consists of minimum capital requirements, a supervisory review process, and effective use of market discipline.

22. This is similar to the process of entry of Japanese baseball players into the U.S. 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 major league arranged a system on its side to scout promising Japanese players.

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 markets 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 introduction of the euro, the single currency of the European Monetary Union (EMU), which has been developing in parallel with globalization. One possible interpretation of regionalization is expansion of the 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.<sup>23</sup>

### **C. 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? Below, we examine some of the factors that are considered important for the discussion of this question.

#### **1. Changes in worldwide 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.<sup>24</sup> However, such acceleration of capital movements could make the financial system fragile in the short run.

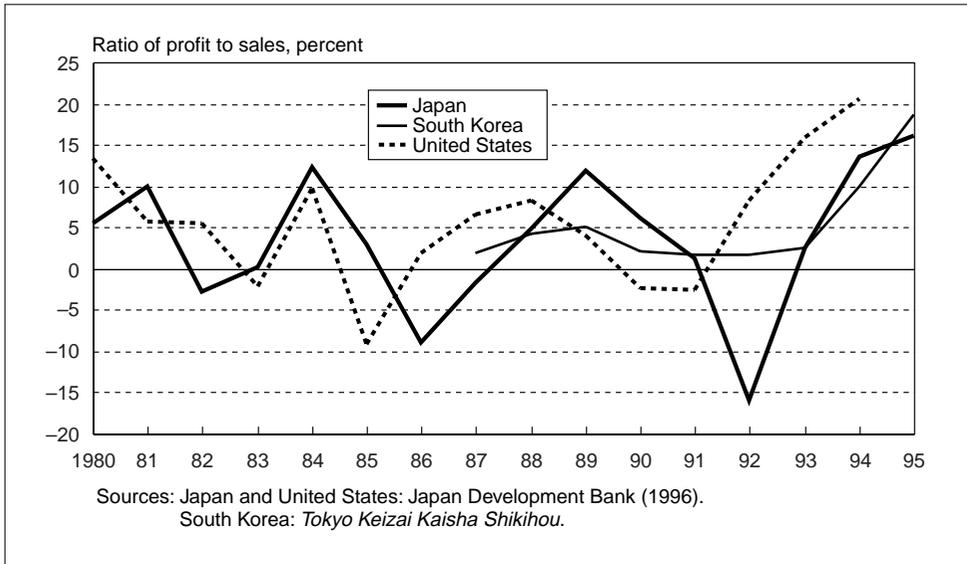
The first category of capital flows in a situation of financial globalization is those from industrialized countries to emerging market economies. When we look at the money flow to the emerging market economies in the BIS statistics, it has increased more than 13 times, from US\$7.8 billion in 1986 to US\$105.0 billion in 1996.

The second category is the changes in capital flows among industries. For example, the performance of the semiconductor industry tends to rely more on international semiconductor market conditions than on domestic business conditions (Figure 9). Therefore, if a country depends heavily on a specific industry that has close

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23. Regarding the euro, we further examine the issue of introduction of the fixed exchange rate system and the optimum currency area in Chapter V.

24. For example, Obstfeld (1994b) 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.

**Figure 9 Profitability of Major Corporations in the Semiconductor Industry**

international linkage, macroeconomic performance and financial market stability of the country will be vulnerable to the external shocks that hit that specific industry.<sup>25</sup>

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 telecommunications 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.<sup>26</sup> Competition among financial markets as well as among financial institutions will be accelerated. In such a situation, two scenarios can be envisaged: first, protectionism will emerge in order to protect domestic financial institutions from foreign competition; and second, 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 established.

25. The example of the semiconductor industry is regarded as a case in which globalization of the real economy occurs first, corresponding to the lower left diagram in Figure 1.

26. Such interest has already been a prominent phenomenon in the real economy. That is, in the frontier industries such as the information and telecommunications industries, a winner-take-all phenomenon stemming 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.

In addition, if international banking of financial institutions develops in the conglomerate direction, once negative information or a settlement failure hits one of the members 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.<sup>27</sup> 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. Therefore, the need to grasp the risk profile of the financial market as a whole has become stronger.

## **2. 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 industrialized 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 (Figure 10). 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.<sup>28</sup>

The future direction of financial globalization will be such that "home bias" will be weakened, and the distinction between residents and nonresidents 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.<sup>29</sup> 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.

## **3. Financial aspects of government behavior**

Another significant aspect that relates to financial stability under globalization stems from the difference in behavior between economic entities: private market participants that are forced to follow the discipline of the globalized financial market, and governments that 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 funds are the ones that explicitly relate to financial aspects. Further, a government implicitly conducts a variety of financial activities. In addition, given that

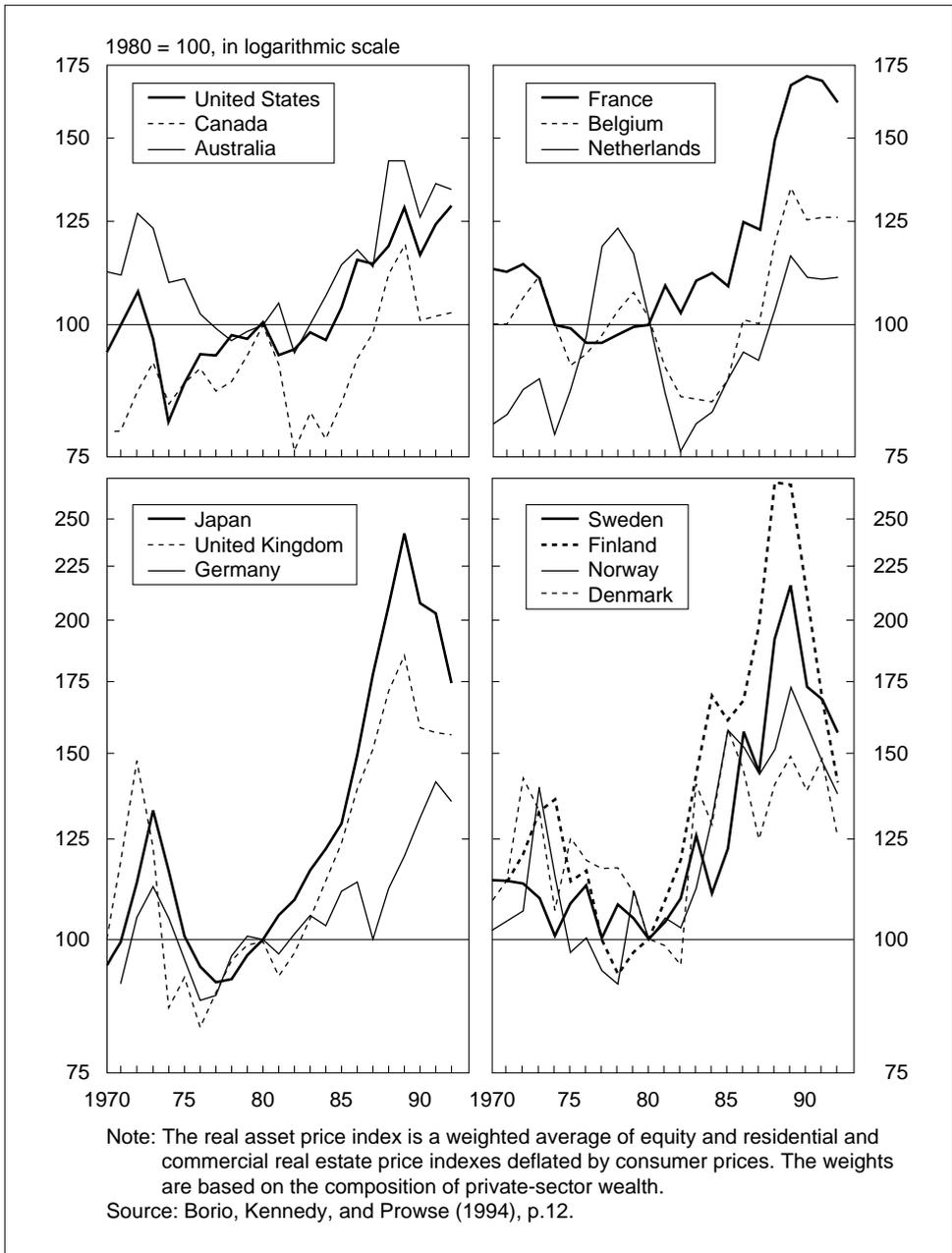
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27. Effects of conglomeration correspond to the upper right diagram in Figure 1, in which globalization in financial aspects occurs first.

28. For an explanation of each country's situation, see Borio, Kennedy, and Prowse (1994).

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

Figure 10 Real Aggregate Asset Prices



the last implicit guarantor of stability of the financial system is the government, sustainability of the fiscal position of the government has gained significance. Commitment to fixed exchange rates can be discussed in this context.<sup>30</sup>

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 markets, 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 peso crisis in 1994 and the recent currency turmoil in Southeast Asia reflect such sentiment among the market participants. In other words, policies that 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 markets 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 discipline for macroeconomic policy management and, hence contribute to stability of the financial system.<sup>31</sup>

The phenomenon in which 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 industrialized 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 a country's own currency may rise because of the increase in the sovereign risk premium. In addition, it is likely that the foreign exchange rate of the country will depreciate substantially because of the increase in the 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.<sup>32</sup>

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30. Regarding the financial crises in the East Asian countries, it is pointed out that implicit guarantees by governments induced moral-hazard behavior of foreign investors. See, for example, Krugman (1998).

31. However, in order to consider whether the 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.

32. Real long-term interest rates are showing a tendency to converge on a certain level. Following Ishi (1996), we employ panel data for seven countries—Japan, the United States, Germany, France, Italy, the United Kingdom, and Canada—during the period 1986–96 to estimate a function that explains each country's real long-term interest rates by real short-term interest rates, cumulative current account balance, and general government net

#### 4. 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 institutions. 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 already been adopted under certain conditions for assessing capital requirements for market risks, and research efforts among private financial institutions to quantify credit risks can be seen in this context. In his recent speech, Federal Reserve Board (FRB) Chairman Greenspan described private market regulation as regulations formed endogenously within market participants, and pointed out its importance. Former Bundesbank President Tietmeyer also emphasized the incentive compatibility of regulations with the market system.<sup>33</sup>

The decision-making process in regard to regulations and rules for financial institutions have changed markedly just in the past decade. Taking capital requirements as an example, each country was adopting its own ratio before the 1988 Basle

debt balance. The results showed that general government net debt balance, which is a proxy for fiscal risk, does not have significant explanatory power for the seven countries as a whole. However, it is significant for four countries (France, Italy, the United Kingdom, and Canada), and for every 10 percent increase in net debt balance/GDP leads to a 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, and thus are not identified as each country’s fiscal risk.

Parameter dummy	Seven countries			Four countries
	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 <sup>2</sup>	0.708	0.705	0.675	0.570

Notes: *t*-values in parentheses. \*, \*\*, and \*\*\* denote statistical significance at 10 percent, 5 percent, and 1 percent, respectively.

33. See Greenspan (1997b) and Tietmeyer (1997).

Capital Accord. The 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.<sup>34</sup>

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

## V. Problems for Central Banks

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In this chapter, we will point out issues relevant to central banks during the ongoing process of globalization. We discuss many issues, which are mutually correlated, from the viewpoints of monetary policy, responsibilities in achieving the stability of the financial system, and enhancing market functioning. 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. This chapter thus does not intend to be conclusive.

### A. Monetary Policy

From the late 1980s, not only industrialized 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 an extended period of time often caused financial and macroeconomic instability characterized by failure in macroeconomic policy coordination among industrialized countries, and turbulence in emerging countries and the European Monetary System.

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34. The pre-commitment approach proposed by Kupiec and O'Brien (1995) should be discussed in this context. This approach can be understood as a form of incentive-compatible regulation that 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 that is a check mechanism formed naturally among market participants.

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 the domestic currency. However, keen questions also arise 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 are likely to gain increasing importance in the future.

### **1. Open economy 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 payments imbalances, becomes smaller.<sup>35</sup> 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 payments imbalances, are less likely to be generated, so that it will take more time to pursue 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.

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 the real and financial sides of the economy because of the advance in globalization.

### **2. 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.

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35. 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.

According to the theory of optimum currency areas,<sup>36</sup> 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: (1) similarity of policy objectives or preference;<sup>37</sup> (2) symmetry in impacts of external shocks;<sup>38</sup> and (3) an alternative adjustment mechanism between regions for exchange rate adjustment.<sup>39</sup> 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 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, a 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.

In Europe, the euro, which is the single currency of the EMU, was adopted by 11 member states from January 1999.<sup>40</sup> Countries joining the EMU must 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.<sup>41</sup> Such a prerequisite may induce political conflicts with the European Central Bank, which operates supranationally, 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.

### **3. 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

36. See Chapter 20 of Krugman and Obstfeld (1997), for example.

37. If this condition is not met, 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.

38. If external shocks affect member countries in the same direction, common monetary policy reaction will successfully offset shocks, thus the 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, a rapid increase in oil prices will affect the two asymmetrically.

39. Although condition (1) is not met, capital mobility, fiscal transfer, and labor mobility will be able to absorb the asymmetric shock without conducting independent monetary policy.

40. The 11 countries are Germany, France, Italy, Netherlands, Belgium, Luxembourg, Ireland, Spain, Portugal, Austria, and Finland.

41. See Tietmeyer (1997).

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 the global economy.<sup>42</sup>

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 underlying the boom and bust of asset markets and the instability of the financial system. In this regard, Matsushita (1995), former 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.” Then, looking back at policy management after the 1987 Louvre Accord, he added 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.”<sup>43</sup>

#### **4. 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 the latter option succeeds depends on the ability of a central bank to forecast the 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 rates in conditions of perfect capital mobility, while monetary easing will stimulate real economic activity through exchange rate depreciation.<sup>44</sup> In this case, the political pressure stems from the industries that 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.

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42. Feldstein (1988), on the basis of his experience as the Chairman of the Council of Economic Advisers under the Reagan Administration, stated his opinion on the international coordination of macroeconomic policy as follows:

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 is truly essential. (p. 12)

43. See Matsushita (1995), p. 7.

44. Of course, even in a closed economy, if people have a rational expectation of 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.

## 5. Asset price fluctuation

Experience of serious asset price inflation and deflation since the late 1980s in many countries 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.<sup>45</sup> The debate on the monetary policy response during the U.S. equity price surge in the late 1920s was surprisingly similar to that of the late 1980s.<sup>46</sup> Nevertheless, knowledge at central banks on this issue has not progressed very much 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 the 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 increases in East Asian countries during the 1990s been affected by the low interest rates in the industrialized 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?<sup>47</sup>

## B. The Role of Central Banks in Achieving Financial Stability

Worldwide consensus has been established about the importance of central bank independence and accountability in achieving price stability. However, with respect to the role of central banks in prudential regulation and supervision, a global standard has yet to be formed. More specifically, the fundamental issue seems to be,

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45. Based on a review of the experience of the U.S. 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 conditions 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)

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

47. A supporting factor on this issue may be that non-tradables in the past—such as financial services, logistics, software development, and various areas in the real economic activities—have been adding the features of tradables, reflecting the recent development of information and communications 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 conditions abroad.

in a broader sense, the roles of central banks in achieving stability of the financial system. Here, we first try to summarize the recent debate on this issue, and then examine the implication of financial globalization for it.

### **1. The basic principle of central bank responsibility**

As a starting point for the discussion on the roles of central banks in achieving stability of the 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 main motivation of such activities 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, state that “[bank] regulation is motivated in particular by the need to protect the small depositors.” For central banks, objectives do not perfectly correspond to those of bank regulatory authorities.

Of course, as typically seen in countries in which a central bank is the only bank 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 aspects.

### **2. 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 financial system becomes unstable. If a financial crisis occurs and large-scale bank closures take place, it is most likely that the response of financial institutions to changes in policy interest rates will be weaker than usual.

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 nonperforming loans were accumulated. In this sense, it would be appropriate to recognize that price stability is an important precondition for achieving the stability of the financial system as a whole.

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. Thus, it is not appropriate to think that there is a fundamental trade-off 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 that 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. This is because the existence of a conflict between price stability and financial stability implies the necessity of coordination to pursue both objectives simultaneously.<sup>48</sup> Thus, it is likely that combining the two responsibilities within a central bank has certain practical advantages.<sup>49</sup>

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 to fulfill its responsibilities for implementing monetary policy and maintaining the stability of the financial system. In addition, 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, there are problems in combining the two responsibilities. One of the factors 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 status as the guardian of the value of money (as, for example, an 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.<sup>50</sup> Even in this case, however, the failure of financial institutions will probably be recognized as a failure of the bank regulatory and supervisory authority, which may undermine the credibility of the central bank and have a negative influence on its conduct of monetary policy.

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

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

50. Greenspan (1997a) discussed 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 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.

### **3. 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 bank regulation and supervision framework itself will, of necessity, adjust continuously 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 international aspects of financial institutions and financial transactions. In particular, as typically seen in the expansion of financial derivatives transactions, international financial markets have become increasingly complex, suggesting that a central bank alone may have difficulty in maintaining stability of the financial system. In addition, in order to cope with potential systemic risks, international coordination among central banks will become increasingly important, because of (1) the increase in the diffusion speed of problems; (2) the increase in the cross-border transaction volume accompanied by delivery lag; and (3) 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 bank regulatory and supervisory authorities, to quite difficult ones such as setting up a formal arrangement for implementing international coordination. From these viewpoints, as FRB Chairman Greenspan stated, what is required is not a formal and rigid arrangement but an informal and flexible arrangement for international coordination and mutual reliance.<sup>51</sup>

### **4. Balancing private market regulation**

In designing the safety net, it becomes increasingly important to consider how to provide individual financial institutions with appropriate incentives that are compatible with stability of the financial system. In other words, the question we must ask here is how to formulate a framework for bank 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 bank supervision on a consolidated basis, or the appropriate response to the trend toward 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 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. In this context, the following points should be emphasized: (1) advantage should be taken of private market regulation generated autonomously and endogenously among financial market participants; and

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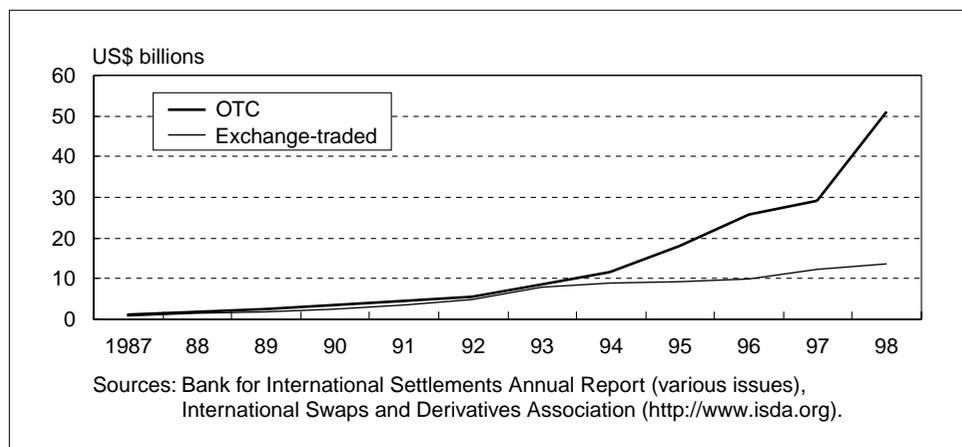
51. See Greenspan (1997b).

(2) more significance should be placed on incentive-compatible instruments as supplements for such private market regulation. Therefore, the key questions for central banks are (1) where the limitation of private market regulation as a foundation of such framework lies; and (2) what kinds of 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 (Figure 11). This seems to reflect their merit of a high degree of flexibility in tailoring cash flows according to customers' 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 participant has 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.

**Figure 11 International Financial Derivative Markets**



### 5. The evaluation of aggregated risk

Finally, we discuss the increasing importance of appropriate risk evaluation in the 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 markets. As a result, it becomes difficult for a central bank alone to maintain stability of the 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 (1997) 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.<sup>52</sup> 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 it seems quite difficult to discover such motivations through research, ongoing globalization forces central banks to contend with them.

### **C. Enhancing Market Functioning**

The third problem that central banks confront as a result of the growing trend toward financial globalization is the exploration of the kinds of efforts effective in promoting 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.

Three reasons why central banks should make such efforts can be summarized as follows. 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.<sup>53</sup>

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52. This succeeded the research efforts in the *Yoshikuni Report* of the BIS Euro-currency Committee (currently the Committee on the Global Financial System, BIS [1996b]).

53. Although mutual funds are expected to be more important financial instruments in the future, high market liquidity is a prerequisite for mutual funds with high liquidity to play such a role.

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 central banks. The first point is the importance of investigating and understanding the actual state of the international financial markets. The Committee on the Global Financial System (formerly called 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 occurs. 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?" and "What type of trading mechanism is the most effective in improving market liquidity?"<sup>54</sup> In academic circles, so-called market microstructure theory has progressed during the last decade to find the answers to these questions.

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 areas for central banks to intervene in directly. However, there are also some impediments that 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 important infrastructural elements for promoting market efficiency, central banks are required to examine whether inappropriate central bank operations, which are incompatible with changing financial markets, 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 requirements. Some issues are under reconsideration, while others are issues for future work. Desirable directions for reconsideration are still

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54. See BIS (1999b) for the discussion on market liquidity.

open questions. In any case, it has become 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.

## **VI. Concluding Remarks**

We have reviewed the facts about the impacts of financial market globalization and presented our interpretation. 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 that 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. Accordingly, public interest in and understanding of the central banks have increased,<sup>55</sup> and the independence of the central bank has been strengthened in many countries, given the inherent inflationary bias. A more or less worldwide consensus has been established on the importance of central bank independence and accountability in achieving 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.

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55. The number of papers in the economics reference data base (ECONOLIT) using “central bank” as a key word 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.

There are many issues which central banks must examine in order to ensure stability of the 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 the 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.

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